

March 14, 2024



Clayton Properties Group, Inc., a Tennessee Corporation  
4908 Tower Road  
Denver, CO 80249

**Re: Traffic Letter for Reunion Center – Duet & Commercial & Commercial Phase, a Supplement to Reunion Center – South Traffic Impact Study in Commerce City, CO dated March 6, 2020**

To Whom It May Concern:

This Traffic Letter has been prepared to provide a supplement to the approved *Reunion Center – South Traffic Impact Study* (TIS) dated March 6, 2020, prepared by JR Engineering. “Reunion Center – South” is also known as the “Reunion Sports, Entertainment, & Cultural Metropolitan District”. The scope of this letter will be limited to the temporary road network for the Duet & Commercial Phase and the effects of the anticipated trip generation.

This traffic letter overrides the *Traffic Letter for Reunion Center – Duet Phase*, submitted by JR Engineering on May 26, 2022, and the *Reunion Center – STEAD School Phase 2 Traffic Letter*, submitted by JR Engineering on August 26, 2022, since the Duet and Commercial parcels are now combined.

### **Project Site**

Reunion Center is located within Sections 9 and 10, Township 2 South, Range 66 West of the 6th Principal Meridian, City of Commerce City, County of Adams, State of Colorado.

The most recent site plans available are the *Reunion Center Duets*, prepared by Terracina Design on January 27, 2023, and the *Reunion Center – Commercial Parcel*, prepared by G3 Architecture on November 28, 2022. Residential townhomes are proposed within the Duet parcel, while mixed-use commercial buildings are proposed within the Commercial Parcel. This conformance letter will analyze the trip generation from these sites and the effects on the surrounding intersections. These site plans are included in **Appendix E**.

The Duet Townhomes & Commercial Parcel developments were shown as Parcels PA-2 and TC-2, respectively, in the *Reunion Center Village Plan*, prepared by Terracina Design on January 22, 2020. These parcels were also labeled as Traffic Analysis Zones (TAZ) 1-2, 1-3, and Future-2 in the *Reunion Center – South TIS*. Relevant figures are included in **Appendix F** and **Appendix G**, respectively.

The townhomes and commercial buildings are anticipated to be constructed by the Year 2028.

Roadway improvements include the following:

- o Site accesses along Tower Road, 104<sup>th</sup> Avenue, Walden Street, and 105<sup>th</sup> Avenue. The accesses meet the City's minimum access spacing criteria for full-movement intersections and 3/4 movement intersections. However, the 3/4 movement intersection at 104<sup>th</sup> Avenue & Yampa Street is approximately 605 feet east of the intersection of 104<sup>th</sup> Avenue & Walden Street. A variance was approved on September 12, 2023.
- o Connection of 105<sup>th</sup> Avenue to Tower Road will be 3/4 access. The ultimate median and west curb are proposed along Tower Road, between 104<sup>th</sup> Way and 105<sup>th</sup> Avenue.

Roadway improvements have already been completed along Homestead Trail per the *Reunion Center – Duet Phase District Improvements* construction plans approved on June 23, 2022. Improvements along Walden Street and 105<sup>th</sup> Avenue have not yet been constructed. Homestead Trail is not proposed to connect to Tower Road in this Duet & Commercial Phase.

This traffic letter will analyze the Level of Service (LOS) at the following intersections:

- o E 104<sup>th</sup> Avenue & Tower Road (E1)
- o E 104<sup>th</sup> Avenue & Walden Street (E2)
- o Walden Street & E 105<sup>th</sup> Avenue (E3)
- o Walden Street & Homestead Trail (E4)
- o Tower Road & E 105<sup>th</sup> Avenue (A1)
- o E 104<sup>th</sup> Avenue & Yampa Street (A2)
- o Walden Street & E 104<sup>th</sup> Way (A3)
- o Walden Street & E 105<sup>th</sup> Place (A4)
- o 105<sup>th</sup> Ave & Yampa Street (A5)
- o Homestead Trail & Yampa Street (A6)

## Data Collection

Existing turning movement counts were collected by All Traffic Data on August 23, 2022 at the following study area intersections:

- o 104<sup>th</sup> & Tower (E1)
- o 104<sup>th</sup> & Walden (E2)
- o Walden & 105<sup>th</sup> (E3)
- o Walden & Homestead (E4)

The counts were collected from 7:00-9:00 AM and 4:00-6:00 PM along 104<sup>th</sup> Avenue and from 7:00-9:00 AM and 2:00-6:00 PM along Walden Street. The AM peak hour generally occurred 7:15-8:15 AM. The PM peak hour generally occurred 4:30-5:30 PM along 104<sup>th</sup> Avenue and 2:45-3:45 PM along Walden Street (due to the STEAD School). The traffic counts are included in **Appendix B**.

Additionally, signal timing plans along the 104<sup>th</sup> Avenue corridor (from State Highway 2 to Tower Road) were prepared by Michael Baker International on February 2, 2022 and provided by the City. The Implemented Signal Timing cycle length and parameters per their Synchro reports were utilized in the opening day Year 2028, but the phasing splits were optimized as necessary with the site generated traffic. These timing reports are included in **Appendix C**.



## Background Traffic Summary

Traffic projections were updated based on new traffic counts and sources described in the *Reunion Center – South TIS – Addendum Letter* dated March 14, 2024, prepared by JR Engineering.

In order to align with projections by the DRCOG Focus Travel Model for Year 2050, a 3.0% growth rate was applied to the existing thru traffic volumes along 104<sup>th</sup> Avenue and Tower Road. A 2.0% growth rate was applied to the turning volumes at the intersection of 104<sup>th</sup> & Tower. A 1.0% growth rate was applied to the remaining minor streets and turning movements, since most of the traffic growth along these streets is accounted for in the Duet & Commercial site generated traffic. These rates were applied to estimate Year 2028 background volumes. JR notes that the City has observed 1.4% annual growth in recent years along 104<sup>th</sup> Avenue and Tower Road, according to traffic counts in December 2022.

JR also calculated average daily traffic (ADT) for the Year 2028 background condition. This was calculated by applying growth rates to existing ADT volumes. The sources of existing ADT volumes and the growth rates used are listed below, based on the highest ADT found for each segment:

- o Tower Rd north of 104<sup>th</sup> Ave
  - o 2022 ADT from DRCOG travel model
  - o 3% growth rate
- o Tower Rd south of 104<sup>th</sup> Ave
  - o 2022 ADT from DRCOG travel model
  - o 3% growth rate
- o 104<sup>th</sup> Ave east of Tower Rd
  - o May 2018 ADT from *Reunion Center – South TIS*
  - o 3% growth rate
- o 104<sup>th</sup> Ave west of Tower Rd
  - o December 2022 ADT from traffic counts
  - o 3% growth rate
- o Walden St north of 104<sup>th</sup> Ave
  - o August 2022 ADT from traffic counts
  - o 1% growth rate

The *Reunion Center – STEAD School Phase 2 Traffic Letter* analyzed the Year 2024 scenario with half the STEAD School remaining (325 students) and the Duet townhomes. Therefore, site generated traffic of half the school was included in the Year 2028 Background Traffic in this conformance letter. The trip generation summary is included in **Appendix A**.

In the STEAD School Phase traffic letter, the AM Peak Hour of Adjacent Street Traffic and the PM Peak Hour of Generator options were used. This was because the PM peak hour of a school typically does not coincide with the PM peak hour of adjacent street traffic. In order to be conservative again, the PM Peak Hour of Generator was kept for the STEAD School.



### **Trip Generation Summary**

Site generated traffic has been calculated from the latest data contained within the Institute of Transportation Engineers' (ITE) *Trip Generation Manual – 10<sup>th</sup> Edition*. The Duet & Commercial townhomes (2 units each) were studied as ITE Code 210 (Single-Family Detached Housing) with 190 total dwelling units. The townhomes were not studied as ITE Code 220 (Low-Rise Multifamily Housing) because the *Trip Generation Manual – 10<sup>th</sup> Edition* describes Code 220 as buildings with at least 4 residential units each. Based on the land use and the guidelines within Volume 1 of the *Trip Generation Manual*, JR used the fitted equations for the AM and PM peak hours of adjacent street traffic.

The land uses for the Commercial Parcel vary according to the site plan and are shown in the Trip Generation Summary as **Table 1**. This site plan is subject to change and will be updated as necessary in subsequent submittals.

No adjustments were made for internal capture trips, but adjustments were made for pass-by trips. The detailed land use reports are included in **Appendix A**.

The estimated site generated traffic for the Duet Townhomes are now less than the volumes assumed in the *Reunion Center – South TIS*, since the South TIS assumed a retail shopping center along with apartment buildings in TAZ's 1-2, 1-3a, and 1-3b. The estimated site generated traffic for the Commercial Parcel is now greater than the volumes assumed in the *Reunion Center – South TIS*, since the South TIS assumed multi-family housing and a shopping center in TAZ's Future-2a and Future-2b.

The TAZ Map and Trip Generation Table from the South TIS are included in **Appendix G**.



## Trip Generation Summary

Alternative: Duet Phase and Commercial Center

Phase:

Open Date: 2/8/2023

Project: Reunion Center

Analysis Date: 2/8/2023

| ITE | Land Use                          | Weekday Average Daily Trips |       |      |       | Weekday AM Peak Hour of Adjacent Street Traffic |       |      |       | Weekday PM Peak Hour of Adjacent Street Traffic |       |      |       |
|-----|-----------------------------------|-----------------------------|-------|------|-------|-------------------------------------------------|-------|------|-------|-------------------------------------------------|-------|------|-------|
|     |                                   | *                           | Enter | Exit | Total | *                                               | Enter | Exit | Total | *                                               | Enter | Exit | Total |
| 210 | Townhomes                         |                             | 939   | 938  | 1877  |                                                 | 35    | 105  | 140   |                                                 | 118   | 70   | 188   |
|     | 190 Dwelling Units                |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 565 | Child Care Center                 |                             | 357   | 357  | 714   |                                                 | 87    | 78   | 165   |                                                 | 78    | 89   | 167   |
|     | 15 1000 Sq. Ft. GFA               |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 720 | Medical Office Building           |                             | 129   | 129  | 258   |                                                 | 20    | 6    | 26    |                                                 | 9     | 24   | 33    |
|     | 9 1000 Sq. Ft. GFA                |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 820 | Retail                            |                             | 589   | 589  | 1178  |                                                 | 97    | 59   | 156   |                                                 | 44    | 48   | 92    |
|     | 9.1 1000 Sq. Ft. GLA              |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 848 | Tire Store                        |                             | 64    | 64   | 128   |                                                 | 8     | 4    | 12    |                                                 | 8     | 10   | 18    |
|     | 4.5 1000 Sq. Ft. GFA              |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 880 | Drug Store                        |                             | 681   | 681  | 1362  |                                                 | 53    | 29   | 82    |                                                 | 64    | 67   | 131   |
|     | 15.4 1000 Sq. Ft. GFA             |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 911 | Bank                              |                             |       |      | 0     |                                                 |       |      | 0     |                                                 | 18    | 22   | 40    |
|     | 3.3 1000 Sq. Ft. GFA              |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 932 | Restaurant                        |                             | 449   | 448  | 897   |                                                 | 44    | 36   | 80    |                                                 | 48    | 30   | 78    |
|     | 8 1000 Sq. Ft. GFA                |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 934 | Fast Food West with Drive-Through |                             | 589   | 588  | 1177  |                                                 | 51    | 49   | 100   |                                                 | 43    | 39   | 82    |
|     | 2.5 1000 Sq. Ft. GFA              |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 934 | Fast Food East with Drive-Through |                             | 589   | 588  | 1177  |                                                 | 51    | 49   | 100   |                                                 | 43    | 39   | 82    |
|     | 2.5 1000 Sq. Ft. GFA              |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 937 | Coffee Shop with Drive-Through    |                             | 357   | 357  | 714   |                                                 | 39    | 38   | 77    |                                                 | 19    | 19   | 38    |
|     | 0.87 1000 Sq. Ft. GFA             |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |
| 948 | Car Wash                          |                             |       |      | 0     |                                                 |       |      | 0     |                                                 | 39    | 39   | 78    |
|     | 1 Car Wash Tunnels                |                             |       |      |       |                                                 |       |      |       |                                                 |       |      |       |

\* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

**TRIP GENERATION 10, TRAFFICWARE, LLC**

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| ITE | Land Use                         | Weekday Average Daily Trips |       |      |       | Weekday AM Peak Hour of Adjacent Street Traffic |       |      |       | Weekday PM Peak Hour of Adjacent Street Traffic |       |      |       |
|-----|----------------------------------|-----------------------------|-------|------|-------|-------------------------------------------------|-------|------|-------|-------------------------------------------------|-------|------|-------|
|     |                                  | *                           | Enter | Exit | Total | *                                               | Enter | Exit | Total | *                                               | Enter | Exit | Total |
|     | Unadjusted Volume                |                             | 4743  | 4739 | 9482  |                                                 | 485   | 453  | 938   |                                                 | 531   | 496  | 1027  |
|     | Internal Capture Trips           |                             | 0     | 0    | 0     |                                                 | 0     | 0    | 0     |                                                 | 0     | 0    | 0     |
|     | Pass-By Trips                    |                             | 0     | 0    | 0     |                                                 | 48    | 48   | 96    |                                                 | 108   | 108  | 216   |
|     | Volume Added to Adjacent Streets |                             | 4743  | 4739 | 9482  |                                                 | 437   | 405  | 842   |                                                 | 423   | 388  | 811   |

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

\* - Custom rate used for selected time period.

In summary, the Duet Townhomes & Commercial Parcel are expected to generate the approximate following unadjusted number of trips:

- 9,482 weekday trips
- 938 AM peak hour vehicle trips, split 485 entering (52%) and 453 exiting (48%)
- 1,027 PM peak hour vehicle trips, split 531 entering (52%) and 496 exiting (48%)

Based on the projected volumes, the Year 2028 Background Traffic, Assignment of Site Generated Traffic, and Year 2028 Opening Day Traffic are shown in **Figure 1**, **Figure 2**, and **Figure 3**, respectively. Lane Geometry is shown in **Figures 1 and 3**, while directional distribution of site generated traffic is shown in **Figure 2**.

Also described in the *Reunion Center – South TIS – Addendum Letter*, the directional distribution of site generated traffic was updated based on the traffic counts in August 2022 at Tower & 104<sup>th</sup> (E1) and described as follows:

- 25% to the west along 104<sup>th</sup> Avenue
- 40% to the south along Tower Road
- 10% to the east along 104<sup>th</sup> Avenue (toward E470)
- 25% to the north along Tower Road

### All-Way Stop Warrant

JR analyzed whether the intersection of Walden Street and Homestead Trail (E4) meets the minimum volumes for an all-way stop condition (AWSC) per MUTCD Section 2B.07 in the Year 2028 Opening Day. The approach speed of Walden Street is below 40mph, so the full values were used. The total of both major street approaches is expected to exceed 300 vehicles in the AM peak hour with 481 vehicles, but not the PM peak hour with 169 vehicles. It is unlikely it would average at least 300 vehicles per hour for 8 hours of an average day. The total of both minor street approaches is not expected to exceed 200 vehicles, pedestrians, and bicyclists during any peak hour in Year 2028.

However, based on comments and discussions with the City, an AWSC condition is typical at the intersection of two collector roads, particularly in residential areas. Furthermore, safety is a concern for pedestrians crossing to/from the STEAD School and residents of the Duet Townhomes who cross to/from the Reunion Park facilities along Reunion Parkway. Therefore, even though the MUTCD volume warrant is not expected to be met, all-way stop control is proposed at Walden & Homestead (E4).



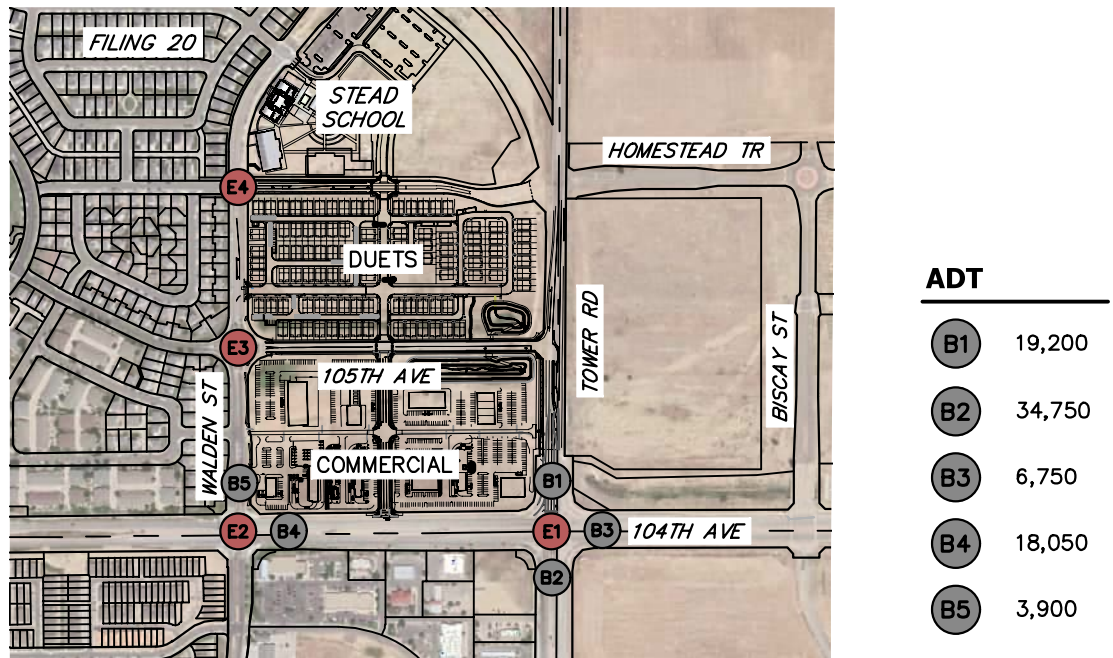
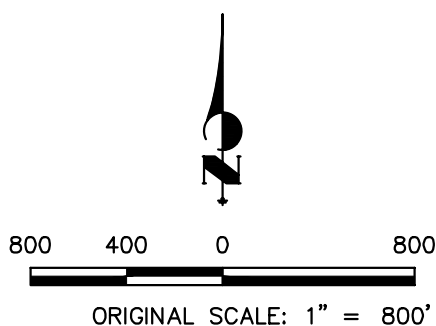
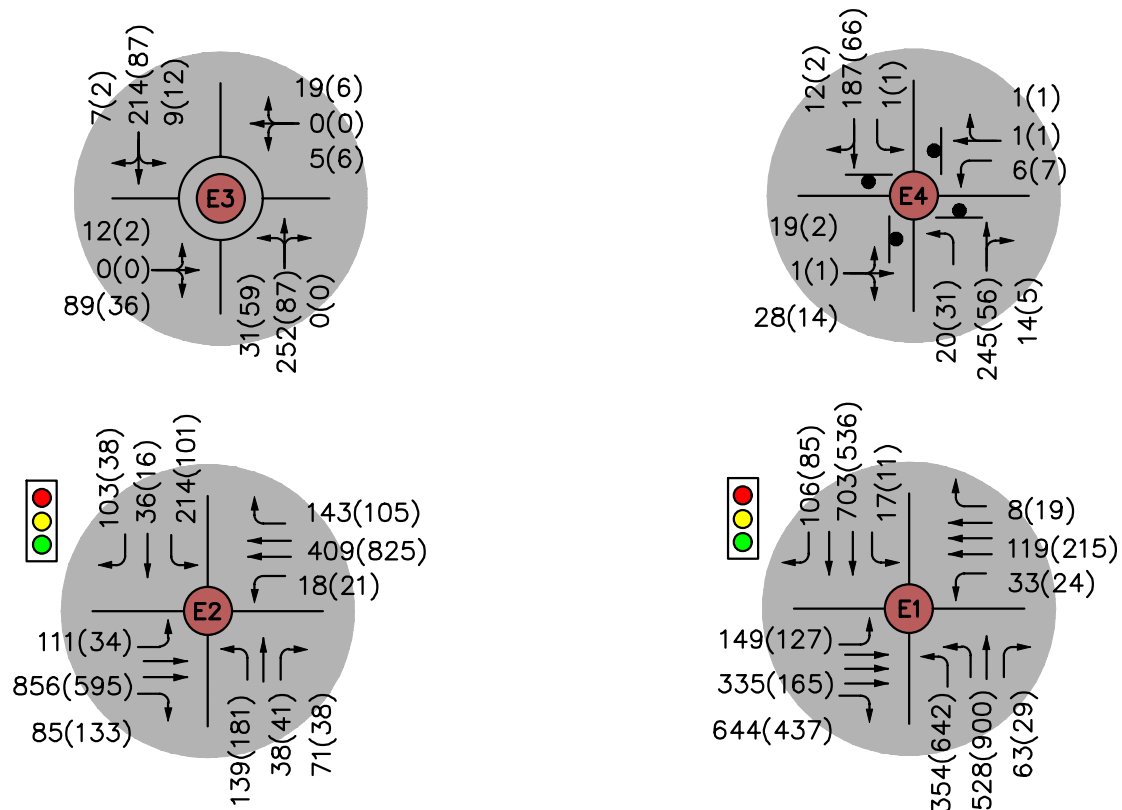


Figure 1 - Year 2028 Background Traffic and Lane Geometry



LEGEND

- EXISTING INTERSECTION
- AM (PM) PEAK HOUR TRIP DISTRIBUTION
- STOP SIGN CONTROL
- ROUNDABOUT CONTROL
- TRAFFIC SIGNAL

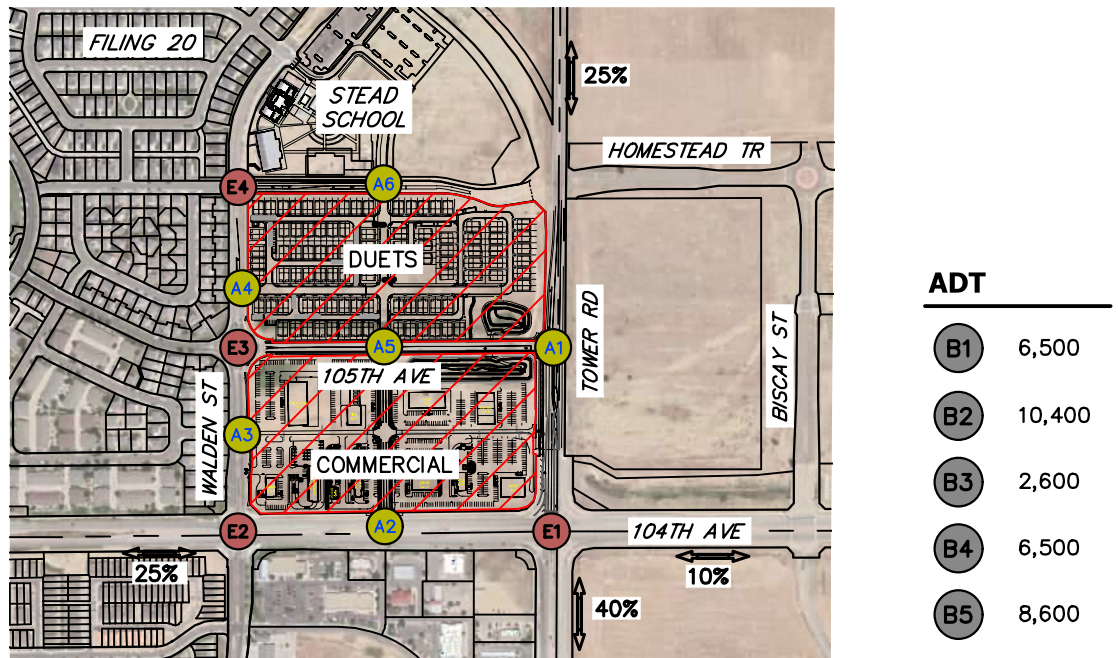
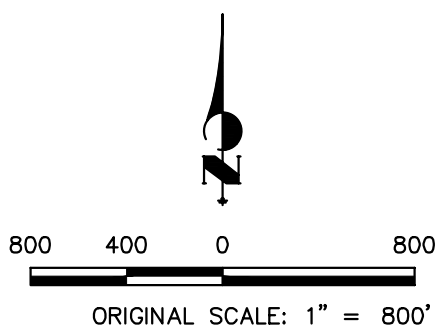
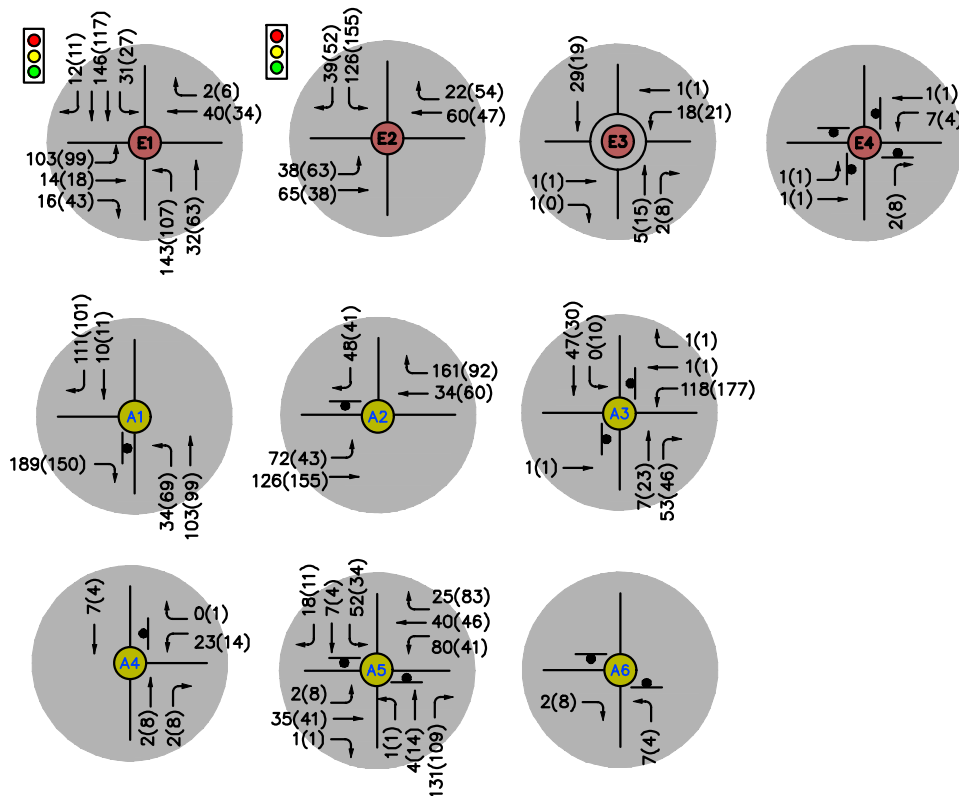


Figure 2 - Assignment of Site Generated Traffic



LEGEND

- PROPOSED INTERSECTION
- EXISTING INTERSECTION
- XX (XX) AM (PM) PEAK HOUR TRIP DISTRIBUTION
- STOP SIGN CONTROL
- ROUNDABOUT CONTROL
- TRAFFIC SIGNAL
- PROJECT SITE

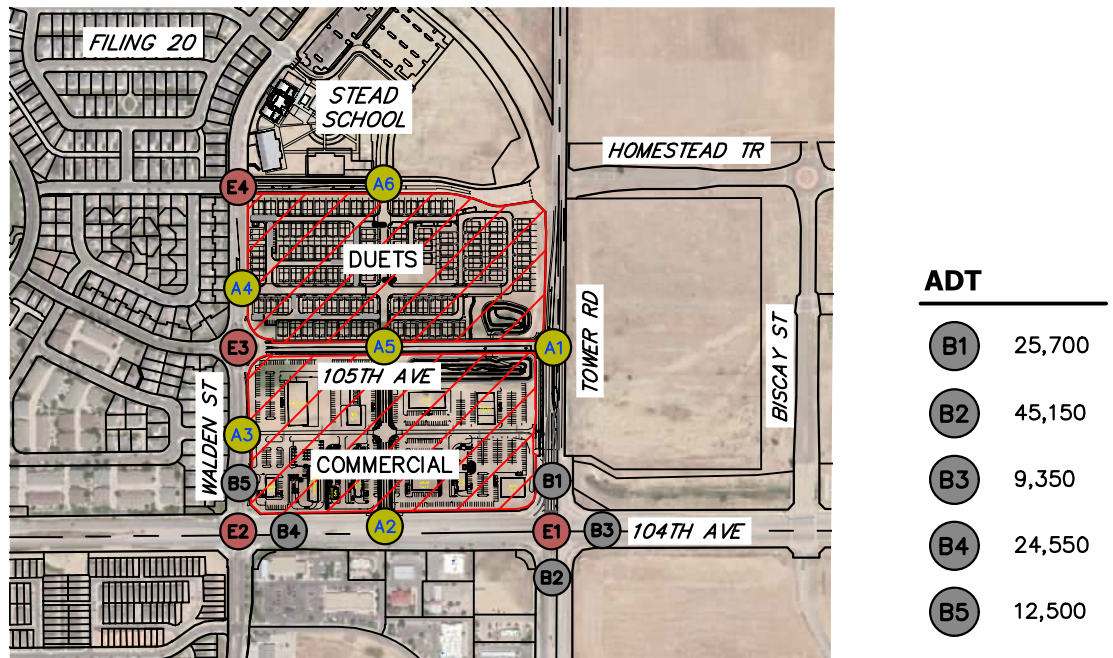
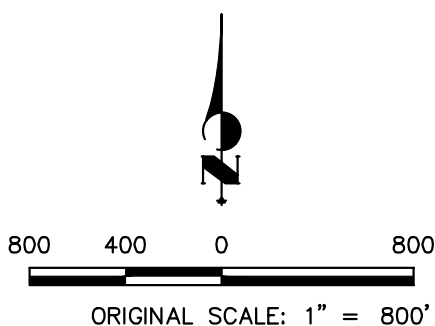
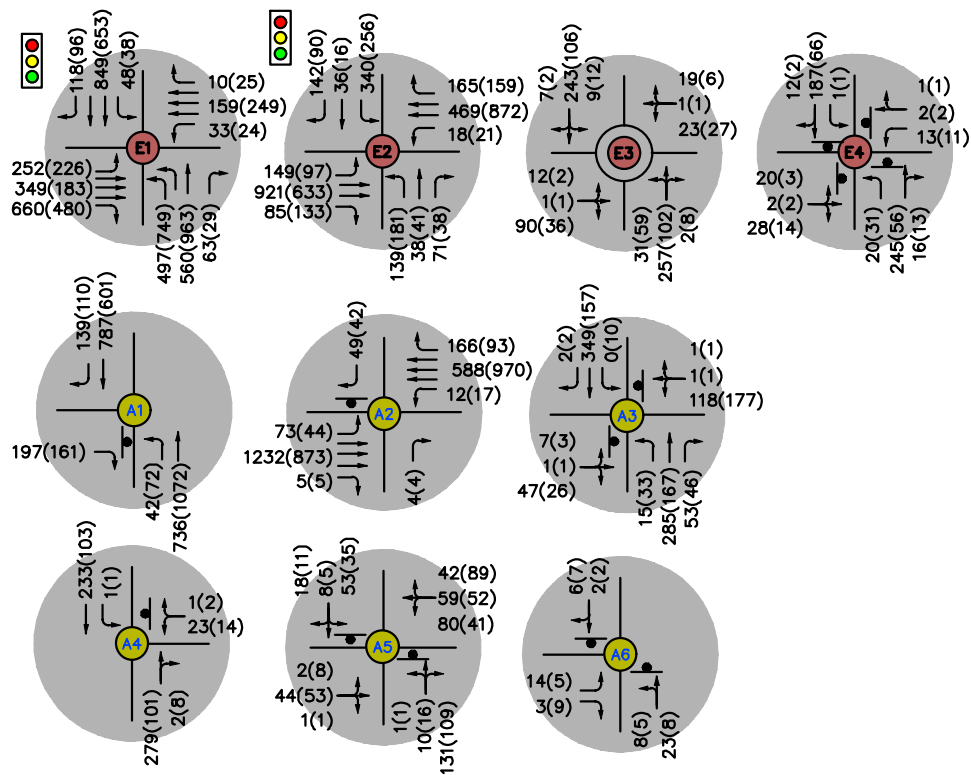


Figure 3 - Year 2028 Opening Day Traffic and Lane Geometry



## Level of Service Results

Operational analyses were conducted in the Year 2028 AM and PM peak hours to determine the levels of service. The projected traffic volumes, lane geometry, and intersection control were input into *Synchro* software and the level of service results are summarized in **Table 2** below. For the traffic signals along 104<sup>th</sup> Avenue, the cycle length of 120 seconds and parameters were maintained from the Michael Baker implemented signal timings, but the phasing splits were optimized in order to improve LOS due to site generated traffic.

**Table 2 – LOS for Year 2028 Traffic**

| Signalized Intersection              | Movement       | Background Traffic LOS |              | Opening Day Traffic LOS |              |
|--------------------------------------|----------------|------------------------|--------------|-------------------------|--------------|
|                                      |                | AM Peak Hour           | PM Peak Hour | AM Peak Hour            | PM Peak Hour |
| E1 - 104th Avenue & Tower Road       | EBL            | D                      | D            | D                       | D            |
|                                      | EBT            | D                      | D            | D                       | D            |
|                                      | WBL            | D                      | D            | D                       | D            |
|                                      | WBT            | D                      | D            | D                       | D            |
|                                      | NBL            | D                      | D            | D                       | D            |
|                                      | NBT            | B                      | B            | C                       | C            |
|                                      | SBL            | E                      | E            | E                       | E            |
|                                      | SBT            | C                      | C            | D                       | D            |
|                                      | <b>OVERALL</b> | <b>D</b>               | <b>D</b>     | <b>D</b>                | <b>D</b>     |
| E2 - 104th Avenue & Walden Street    | EBL            | B                      | B            | B                       | C            |
|                                      | EBT            | B                      | B            | C                       | B            |
|                                      | EBR            | B                      | B            | B                       | B            |
|                                      | WBL            | B                      | B            | C                       | B            |
|                                      | WBT            | C                      | D            | D                       | D            |
|                                      | WBR            | C                      | C            | D                       | C            |
|                                      | NBL            | D                      | D            | D                       | D            |
|                                      | NBT            | D                      | D            | D                       | D            |
|                                      | NBR            | E                      | D            | E                       | D            |
|                                      | SBL            | D                      | D            | D                       | D            |
|                                      | SBT            | D                      | D            | D                       | D            |
|                                      | SBR            | D                      | D            | D                       | D            |
|                                      | <b>OVERALL</b> | <b>C</b>               | <b>C</b>     | <b>C</b>                | <b>C</b>     |
| <b>AWSC Intersection</b>             |                |                        |              |                         |              |
| E4 - Walden Street & Homestead Trail | EBLTR          | A                      | A            | A                       | A            |
|                                      | WBL            | A                      | A            | A                       | A            |
|                                      | WBTR           | A                      | A            | A                       | A            |
|                                      | NBL            | A                      | A            | A                       | A            |
|                                      | NBTR           | B                      | A            | B                       | A            |
|                                      | SBL            | A                      | A            | A                       | A            |
|                                      | SBTR           | B                      | A            | B                       | A            |



| TWSC Intersection                             | Movement | Background Traffic LOS |              | Opening Day Traffic LOS |              |
|-----------------------------------------------|----------|------------------------|--------------|-------------------------|--------------|
|                                               |          | AM Peak Hour           | PM Peak Hour | AM Peak Hour            | PM Peak Hour |
| A1 - Tower Road & 105th Avenue                | EBR      | C                      | B            | D                       | C            |
|                                               | NBL      | A                      | A            | B                       | A            |
| A2 - 104th Avenue & Yampa Street (3/4 Access) | EBL      | B                      | B            | B                       | C            |
|                                               | WBL      | C                      | B            | C                       | B            |
|                                               | NBR      | B                      | B            | C                       | B            |
|                                               | SBR      | B                      | B            | B                       | B            |
| A3 - Walden Street & E 104th Way              | EBLTR    | B                      | A            | B                       | B            |
|                                               | WBLTR    | N/A                    | N/A          | D                       | C            |
|                                               | NBL      | A                      | A            | A                       | A            |
|                                               | SBL      | N/A                    | N/A          | A                       | A            |
| A4 - Walden Street & E 105th Place            | WBLR     | B                      | A            | B                       | A            |
|                                               | SBL      | A                      | A            | A                       | A            |
| A5 - 105th Avenue & Yampa Street              | EBLTR    | N/A                    | N/A          | A                       | A            |
|                                               | WBLTR    | N/A                    | N/A          | A                       | A            |
|                                               | NBLTR    | A                      | A            | A                       | A            |
|                                               | SBLTR    | A                      | A            | B                       | B            |
| A6 - Homestead Trail & Yampa Street           | EBL      | A                      | A            | A                       | A            |
|                                               | EBR      | A                      | A            | A                       | A            |
|                                               | NBLT     | A                      | A            | A                       | A            |
|                                               | SBTR     | A                      | A            | A                       | A            |
| <b>Roundabout Intersection</b>                |          |                        |              |                         |              |
| E3 - Walden Street & E 105th Avenue           | EBLTR    | A                      | A            | A                       | A            |
|                                               | WBLTR    | A                      | A            | A                       | A            |
|                                               | NBLTR    | A                      | A            | A                       | A            |
|                                               | SBLTR    | A                      | A            | A                       | A            |

**Notes:**

1. EB=Eastbound, WB=Westbound, NB=Northbound, SB=Southbound, N/A=Not Applicable
2. L=Left, R=Right, T=Through
3. Yellow highlight does not meet established threshold of LOS D

The *HCM 6<sup>th</sup> Edition* Level of Service reports are included in **Appendix D**.



As shown in **Table 2**, all movements are expected to operate at acceptable levels of service in the Year 2028, except for the following:

Year 2028 Background Traffic

- 104<sup>th</sup> Avenue & Tower Road (E1): SBL in the AM and PM Peak Hours
- 104<sup>th</sup> Avenue & Walden Street (E2): NBR in the AM Peak Hour

Year 2028 Opening Day Traffic

- 104<sup>th</sup> Avenue & Tower Road (E1): SBL in the AM and PM Peak Hours
- 104<sup>th</sup> Avenue & Walden Street (E2): NBR in the AM Peak Hour

At 104<sup>th</sup> & Tower (E1), the 95<sup>th</sup> percentile queue lengths for the southbound-left lane are:

- 38 feet and 28 feet in the background AM and PM peak hours, respectively
- 78 feet and 67 feet in the opening day AM and PM peak hours, respectively

The existing storage length for the SBL lane is 250 feet. Because the upstream through lane is not expected to be impeded, JR recommends the City accept this failing LOS. Furthermore, this failure occurs in the background scenario and is not caused by site generated traffic.

At 104<sup>th</sup> & Walden (E2), the 95<sup>th</sup> percentile queue length for the northbound-right turn lane is nominal in the opening day AM peak hour. Therefore, JR recommends the City accept this failing LOS. Furthermore, this failure occurs in the background scenario and is not caused by site generated traffic.



## Recommendations

In order to optimize traffic operations, below is a summary of the improvements recommended with the construction of the Duet Townhomes and Commercial Parcel. The improvements are categorized as Project responsibility and City responsibility. The recommended improvements are illustrated in **Figure 4**.

### Project Responsibility

- Walden Street & Homestead Trail (E4): all-way stop control is recommended at this intersection.
- Tower Road & E 105<sup>th</sup> Avenue (A1): northbound-left and southbound-right turn lanes are recommended. This intersection is planned as a 3/4 access. 150 feet of storage is recommended for both turn lanes.
- E 104<sup>th</sup> Avenue & Yampa Street (A2): this is an existing 3/4 access intersection, but the access needs to be rebuilt to tie into Yampa Street.
- Walden Street & E 104<sup>th</sup> Way (A3): this is an existing full movement intersection, but the access needs to be rebuilt to tie into 104<sup>th</sup> Way.
- Walden Street & E 105<sup>th</sup> Place (A4): a southbound-left turn lane with 90 feet of storage is recommended.

### City Responsibility

- E 104<sup>th</sup> Avenue & Tower Road (E1): stripe a second northbound through lane. Optimized traffic signal phasing is recommended.
- E 104<sup>th</sup> Avenue & Walden Street (E2): no roadway improvements are recommended, but optimized traffic signal phasing is recommended.



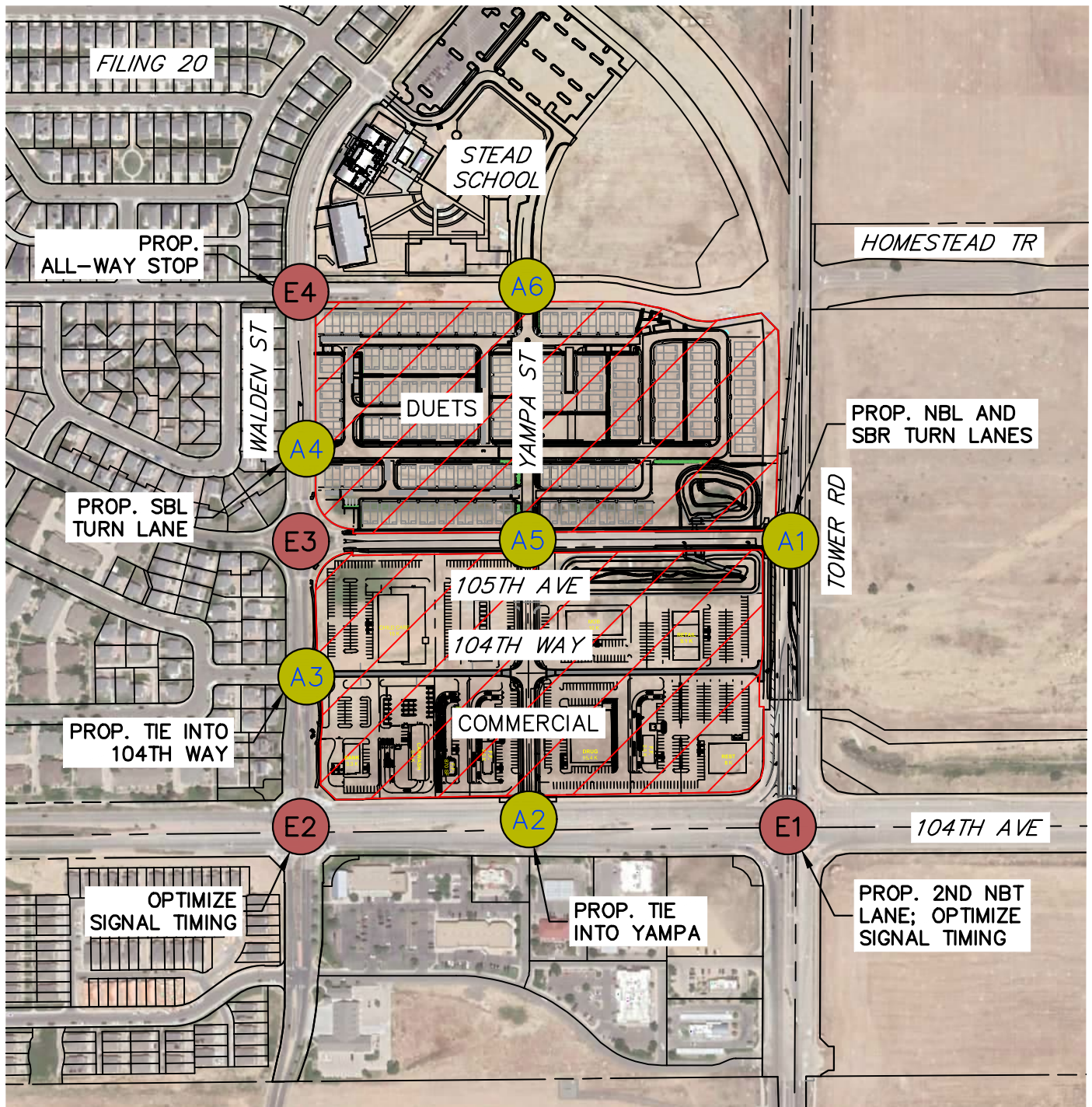
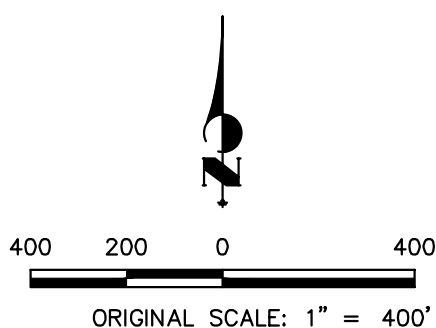


Figure 4 - Recommended Improvements



**LEGEND**

- PROPOSED INTERSECTION
- EXISTING INTERSECTION
- PROJECT SITE

## Conclusion

This Traffic Letter has been prepared as a supplement to the *Reunion Center – South Traffic Impact Study*, dated March 6, 2020 and prepared by JR Engineering. Based on the development described herein and the anticipated trip generation, JR Engineering is of the opinion that the adjacent roadway network will function satisfactorily with the Duet & Commercial Phase of Reunion Center.

If you have any questions or comments, please feel free to contact me at [efarney@jrengineering.com](mailto:efarney@jrengineering.com) or 303-267-6183.

Sincerely,  
JR Engineering, LLC



Eli Farney, PE, PTOE  
Director of Public Works



Attachments: Appendix A: TripGen Reports  
Appendix B: Traffic Counts – August 2022  
Appendix C: 104<sup>th</sup> Avenue Implemented Signal Timing – February 2022  
(Michael Baker)  
Appendix D: HCM 6<sup>th</sup> Edition Level of Service Reports  
Appendix E: Site Plans – Reunion Center Duet and Commercial Parcel  
Appendix F: *Reunion Center Village Plan* Figures  
Appendix G: *Reunion Center – South TIS* Excerpts



## **APPENDIX A**

### **TRIPGEN REPORTS**



**Detailed Land Use Data**  
For 190 Dwelling Units of Townhomes  
( 210 ) Single-Family Detached Housing

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u>               | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-------------------------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 1877                   | 0                        | 9.44                | 4.81                | 19.39               | 2.1                | 264                 | 50                 | 50                | True               | $\ln(T) = 0.92 \ln(X) + 2.71$ | 0.95      |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 140                    | 0                        | 0.74                | 0.33                | 2.27                | 0.27               | 219                 | 25                 | 75                | True               | $T = 0.71(X) + 4.8$           | 0.89      |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 188                    | 0                        | 0.99                | 0.44                | 2.98                | 0.31               | 242                 | 63                 | 37                | True               | $\ln(T) = 0.96 \ln(X) + 0.2$  | 0.92      |

**Detailed Land Use Data**  
For 15 1000 Sq. Ft. GFA of Child Care Center  
( 565 ) Day Care Center

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 714                    | 0                        | 47.62               | 12.12               | 211.06              | 29.78              | 5                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 165                    | 0                        | 11                  | 1.79                | 57.02               | 6.08               | 5                   | 53                 | 47                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 167                    | 0                        | 11.12               | 1.56                | 40.85               | 6.28               | 5                   | 47                 | 53                | False              |                 |           |

**Detailed Land Use Data**  
For 1 Car Wash Tunnels of Car Wash  
( 948 ) Automated Car Wash

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 78                     | 0                        | 77.5                | 50                  | 104.5               | 33.07              | 1                   | 50                 | 50                | False              |                 |           |

**Detailed Land Use Data**  
For 4.5 1000 Sq. Ft. GFA of Tire Store  
( 848 ) Tire Store

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 128                    | 0                        | 28.52               | 19.02               | 88.78               | 16.45              | 5                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 12                     | 0                        | 2.72                | 0.51                | 7.78                | 1.45               | 5                   | 64                 | 36                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 18                     | 0                        | 3.98                | 1.46                | 12.76               | 2.12               | 6                   | 43                 | 57                | False              |                 |           |

### Detailed Land Use Data

For 2.5 1000 Sq. Ft. GFA of Fast Food East with Drive-Through  
( 934 ) Fast-Food Restaurant with Drive-Through Window

Project: Reunion Center

Open Date: 2/8/2023

Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 1177                   | 0                        | 470.95              | 98.89               | 1137.66             | 244.44             | 3                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 100                    | 49                       | 40.19               | 0.38                | 164.25              | 28.78              | 4                   | 51                 | 49                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 82                     | 41                       | 32.67               | 8.17                | 117.22              | 17.87              | 3                   | 52                 | 48                | False              |                 |           |

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

**TRIP GENERATION 10, TRAFFICWARE, LLC**

**Detailed Land Use Data**  
For 9.1 1000 Sq. Ft. GLA of Retail  
( 820 ) Shopping Center

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| Day / Period                                                                                    | Total<br>Trips | Pass-By<br>Trips | Avg<br>Rate | Min<br>Rate | Max<br>Rate | Std<br>Dev | Avg<br>Size | %<br>Enter | %<br>Exit | Use<br>Eq. | Equation                      | R2   |
|-------------------------------------------------------------------------------------------------|----------------|------------------|-------------|-------------|-------------|------------|-------------|------------|-----------|------------|-------------------------------|------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 1178           | 0                | 37.75       | 7.42        | 207.98      | 16.41      | 453         | 50         | 50        | True       | $\ln(T) = 0.68 \ln(X) + 5.57$ | 0.76 |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 156            | 0                | 0.94        | 0.18        | 23.74       | 0.87       | 351         | 62         | 38        | True       | $T = 0.5(X) + 151.78$         | 0.5  |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 92             | 31               | 3.81        | 0.74        | 18.69       | 2.04       | 327         | 48         | 52        | True       | $\ln(T) = 0.74 \ln(X) + 2.89$ | 0.82 |

### Detailed Land Use Data

For 0.87 1000 Sq. Ft. GFA of Coffee Shop with Drive-Through  
( 937 ) Coffee/Donut Shop with Drive-Through Window

Project: Reunion Center

Open Date: 2/8/2023

Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 714                    | 0                        | 820.38              | 738.66              | 869                 |                    | 2                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 77                     | 0                        | 88.99               | 18.32               | 353.57              | 48.19              | 2                   | 51                 | 49                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 38                     | 0                        | 43.38               | 2.09                | 92.31               | 18.88              | 2                   | 50                 | 50                | False              |                 |           |

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

**TRIP GENERATION 10, TRAFFICWARE, LLC**

**Detailed Land Use Data**  
For 9 1000 Sq. Ft. GFA of Medical Office Building  
( 720 ) Medical-Dental Office Building

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| Day / Period                                                                                    | Total<br>Trips | Pass-By<br>Trips | Avg<br>Rate | Min<br>Rate | Max<br>Rate | Std<br>Dev | Avg<br>Size | %<br>Enter | %<br>Exit | Use<br>Eq. | Equation                      | R2   |
|-------------------------------------------------------------------------------------------------|----------------|------------------|-------------|-------------|-------------|------------|-------------|------------|-----------|------------|-------------------------------|------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 258            | 0                | 34.8        | 9.14        | 100.75      | 9.79       | 24          | 50         | 50        | True       | $T = 38.42(X) - 87.62$        | 0.95 |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 26             | 0                | 2.78        | 0.85        | 14.3        | 1.28       | 32          | 78         | 22        | True       | $\ln(T) = 0.89 \ln(X) + 1.31$ | 0.8  |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 33             | 0                | 3.46        | 0.25        | 8.86        | 1.58       | 28          | 28         | 72        | True       | $T = 3.39(X) + 2.02$          | 0.73 |

**Detailed Land Use Data**  
For 3.3 1000 Sq. Ft. GFA of Bank  
( 911 ) Walk-in Bank

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 40                     | 0                        | 12.13               | 2                   | 24.15               | 12.41              | 5                   | 44                 | 56                | False              |                 |           |

**Detailed Land Use Data**  
For 8 1000 Sq. Ft. GFA of Restaurant  
( 932 ) High-Turnover (Sit-Down) Restaurant

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 897                    | 0                        | 112.18              | 13.04               | 742.41              | 72.51              | 5                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 80                     | 0                        | 9.94                | 0.76                | 102.39              | 11.33              | 5                   | 55                 | 45                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 78                     | 34                       | 9.77                | 0.92                | 62                  | 7.37               | 6                   | 62                 | 38                | False              |                 |           |

**Detailed Land Use Data**  
For 15.4 1000 Sq. Ft. GFA of Drug Store  
( 880 ) Pharmacy/Drugstore without Drive-Through Window

Project: Reunion Center

Open Date: 2/8/2023  
Analysis Date: 2/8/2023

| Day / Period                                                                                    | Total<br>Trips | Pass-By<br>Trips | Avg<br>Rate | Min<br>Rate | Max<br>Rate | Std<br>Dev | Avg<br>Size | %<br>Enter | %<br>Exit | Use<br>Eq. | Equation                      | R2   |
|-------------------------------------------------------------------------------------------------|----------------|------------------|-------------|-------------|-------------|------------|-------------|------------|-----------|------------|-------------------------------|------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 1362           | 0                | 90.08       | 81          | 106.5       | 8.9        | 11          | 50         | 50        | True       | $\ln(T) = 0.99 \ln(X) + 4.51$ | 0.73 |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 82             | 0                | 2.94        | 1.17        | 4.3         | 1.25       | 10          | 65         | 35        | True       | $T = 10.22(X) - 75.7$         | 0.89 |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 131            | 69               | 8.51        | 5.11        | 11.7        | 2.16       | 11          | 49         | 51        | False      |                               |      |

### Detailed Land Use Data

For 2.5 1000 Sq. Ft. GFA of Fast Food West with Drive-Through  
( 934 ) Fast-Food Restaurant with Drive-Through Window

Project: Reunion Center

Open Date: 2/8/2023

Analysis Date: 2/8/2023

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u> | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-----------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 1177                   | 0                        | 470.95              | 98.89               | 1137.66             | 244.44             | 3                   | 50                 | 50                | False              |                 |           |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 100                    | 49                       | 40.19               | 0.38                | 164.25              | 28.78              | 4                   | 51                 | 49                | False              |                 |           |
| Weekday PM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 82                     | 41                       | 32.67               | 8.17                | 117.22              | 17.87              | 3                   | 52                 | 48                | False              |                 |           |

**Detailed Land Use Data**  
For 325 Students of STEAD School  
( 530 ) High School

Project: Reunion Center

Open Date: 8/26/2022  
Analysis Date: 8/26/2024

| <u>Day / Period</u>                                                                             | <u>Total<br/>Trips</u> | <u>Pass-By<br/>Trips</u> | <u>Avg<br/>Rate</u> | <u>Min<br/>Rate</u> | <u>Max<br/>Rate</u> | <u>Std<br/>Dev</u> | <u>Avg<br/>Size</u> | <u>%<br/>Enter</u> | <u>%<br/>Exit</u> | <u>Use<br/>Eq.</u> | <u>Equation</u>                           | <u>R2</u> |
|-------------------------------------------------------------------------------------------------|------------------------|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-------------------------------------------|-----------|
| Weekday Average Daily Trips<br>Source : Trip Generation Manual 10th Edition                     | 660                    | 0                        | 2.03                | 1.19                | 3.96                | 0.82               | 1498                | 50                 | 50                | False              | $\text{Ln}(T) = 0.76 \text{Ln}(X) + 2.46$ | 0.6       |
| Weekday AM Peak Hour of Adjacent Street Traffic<br>Source : Trip Generation Manual 10th Edition | 169                    | 0                        | 0.52                | 0.03                | 1.15                | 0.23               | 1202                | 67                 | 33                | False              |                                           |           |
| Weekday PM Peak Hour of Generator<br>Source : Trip Generation Manual 10th Edition               | 107                    | 0                        | 0.33                | 0.16                | 0.74                | 0.13               | 1127                | 32                 | 68                | False              | $\text{Ln}(T) = 0.69 \text{Ln}(X) + 1.07$ | 0.64      |

## **APPENDIX B**

### **TRAFFIC COUNTS – AUGUST 23, 2022**





(303) 216-2439  
www.alltrafficdata.net

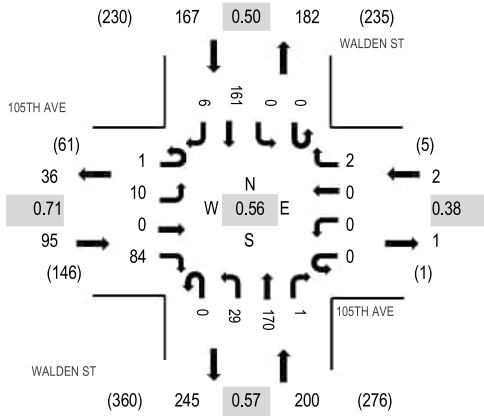
**Location:** 1 WALDEN ST & 105TH AVE AM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 07:15 AM - 08:15 AM

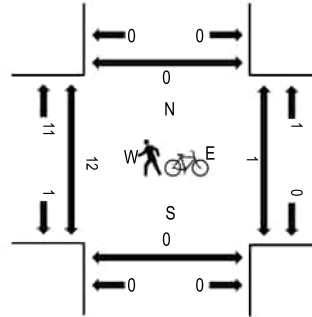
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | 105TH AVE<br>Eastbound |      |      |       | 105TH AVE<br>Westbound |      |      |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|------------------------|------|------|-------|------------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                 | Left | Thru | Right | U-Turn                 | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 7:00 AM                | 0                      | 0    | 0    | 20    | 0                      | 0    | 0    | 2     | 1                       | 5    | 13   | 0     | 0                       | 0    | 25   | 0     | 66    | 453             | 0                    | 0    | 0     | 0     |
| 7:15 AM                | 0                      | 0    | 0    | 21    | 0                      | 0    | 0    | 1     | 0                       | 4    | 31   | 0     | 0                       | 0    | 12   | 0     | 69    | 464             | 0                    | 1    | 0     | 0     |
| 7:30 AM                | 1                      | 1    | 0    | 23    | 0                      | 0    | 0    | 0     | 0                       | 11   | 39   | 0     | 0                       | 0    | 33   | 2     | 110   | 452             | 5                    | 0    | 0     | 0     |
| 7:45 AM                | 0                      | 8    | 0    | 28    | 0                      | 0    | 0    | 0     | 0                       | 9    | 78   | 0     | 0                       | 0    | 81   | 4     | 208   | 377             | 1                    | 0    | 0     | 0     |
| 8:00 AM                | 0                      | 1    | 0    | 12    | 0                      | 0    | 0    | 1     | 0                       | 5    | 22   | 1     | 0                       | 0    | 35   | 0     | 77    | 204             | 0                    | 0    | 0     | 0     |
| 8:15 AM                | 0                      | 1    | 0    | 11    | 0                      | 1    | 0    | 0     | 0                       | 11   | 17   | 0     | 0                       | 0    | 16   | 0     | 57    |                 | 1                    | 0    | 0     | 0     |
| 8:30 AM                | 0                      | 0    | 0    | 11    | 0                      | 0    | 0    | 0     | 0                       | 4    | 11   | 0     | 0                       | 0    | 9    | 0     | 35    |                 | 0                    | 0    | 0     | 0     |
| 8:45 AM                | 0                      | 0    | 0    | 8     | 0                      | 0    | 0    | 0     | 0                       | 5    | 9    | 0     | 0                       | 0    | 13   | 0     | 35    |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 1                      | 11   | 0    | 134   | 0                      | 1    | 0    | 4     | 1                       | 54   | 220  | 1     | 0                       | 0    | 224  | 6     | 657   |                 | 7                    | 1    | 0     | 0     |
| Peak Hour              | 1                      | 10   | 0    | 84    | 0                      | 0    | 0    | 2     | 0                       | 29   | 170  | 1     | 0                       | 0    | 161  | 6     | 464   |                 | 6                    | 1    | 0     | 0     |



(303) 216-2439  
www.alltrafficdata.net

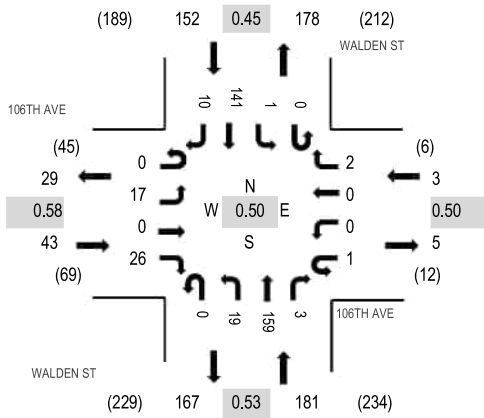
**Location:** 2 WALDEN ST & 106TH AVE AM

**Date:** Tuesday, August 23, 2022

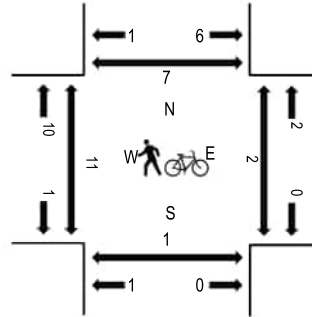
**Peak Hour:** 07:15 AM - 08:15 AM

**Peak 15-Minutes:** 07:45 AM - 08:00 AM

### Peak Hour - All Vehicles



### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

### Traffic Counts

| Interval<br>Start Time | 106TH AVE<br>Eastbound |      |      |       | 106TH AVE<br>Westbound |      |      |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|------------------------|------|------|-------|------------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                 | Left | Thru | Right | U-Turn                 | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 7:00 AM                | 0                      | 0    | 0    | 11    | 0                      | 0    | 0    | 1     | 0                       | 1    | 9    | 4     | 0                       | 0    | 13   | 0     | 39    | 356             | 0                    | 0    | 0     | 0     |
| 7:15 AM                | 0                      | 1    | 0    | 3     | 0                      | 0    | 0    | 0     | 0                       | 7    | 23   | 2     | 0                       | 0    | 9    | 0     | 45    | 379             | 0                    | 0    | 0     | 0     |
| 7:30 AM                | 0                      | 3    | 0    | 6     | 0                      | 0    | 0    | 0     | 0                       | 4    | 36   | 0     | 0                       | 0    | 29   | 3     | 81    | 368             | 1                    | 1    | 0     | 1     |
| 7:45 AM                | 0                      | 11   | 0    | 9     | 0                      | 0    | 0    | 1     | 0                       | 7    | 79   | 0     | 0                       | 1    | 78   | 5     | 191   | 308             | 5                    | 0    | 0     | 4     |
| 8:00 AM                | 0                      | 2    | 0    | 8     | 1                      | 0    | 0    | 1     | 0                       | 1    | 21   | 1     | 0                       | 0    | 25   | 2     | 62    | 142             | 1                    | 0    | 0     | 1     |
| 8:15 AM                | 0                      | 0    | 0    | 7     | 0                      | 0    | 0    | 0     | 0                       | 4    | 14   | 0     | 0                       | 0    | 9    | 0     | 34    |                 | 0                    | 0    | 0     | 0     |
| 8:30 AM                | 0                      | 0    | 0    | 1     | 0                      | 0    | 0    | 1     | 0                       | 5    | 4    | 2     | 0                       | 0    | 8    | 0     | 21    |                 | 0                    | 0    | 0     | 0     |
| 8:45 AM                | 0                      | 1    | 0    | 6     | 0                      | 0    | 1    | 0     | 0                       | 5    | 4    | 1     | 0                       | 0    | 7    | 0     | 25    |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 0                      | 18   | 0    | 51    | 1                      | 0    | 1    | 4     | 0                       | 34   | 190  | 10    | 0                       | 1    | 178  | 10    | 498   |                 | 7                    | 1    | 0     | 6     |
| Peak Hour              | 0                      | 17   | 0    | 26    | 1                      | 0    | 0    | 2     | 0                       | 19   | 159  | 3     | 0                       | 1    | 141  | 10    | 379   |                 | 7                    | 1    | 0     | 6     |



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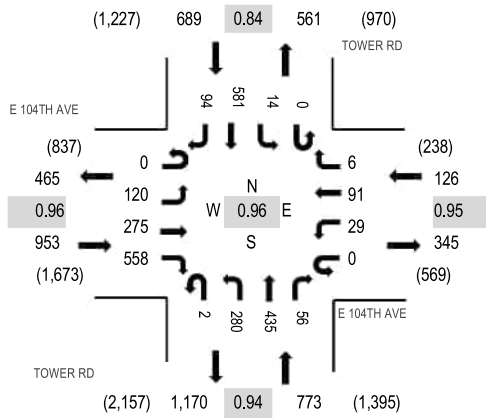
**Location:** 3 TOWER RD & E 104TH AVE AM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 07:00 AM - 08:00 AM

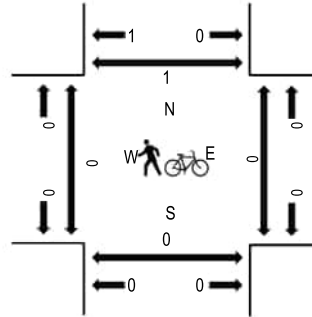
**Peak 15-Minutes:** 07:00 AM - 07:15 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | E 104TH AVE<br>Eastbound |      |      |       | E 104TH AVE<br>Westbound |      |      |       | TOWER RD<br>Northbound |      |      |       | TOWER RD<br>Southbound |      |       |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|--------------------------|------|------|-------|--------------------------|------|------|-------|------------------------|------|------|-------|------------------------|------|-------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                 | Left | Thru | Right | U-Turn                 | Left | Thru  | Right |       |                 | West                 | East | South | North |
| 7:00 AM                | 0                        | 19   | 67   | 155   | 0                        | 8    | 15   | 0     | 0                      | 57   | 127  | 9     | 0                      | 4    | 187   | 13    | 661   | 2,541           | 0                    | 0    | 0     | 0     |
| 7:15 AM                | 0                        | 22   | 65   | 141   | 0                        | 4    | 25   | 3     | 0                      | 83   | 72   | 14    | 0                      | 4    | 167   | 16    | 616   | 2,462           | 0                    | 0    | 0     | 0     |
| 7:30 AM                | 0                        | 38   | 69   | 130   | 0                        | 10   | 26   | 0     | 1                      | 62   | 122  | 21    | 0                      | 4    | 127   | 35    | 645   | 2,375           | 0                    | 0    | 0     | 0     |
| 7:45 AM                | 0                        | 41   | 74   | 132   | 0                        | 7    | 25   | 3     | 1                      | 78   | 114  | 12    | 0                      | 2    | 100   | 30    | 619   | 2,201           | 0                    | 0    | 0     | 0     |
| 8:00 AM                | 0                        | 20   | 65   | 140   | 0                        | 10   | 22   | 2     | 0                      | 55   | 97   | 15    | 0                      | 1    | 139   | 16    | 582   | 1,992           | 0                    | 0    | 0     | 0     |
| 8:15 AM                | 0                        | 15   | 53   | 116   | 0                        | 7    | 16   | 1     | 2                      | 73   | 101  | 7     | 0                      | 1    | 116   | 21    | 529   |                 | 0                    | 0    | 0     | 0     |
| 8:30 AM                | 0                        | 19   | 31   | 122   | 0                        | 7    | 20   | 2     | 0                      | 50   | 83   | 11    | 0                      | 2    | 113   | 11    | 471   |                 | 0                    | 0    | 0     | 0     |
| 8:45 AM                | 0                        | 6    | 33   | 100   | 0                        | 4    | 21   | 0     | 0                      | 60   | 63   | 5     | 0                      | 0    | 111   | 7     | 410   |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 0                        | 180  | 457  | 1,036 | 0                        | 57   | 170  | 11    | 4                      | 518  | 779  | 94    | 0                      | 18   | 1,060 | 149   | 4,533 |                 | 0                    | 0    | 0     | 0     |
| Peak Hour              | 0                        | 120  | 275  | 558   | 0                        | 29   | 91   | 6     | 2                      | 280  | 435  | 56    | 0                      | 14   | 581   | 94    | 2,541 |                 | 0                    | 0    | 0     | 0     |



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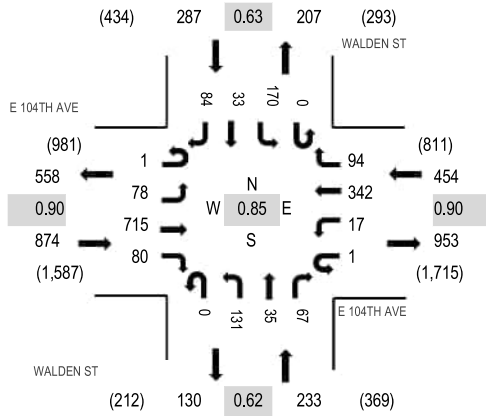
**Location:** 4 WALDEN ST & E 104TH AVE AM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 07:15 AM - 08:15 AM

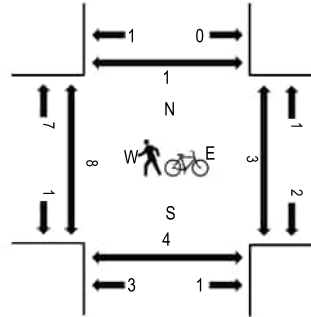
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | E 104TH AVE<br>Eastbound |      |       |       | E 104TH AVE<br>Westbound |      |      |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|--------------------------|------|-------|-------|--------------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                   | Left | Thru  | Right | U-Turn                   | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 7:00 AM                | 0                        | 8    | 210   | 6     | 0                        | 4    | 74   | 9     | 0                       | 20   | 3    | 12    | 0                       | 39   | 4    | 15    | 404   | 1,788           | 0                    | 0    | 0     | 0     |
| 7:15 AM                | 0                        | 7    | 160   | 17    | 1                        | 3    | 71   | 23    | 0                       | 21   | 7    | 11    | 0                       | 42   | 5    | 6     | 374   | 1,848           | 2                    | 3    | 2     | 0     |
| 7:30 AM                | 0                        | 19   | 201   | 18    | 0                        | 9    | 86   | 29    | 0                       | 21   | 3    | 21    | 0                       | 38   | 8    | 12    | 465   | 1,828           | 3                    | 0    | 0     | 0     |
| 7:45 AM                | 0                        | 37   | 148   | 24    | 0                        | 3    | 95   | 31    | 0                       | 53   | 20   | 21    | 0                       | 56   | 14   | 43    | 545   | 1,671           | 1                    | 0    | 0     | 0     |
| 8:00 AM                | 1                        | 15   | 206   | 21    | 0                        | 2    | 90   | 11    | 0                       | 36   | 5    | 14    | 0                       | 34   | 6    | 23    | 464   | 1,413           | 1                    | 0    | 2     | 0     |
| 8:15 AM                | 1                        | 10   | 142   | 15    | 0                        | 5    | 90   | 15    | 0                       | 20   | 7    | 10    | 0                       | 26   | 3    | 10    | 354   |                 | 1                    | 1    | 3     | 1     |
| 8:30 AM                | 0                        | 4    | 153   | 14    | 0                        | 5    | 68   | 8     | 0                       | 22   | 6    | 4     | 0                       | 17   | 1    | 6     | 308   |                 | 1                    | 0    | 0     | 0     |
| 8:45 AM                | 0                        | 2    | 129   | 19    | 0                        | 4    | 67   | 8     | 0                       | 22   | 6    | 4     | 0                       | 16   | 2    | 8     | 287   |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 2                        | 102  | 1,349 | 134   | 1                        | 35   | 641  | 134   | 0                       | 215  | 57   | 97    | 0                       | 268  | 43   | 123   | 3,201 |                 | 9                    | 4    | 7     | 1     |
| Peak Hour              | 1                        | 78   | 715   | 80    | 1                        | 17   | 342  | 94    | 0                       | 131  | 35   | 67    | 0                       | 170  | 33   | 84    | 1,848 |                 | 7                    | 3    | 4     | 0     |



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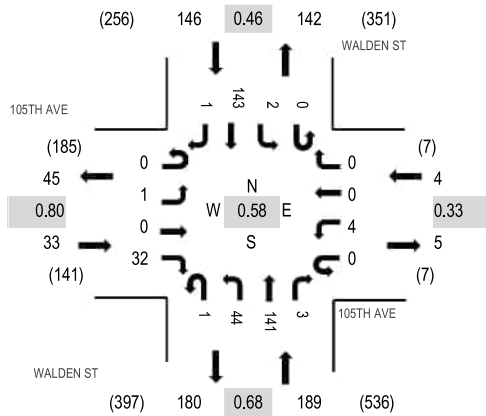
**Location:** 1 WALDEN ST & 105TH AVE PM

**Date:** Tuesday, August 23, 2022

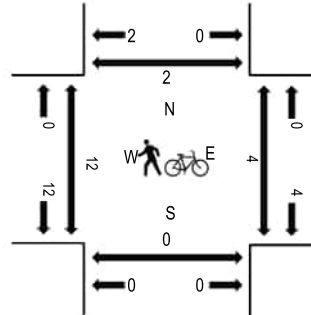
**Peak Hour:** 02:45 PM - 03:45 PM

**Peak 15-Minutes:** 03:00 PM - 03:15 PM

### Peak Hour - All Vehicles



### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

### Traffic Counts

| Interval<br>Start Time | 105TH AVE<br>Eastbound |      |      |       | 105TH AVE<br>Westbound |      |      |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|------------------------|------|------|-------|------------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                 | Left | Thru | Right | U-Turn                 | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 2:00 PM                | 0                      | 0    | 0    | 8     | 0                      | 0    | 0    | 1     | 0                       | 8    | 10   | 1     | 0                       | 0    | 10   | 1     | 39    | 211             | 0                    | 0    | 0     | 0     |
| 2:15 PM                | 1                      | 0    | 0    | 7     | 0                      | 0    | 0    | 0     | 0                       | 7    | 18   | 0     | 0                       | 0    | 8    | 0     | 41    | 331             | 0                    | 0    | 0     | 0     |
| 2:30 PM                | 0                      | 0    | 0    | 13    | 0                      | 0    | 0    | 0     | 0                       | 6    | 20   | 0     | 0                       | 0    | 8    | 0     | 47    | 348             | 0                    | 0    | 0     | 0     |
| 2:45 PM                | 0                      | 1    | 0    | 2     | 0                      | 0    | 0    | 0     | 0                       | 10   | 55   | 1     | 0                       | 1    | 14   | 0     | 84    | 372             | 0                    | 0    | 0     | 0     |
| 3:00 PM                | 0                      | 0    | 0    | 7     | 0                      | 3    | 0    | 0     | 0                       | 17   | 52   | 1     | 0                       | 0    | 79   | 0     | 159   | 342             | 7                    | 3    | 0     | 2     |
| 3:15 PM                | 0                      | 0    | 0    | 9     | 0                      | 0    | 0    | 0     | 0                       | 9    | 17   | 0     | 0                       | 1    | 22   | 0     | 58    | 228             | 1                    | 0    | 0     | 0     |
| 3:30 PM                | 0                      | 0    | 0    | 14    | 0                      | 1    | 0    | 0     | 1                       | 8    | 17   | 1     | 0                       | 0    | 28   | 1     | 71    | 221             | 0                    | 0    | 0     | 0     |
| 3:45 PM                | 0                      | 0    | 0    | 11    | 0                      | 0    | 0    | 0     | 0                       | 13   | 22   | 0     | 0                       | 0    | 8    | 0     | 54    | 191             | 0                    | 1    | 0     | 1     |
| 4:00 PM                | 0                      | 0    | 0    | 8     | 0                      | 0    | 0    | 0     | 0                       | 12   | 17   | 0     | 0                       | 0    | 8    | 0     | 45    | 179             | 0                    | 0    | 0     | 0     |
| 4:15 PM                | 0                      | 1    | 0    | 11    | 0                      | 0    | 0    | 0     | 0                       | 14   | 16   | 0     | 0                       | 0    | 9    | 0     | 51    | 185             | 0                    | 0    | 2     | 0     |
| 4:30 PM                | 0                      | 0    | 0    | 12    | 0                      | 0    | 0    | 0     | 0                       | 14   | 8    | 0     | 0                       | 0    | 7    | 0     | 41    | 182             | 1                    | 0    | 0     | 0     |
| 4:45 PM                | 0                      | 0    | 0    | 6     | 0                      | 0    | 0    | 0     | 0                       | 10   | 17   | 0     | 0                       | 0    | 9    | 0     | 42    | 198             | 0                    | 0    | 1     | 0     |
| 5:00 PM                | 0                      | 0    | 0    | 12    | 0                      | 0    | 0    | 0     | 0                       | 14   | 17   | 1     | 0                       | 0    | 7    | 0     | 51    | 208             | 0                    | 0    | 0     | 0     |
| 5:15 PM                | 0                      | 0    | 0    | 4     | 0                      | 1    | 0    | 0     | 0                       | 18   | 19   | 0     | 0                       | 0    | 6    | 0     | 48    |                 | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 0                      | 0    | 0    | 5     | 0                      | 0    | 0    | 0     | 0                       | 12   | 25   | 0     | 0                       | 0    | 15   | 0     | 57    |                 | 0                    | 0    | 0     | 0     |
| 5:45 PM                | 0                      | 0    | 0    | 9     | 0                      | 1    | 0    | 0     | 0                       | 10   | 18   | 0     | 0                       | 0    | 14   | 0     | 52    |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 1                      | 2    | 0    | 138   | 0                      | 6    | 0    | 1     | 1                       | 182  | 348  | 5     | 0                       | 2    | 252  | 2     | 940   |                 | 9                    | 4    | 3     | 3     |
| Peak Hour              | 0                      | 1    | 0    | 32    | 0                      | 4    | 0    | 0     | 1                       | 44   | 141  | 3     | 0                       | 2    | 143  | 1     | 372   |                 | 8                    | 3    | 0     | 2     |



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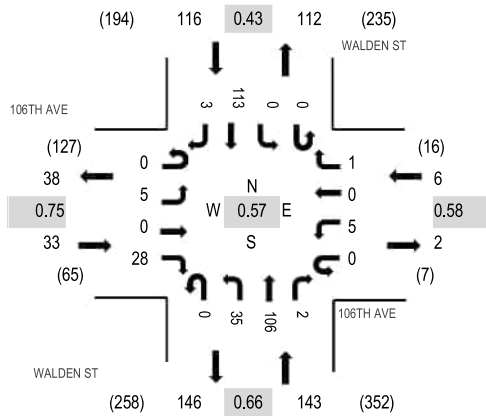
**Location:** 2 WALDEN ST & 106TH AVE PM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 02:45 PM - 03:45 PM

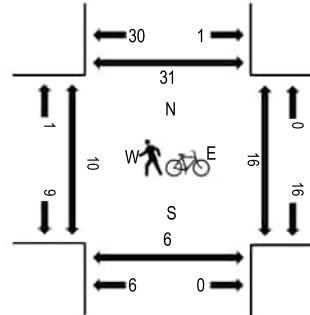
**Peak 15-Minutes:** 03:00 PM - 03:15 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | 106TH AVE<br>Eastbound |      |      |       | 106TH AVE<br>Westbound |      |      |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|------------------------|------|------|-------|------------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                 | Left | Thru | Right | U-Turn                 | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 2:00 PM                | 0                      | 0    | 0    | 1     | 0                      | 2    | 0    | 1     | 0                       | 3    | 6    | 2     | 0                       | 0    | 7    | 0     | 22    | 158             | 0                    | 0    | 0     | 0     |
| 2:15 PM                | 0                      | 0    | 0    | 2     | 0                      | 2    | 0    | 0     | 0                       | 9    | 9    | 0     | 0                       | 0    | 4    | 3     | 29    | 267             | 0                    | 0    | 0     | 0     |
| 2:30 PM                | 0                      | 1    | 0    | 2     | 0                      | 1    | 0    | 0     | 0                       | 3    | 17   | 0     | 0                       | 0    | 5    | 0     | 29    | 280             | 0                    | 0    | 0     | 0     |
| 2:45 PM                | 0                      | 4    | 0    | 7     | 0                      | 1    | 0    | 0     | 0                       | 12   | 42   | 1     | 0                       | 0    | 11   | 0     | 78    | 298             | 0                    | 0    | 0     | 1     |
| 3:00 PM                | 0                      | 1    | 0    | 9     | 0                      | 0    | 0    | 1     | 0                       | 11   | 40   | 1     | 0                       | 0    | 66   | 2     | 131   | 250             | 6                    | 15   | 4     | 26    |
| 3:15 PM                | 0                      | 0    | 0    | 8     | 0                      | 1    | 0    | 0     | 0                       | 6    | 12   | 0     | 0                       | 0    | 14   | 1     | 42    | 148             | 1                    | 0    | 0     | 1     |
| 3:30 PM                | 0                      | 0    | 0    | 4     | 0                      | 3    | 0    | 0     | 0                       | 6    | 12   | 0     | 0                       | 0    | 22   | 0     | 47    | 133             | 0                    | 0    | 0     | 0     |
| 3:45 PM                | 0                      | 0    | 0    | 0     | 0                      | 1    | 0    | 0     | 1                       | 9    | 11   | 1     | 0                       | 0    | 7    | 0     | 30    | 101             | 2                    | 0    | 0     | 0     |
| 4:00 PM                | 0                      | 1    | 0    | 3     | 0                      | 0    | 0    | 0     | 0                       | 12   | 6    | 0     | 0                       | 0    | 7    | 0     | 29    | 98              | 0                    | 0    | 0     | 0     |
| 4:15 PM                | 0                      | 0    | 0    | 2     | 0                      | 0    | 0    | 0     | 0                       | 7    | 10   | 0     | 0                       | 1    | 7    | 0     | 27    | 94              | 0                    | 0    | 0     | 0     |
| 4:30 PM                | 0                      | 0    | 0    | 2     | 0                      | 0    | 0    | 0     | 0                       | 2    | 6    | 0     | 0                       | 0    | 5    | 0     | 15    | 91              | 0                    | 0    | 0     | 0     |
| 4:45 PM                | 0                      | 1    | 0    | 5     | 0                      | 0    | 0    | 0     | 0                       | 9    | 8    | 0     | 0                       | 0    | 4    | 0     | 27    | 117             | 0                    | 0    | 0     | 0     |
| 5:00 PM                | 0                      | 0    | 0    | 3     | 0                      | 0    | 0    | 0     | 0                       | 9    | 8    | 0     | 0                       | 1    | 4    | 0     | 25    | 121             | 0                    | 0    | 0     | 0     |
| 5:15 PM                | 0                      | 0    | 0    | 3     | 0                      | 0    | 0    | 0     | 0                       | 9    | 9    | 0     | 0                       | 0    | 3    | 0     | 24    |                 | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 0                      | 0    | 0    | 4     | 0                      | 0    | 0    | 0     | 0                       | 10   | 16   | 0     | 0                       | 0    | 11   | 0     | 41    |                 | 2                    | 0    | 0     | 0     |
| 5:45 PM                | 0                      | 0    | 0    | 2     | 0                      | 3    | 0    | 0     | 0                       | 4    | 13   | 0     | 0                       | 0    | 9    | 0     | 31    |                 | 1                    | 0    | 0     | 0     |
| Count Total            | 0                      | 8    | 0    | 57    | 0                      | 14   | 0    | 2     | 1                       | 121  | 225  | 5     | 0                       | 2    | 186  | 6     | 627   |                 | 12                   | 15   | 4     | 28    |
| Peak Hour              | 0                      | 5    | 0    | 28    | 0                      | 5    | 0    | 1     | 0                       | 35   | 106  | 2     | 0                       | 0    | 113  | 3     | 298   |                 | 7                    | 15   | 4     | 28    |



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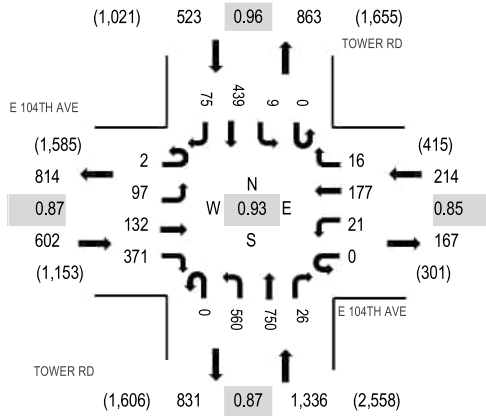
**Location:** 3 TOWER RD & E 104TH AVE PM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 04:45 PM - 05:45 PM

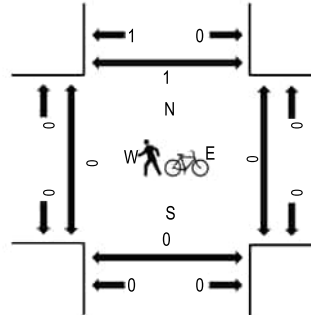
**Peak 15-Minutes:** 05:15 PM - 05:30 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | E 104TH AVE<br>Eastbound |      |      |       | E 104TH AVE<br>Westbound |      |      |       | TOWER RD<br>Northbound |       |       |       | TOWER RD<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|--------------------------|------|------|-------|--------------------------|------|------|-------|------------------------|-------|-------|-------|------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                 | Left  | Thru  | Right | U-Turn                 | Left | Thru | Right |       |                 | West                 | East | South | North |
| 4:00 PM                | 0                        | 28   | 32   | 80    | 0                        | 4    | 47   | 2     | 0                      | 160   | 184   | 9     | 0                      | 1    | 103  | 22    | 672   | 2,508           | 0                    | 0    | 0     | 0     |
| 4:15 PM                | 0                        | 25   | 23   | 79    | 0                        | 12   | 33   | 2     | 0                      | 114   | 183   | 6     | 0                      | 1    | 81   | 24    | 583   | 2,539           | 0                    | 0    | 0     | 0     |
| 4:30 PM                | 0                        | 26   | 30   | 88    | 0                        | 6    | 52   | 2     | 0                      | 128   | 170   | 1     | 0                      | 1    | 95   | 25    | 624   | 2,673           | 0                    | 0    | 0     | 0     |
| 4:45 PM                | 1                        | 30   | 26   | 79    | 0                        | 6    | 48   | 3     | 0                      | 129   | 187   | 6     | 0                      | 1    | 97   | 16    | 629   | 2,675           | 0                    | 0    | 0     | 0     |
| 5:00 PM                | 0                        | 20   | 30   | 102   | 0                        | 5    | 32   | 5     | 0                      | 159   | 215   | 9     | 0                      | 2    | 108  | 16    | 703   | 2,639           | 0                    | 0    | 0     | 0     |
| 5:15 PM                | 1                        | 35   | 43   | 95    | 0                        | 7    | 54   | 5     | 0                      | 141   | 185   | 6     | 0                      | 6    | 111  | 28    | 717   |                 | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 0                        | 12   | 33   | 95    | 0                        | 3    | 43   | 3     | 0                      | 131   | 163   | 5     | 0                      | 0    | 123  | 15    | 626   |                 | 0                    | 0    | 0     | 1     |
| 5:45 PM                | 0                        | 19   | 28   | 93    | 0                        | 5    | 34   | 2     | 1                      | 115   | 149   | 2     | 0                      | 0    | 128  | 17    | 593   |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 2                        | 195  | 245  | 711   | 0                        | 48   | 343  | 24    | 1                      | 1,077 | 1,436 | 44    | 0                      | 12   | 846  | 163   | 5,147 |                 | 0                    | 0    | 0     | 1     |
| Peak Hour              | 2                        | 97   | 132  | 371   | 0                        | 21   | 177  | 16    | 0                      | 560   | 750   | 26    | 0                      | 9    | 439  | 75    | 2,675 |                 | 0                    | 0    | 0     | 1     |



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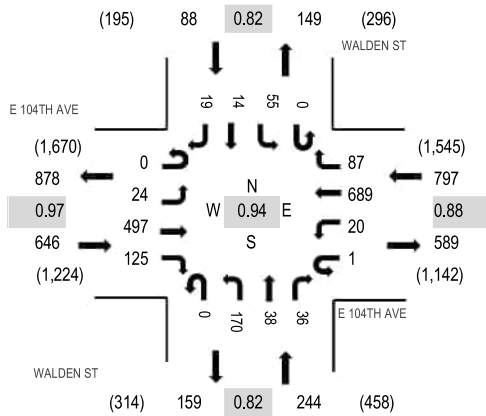
**Location:** 4 WALDEN ST & E 104TH AVE PM

**Date:** Tuesday, August 23, 2022

**Peak Hour:** 04:30 PM - 05:30 PM

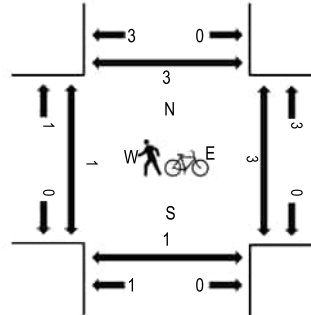
**Peak 15-Minutes:** 05:15 PM - 05:30 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

| Interval<br>Start Time | E 104TH AVE<br>Eastbound |      |      |       | E 104TH AVE<br>Westbound |      |       |       | WALDEN ST<br>Northbound |      |      |       | WALDEN ST<br>Southbound |      |      |       | Total | Rolling<br>Hour | Pedestrian Crossings |      |       |       |
|------------------------|--------------------------|------|------|-------|--------------------------|------|-------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|-----------------|----------------------|------|-------|-------|
|                        | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru  | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |                 | West                 | East | South | North |
| 4:00 PM                | 0                        | 1    | 131  | 20    | 0                        | 7    | 190   | 31    | 0                       | 46   | 6    | 10    | 0                       | 12   | 4    | 7     | 465   | 1,687           | 0                    | 2    | 0     | 0     |
| 4:15 PM                | 0                        | 4    | 93   | 21    | 0                        | 8    | 146   | 22    | 0                       | 26   | 12   | 10    | 0                       | 11   | 10   | 5     | 368   | 1,671           | 0                    | 0    | 0     | 0     |
| 4:30 PM                | 0                        | 8    | 126  | 33    | 0                        | 4    | 186   | 16    | 0                       | 43   | 7    | 9     | 0                       | 16   | 3    | 2     | 453   | 1,775           | 0                    | 0    | 0     | 0     |
| 4:45 PM                | 0                        | 8    | 115  | 37    | 0                        | 6    | 144   | 15    | 0                       | 30   | 8    | 11    | 0                       | 14   | 3    | 10    | 401   | 1,744           | 0                    | 0    | 1     | 0     |
| 5:00 PM                | 0                        | 1    | 129  | 24    | 1                        | 3    | 170   | 26    | 0                       | 56   | 13   | 5     | 0                       | 15   | 3    | 3     | 449   | 1,735           | 1                    | 3    | 0     | 3     |
| 5:15 PM                | 0                        | 7    | 127  | 31    | 0                        | 7    | 189   | 30    | 0                       | 41   | 10   | 11    | 0                       | 10   | 5    | 4     | 472   |                 | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 1                        | 6    | 120  | 32    | 0                        | 8    | 151   | 26    | 0                       | 32   | 6    | 12    | 0                       | 17   | 4    | 7     | 422   |                 | 0                    | 2    | 0     | 2     |
| 5:45 PM                | 0                        | 10   | 110  | 29    | 1                        | 8    | 137   | 13    | 0                       | 37   | 10   | 7     | 0                       | 19   | 4    | 7     | 392   |                 | 0                    | 0    | 0     | 0     |
| Count Total            | 1                        | 45   | 951  | 227   | 2                        | 51   | 1,313 | 179   | 0                       | 311  | 72   | 75    | 0                       | 114  | 36   | 45    | 3,422 |                 | 1                    | 7    | 1     | 5     |
| Peak Hour              | 0                        | 24   | 497  | 125   | 1                        | 20   | 689   | 87    | 0                       | 170  | 38   | 36    | 0                       | 55   | 14   | 19    | 1,775 |                 | 1                    | 3    | 1     | 3     |

## **APPENDIX C**

104<sup>TH</sup> AVENUE IMPLEMENTED SIGNAL TIMING

BY MICHAEL BAKER INTERNATIONAL



# AM Peak Signal Timing Plan After Implementation

# 104th Avenue Implemented Signal Timing

10: Walden St & 104th Ave

AM Peak

|                            |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 10                                                                                | 742                                                                               | 42                                                                                | 1                                                                                 | 296                                                                               | 44                                                                                | 64                                                                                  | 10                                                                                  | 26                                                                                  | 75                                                                                  | 7                                                                                   | 18                                                                                  |
| Future Volume (vph)        | 10                                                                                | 742                                                                               | 42                                                                                | 1                                                                                 | 296                                                                               | 44                                                                                | 64                                                                                  | 10                                                                                  | 26                                                                                  | 75                                                                                  | 7                                                                                   | 18                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 250                                                                               |                                                                                   | 0                                                                                 | 230                                                                                 |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor            | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.98                                                                              | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.99                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1805                                                                              | 3406                                                                              | 1538                                                                              | 1805                                                                              | 3406                                                                              | 1583                                                                              | 1770                                                                                | 1727                                                                                | 1615                                                                                | 1805                                                                                | 1900                                                                                | 1615                                                                                |
| Flt Permitted              | 0.544                                                                             |                                                                                   |                                                                                   | 0.328                                                                             |                                                                                   |                                                                                   | 0.752                                                                               |                                                                                     |                                                                                     | 0.727                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1031                                                                              | 3406                                                                              | 1538                                                                              | 623                                                                               | 3406                                                                              | 1545                                                                              | 1399                                                                                | 1727                                                                                | 1615                                                                                | 1381                                                                                | 1900                                                                                | 1594                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 159                                                                               |                                                                                   |                                                                                   | 159                                                                               |                                                                                     |                                                                                     | 168                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1290                                                                              |                                                                                   |                                                                                   | 1314                                                                              |                                                                                   |                                                                                     | 404                                                                                 |                                                                                     |                                                                                     | 2709                                                                                |                                                                                     |
| Travel Time (s)            |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                     | 9.2                                                                                 |                                                                                     |                                                                                     | 61.6                                                                                |                                                                                     |
| Confl. Peds. (#/hr)        | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1                                                                                   |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 6%                                                                                | 5%                                                                                | 0%                                                                                | 6%                                                                                | 2%                                                                                | 2%                                                                                  | 10%                                                                                 | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 11                                                                                | 789                                                                               | 45                                                                                | 1                                                                                 | 344                                                                               | 51                                                                                | 69                                                                                  | 11                                                                                  | 28                                                                                  | 81                                                                                  | 8                                                                                   | 19                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 11                                                                                | 789                                                                               | 45                                                                                | 1                                                                                 | 344                                                                               | 51                                                                                | 69                                                                                  | 11                                                                                  | 28                                                                                  | 81                                                                                  | 8                                                                                   | 19                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 22                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |

# 104th Avenue Implemented Signal Timing

## 10: Walden St & 104th Ave

AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Type               | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        | 2                                                                                 |                                                                                   | 2                                                                                 | 6                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                  |                                                                                     | 8                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                  | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 36.5                                                                              | 36.5                                                                              | 12.5                                                                              | 36.5                                                                              | 36.5                                                                              | 14.5                                                                               | 42.5                                                                                | 42.5                                                                                | 14.5                                                                                | 42.5                                                                                | 42.5                                                                                |
| Total Split (s)         | 14.0                                                                              | 67.0                                                                              | 67.0                                                                              | 14.0                                                                              | 67.0                                                                              | 67.0                                                                              | 19.0                                                                               | 20.0                                                                                | 20.0                                                                                | 19.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 11.7%                                                                             | 55.8%                                                                             | 55.8%                                                                             | 11.7%                                                                             | 55.8%                                                                             | 55.8%                                                                             | 15.8%                                                                              | 16.7%                                                                               | 16.7%                                                                               | 15.8%                                                                               | 16.7%                                                                               | 16.7%                                                                               |
| Maximum Green (s)       | 6.5                                                                               | 59.5                                                                              | 59.5                                                                              | 6.5                                                                               | 59.5                                                                              | 59.5                                                                              | 12.5                                                                               | 13.5                                                                                | 13.5                                                                                | 12.5                                                                                | 13.5                                                                                | 13.5                                                                                |
| Yellow Time (s)         | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 3.8                                                                                | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 |
| All-Red Time (s)        | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.7                                                                                | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 6.5                                                                                | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Recall Mode             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                    | 31.0                                                                                | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 87.5                                                                              | 87.7                                                                              | 87.7                                                                              | 87.2                                                                              | 87.6                                                                              | 87.6                                                                              | 15.9                                                                               | 10.0                                                                                | 10.0                                                                                | 16.4                                                                                | 10.3                                                                                | 10.3                                                                                |
| Actuated g/C Ratio      | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.08                                                                                | 0.08                                                                                | 0.14                                                                                | 0.09                                                                                | 0.09                                                                                |
| v/c Ratio               | 0.01                                                                              | 0.32                                                                              | 0.04                                                                              | 0.00                                                                              | 0.14                                                                              | 0.04                                                                              | 0.32                                                                               | 0.08                                                                                | 0.10                                                                                | 0.36                                                                                | 0.05                                                                                | 0.07                                                                                |
| Control Delay           | 3.6                                                                               | 3.6                                                                               | 0.1                                                                               | 3.0                                                                               | 3.4                                                                               | 0.7                                                                               | 44.0                                                                               | 52.2                                                                                | 0.7                                                                                 | 45.0                                                                                | 51.3                                                                                | 0.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 3.6                                                                               | 3.6                                                                               | 0.1                                                                               | 3.0                                                                               | 3.4                                                                               | 0.7                                                                               | 44.0                                                                               | 52.2                                                                                | 0.7                                                                                 | 45.0                                                                                | 51.3                                                                                | 0.4                                                                                 |
| LOS                     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 3.4                                                                               |                                                                                   |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 33.6                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 16 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 8.1

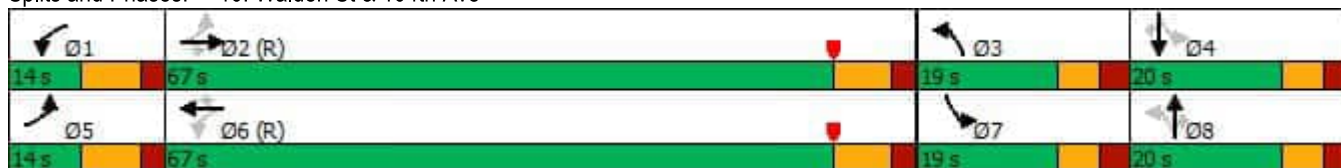
Intersection LOS: A

Intersection Capacity Utilization 57.0%

ICU Level of Service B

Analysis Period (min) 15

### Splits and Phases: 10: Walden St & 104th Ave



# 104th Avenue Implemented Signal Timing

## 11: Tower Rd & 104th Ave

AM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 50                                                                                | 161                                                                               | 583                                                                               | 35                                                                                | 64                                                                                | 3                                                                                 | 270                                                                                | 426                                                                                 | 23                                                                                  | 5                                                                                   | 663                                                                                 | 40                                                                                  |
| Future Volume (vph)        | 50                                                                                | 161                                                                               | 583                                                                               | 35                                                                                | 64                                                                                | 3                                                                                 | 270                                                                                | 426                                                                                 | 23                                                                                  | 5                                                                                   | 663                                                                                 | 40                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 350                                                                               |                                                                                   | 590                                                                               | 330                                                                               |                                                                                   | 440                                                                               | 320                                                                                |                                                                                     | 290                                                                                 | 290                                                                                 |                                                                                     | 190                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 0.97                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1736                                                                              | 4848                                                                              | 1538                                                                              | 1467                                                                              | 4803                                                                              | 1615                                                                              | 3367                                                                               | 1743                                                                                | 1162                                                                                | 1504                                                                                | 3406                                                                                | 1538                                                                                |
| Flt Permitted              | 0.693                                                                             |                                                                                   |                                                                                   | 0.628                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1266                                                                              | 4848                                                                              | 1538                                                                              | 970                                                                               | 4803                                                                              | 1615                                                                              | 3367                                                                               | 1743                                                                                | 1162                                                                                | 1504                                                                                | 3406                                                                                | 1538                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 485                                                                               |                                                                                   |                                                                                   | 189                                                                               |                                                                                    |                                                                                     | 182                                                                                 |                                                                                     |                                                                                     | 182                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 45                                                                                  |                                                                                     |                                                                                     | 45                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1314                                                                              |                                                                                   |                                                                                   | 579                                                                               |                                                                                   |                                                                                    | 636                                                                                 |                                                                                     |                                                                                     | 501                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                   | 8.8                                                                               |                                                                                   |                                                                                    | 9.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor           | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.71                                                                              | 0.71                                                                              | 0.71                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 4%                                                                                | 7%                                                                                | 5%                                                                                | 23%                                                                               | 8%                                                                                | 0%                                                                                | 4%                                                                                 | 9%                                                                                  | 39%                                                                                 | 20%                                                                                 | 6%                                                                                  | 5%                                                                                  |
| Adj. Flow (vph)            | 59                                                                                | 189                                                                               | 686                                                                               | 49                                                                                | 90                                                                                | 4                                                                                 | 290                                                                                | 458                                                                                 | 25                                                                                  | 5                                                                                   | 705                                                                                 | 43                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 59                                                                                | 189                                                                               | 686                                                                               | 49                                                                                | 90                                                                                | 4                                                                                 | 290                                                                                | 458                                                                                 | 25                                                                                  | 5                                                                                   | 705                                                                                 | 43                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |

# 104th Avenue Implemented Signal Timing

## 11: Tower Rd & 104th Ave

AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 15.4                                                                              | 39.4                                                                              | 39.4                                                                              | 15.4                                                                              | 39.4                                                                              | 39.4                                                                              | 16.2                                                                               | 40.2                                                                                | 40.2                                                                                | 16.2                                                                                | 40.2                                                                                | 40.2                                                                                |
| Total Split (s)         | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 25.0                                                                               | 39.0                                                                                | 39.0                                                                                | 25.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| Total Split (%)         | 15.0%                                                                             | 31.7%                                                                             | 31.7%                                                                             | 15.0%                                                                             | 31.7%                                                                             | 31.7%                                                                             | 20.8%                                                                              | 32.5%                                                                               | 32.5%                                                                               | 20.8%                                                                               | 32.5%                                                                               | 32.5%                                                                               |
| Maximum Green (s)       | 10.6                                                                              | 30.6                                                                              | 30.6                                                                              | 10.6                                                                              | 30.6                                                                              | 30.6                                                                              | 16.8                                                                               | 30.8                                                                                | 30.8                                                                                | 16.8                                                                                | 30.8                                                                                | 30.8                                                                                |
| Yellow Time (s)         | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.1                                                                                | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 |
| All-Red Time (s)        | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 3.1                                                                                | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 2.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 27.0                                                                              | 27.0                                                                              |                                                                                   | 27.0                                                                              | 27.0                                                                              |                                                                                    | 27.0                                                                                | 27.0                                                                                |                                                                                     | 27.0                                                                                | 27.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 33.2                                                                              | 26.5                                                                              | 26.5                                                                              | 33.3                                                                              | 26.6                                                                              | 26.6                                                                              | 14.2                                                                               | 62.0                                                                                | 62.0                                                                                | 8.0                                                                                 | 42.8                                                                                | 42.8                                                                                |
| Actuated g/C Ratio      | 0.28                                                                              | 0.22                                                                              | 0.22                                                                              | 0.28                                                                              | 0.22                                                                              | 0.22                                                                              | 0.12                                                                               | 0.52                                                                                | 0.52                                                                                | 0.07                                                                                | 0.36                                                                                | 0.36                                                                                |
| v/c Ratio               | 0.15                                                                              | 0.18                                                                              | 0.96                                                                              | 0.16                                                                              | 0.08                                                                              | 0.01                                                                              | 0.73                                                                               | 0.51                                                                                | 0.04                                                                                | 0.05                                                                                | 0.58                                                                                | 0.06                                                                                |
| Control Delay           | 24.6                                                                              | 38.8                                                                              | 51.5                                                                              | 24.5                                                                              | 34.7                                                                              | 0.0                                                                               | 61.8                                                                               | 26.4                                                                                | 0.1                                                                                 | 53.6                                                                                | 37.2                                                                                | 0.2                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 24.6                                                                              | 38.8                                                                              | 51.5                                                                              | 24.5                                                                              | 34.7                                                                              | 0.0                                                                               | 61.8                                                                               | 26.4                                                                                | 0.1                                                                                 | 53.6                                                                                | 37.2                                                                                | 0.2                                                                                 |
| LOS                     | C                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | E                                                                                  | C                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 47.3                                                                              |                                                                                   |                                                                                   | 30.2                                                                              |                                                                                   |                                                                                    | 38.8                                                                                |                                                                                     |                                                                                     | 35.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 40.3

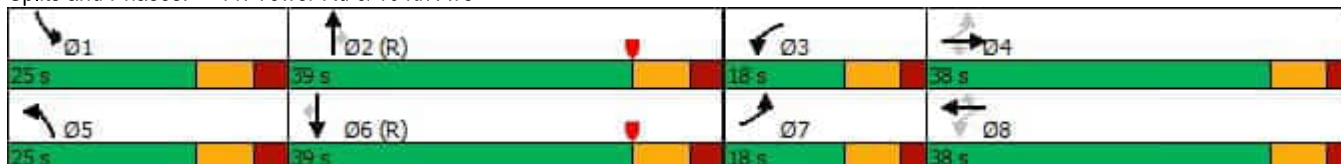
Intersection LOS: D

Intersection Capacity Utilization 80.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Tower Rd & 104th Ave



## PM Peak Signal Timing Plan

### After Implementation

# 104th Avenue Implemented Signal Timing

10: Walden St & 104th Ave

PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 33                                                                                | 516                                                                               | 85                                                                                | 32                                                                                | 646                                                                               | 69                                                                                | 160                                                                                | 30                                                                                  | 32                                                                                  | 68                                                                                  | 10                                                                                  | 30                                                                                  |
| Future Volume (vph)        | 33                                                                                | 516                                                                               | 85                                                                                | 32                                                                                | 646                                                                               | 69                                                                                | 160                                                                                | 30                                                                                  | 32                                                                                  | 68                                                                                  | 10                                                                                  | 30                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 250                                                                               |                                                                                   | 0                                                                                 | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Fr t                       |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1805                                                                              | 3539                                                                              | 1599                                                                              | 1752                                                                              | 3471                                                                              | 1599                                                                              | 1770                                                                               | 1776                                                                                | 1568                                                                                | 1752                                                                                | 1727                                                                                | 1509                                                                                |
| Flt Permitted              | 0.332                                                                             |                                                                                   |                                                                                   | 0.397                                                                             |                                                                                   |                                                                                   | 0.507                                                                              |                                                                                     |                                                                                     | 0.732                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 631                                                                               | 3539                                                                              | 1599                                                                              | 732                                                                               | 3471                                                                              | 1599                                                                              | 943                                                                                | 1776                                                                                | 1545                                                                                | 1346                                                                                | 1727                                                                                | 1488                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 159                                                                               |                                                                                   |                                                                                   | 159                                                                               |                                                                                    |                                                                                     | 168                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1290                                                                              |                                                                                   |                                                                                   | 1314                                                                              |                                                                                   |                                                                                    | 404                                                                                 |                                                                                     |                                                                                     | 2709                                                                                |                                                                                     |
| Travel Time (s)            |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                    | 9.2                                                                                 |                                                                                     |                                                                                     | 61.6                                                                                |                                                                                     |
| Confl. Peds. (#/hr)        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     | 3                                                                                   | 3                                                                                   |                                                                                     | 2                                                                                   |
| Peak Hour Factor           | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.76                                                                               | 0.76                                                                                | 0.76                                                                                | 0.73                                                                                | 0.73                                                                                | 0.73                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 2%                                                                                | 1%                                                                                | 3%                                                                                | 4%                                                                                | 1%                                                                                | 2%                                                                                 | 7%                                                                                  | 3%                                                                                  | 3%                                                                                  | 10%                                                                                 | 7%                                                                                  |
| Adj. Flow (vph)            | 38                                                                                | 600                                                                               | 99                                                                                | 36                                                                                | 726                                                                               | 78                                                                                | 211                                                                                | 39                                                                                  | 42                                                                                  | 93                                                                                  | 14                                                                                  | 41                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 38                                                                                | 600                                                                               | 99                                                                                | 36                                                                                | 726                                                                               | 78                                                                                | 211                                                                                | 39                                                                                  | 42                                                                                  | 93                                                                                  | 14                                                                                  | 41                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     | 22                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |

# 104th Avenue Implemented Signal Timing

## 10: Walden St & 104th Ave

PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Type               | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        | 2                                                                                 |                                                                                   | 2                                                                                 | 6                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                  |                                                                                     | 8                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                  | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 36.5                                                                              | 36.5                                                                              | 12.5                                                                              | 36.5                                                                              | 36.5                                                                              | 14.5                                                                               | 42.5                                                                                | 42.5                                                                                | 14.5                                                                                | 42.5                                                                                | 42.5                                                                                |
| Total Split (s)         | 14.0                                                                              | 60.0                                                                              | 60.0                                                                              | 14.0                                                                              | 60.0                                                                              | 60.0                                                                              | 23.0                                                                               | 23.0                                                                                | 23.0                                                                                | 23.0                                                                                | 23.0                                                                                | 23.0                                                                                |
| Total Split (%)         | 11.7%                                                                             | 50.0%                                                                             | 50.0%                                                                             | 11.7%                                                                             | 50.0%                                                                             | 50.0%                                                                             | 19.2%                                                                              | 19.2%                                                                               | 19.2%                                                                               | 19.2%                                                                               | 19.2%                                                                               | 19.2%                                                                               |
| Maximum Green (s)       | 6.5                                                                               | 52.5                                                                              | 52.5                                                                              | 6.5                                                                               | 52.5                                                                              | 52.5                                                                              | 16.5                                                                               | 16.5                                                                                | 16.5                                                                                | 16.5                                                                                | 16.5                                                                                | 16.5                                                                                |
| Yellow Time (s)         | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 3.8                                                                                | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 |
| All-Red Time (s)        | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.7                                                                                | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 6.5                                                                                | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Recall Mode             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                    | 31.0                                                                                | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 72.9                                                                              | 68.7                                                                              | 68.7                                                                              | 72.8                                                                              | 68.6                                                                              | 68.6                                                                              | 27.2                                                                               | 13.8                                                                                | 13.8                                                                                | 19.6                                                                                | 10.0                                                                                | 10.0                                                                                |
| Actuated g/C Ratio      | 0.61                                                                              | 0.57                                                                              | 0.57                                                                              | 0.61                                                                              | 0.57                                                                              | 0.57                                                                              | 0.23                                                                               | 0.12                                                                                | 0.12                                                                                | 0.16                                                                                | 0.08                                                                                | 0.08                                                                                |
| v/c Ratio               | 0.09                                                                              | 0.30                                                                              | 0.10                                                                              | 0.07                                                                              | 0.37                                                                              | 0.08                                                                              | 0.66                                                                               | 0.19                                                                                | 0.13                                                                                | 0.36                                                                                | 0.10                                                                                | 0.15                                                                                |
| Control Delay           | 3.8                                                                               | 5.0                                                                               | 0.3                                                                               | 2.7                                                                               | 9.0                                                                               | 1.4                                                                               | 48.9                                                                               | 50.5                                                                                | 0.8                                                                                 | 39.2                                                                                | 52.6                                                                                | 1.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 3.8                                                                               | 5.0                                                                               | 0.3                                                                               | 2.7                                                                               | 9.0                                                                               | 1.4                                                                               | 48.9                                                                               | 50.5                                                                                | 0.8                                                                                 | 39.2                                                                                | 52.6                                                                                | 1.1                                                                                 |
| LOS                     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                    | 42.2                                                                                |                                                                                     |                                                                                     | 29.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 13.2

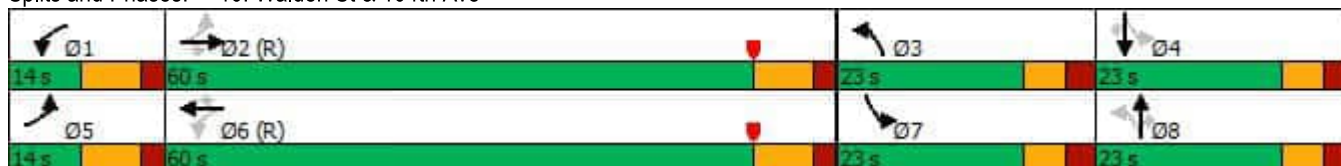
Intersection LOS: B

Intersection Capacity Utilization 56.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Walden St & 104th Ave



# 104th Avenue Implemented Signal Timing

## 11: Tower Rd & 104th Ave

PM Peak

|                            |  |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group                 | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations        |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)       | 102                                                                                | 127   | 405   | 23    | 159   | 9     | 576   | 708   | 22    | 8     | 431   | 67    |
| Future Volume (vph)        | 102                                                                                | 127   | 405   | 23    | 159   | 9     | 576   | 708   | 22    | 8     | 431   | 67    |
| Ideal Flow (vphpl)         | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 350                                                                                |       | 590   | 330   |       | 440   | 320   |       | 290   | 290   |       | 190   |
| Storage Lanes              | 1                                                                                  |       | 1     | 1     |       | 1     | 2     |       | 1     | 1     |       | 1     |
| Taper Length (ft)          | 25                                                                                 |       |       | 25    |       |       | 25    |       |       | 25    |       |       |
| Lane Util. Factor          | 1.00                                                                               | 0.91  | 1.00  | 1.00  | 0.91  | 1.00  | 0.97  | 1.00  | 1.00  | 1.00  | 0.95  | 1.00  |
| Frt                        |                                                                                    |       | 0.850 |       |       | 0.850 |       |       | 0.850 |       |       | 0.850 |
| Flt Protected              | 0.950                                                                              |       |       | 0.950 |       |       | 0.950 |       |       | 0.950 |       |       |
| Satd. Flow (prot)          | 1787                                                                               | 4940  | 1583  | 1597  | 4759  | 1615  | 3433  | 1827  | 1417  | 1805  | 3406  | 1599  |
| Flt Permitted              | 0.513                                                                              |       |       | 0.657 |       |       | 0.950 |       |       | 0.950 |       |       |
| Satd. Flow (perm)          | 965                                                                                | 4940  | 1583  | 1105  | 4759  | 1615  | 3433  | 1827  | 1417  | 1805  | 3406  | 1599  |
| Right Turn on Red          |                                                                                    |       | Yes   |       |       | Yes   |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)          |                                                                                    |       | 460   |       |       | 264   |       |       | 182   |       |       | 256   |
| Link Speed (mph)           |                                                                                    | 45    |       |       | 45    |       |       | 45    |       |       | 45    |       |
| Link Distance (ft)         |                                                                                    | 1314  |       |       | 579   |       |       | 636   |       |       | 501   |       |
| Travel Time (s)            |                                                                                    | 19.9  |       |       | 8.8   |       |       | 9.6   |       |       | 7.6   |       |
| Peak Hour Factor           | 0.88                                                                               | 0.88  | 0.88  | 0.92  | 0.92  | 0.92  | 0.97  | 0.97  | 0.97  | 0.92  | 0.92  | 0.92  |
| Heavy Vehicles (%)         | 1%                                                                                 | 5%    | 2%    | 13%   | 9%    | 0%    | 2%    | 4%    | 14%   | 0%    | 6%    | 1%    |
| Adj. Flow (vph)            | 116                                                                                | 144   | 460   | 25    | 173   | 10    | 594   | 730   | 23    | 9     | 468   | 73    |
| Shared Lane Traffic (%)    |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 116                                                                                | 144   | 460   | 25    | 173   | 10    | 594   | 730   | 23    | 9     | 468   | 73    |
| Enter Blocked Intersection | No                                                                                 | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left                                                                               | Left  | Right | Left  | Left  | Right | Left  | Left  | Right | Left  | Left  | Right |
| Median Width(ft)           |                                                                                    | 12    |       |       | 12    |       |       | 24    |       |       | 12    |       |
| Link Offset(ft)            |                                                                                    | 0     |       |       | 0     |       |       | 0     |       |       | 0     |       |
| Crosswalk Width(ft)        |                                                                                    | 16    |       |       | 16    |       |       | 16    |       |       | 16    |       |
| Two way Left Turn Lane     |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15                                                                                 |       | 9     | 15    |       | 9     | 15    |       | 9     | 15    |       | 9     |
| Number of Detectors        | 1                                                                                  | 2     | 1     | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 2     | 1     |
| Detector Template          | Left                                                                               | Thru  | Right | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Thru  | Right |
| Leading Detector (ft)      | 20                                                                                 | 100   | 20    | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 100   | 20    |
| Trailing Detector (ft)     | 0                                                                                  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0                                                                                  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20                                                                                 | 6     | 20    | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 6     | 20    |
| Detector 1 Type            | Cl+Ex                                                                              | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |                                                                                    | 94    |       |       | 94    |       |       | 94    |       |       | 94    |       |
| Detector 2 Size(ft)        |                                                                                    | 6     |       |       | 6     |       |       | 6     |       |       | 6     |       |
| Detector 2 Type            |                                                                                    | Cl+Ex |       |       | Cl+Ex |       |       | Cl+Ex |       |       | Cl+Ex |       |
| Detector 2 Channel         |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |                                                                                    | 0.0   |       |       | 0.0   |       |       | 0.0   |       |       | 0.0   |       |
| Turn Type                  | pm+pt                                                                              | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases           | 7                                                                                  | 4     |       | 3     | 8     |       | 5     | 2     |       | 1     | 6     |       |

# 104th Avenue Implemented Signal Timing

## 11: Tower Rd & 104th Ave

PM Peak

|                         |  |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     |       |       | 2     |       |       | 6     |
| Detector Phase          | 7                                                                                  | 4     | 4     | 3     | 8     | 8     | 5     | 2     | 2     | 1     | 6     | 6     |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0                                                                                | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  |
| Minimum Split (s)       | 15.4                                                                               | 39.4  | 39.4  | 15.4  | 39.4  | 39.4  | 16.2  | 40.2  | 40.2  | 16.2  | 40.2  | 40.2  |
| Total Split (s)         | 16.0                                                                               | 32.0  | 32.0  | 16.0  | 32.0  | 32.0  | 30.0  | 55.0  | 55.0  | 17.0  | 42.0  | 42.0  |
| Total Split (%)         | 13.3%                                                                              | 26.7% | 26.7% | 13.3% | 26.7% | 26.7% | 25.0% | 45.8% | 45.8% | 14.2% | 35.0% | 35.0% |
| Maximum Green (s)       | 8.6                                                                                | 24.6  | 24.6  | 8.6   | 24.6  | 24.6  | 21.8  | 46.8  | 46.8  | 8.8   | 33.8  | 33.8  |
| Yellow Time (s)         | 5.0                                                                                | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.1   | 5.1   | 5.1   | 5.1   | 5.1   | 5.1   |
| All-Red Time (s)        | 2.4                                                                                | 2.4   | 2.4   | 2.4   | 2.4   | 2.4   | 3.1   | 3.1   | 3.1   | 3.1   | 3.1   | 3.1   |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.4                                                                                | 7.4   | 7.4   | 7.4   | 7.4   | 7.4   | 8.2   | 8.2   | 8.2   | 8.2   | 8.2   | 8.2   |
| Lead/Lag                | Lead                                                                               | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Vehicle Extension (s)   | 2.0                                                                                | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 5.0   | 5.0   | 2.0   | 5.0   | 5.0   |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | None  | C-Max | C-Max | None  | C-Max | C-Max |
| Walk Time (s)           |                                                                                    | 5.0   | 5.0   |       | 5.0   | 5.0   |       | 5.0   | 5.0   |       | 5.0   | 5.0   |
| Flash Dont Walk (s)     |                                                                                    | 27.0  | 27.0  |       | 27.0  | 27.0  |       | 27.0  | 27.0  |       | 27.0  | 27.0  |
| Pedestrian Calls (#/hr) |                                                                                    | 0     | 0     |       | 0     | 0     |       | 0     | 0     |       | 0     | 0     |
| Act Effect Green (s)    | 24.0                                                                               | 18.9  | 18.9  | 20.2  | 12.2  | 12.2  | 25.5  | 73.1  | 73.1  | 8.0   | 42.6  | 42.6  |
| Actuated g/C Ratio      | 0.20                                                                               | 0.16  | 0.16  | 0.17  | 0.10  | 0.10  | 0.21  | 0.61  | 0.61  | 0.07  | 0.36  | 0.36  |
| v/c Ratio               | 0.46                                                                               | 0.19  | 0.72  | 0.11  | 0.36  | 0.02  | 0.82  | 0.66  | 0.02  | 0.07  | 0.39  | 0.10  |
| Control Delay           | 36.0                                                                               | 38.9  | 25.1  | 35.4  | 51.5  | 0.1   | 54.4  | 21.2  | 0.0   | 54.0  | 31.1  | 0.3   |
| Queue Delay             | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 36.0                                                                               | 38.9  | 25.1  | 35.4  | 51.5  | 0.1   | 54.4  | 21.5  | 0.0   | 54.0  | 31.1  | 0.3   |
| LOS                     | D                                                                                  | D     | C     | D     | D     | A     | D     | C     | A     | D     | C     | A     |
| Approach Delay          |                                                                                    | 29.6  |       |       | 47.1  |       |       | 35.6  |       |       | 27.4  |       |
| Approach LOS            |                                                                                    | C     |       |       | D     |       |       | D     |       |       | C     |       |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 33.3

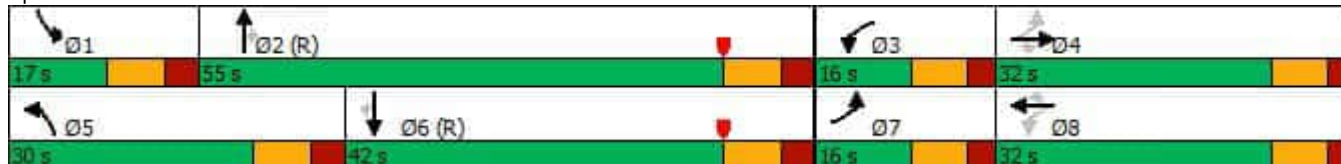
Intersection LOS: C

Intersection Capacity Utilization 84.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 11: Tower Rd & 104th Ave



## **APPENDIX D**

### *HCM 6<sup>TH</sup> EDITION* LEVEL OF SERVICE REPORTS



Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |   |   |  |  |  |  |
| Traffic Volume (vph)       | 149                                                                               | 335                                                                               | 644                                                                               | 33                                                                                | 119                                                                               | 8                                                                                 | 354                                                                                | 528                                                                                 | 63                                                                                  | 17                                                                                  | 703                                                                                 | 106                                                                                 |
| Future Volume (vph)        | 149                                                                               | 335                                                                               | 644                                                                               | 33                                                                                | 119                                                                               | 8                                                                                 | 354                                                                                | 528                                                                                 | 63                                                                                  | 17                                                                                  | 703                                                                                 | 106                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 350                                                                               |                                                                                   | 590                                                                               | 330                                                                               |                                                                                   | 440                                                                               | 320                                                                                |                                                                                     | 290                                                                                 | 290                                                                                 |                                                                                     | 190                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 0.97                                                                               | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 3433                                                                               | 3539                                                                                | 1583                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.445                                                                             |                                                                                   |                                                                                   | 0.518                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 829                                                                               | 5085                                                                              | 1583                                                                              | 965                                                                               | 5085                                                                              | 1583                                                                              | 3433                                                                               | 3539                                                                                | 1583                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 613                                                                               |                                                                                   |                                                                                   | 331                                                                               |                                                                                    |                                                                                     | 249                                                                                 |                                                                                     |                                                                                     | 324                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 45                                                                                  |                                                                                     |                                                                                     | 45                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 1515                                                                              |                                                                                   |                                                                                    | 645                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                    | 9.8                                                                                 |                                                                                     |                                                                                     | 6.8                                                                                 |                                                                                     |
| Peak Hour Factor           | 0.84                                                                              | 0.88                                                                              | 0.92                                                                              | 0.78                                                                              | 0.83                                                                              | 0.78                                                                              | 0.88                                                                               | 0.92                                                                                | 0.79                                                                                | 0.78                                                                                | 0.92                                                                                | 0.83                                                                                |
| Adj. Flow (vph)            | 177                                                                               | 381                                                                               | 700                                                                               | 42                                                                                | 143                                                                               | 10                                                                                | 402                                                                                | 574                                                                                 | 80                                                                                  | 22                                                                                  | 764                                                                                 | 128                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 177                                                                               | 381                                                                               | 700                                                                               | 42                                                                                | 143                                                                               | 10                                                                                | 402                                                                                | 574                                                                                 | 80                                                                                  | 22                                                                                  | 764                                                                                 | 128                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases           | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 16.2                                                                               | 18.2                                                                                | 18.2                                                                                | 16.2                                                                                | 18.2                                                                                | 18.2                                                                                |
| Total Split (s)       | 28.0                                                                              | 37.0                                                                              | 37.0                                                                              | 16.0                                                                              | 25.0                                                                              | 25.0                                                                              | 39.0                                                                               | 47.0                                                                                | 47.0                                                                                | 20.0                                                                                | 28.0                                                                                | 28.0                                                                                |
| Total Split (%)       | 23.3%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 13.3%                                                                             | 20.8%                                                                             | 20.8%                                                                             | 32.5%                                                                              | 39.2%                                                                               | 39.2%                                                                               | 16.7%                                                                               | 23.3%                                                                               | 23.3%                                                                               |
| Maximum Green (s)     | 20.6                                                                              | 29.6                                                                              | 29.6                                                                              | 8.6                                                                               | 17.6                                                                              | 17.6                                                                              | 30.8                                                                               | 38.8                                                                                | 38.8                                                                                | 11.8                                                                                | 19.8                                                                                | 19.8                                                                                |
| Yellow Time (s)       | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.1                                                                                | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 |
| All-Red Time (s)      | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 3.1                                                                                | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 2.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Recall Mode           | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effect Green (s)  | 35.7                                                                              | 23.7                                                                              | 23.7                                                                              | 22.1                                                                              | 13.9                                                                              | 13.9                                                                              | 18.5                                                                               | 61.8                                                                                | 61.8                                                                                | 8.0                                                                                 | 41.6                                                                                | 41.6                                                                                |
| Actuated g/C Ratio    | 0.30                                                                              | 0.20                                                                              | 0.20                                                                              | 0.18                                                                              | 0.12                                                                              | 0.12                                                                              | 0.15                                                                               | 0.52                                                                                | 0.52                                                                                | 0.07                                                                                | 0.35                                                                                | 0.35                                                                                |
| v/c Ratio             | 0.49                                                                              | 0.38                                                                              | 0.87                                                                              | 0.18                                                                              | 0.24                                                                              | 0.02                                                                              | 0.76                                                                               | 0.32                                                                                | 0.09                                                                                | 0.19                                                                                | 0.62                                                                                | 0.17                                                                                |
| Control Delay         | 31.1                                                                              | 39.0                                                                              | 32.0                                                                              | 30.1                                                                              | 48.1                                                                              | 0.1                                                                               | 58.1                                                                               | 20.5                                                                                | 0.2                                                                                 | 56.8                                                                                | 37.7                                                                                | 0.5                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 31.1                                                                              | 39.0                                                                              | 32.0                                                                              | 30.1                                                                              | 48.1                                                                              | 0.1                                                                               | 58.1                                                                               | 20.5                                                                                | 0.2                                                                                 | 56.8                                                                                | 37.7                                                                                | 0.5                                                                                 |
| LOS                   | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | E                                                                                  | C                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay        | 34.0                                                                              |                                                                                   |                                                                                   | 41.8                                                                              |                                                                                   |                                                                                   | 33.3                                                                               |                                                                                     |                                                                                     | 32.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS          | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 33.9

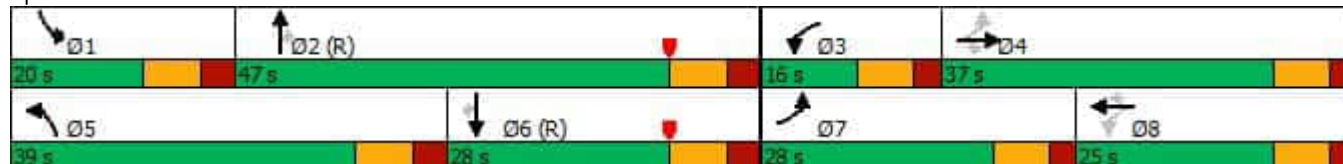
Intersection LOS: C

Intersection Capacity Utilization 85.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Tower Road & 104th Avenue



## Queues

JR Engineering

10/19/2023

## 1: Tower Road &amp; 104th Avenue



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 177  | 381  | 700  | 42   | 143  | 10   | 402  | 574  | 80   | 22   | 764  | 128  |
| v/c Ratio               | 0.49 | 0.38 | 0.87 | 0.18 | 0.24 | 0.02 | 0.76 | 0.32 | 0.09 | 0.19 | 0.62 | 0.17 |
| Control Delay           | 31.1 | 39.0 | 32.0 | 30.1 | 48.1 | 0.1  | 58.1 | 20.5 | 0.2  | 56.8 | 37.7 | 0.5  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 31.1 | 39.0 | 32.0 | 30.1 | 48.1 | 0.1  | 58.1 | 20.5 | 0.2  | 56.8 | 37.7 | 0.5  |
| Queue Length 50th (ft)  | 117  | 102  | 281  | 24   | 38   | 0    | 155  | 107  | 0    | 16   | 248  | 0    |
| Queue Length 95th (ft)  | 157  | 123  | 458  | 39   | 52   | 0    | 195  | 232  | 0    | 38   | #433 | 0    |
| Internal Link Dist (ft) |      | 580  |      |      | 1435 |      |      | 565  |      |      | 370  |      |
| Turn Bay Length (ft)    | 350  |      | 590  | 330  |      | 440  | 320  |      | 290  | 290  |      | 190  |
| Base Capacity (vph)     | 411  | 1254 | 852  | 238  | 774  | 521  | 881  | 1821 | 935  | 174  | 1226 | 760  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.43 | 0.30 | 0.82 | 0.18 | 0.18 | 0.02 | 0.46 | 0.32 | 0.09 | 0.13 | 0.62 | 0.17 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |    |    |    |    |  |
| Traffic Volume (veh/h)       | 149                                                                               | 335                                                                               | 644                                                                               | 33                                                                                | 119                                                                               | 8                                                                                 | 354                                                                               | 528                                                                                 | 63                                                                                  | 17                                                                                  | 703                                                                                 | 106                                                                                 |
| Future Volume (veh/h)        | 149                                                                               | 335                                                                               | 644                                                                               | 33                                                                                | 119                                                                               | 8                                                                                 | 354                                                                               | 528                                                                                 | 63                                                                                  | 17                                                                                  | 703                                                                                 | 106                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 177                                                                               | 381                                                                               | 0                                                                                 | 42                                                                                | 143                                                                               | 0                                                                                 | 402                                                                               | 574                                                                                 | 0                                                                                   | 22                                                                                  | 764                                                                                 | 0                                                                                   |
| Peak Hour Factor             | 0.84                                                                              | 0.88                                                                              | 0.92                                                                              | 0.78                                                                              | 0.83                                                                              | 0.78                                                                              | 0.88                                                                              | 0.92                                                                                | 0.79                                                                                | 0.78                                                                                | 0.92                                                                                | 0.83                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 322                                                                               | 716                                                                               |                                                                                   | 217                                                                               | 426                                                                               |                                                                                   | 469                                                                               | 1830                                                                                |                                                                                     | 62                                                                                  | 1470                                                                                |                                                                                     |
| Arrive On Green              | 0.04                                                                              | 0.05                                                                              | 0.00                                                                              | 0.05                                                                              | 0.08                                                                              | 0.00                                                                              | 0.14                                                                              | 0.51                                                                                | 0.00                                                                                | 0.03                                                                                | 0.41                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 5106                                                                              | 1585                                                                              | 1781                                                                              | 5106                                                                              | 1585                                                                              | 3456                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 177                                                                               | 381                                                                               | 0                                                                                 | 42                                                                                | 143                                                                               | 0                                                                                 | 402                                                                               | 574                                                                                 | 0                                                                                   | 22                                                                                  | 764                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1702                                                                              | 1585                                                                              | 1781                                                                              | 1702                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.6                                                                              | 8.8                                                                               | 0.0                                                                               | 2.5                                                                               | 3.2                                                                               | 0.0                                                                               | 13.7                                                                              | 11.2                                                                                | 0.0                                                                                 | 1.4                                                                                 | 19.3                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 10.6                                                                              | 8.8                                                                               | 0.0                                                                               | 2.5                                                                               | 3.2                                                                               | 0.0                                                                               | 13.7                                                                              | 11.2                                                                                | 0.0                                                                                 | 1.4                                                                                 | 19.3                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 322                                                                               | 716                                                                               |                                                                                   | 217                                                                               | 426                                                                               |                                                                                   | 469                                                                               | 1830                                                                                |                                                                                     | 62                                                                                  | 1470                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.55                                                                              | 0.53                                                                              |                                                                                   | 0.19                                                                              | 0.34                                                                              |                                                                                   | 0.86                                                                              | 0.31                                                                                |                                                                                     | 0.36                                                                                | 0.52                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 437                                                                               | 1260                                                                              |                                                                                   | 255                                                                               | 749                                                                               |                                                                                   | 887                                                                               | 1830                                                                                |                                                                                     | 175                                                                                 | 1470                                                                                |                                                                                     |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 45.9                                                                              | 53.4                                                                              | 0.0                                                                               | 46.1                                                                              | 51.9                                                                              | 0.0                                                                               | 50.7                                                                              | 16.8                                                                                | 0.0                                                                                 | 56.6                                                                                | 26.3                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 0.2                                                                               | 0.0                                                                               | 0.4                                                                               | 0.2                                                                               | 0.0                                                                               | 1.8                                                                               | 0.4                                                                                 | 0.0                                                                                 | 1.3                                                                                 | 1.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.1                                                                               | 3.9                                                                               | 0.0                                                                               | 1.1                                                                               | 1.3                                                                               | 0.0                                                                               | 5.9                                                                               | 4.4                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 8.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 47.4                                                                              | 53.6                                                                              | 0.0                                                                               | 46.6                                                                              | 52.0                                                                              | 0.0                                                                               | 52.5                                                                              | 17.3                                                                                | 0.0                                                                                 | 57.9                                                                                | 27.6                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | B                                                                                   |                                                                                     | E                                                                                   | C                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 558                                                                               |                                                                                   |                                                                                   | 185                                                                               |                                                                                   |                                                                                   | 976                                                                               |                                                                                     |                                                                                     | 786                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 51.6                                                                              |                                                                                   |                                                                                   | 50.8                                                                              |                                                                                   |                                                                                   | 31.8                                                                              |                                                                                     |                                                                                     | 28.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.4                                                                              | 70.0                                                                              | 13.4                                                                              | 24.2                                                                              | 24.5                                                                              | 57.8                                                                              | 20.3                                                                              | 17.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 8.2                                                                               | 8.2                                                                               | 7.4                                                                               | 7.4                                                                               | 8.2                                                                               | 8.2                                                                               | 7.4                                                                               | 7.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.8                                                                              | 38.8                                                                              | 8.6                                                                               | 29.6                                                                              | 30.8                                                                              | 19.8                                                                              | 20.6                                                                              | 17.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 13.2                                                                              | 4.5                                                                               | 10.8                                                                              | 15.7                                                                              | 21.3                                                                              | 12.6                                                                              | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 6.8                                                                               | 0.0                                                                               | 1.4                                                                               | 0.6                                                                               | 0.0                                                                               | 0.3                                                                               | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 36.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 111                                                                               | 856                                                                               | 85                                                                                | 18                                                                                | 409                                                                               | 143                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 214                                                                                 | 36                                                                                  | 103                                                                                 |
| Future Volume (vph)        | 111                                                                               | 856                                                                               | 85                                                                                | 18                                                                                | 409                                                                               | 143                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 214                                                                                 | 36                                                                                  | 103                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 0                                                                                 |                                                                                   | 250                                                                               | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted              | 0.416                                                                             |                                                                                   |                                                                                   | 0.251                                                                             |                                                                                   |                                                                                   | 0.727                                                                              |                                                                                     |                                                                                     | 0.441                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 775                                                                               | 3539                                                                              | 1583                                                                              | 468                                                                               | 3539                                                                              | 1583                                                                              | 1354                                                                               | 1863                                                                                | 1583                                                                                | 821                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                    |                                                                                     | 227                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 900                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 652                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 14.8                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor           | 0.83                                                                              | 0.92                                                                              | 0.82                                                                              | 0.78                                                                              | 0.88                                                                              | 0.84                                                                              | 0.84                                                                               | 0.78                                                                                | 0.80                                                                                | 0.87                                                                                | 0.78                                                                                | 0.83                                                                                |
| Adj. Flow (vph)            | 134                                                                               | 930                                                                               | 104                                                                               | 23                                                                                | 465                                                                               | 170                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 246                                                                                 | 46                                                                                  | 124                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 134                                                                               | 930                                                                               | 104                                                                               | 23                                                                                | 465                                                                               | 170                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 246                                                                                 | 46                                                                                  | 124                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases           | 2                                                                                 |                                                                                   | 2                                                                                 | 6                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                  |                                                                                     | 8                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                  | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 14.5                                                                               | 16.5                                                                                | 16.5                                                                                | 14.5                                                                                | 16.5                                                                                | 16.5                                                                                |
| Total Split (s)       | 19.0                                                                              | 50.0                                                                              | 50.0                                                                              | 13.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                               | 17.0                                                                                | 17.0                                                                                | 40.0                                                                                | 37.0                                                                                | 37.0                                                                                |
| Total Split (%)       | 15.8%                                                                             | 41.7%                                                                             | 41.7%                                                                             | 10.8%                                                                             | 36.7%                                                                             | 36.7%                                                                             | 16.7%                                                                              | 14.2%                                                                               | 14.2%                                                                               | 33.3%                                                                               | 30.8%                                                                               | 30.8%                                                                               |
| Maximum Green (s)     | 11.5                                                                              | 42.5                                                                              | 42.5                                                                              | 5.5                                                                               | 36.5                                                                              | 36.5                                                                              | 13.5                                                                               | 10.5                                                                                | 10.5                                                                                | 33.5                                                                                | 30.5                                                                                | 30.5                                                                                |
| Yellow Time (s)       | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 3.8                                                                                | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 |
| All-Red Time (s)      | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.7                                                                                | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 6.5                                                                                | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Recall Mode           | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)  | 68.3                                                                              | 62.1                                                                              | 62.1                                                                              | 59.1                                                                              | 53.7                                                                              | 53.7                                                                              | 22.3                                                                               | 10.1                                                                                | 10.1                                                                                | 34.9                                                                                | 17.4                                                                                | 17.4                                                                                |
| Actuated g/C Ratio    | 0.57                                                                              | 0.52                                                                              | 0.52                                                                              | 0.49                                                                              | 0.45                                                                              | 0.45                                                                              | 0.19                                                                               | 0.08                                                                                | 0.08                                                                                | 0.29                                                                                | 0.14                                                                                | 0.14                                                                                |
| v/c Ratio             | 0.26                                                                              | 0.51                                                                              | 0.11                                                                              | 0.08                                                                              | 0.29                                                                              | 0.21                                                                              | 0.57                                                                               | 0.31                                                                                | 0.26                                                                                | 0.63                                                                                | 0.17                                                                                | 0.33                                                                                |
| Control Delay         | 13.9                                                                              | 22.4                                                                              | 0.2                                                                               | 4.8                                                                               | 8.4                                                                               | 2.0                                                                               | 40.2                                                                               | 57.3                                                                                | 1.8                                                                                 | 40.8                                                                                | 44.8                                                                                | 4.5                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 13.9                                                                              | 22.4                                                                              | 0.2                                                                               | 4.8                                                                               | 8.4                                                                               | 2.0                                                                               | 40.2                                                                               | 57.3                                                                                | 1.8                                                                                 | 40.8                                                                                | 44.8                                                                                | 4.5                                                                                 |
| LOS                   | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | E                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay        |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                    | 31.7                                                                                |                                                                                     |                                                                                     | 30.4                                                                                |                                                                                     |
| Approach LOS          |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 19.4

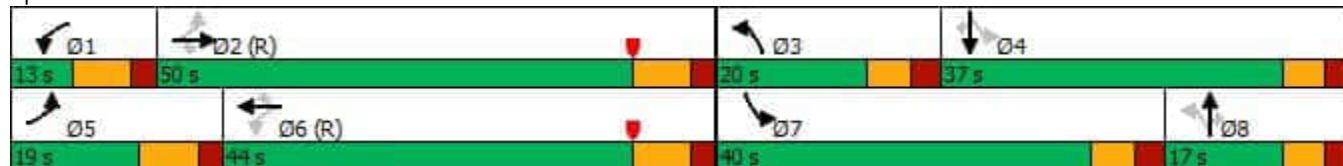
Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Walden Street & 104th Avenue



Queues  
2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 134  | 930  | 104  | 23   | 465  | 170  | 165  | 49   | 89   | 246  | 46   | 124  |
| v/c Ratio               | 0.26 | 0.51 | 0.11 | 0.08 | 0.29 | 0.21 | 0.57 | 0.31 | 0.26 | 0.63 | 0.17 | 0.33 |
| Control Delay           | 13.9 | 22.4 | 0.2  | 4.8  | 8.4  | 2.0  | 40.2 | 57.3 | 1.8  | 40.8 | 44.8 | 4.5  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 13.9 | 22.4 | 0.2  | 4.8  | 8.4  | 2.0  | 40.2 | 57.3 | 1.8  | 40.8 | 44.8 | 4.5  |
| Queue Length 50th (ft)  | 44   | 258  | 0    | 4    | 67   | 0    | 99   | 36   | 0    | 156  | 32   | 0    |
| Queue Length 95th (ft)  | 81   | 378  | 0    | m5   | 93   | 0    | 132  | 65   | 0    | 202  | 54   | 11   |
| Internal Link Dist (ft) | 820  |      |      |      | 580  |      |      |      | 572  |      | 370  |      |
| Turn Bay Length (ft)    | 400  |      | 230  |      |      |      | 250  |      | 230  |      | 210  |      |
| Base Capacity (vph)     | 543  | 1830 | 924  | 293  | 1583 | 828  | 313  | 164  | 345  | 518  | 473  | 527  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.25 | 0.51 | 0.11 | 0.08 | 0.29 | 0.21 | 0.53 | 0.30 | 0.26 | 0.47 | 0.10 | 0.24 |

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 111                                                                               | 856                                                                               | 85                                                                                | 18                                                                                | 409                                                                               | 143                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 214                                                                                 | 36                                                                                  | 103                                                                                 |
| Future Volume (veh/h)        | 111                                                                               | 856                                                                               | 85                                                                                | 18                                                                                | 409                                                                               | 143                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 214                                                                                 | 36                                                                                  | 103                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 134                                                                               | 930                                                                               | 104                                                                               | 23                                                                                | 465                                                                               | 170                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 246                                                                                 | 46                                                                                  | 124                                                                                 |
| Peak Hour Factor             | 0.83                                                                              | 0.92                                                                              | 0.82                                                                              | 0.78                                                                              | 0.88                                                                              | 0.84                                                                              | 0.84                                                                               | 0.78                                                                                | 0.80                                                                                | 0.87                                                                                | 0.78                                                                                | 0.83                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 451                                                                               | 1843                                                                              | 822                                                                               | 290                                                                               | 1730                                                                              | 772                                                                               | 339                                                                                | 156                                                                                 | 132                                                                                 | 387                                                                                 | 235                                                                                 | 200                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.52                                                                              | 0.52                                                                              | 0.01                                                                              | 0.16                                                                              | 0.16                                                                              | 0.10                                                                               | 0.08                                                                                | 0.08                                                                                | 0.14                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                               | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 134                                                                               | 930                                                                               | 104                                                                               | 23                                                                                | 465                                                                               | 170                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 246                                                                                 | 46                                                                                  | 124                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                               | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.5                                                                               | 20.5                                                                              | 4.1                                                                               | 0.8                                                                               | 13.8                                                                              | 11.2                                                                              | 10.0                                                                               | 3.0                                                                                 | 6.5                                                                                 | 14.8                                                                                | 2.6                                                                                 | 8.9                                                                                 |
| Cycle Q Clear(g_c), s        | 4.5                                                                               | 20.5                                                                              | 4.1                                                                               | 0.8                                                                               | 13.8                                                                              | 11.2                                                                              | 10.0                                                                               | 3.0                                                                                 | 6.5                                                                                 | 14.8                                                                                | 2.6                                                                                 | 8.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 451                                                                               | 1843                                                                              | 822                                                                               | 290                                                                               | 1730                                                                              | 772                                                                               | 339                                                                                | 156                                                                                 | 132                                                                                 | 387                                                                                 | 235                                                                                 | 200                                                                                 |
| V/C Ratio(X)                 | 0.30                                                                              | 0.50                                                                              | 0.13                                                                              | 0.08                                                                              | 0.27                                                                              | 0.22                                                                              | 0.49                                                                               | 0.31                                                                                | 0.67                                                                                | 0.64                                                                                | 0.20                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h        | 526                                                                               | 1843                                                                              | 822                                                                               | 331                                                                               | 1730                                                                              | 772                                                                               | 362                                                                                | 164                                                                                 | 139                                                                                 | 631                                                                                 | 475                                                                                 | 403                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.6                                                                              | 18.8                                                                              | 14.9                                                                              | 16.1                                                                              | 31.6                                                                              | 30.5                                                                              | 44.1                                                                               | 51.8                                                                                | 53.4                                                                                | 41.2                                                                                | 47.0                                                                                | 49.7                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 1.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.7                                                                               | 0.4                                                                                | 0.4                                                                                 | 9.0                                                                                 | 0.6                                                                                 | 0.1                                                                                 | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.7                                                                               | 8.1                                                                               | 1.5                                                                               | 0.3                                                                               | 6.6                                                                               | 4.9                                                                               | 4.5                                                                                | 1.4                                                                                 | 2.9                                                                                 | 6.6                                                                                 | 1.2                                                                                 | 3.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 14.8                                                                              | 19.8                                                                              | 15.2                                                                              | 16.1                                                                              | 32.0                                                                              | 31.2                                                                              | 44.5                                                                               | 52.2                                                                                | 62.5                                                                                | 41.9                                                                                | 47.1                                                                                | 50.9                                                                                |
| LnGrp LOS                    | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | D                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1168                                                                              |                                                                                   |                                                                                   | 658                                                                               |                                                                                   |                                                                                    | 303                                                                                 |                                                                                     |                                                                                     | 416                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 18.8                                                                              |                                                                                   |                                                                                   | 31.2                                                                              |                                                                                   |                                                                                    | 51.0                                                                                |                                                                                     |                                                                                     | 45.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 69.7                                                                              | 18.5                                                                              | 21.6                                                                              | 14.0                                                                              | 65.9                                                                              | 23.6                                                                               | 16.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                               | 6.5                                                                               | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                                | 6.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.5                                                                             | * 43                                                                              | 13.5                                                                              | 30.5                                                                              | * 12                                                                              | * 37                                                                              | 33.5                                                                               | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.8                                                                               | 22.5                                                                              | 12.0                                                                              | 10.9                                                                              | 6.5                                                                               | 15.8                                                                              | 16.8                                                                               | 8.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.9                                                                              | 0.0                                                                               | 0.3                                                                               | 0.1                                                                               | 6.3                                                                               | 0.3                                                                                | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 30.2 |
| HCM 6th LOS        | C    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
3: Walden Street & 105th Avenue

JR Engineering

10/19/2023

|                                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)                    | 12                                                                                | 0                                                                                 | 89                                                                                | 5                                                                                 | 0                                                                                 | 19                                                                                | 31                                                                                 | 252                                                                                 | 0                                                                                   | 9                                                                                   | 214                                                                                 | 7                                                                                   |
| Future Volume (vph)                     | 12                                                                                | 0                                                                                 | 89                                                                                | 5                                                                                 | 0                                                                                 | 19                                                                                | 31                                                                                 | 252                                                                                 | 0                                                                                   | 9                                                                                   | 214                                                                                 | 7                                                                                   |
| Ideal Flow (vphpl)                      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                                     |                                                                                   | 0.881                                                                             |                                                                                   |                                                                                   | 0.892                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Flt Protected                           |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                    | 0.994                                                                               |                                                                                     |                                                                                     | 0.998                                                                               |                                                                                     |
| Satd. Flow (prot)                       | 0                                                                                 | 1631                                                                              | 0                                                                                 | 0                                                                                 | 1645                                                                              | 0                                                                                 | 0                                                                                  | 1852                                                                                | 0                                                                                   | 0                                                                                   | 1850                                                                                | 0                                                                                   |
| Flt Permitted                           |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                    | 0.994                                                                               |                                                                                     |                                                                                     | 0.998                                                                               |                                                                                     |
| Satd. Flow (perm)                       | 0                                                                                 | 1631                                                                              | 0                                                                                 | 0                                                                                 | 1645                                                                              | 0                                                                                 | 0                                                                                  | 1852                                                                                | 0                                                                                   | 0                                                                                   | 1850                                                                                | 0                                                                                   |
| Link Speed (mph)                        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                      |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                         |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                    | 8.2                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor                        | 0.78                                                                              | 0.78                                                                              | 0.80                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.87                                                                                | 0.78                                                                                | 0.78                                                                                | 0.87                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                         | 15                                                                                | 0                                                                                 | 111                                                                               | 6                                                                                 | 0                                                                                 | 24                                                                                | 40                                                                                 | 290                                                                                 | 0                                                                                   | 12                                                                                  | 246                                                                                 | 9                                                                                   |
| Shared Lane Traffic (%)                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)                   | 0                                                                                 | 126                                                                               | 0                                                                                 | 0                                                                                 | 30                                                                                | 0                                                                                 | 0                                                                                  | 330                                                                                 | 0                                                                                   | 0                                                                                   | 267                                                                                 | 0                                                                                   |
| Enter Blocked Intersection              | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                          | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                        |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                         |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)                     |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)                     | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                            |                                                                                   | Yield                                                                             |                                                                                   |                                                                                   | Yield                                                                             |                                                                                   |                                                                                    | Yield                                                                               |                                                                                     |                                                                                     | Yield                                                                               |                                                                                     |
| Intersection Summary                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                              | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                           | Roundabout                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization 39.8% |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service A                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min) 15                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 4.7   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 126   | 30    | 330   | 267   |
| Demand Flow Rate, veh/h     | 128   | 30    | 337   | 272   |
| Vehicles Circulating, veh/h | 269   | 352   | 27    | 47    |
| Vehicles Exiting, veh/h     | 50    | 12    | 370   | 335   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.6   | 4.0   | 4.9   | 4.5   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 128   | 30    | 337   | 272   |
| Cap Entry Lane, veh/h       | 1049  | 964   | 1342  | 1315  |
| Entry HV Adj Factor         | 0.984 | 1.000 | 0.980 | 0.982 |
| Flow Entry, veh/h           | 126   | 30    | 330   | 267   |
| Cap Entry, veh/h            | 1032  | 964   | 1315  | 1291  |
| V/C Ratio                   | 0.122 | 0.031 | 0.251 | 0.207 |
| Control Delay, s/veh        | 4.6   | 4.0   | 4.9   | 4.5   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 0     | 0     | 1     | 1     |

Lanes, Volumes, Timings  
4: Walden Street & Homestead Trail

JR Engineering

10/19/2023

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 19                                                                                | 1                                                                                 | 28                                                                                | 6                                                                                 | 1                                                                                 | 1                                                                                 | 20                                                                                  | 245                                                                                 | 14                                                                                  | 1                                                                                   | 187                                                                                 | 12                                                                                  |
| Future Volume (vph)               | 19                                                                                | 1                                                                                 | 28                                                                                | 6                                                                                 | 1                                                                                 | 1                                                                                 | 20                                                                                  | 245                                                                                 | 14                                                                                  | 1                                                                                   | 187                                                                                 | 12                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.920                                                                             |                                                                                   |                                                                                   | 0.925                                                                             |                                                                                   |                                                                                     | 0.991                                                                               |                                                                                     |                                                                                     | 0.990                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.981                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1681                                                                              | 0                                                                                 | 1770                                                                              | 1723                                                                              | 0                                                                                 | 1770                                                                                | 1846                                                                                | 0                                                                                   | 1770                                                                                | 1844                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.981                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1681                                                                              | 0                                                                                 | 1770                                                                              | 1723                                                                              | 0                                                                                 | 1770                                                                                | 1846                                                                                | 0                                                                                   | 1770                                                                                | 1844                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 666                                                                               |                                                                                   |                                                                                     | 395                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.2                                                                              |                                                                                   |                                                                                     | 10.8                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.87                                                                                | 0.78                                                                                | 0.78                                                                                | 0.85                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 24                                                                                | 1                                                                                 | 36                                                                                | 8                                                                                 | 1                                                                                 | 1                                                                                 | 26                                                                                  | 282                                                                                 | 18                                                                                  | 1                                                                                   | 220                                                                                 | 15                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 61                                                                                | 0                                                                                 | 8                                                                                 | 2                                                                                 | 0                                                                                 | 26                                                                                  | 300                                                                                 | 0                                                                                   | 1                                                                                   | 235                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 32.8%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 10.4 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                 | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 19   | 1                                                                                 | 28   | 6                                                                                 | 1                                                                                 | 1    | 20                                                                                  | 245                                                                                 | 14   | 1                                                                                   | 187                                                                                 | 12   |
| Future Vol, veh/h   | 19   | 1                                                                                 | 28   | 6                                                                                 | 1                                                                                 | 1    | 20                                                                                  | 245                                                                                 | 14   | 1                                                                                   | 187                                                                                 | 12   |
| Peak Hour Factor    | 0.78 | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                                | 0.87                                                                                | 0.78 | 0.78                                                                                | 0.85                                                                                | 0.78 |
| Heavy Vehicles, %   | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                   | 2                                                                                   | 2    | 2                                                                                   | 2                                                                                   | 2    |
| Mvmt Flow           | 24   | 1                                                                                 | 36   | 8                                                                                 | 1                                                                                 | 1    | 26                                                                                  | 282                                                                                 | 18   | 1                                                                                   | 220                                                                                 | 15   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                   | 1                                                                                   | 0    | 1                                                                                   | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB   | SB   |
|----------------------------|-----|-----|------|------|
| Opposing Approach          | WB  | EB  | SB   | NB   |
| Opposing Lanes             | 2   | 1   | 2    | 2    |
| Conflicting Approach Left  | SB  | NB  | EB   | WB   |
| Conflicting Lanes Left     | 2   | 2   | 1    | 2    |
| Conflicting Approach Right | NB  | SB  | WB   | EB   |
| Conflicting Lanes Right    | 2   | 2   | 2    | 1    |
| HCM Control Delay          | 9.3 | 9.1 | 10.8 | 10.1 |
| HCM LOS                    | A   | A   | B    | B    |

| Lane                   | NBLn1 | NBLn2 | EBLn1 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 100%  | 0%    | 40%   | 100%  | 0%    | 100%  | 0%    |
| Vol Thru, %            | 0%    | 95%   | 2%    | 0%    | 50%   | 0%    | 94%   |
| Vol Right, %           | 0%    | 5%    | 58%   | 0%    | 50%   | 0%    | 6%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 20    | 259   | 48    | 6     | 2     | 1     | 199   |
| LT Vol                 | 20    | 0     | 19    | 6     | 0     | 1     | 0     |
| Through Vol            | 0     | 245   | 1     | 0     | 1     | 0     | 187   |
| RT Vol                 | 0     | 14    | 28    | 0     | 1     | 0     | 12    |
| Lane Flow Rate         | 26    | 300   | 62    | 8     | 3     | 1     | 235   |
| Geometry Grp           | 7     | 7     | 6     | 7     | 7     | 7     | 7     |
| Degree of Util (X)     | 0.039 | 0.407 | 0.096 | 0.014 | 0.004 | 0.002 | 0.325 |
| Departure Headway (Hd) | 5.433 | 4.893 | 5.613 | 6.47  | 5.612 | 5.512 | 4.967 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 660   | 737   | 638   | 552   | 636   | 650   | 725   |
| Service Time           | 3.158 | 2.618 | 3.655 | 4.221 | 3.363 | 3.238 | 2.693 |
| HCM Lane V/C Ratio     | 0.039 | 0.407 | 0.097 | 0.014 | 0.005 | 0.002 | 0.324 |
| HCM Control Delay      | 8.4   | 11    | 9.3   | 9.3   | 8.4   | 8.2   | 10.1  |
| HCM Lane LOS           | A     | B     | A     | A     | A     | A     | B     |
| HCM 95th-tile Q        | 0.1   | 2     | 0.3   | 0     | 0     | 0     | 1.4   |

Lanes, Volumes, Timings  
11: Tower Road & 105th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |                                                                                   |  |  |  |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 8                                                                                 | 8                                                                                 | 633                                                                               | 777                                                                               | 28                                                                                |
| Future Volume (vph)               | 0                                                                                 | 8                                                                                 | 8                                                                                 | 633                                                                               | 777                                                                               | 28                                                                                |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 250                                                                               | 0                                                                                 | 150                                                                               |                                                                                   |                                                                                   | 150                                                                               |
| Storage Lanes                     | 0                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |
| Taper Length (ft)                 | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               |                                                                                   | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)                | 660                                                                               |                                                                                   |                                                                                   | 300                                                                               | 1403                                                                              |                                                                                   |
| Travel Time (s)                   | 15.0                                                                              |                                                                                   |                                                                                   | 6.8                                                                               | 31.9                                                                              |                                                                                   |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.92                                                                              | 0.78                                                                              |
| Adj. Flow (vph)                   | 0                                                                                 | 10                                                                                | 10                                                                                | 688                                                                               | 845                                                                               | 36                                                                                |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 10                                                                                | 10                                                                                | 688                                                                               | 845                                                                               | 36                                                                                |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Left                                                                              | Right                                                                             |
| Median Width(ft)                  | 0                                                                                 |                                                                                   |                                                                                   | 12                                                                                | 12                                                                                |                                                                                   |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                | 16                                                                                |                                                                                   |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 60                                                                                | 60                                                                                | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 50.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.1    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL    | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |        |  |  |  |  |  |
| Traffic Vol, veh/h       | 0      | 8                                                                                 | 8                                                                                 | 633                                                                               | 777                                                                               | 28                                                                                |
| Future Vol, veh/h        | 0      | 8                                                                                 | 8                                                                                 | 633                                                                               | 777                                                                               | 28                                                                                |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -      | 0                                                                                 | 150                                                                               | -                                                                                 | -                                                                                 | 150                                                                               |
| Veh in Median Storage, # | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 78     | 78                                                                                | 78                                                                                | 92                                                                                | 92                                                                                | 78                                                                                |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0      | 10                                                                                | 10                                                                                | 688                                                                               | 845                                                                               | 36                                                                                |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Major/Minor              | Minor2 | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   |
| Conflicting Flow All     | -      | 845                                                                               | 881                                                                               | 0                                                                                 | -                                                                                 | 0                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy            | -      | 6.22                                                                              | 4.12                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | -      | 3.318                                                                             | 2.218                                                                             | -                                                                                 | -                                                                                 | -                                                                                 |
| Pot Cap-1 Maneuver       | 0      | 363                                                                               | 767                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |        |                                                                                   |                                                                                   | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-1 Maneuver       | -      | 363                                                                               | 767                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach                 | EB     | NB                                                                                |                                                                                   | SB                                                                                |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 15.2   | 0.1                                                                               |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |
| HCM LOS                  | C      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |                                                                                   |
| Capacity (veh/h)         | 767    | -                                                                                 | 363                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | 0.013  | -                                                                                 | 0.028                                                                             | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | 9.8    | -                                                                                 | 15.2                                                                              | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane LOS             | A      | -                                                                                 | C                                                                                 | -                                                                                 | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | 0      | -                                                                                 | 0.1                                                                               | -                                                                                 | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
13: Yampa Street & 104th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)              | 1                                                                                 | 1106                                                                              | 5                                                                                 | 12                                                                                | 554                                                                               | 5                                                                                 | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Future Volume (vph)               | 1                                                                                 | 1106                                                                              | 5                                                                                 | 12                                                                                | 554                                                                               | 5                                                                                 | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 150                                                                               |                                                                                   | 150                                                                               | 150                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 636                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.93                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 1189                                                                              | 6                                                                                 | 15                                                                                | 602                                                                               | 6                                                                                 | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 1                                                                                 | 1189                                                                              | 6                                                                                 | 15                                                                                | 602                                                                               | 6                                                                                 | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 31.4%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|--------|------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL    | NBT   | NBR                                                                               | SBL    | SBT  | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |  |        |       |  |        |      |  |
| Traffic Vol, veh/h       | 1                                                                                 | 1106                                                                              | 5                                                                                 | 12                                                                                | 554                                                                               | 5                                                                                 | 0      | 0     | 4                                                                                 | 0      | 0    | 1                                                                                   |
| Future Vol, veh/h        | 1                                                                                 | 1106                                                                              | 5                                                                                 | 12                                                                                | 554                                                                               | 5                                                                                 | 0      | 0     | 4                                                                                 | 0      | 0    | 1                                                                                   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0      | 0    | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Stop   | Stop  | Stop                                                                              | Stop   | Stop | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None                                                                              | -      | -     | None                                                                              | -      | -    | None                                                                                |
| Storage Length           | 150                                                                               | -                                                                                 | 150                                                                               | 150                                                                               | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -      | -    | 0                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -      | 0     | -                                                                                 | -      | 0    | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -      | 0     | -                                                                                 | -      | 0    | -                                                                                   |
| Peak Hour Factor         | 78                                                                                | 93                                                                                | 78                                                                                | 78                                                                                | 92                                                                                | 78                                                                                | 78     | 78    | 78                                                                                | 78     | 78   | 78                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2      | 2     | 2                                                                                 | 2      | 2    | 2                                                                                   |
| Mvmt Flow                | 1                                                                                 | 1189                                                                              | 6                                                                                 | 15                                                                                | 602                                                                               | 6                                                                                 | 0      | 0     | 5                                                                                 | 0      | 0    | 1                                                                                   |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Major/Minor              | Major1                                                                            |                                                                                   |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   | Minor1 |       |                                                                                   | Minor2 |      |                                                                                     |
| Conflicting Flow All     | 608                                                                               | 0                                                                                 | 0                                                                                 | 1195                                                                              | 0                                                                                 | 0                                                                                 | -      | -     | 595                                                                               | -      | -    | 301                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Critical Hdwy            | 5.34                                                                              | -                                                                                 | -                                                                                 | 5.34                                                                              | -                                                                                 | -                                                                                 | -      | -     | 7.14                                                                              | -      | -    | 7.14                                                                                |
| Critical Hdwy Stg 1      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Critical Hdwy Stg 2      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Follow-up Hdwy           | 3.12                                                                              | -                                                                                 | -                                                                                 | 3.12                                                                              | -                                                                                 | -                                                                                 | -      | -     | 3.92                                                                              | -      | -    | 3.92                                                                                |
| Pot Cap-1 Maneuver       | 602                                                                               | -                                                                                 | -                                                                                 | 315                                                                               | -                                                                                 | -                                                                                 | 0      | 0     | 383                                                                               | 0      | 0    | 593                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0      | 0     | -                                                                                 | 0      | 0    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0      | 0     | -                                                                                 | 0      | 0    | -                                                                                   |
| Platoon blocked, %       |                                                                                   | -                                                                                 | -                                                                                 |                                                                                   | -                                                                                 | -                                                                                 |        |       |                                                                                   |        |      |                                                                                     |
| Mov Cap-1 Maneuver       | 602                                                                               | -                                                                                 | -                                                                                 | 315                                                                               | -                                                                                 | -                                                                                 | -      | -     | 383                                                                               | -      | -    | 593                                                                                 |
| Mov Cap-2 Maneuver       | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Approach                 | EB                                                                                |                                                                                   |                                                                                   | WB                                                                                |                                                                                   |                                                                                   | NB     |       |                                                                                   | SB     |      |                                                                                     |
| HCM Control Delay, s     | 0                                                                                 |                                                                                   |                                                                                   | 0.4                                                                               |                                                                                   |                                                                                   | 14.5   |       |                                                                                   | 11.1   |      |                                                                                     |
| HCM LOS                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B      |       |                                                                                   | B      |      |                                                                                     |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR    | SBLn1 |                                                                                   |        |      |                                                                                     |
| Capacity (veh/h)         | 383                                                                               | 602                                                                               | -                                                                                 | -                                                                                 | 315                                                                               | -                                                                                 | -      | 593   |                                                                                   |        |      |                                                                                     |
| HCM Lane V/C Ratio       | 0.013                                                                             | 0.002                                                                             | -                                                                                 | -                                                                                 | 0.049                                                                             | -                                                                                 | -      | 0.002 |                                                                                   |        |      |                                                                                     |
| HCM Control Delay (s)    | 14.5                                                                              | 11                                                                                | -                                                                                 | -                                                                                 | 17                                                                                | -                                                                                 | -      | 11.1  |                                                                                   |        |      |                                                                                     |
| HCM Lane LOS             | B                                                                                 | B                                                                                 | -                                                                                 | -                                                                                 | C                                                                                 | -                                                                                 | -      | B     |                                                                                   |        |      |                                                                                     |
| HCM 95th %tile Q(veh)    | 0                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0.2                                                                               | -                                                                                 | -      | 0     |                                                                                   |        |      |                                                                                     |

Lanes, Volumes, Timings  
14: Walden Street & 104th Way

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 7                                                                                 | 0                                                                                 | 47                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                  | 278                                                                                 | 0                                                                                   | 0                                                                                   | 302                                                                                 | 2                                                                                   |
| Future Volume (vph)               | 7                                                                                 | 0                                                                                 | 47                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                  | 278                                                                                 | 0                                                                                   | 0                                                                                   | 302                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 150                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.883                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1635                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1861                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1635                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1861                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 501                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                     | 10.2                                                                                |                                                                                     |                                                                                     | 6.8                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.88                                                                                | 0.78                                                                                | 0.78                                                                                | 0.88                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 9                                                                                 | 0                                                                                 | 60                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 19                                                                                  | 316                                                                                 | 0                                                                                   | 0                                                                                   | 343                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 69                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 19                                                                                  | 316                                                                                 | 0                                                                                   | 0                                                                                   | 346                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                  |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 26.0%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |      |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.3  |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |      |  |      |      |  |      |  |  |  |  |  |  |
| Traffic Vol, veh/h       | 7    | 0                                                                                 | 47   | 0    | 0                                                                                 | 0    | 15                                                                                | 278                                                                               | 0                                                                                 | 0                                                                                   | 302                                                                                 | 2                                                                                   |
| Future Vol, veh/h        | 7    | 0                                                                                 | 47   | 0    | 0                                                                                 | 0    | 15                                                                                | 278                                                                               | 0                                                                                 | 0                                                                                   | 302                                                                                 | 2                                                                                   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop | Stop                                                                              | Stop | Stop | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | 150                                                                               | -                                                                                 | 150                                                                               | 150                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 78   | 78                                                                                | 78   | 78   | 78                                                                                | 78   | 78                                                                                | 88                                                                                | 78                                                                                | 78                                                                                  | 88                                                                                  | 78                                                                                  |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Mvmt Flow                | 9    | 0                                                                                 | 60   | 0    | 0                                                                                 | 0    | 19                                                                                | 316                                                                               | 0                                                                                 | 0                                                                                   | 343                                                                                 | 3                                                                                   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 699    | 699   | 345    | 729   | 700    | 316   | 346    | 0 | 0 | 316   | 0 | 0 |
| Stage 1              | 345    | 345   | -      | 354   | 354    | -     | -      | - | - | -     | - | - |
| Stage 2              | 354    | 354   | -      | 375   | 346    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 354    | 364   | 698    | 338   | 363    | 724   | 1213   | - | - | 1244  | - | - |
| Stage 1              | 671    | 636   | -      | 663   | 630    | -     | -      | - | - | -     | - | - |
| Stage 2              | 663    | 630   | -      | 646   | 635    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - |       | - | - |
| Mov Cap-1 Maneuver   | 350    | 358   | 698    | 305   | 357    | 724   | 1213   | - | - | 1244  | - | - |
| Mov Cap-2 Maneuver   | 350    | 358   | -      | 305   | 357    | -     | -      | - | - | -     | - | - |
| Stage 1              | 660    | 636   | -      | 652   | 620    | -     | -      | - | - | -     | - | - |
| Stage 2              | 653    | 620   | -      | 590   | 635    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB |  | NB  |  | SB |  |
|----------------------|------|--|----|--|-----|--|----|--|
| HCM Control Delay, s | 11.6 |  | 0  |  | 0.5 |  | 0  |  |
| HCM LOS              | B    |  | A  |  |     |  |    |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|-------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1213  | -   | -   | 618        | 1244 | -   | -   |
| HCM Lane V/C Ratio    | 0.016 | -   | -   | 0.112      | -    | -   | -   |
| HCM Control Delay (s) | 8     | -   | -   | 11.6       | 0    | 0   | -   |
| HCM Lane LOS          | A     | -   | -   | B          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0.4        | 0    | -   | -   |

Lanes, Volumes, Timings  
15: Walden Street & 105th Place

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|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 1                                                                                 | 277                                                                               | 0                                                                                 | 1                                                                                 | 226                                                                               |
| Future Volume (vph)               | 0                                                                                 | 1                                                                                 | 277                                                                               | 0                                                                                 | 1                                                                                 | 226                                                                               |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   |
| Storage Lanes                     | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)                 | 1611                                                                              | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)                 | 1611                                                                              | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |
| Link Distance (ft)                | 229                                                                               |                                                                                   | 280                                                                               |                                                                                   |                                                                                   | 395                                                                               |
| Travel Time (s)                   | 5.2                                                                               |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 10.8                                                                              |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.87                                                                              | 0.78                                                                              | 0.78                                                                              | 0.87                                                                              |
| Adj. Flow (vph)                   | 0                                                                                 | 1                                                                                 | 318                                                                               | 0                                                                                 | 1                                                                                 | 260                                                                               |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 1                                                                                 | 0                                                                                 | 318                                                                               | 0                                                                                 | 1                                                                                 | 260                                                                               |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              |
| Median Width(ft)                  | 12                                                                                |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 15                                                                                | 9                                                                                 |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 24.6%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 0                                                                                 | 1        | 277                                                                               | 0      | 1                                                                                 | 226                                                                               |
| Future Vol, veh/h        | 0                                                                                 | 1        | 277                                                                               | 0      | 1                                                                                 | 226                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 100                                                                               | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 78                                                                                | 78       | 87                                                                                | 78     | 78                                                                                | 87                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2        | 2                                                                                 | 2      | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 1        | 318                                                                               | 0      | 1                                                                                 | 260                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 580                                                                               | 318      | 0                                                                                 | 0      | 318                                                                               | 0                                                                                 |
| Stage 1                  | 318                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 262                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22     | -                                                                                 | -      | 4.12                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318    | -                                                                                 | -      | 2.218                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 477                                                                               | 723      | -                                                                                 | -      | 1242                                                                              | -                                                                                 |
| Stage 1                  | 738                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 782                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 477                                                                               | 723      | -                                                                                 | -      | 1242                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 477                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 738                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 781                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 10                                                                                | 0        |                                                                                   | 0      |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | 723      |                                                                                   | 1242   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | 0.002    |                                                                                   | 0.001  | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | 10       |                                                                                   | 7.9    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | B        |                                                                                   | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | 0        |                                                                                   | 0      | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
16: Yampa Street & 105th Avenue

JR Engineering  
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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 19                                                                                | 17                                                                                | 0                                                                                  | 6                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Future Volume (vph)               | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 19                                                                                | 17                                                                                | 0                                                                                  | 6                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 0.935                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1742                                                                              | 0                                                                                 | 0                                                                                  | 1863                                                                                | 0                                                                                   | 0                                                                                   | 1818                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1742                                                                              | 0                                                                                 | 0                                                                                  | 1863                                                                                | 0                                                                                   | 0                                                                                   | 1818                                                                                | 0                                                                                   |
| Link Speed (mph)                  | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)                | 660                                                                               |                                                                                   |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    |                                                                                     | 300                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)                   | 18.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 6.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 24                                                                                | 22                                                                                | 0                                                                                  | 8                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 46                                                                                | 0                                                                                 | 0                                                                                  | 8                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 13.3%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 1.4    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations      |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h       | 0      | 9                                                                                 | 0    | 0      | 19                                                                                | 17   | 0      | 6                                                                                 | 0     | 1      | 1                                                                                   | 0     |
| Future Vol, veh/h        | 0      | 9                                                                                 | 0    | 0      | 19                                                                                | 17   | 0      | 6                                                                                 | 0     | 1      | 1                                                                                   | 0     |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor         | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78    | 78     | 78                                                                                  | 78    |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                | 0      | 12                                                                                | 0    | 0      | 24                                                                                | 22   | 0      | 8                                                                                 | 0     | 1      | 1                                                                                   | 0     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All     | 46     | 0                                                                                 | 0    | 12     | 0                                                                                 | 0    | 48     | 58                                                                                | 12    | 51     | 47                                                                                  | 35    |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 12     | 12                                                                                | -     | 35     | 35                                                                                  | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 36     | 46                                                                                | -     | 16     | 12                                                                                  | -     |
| Critical Hdwy            | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy           | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver       | 1562   | -                                                                                 | -    | 1607   | -                                                                                 | -    | 953    | 833                                                                               | 1069  | 948    | 845                                                                                 | 1038  |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1009   | 886                                                                               | -     | 981    | 866                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 980    | 857                                                                               | -     | 1004   | 886                                                                                 | -     |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver       | 1562   | -                                                                                 | -    | 1607   | -                                                                                 | -    | 952    | 833                                                                               | 1069  | 941    | 845                                                                                 | 1038  |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 952    | 833                                                                               | -     | 941    | 845                                                                                 | -     |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1009   | 886                                                                               | -     | 981    | 866                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 979    | 857                                                                               | -     | 995    | 886                                                                                 | -     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s     | 0      |                                                                                   |      | 0      |                                                                                   |      | 9.4    |                                                                                   |       | 9.1    |                                                                                     |       |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | A      |                                                                                     |       |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)         | 833    | 1562                                                                              | -    | -      | 1607                                                                              | -    | -      | 890                                                                               |       |        |                                                                                     |       |
| HCM Lane V/C Ratio       | 0.009  | -                                                                                 | -    | -      | -                                                                                 | -    | -      | 0.003                                                                             |       |        |                                                                                     |       |
| HCM Control Delay (s)    | 9.4    | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 9.1                                                                               |       |        |                                                                                     |       |
| HCM Lane LOS             | A      | A                                                                                 | -    | -      | A                                                                                 | -    | -      | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)    | 0      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 |       |        |                                                                                     |       |

Lanes, Volumes, Timings  
17: Yampa Street & Homestead Trail

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| Lane Group                 | EBL   | EBR   | NBL  | NBT   | SBT   | SBR   |
|----------------------------|-------|-------|------|-------|-------|-------|
| Lane Configurations        |       |       |      |       |       |       |
| Traffic Volume (vph)       | 14    | 1     | 1    | 23    | 2     | 6     |
| Future Volume (vph)        | 14    | 1     | 1    | 23    | 2     | 6     |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 100   | 0     | 0    |       |       | 0     |
| Storage Lanes              | 1     | 1     | 0    |       |       | 0     |
| Taper Length (ft)          | 25    |       | 25   |       |       |       |
| Lane Util. Factor          | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                        |       | 0.850 |      |       | 0.902 |       |
| Flt Protected              | 0.950 |       |      | 0.998 |       |       |
| Satd. Flow (prot)          | 1770  | 1583  | 0    | 1859  | 1680  | 0     |
| Flt Permitted              | 0.950 |       |      | 0.998 |       |       |
| Satd. Flow (perm)          | 1770  | 1583  | 0    | 1859  | 1680  | 0     |
| Link Speed (mph)           | 25    |       |      | 30    | 30    |       |
| Link Distance (ft)         | 666   |       |      | 181   | 194   |       |
| Travel Time (s)            | 18.2  |       |      | 4.1   | 4.4   |       |
| Peak Hour Factor           | 0.78  | 0.78  | 0.78 | 0.78  | 0.78  | 0.78  |
| Adj. Flow (vph)            | 18    | 1     | 1    | 29    | 3     | 8     |
| Shared Lane Traffic (%)    |       |       |      |       |       |       |
| Lane Group Flow (vph)      | 18    | 1     | 0    | 30    | 11    | 0     |
| Enter Blocked Intersection | No    | No    | No   | No    | No    | No    |
| Lane Alignment             | Left  | Right | Left | Left  | Left  | Right |
| Median Width(ft)           | 12    |       |      | 0     | 0     |       |
| Link Offset(ft)            | 0     |       |      | 0     | 0     |       |
| Crosswalk Width(ft)        | 16    |       |      | 16    | 16    |       |
| Two way Left Turn Lane     |       |       |      |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    | 9     | 15   |       |       | 9     |
| Sign Control               | Stop  |       |      | Stop  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.3 |
| Intersection LOS          | A   |

| Movement            | EBL                                                                               | EBR                                                                               | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 14                                                                                | 1                                                                                 | 1    | 23                                                                                | 2                                                                                 | 6    |
| Future Vol, veh/h   | 14                                                                                | 1                                                                                 | 1    | 23                                                                                | 2                                                                                 | 6    |
| Peak Hour Factor    | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 |
| Heavy Vehicles, %   | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow           | 18                                                                                | 1                                                                                 | 1    | 29                                                                                | 3                                                                                 | 8    |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    |

| Approach                   | EB  | NB  | SB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          |     | SB  | NB  |
| Opposing Lanes             | 0   | 1   | 1   |
| Conflicting Approach Left  | SB  | EB  |     |
| Conflicting Lanes Left     | 1   | 2   | 0   |
| Conflicting Approach Right | NB  |     | EB  |
| Conflicting Lanes Right    | 1   | 0   | 2   |
| HCM Control Delay          | 7.9 | 7.1 | 6.6 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 4%    | 100%  | 0%    | 0%    |
| Vol Thru, %            | 96%   | 0%    | 0%    | 25%   |
| Vol Right, %           | 0%    | 0%    | 100%  | 75%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 24    | 14    | 1     | 8     |
| LT Vol                 | 1     | 14    | 0     | 0     |
| Through Vol            | 23    | 0     | 0     | 2     |
| RT Vol                 | 0     | 0     | 1     | 6     |
| Lane Flow Rate         | 31    | 18    | 1     | 10    |
| Geometry Grp           | 2     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.034 | 0.025 | 0.001 | 0.01  |
| Departure Headway (Hd) | 3.983 | 5.105 | 3.904 | 3.54  |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 900   | 703   | 918   | 1011  |
| Service Time           | 2.001 | 2.82  | 1.62  | 1.563 |
| HCM Lane V/C Ratio     | 0.034 | 0.026 | 0.001 | 0.01  |
| HCM Control Delay      | 7.1   | 8     | 6.6   | 6.6   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.1   | 0.1   | 0     | 0     |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                            |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 127                                                                               | 165                                                                               | 437                                                                               | 24                                                                                | 215                                                                               | 19                                                                                | 642                                                                                 | 900                                                                                 | 29                                                                                  | 11                                                                                  | 536                                                                                 | 85                                                                                  |
| Future Volume (vph)        | 127                                                                               | 165                                                                               | 437                                                                               | 24                                                                                | 215                                                                               | 19                                                                                | 642                                                                                 | 900                                                                                 | 29                                                                                  | 11                                                                                  | 536                                                                                 | 85                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 350                                                                               |                                                                                   | 590                                                                               | 330                                                                               |                                                                                   | 440                                                                               | 320                                                                                 |                                                                                     | 290                                                                                 | 290                                                                                 |                                                                                     | 190                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.387                                                                             |                                                                                   |                                                                                   | 0.623                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 721                                                                               | 5085                                                                              | 1583                                                                              | 1160                                                                              | 5085                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 497                                                                               |                                                                                   |                                                                                   | 264                                                                               |                                                                                     |                                                                                     | 182                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                     | 45                                                                                  |                                                                                     |                                                                                     | 45                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 1515                                                                              |                                                                                   |                                                                                     | 645                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                     | 9.8                                                                                 |                                                                                     |                                                                                     | 6.8                                                                                 |                                                                                     |
| Peak Hour Factor           | 0.83                                                                              | 0.84                                                                              | 0.88                                                                              | 0.78                                                                              | 0.87                                                                              | 0.78                                                                              | 0.92                                                                                | 0.92                                                                                | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                | 0.80                                                                                |
| Adj. Flow (vph)            | 153                                                                               | 196                                                                               | 497                                                                               | 31                                                                                | 247                                                                               | 24                                                                                | 698                                                                                 | 978                                                                                 | 37                                                                                  | 14                                                                                  | 583                                                                                 | 106                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 153                                                                               | 196                                                                               | 497                                                                               | 31                                                                                | 247                                                                               | 24                                                                                | 698                                                                                 | 978                                                                                 | 37                                                                                  | 14                                                                                  | 583                                                                                 | 106                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases           | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |

# Lanes, Volumes, Timings

## 1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 16.2                                                                                | 18.2                                                                                | 18.2                                                                                | 16.2                                                                                | 18.2                                                                                | 18.2                                                                                |
| Total Split (s)       | 26.0                                                                              | 25.0                                                                              | 25.0                                                                              | 21.0                                                                              | 20.0                                                                              | 20.0                                                                              | 45.0                                                                                | 57.0                                                                                | 57.0                                                                                | 17.0                                                                                | 29.0                                                                                | 29.0                                                                                |
| Total Split (%)       | 21.7%                                                                             | 20.8%                                                                             | 20.8%                                                                             | 17.5%                                                                             | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                               | 47.5%                                                                               | 47.5%                                                                               | 14.2%                                                                               | 24.2%                                                                               | 24.2%                                                                               |
| Maximum Green (s)     | 18.6                                                                              | 17.6                                                                              | 17.6                                                                              | 13.6                                                                              | 12.6                                                                              | 12.6                                                                              | 36.8                                                                                | 48.8                                                                                | 48.8                                                                                | 8.8                                                                                 | 20.8                                                                                | 20.8                                                                                |
| Yellow Time (s)       | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 |
| All-Red Time (s)      | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 3.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 2.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Recall Mode           | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effect Green (s)  | 32.5                                                                              | 23.3                                                                              | 23.3                                                                              | 19.0                                                                              | 10.9                                                                              | 10.9                                                                              | 28.9                                                                                | 65.2                                                                                | 65.2                                                                                | 8.0                                                                                 | 34.6                                                                                | 34.6                                                                                |
| Actuated g/C Ratio    | 0.27                                                                              | 0.19                                                                              | 0.19                                                                              | 0.16                                                                              | 0.09                                                                              | 0.09                                                                              | 0.24                                                                                | 0.54                                                                                | 0.54                                                                                | 0.07                                                                                | 0.29                                                                                | 0.29                                                                                |
| v/c Ratio             | 0.48                                                                              | 0.20                                                                              | 0.70                                                                              | 0.14                                                                              | 0.54                                                                              | 0.06                                                                              | 0.84                                                                                | 0.51                                                                                | 0.04                                                                                | 0.12                                                                                | 0.57                                                                                | 0.17                                                                                |
| Control Delay         | 36.2                                                                              | 39.7                                                                              | 22.5                                                                              | 32.9                                                                              | 56.5                                                                              | 0.3                                                                               | 53.3                                                                                | 20.7                                                                                | 0.1                                                                                 | 55.2                                                                                | 41.0                                                                                | 0.6                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 36.2                                                                              | 39.7                                                                              | 22.5                                                                              | 32.9                                                                              | 56.5                                                                              | 0.3                                                                               | 53.3                                                                                | 20.7                                                                                | 0.1                                                                                 | 55.2                                                                                | 41.0                                                                                | 0.6                                                                                 |
| LOS                   | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | A                                                                                 | D                                                                                   | C                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay        | 29.0                                                                              |                                                                                   |                                                                                   | 49.6                                                                              |                                                                                   |                                                                                   | 33.5                                                                                |                                                                                     |                                                                                     | 35.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS          | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 34.1

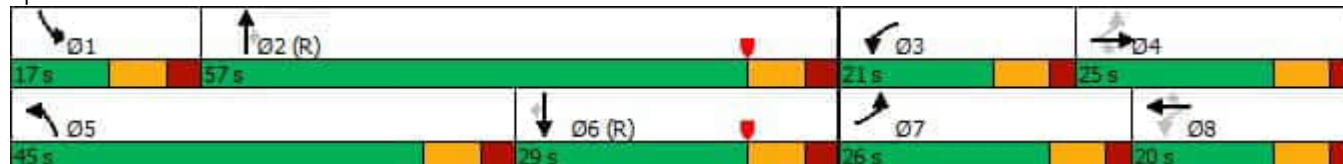
Intersection LOS: C

Intersection Capacity Utilization 74.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Tower Road & 104th Avenue



## Queues

JR Engineering

10/19/2023

## 1: Tower Road &amp; 104th Avenue



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 153  | 196  | 497  | 31   | 247  | 24   | 698  | 978  | 37   | 14   | 583  | 106  |
| v/c Ratio               | 0.48 | 0.20 | 0.70 | 0.14 | 0.54 | 0.06 | 0.84 | 0.51 | 0.04 | 0.12 | 0.57 | 0.17 |
| Control Delay           | 36.2 | 39.7 | 22.5 | 32.9 | 56.5 | 0.3  | 53.3 | 20.7 | 0.1  | 55.2 | 41.0 | 0.6  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 36.2 | 39.7 | 22.5 | 32.9 | 56.5 | 0.3  | 53.3 | 20.7 | 0.1  | 55.2 | 41.0 | 0.6  |
| Queue Length 50th (ft)  | 104  | 53   | 174  | 18   | 68   | 0    | 266  | 205  | 0    | 10   | 201  | 0    |
| Queue Length 95th (ft)  | 141  | 69   | 252  | 34   | 93   | 0    | 314  | 392  | 0    | 28   | #330 | 0    |
| Internal Link Dist (ft) |      | 580  |      |      | 1435 |      |      | 565  |      |      | 370  |      |
| Turn Bay Length (ft)    | 350  |      | 590  | 330  |      | 440  | 320  |      | 290  | 290  |      | 190  |
| Base Capacity (vph)     | 358  | 994  | 709  | 305  | 536  | 403  | 1052 | 1924 | 943  | 129  | 1020 | 638  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.43 | 0.20 | 0.70 | 0.10 | 0.46 | 0.06 | 0.66 | 0.51 | 0.04 | 0.11 | 0.57 | 0.17 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 1: Tower Road & 104th Avenue

JR Engineering

10/19/2023

|                              |  |                                                                                                                                                                      |  |  |                                                                                                                                                                      |  |                                                                                       |                                                                                      |  |  |                                                                                      |  |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                                                                                                   | WBR                                                                               | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |  |    |  |  |    |  |   |   |  |  |   |  |
| Traffic Volume (veh/h)       | 127                                                                               | 165                                                                                                                                                                                                                                                   | 437                                                                               | 24                                                                                | 215                                                                                                                                                                                                                                                   | 19                                                                                | 642                                                                                                                                                                     | 900                                                                                                                                                                     | 29                                                                                  | 11                                                                                  | 536                                                                                                                                                                     | 85                                                                                  |
| Future Volume (veh/h)        | 127                                                                               | 165                                                                                                                                                                                                                                                   | 437                                                                               | 24                                                                                | 215                                                                                                                                                                                                                                                   | 19                                                                                | 642                                                                                                                                                                     | 900                                                                                                                                                                     | 29                                                                                  | 11                                                                                  | 536                                                                                                                                                                     | 85                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                         | No                                                                                                                                                                      |                                                                                     |                                                                                     | No                                                                                                                                                                      |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                              | 1870                                                                                                                                                                    | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 153                                                                               | 196                                                                                                                                                                                                                                                   | 0                                                                                 | 31                                                                                | 247                                                                                                                                                                                                                                                   | 0                                                                                 | 698                                                                                                                                                                     | 978                                                                                                                                                                     | 0                                                                                   | 14                                                                                  | 583                                                                                                                                                                     | 0                                                                                   |
| Peak Hour Factor             | 0.83                                                                              | 0.84                                                                                                                                                                                                                                                  | 0.88                                                                              | 0.78                                                                              | 0.87                                                                                                                                                                                                                                                  | 0.78                                                                              | 0.92                                                                                                                                                                    | 0.92                                                                                                                                                                    | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                                                                                                    | 0.80                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 271                                                                               | 691                                                                                                                                                                                                                                                   |                                                                                   | 235                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                   | 770                                                                                                                                                                     | 1908                                                                                                                                                                    |                                                                                     | 44                                                                                  | 1205                                                                                                                                                                    |                                                                                     |
| Arrive On Green              | 0.03                                                                              | 0.04                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.04                                                                              | 0.08                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.22                                                                                                                                                                    | 0.54                                                                                                                                                                    | 0.00                                                                                | 0.02                                                                                | 0.34                                                                                                                                                                    | 0.00                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                              | 3456                                                                                                                                                                    | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 153                                                                               | 196                                                                                                                                                                                                                                                   | 0                                                                                 | 31                                                                                | 247                                                                                                                                                                                                                                                   | 0                                                                                 | 698                                                                                                                                                                     | 978                                                                                                                                                                     | 0                                                                                   | 14                                                                                  | 583                                                                                                                                                                     | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                              | 1728                                                                                                                                                                    | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 9.3                                                                               | 4.5                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.9                                                                               | 5.6                                                                                                                                                                                                                                                   | 0.0                                                                               | 23.6                                                                                                                                                                    | 21.1                                                                                                                                                                    | 0.0                                                                                 | 0.9                                                                                 | 15.6                                                                                                                                                                    | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.3                                                                               | 4.5                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.9                                                                               | 5.6                                                                                                                                                                                                                                                   | 0.0                                                                               | 23.6                                                                                                                                                                    | 21.1                                                                                                                                                                    | 0.0                                                                                 | 0.9                                                                                 | 15.6                                                                                                                                                                    | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 271                                                                               | 691                                                                                                                                                                                                                                                   |                                                                                   | 235                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                   | 770                                                                                                                                                                     | 1908                                                                                                                                                                    |                                                                                     | 44                                                                                  | 1205                                                                                                                                                                    |                                                                                     |
| V/C Ratio(X)                 | 0.57                                                                              | 0.28                                                                                                                                                                                                                                                  |                                                                                   | 0.13                                                                              | 0.58                                                                                                                                                                                                                                                  |                                                                                   | 0.91                                                                                                                                                                    | 0.51                                                                                                                                                                    |                                                                                     | 0.32                                                                                | 0.48                                                                                                                                                                    |                                                                                     |
| Avail Cap(c_a), veh/h        | 378                                                                               | 749                                                                                                                                                                                                                                                   |                                                                                   | 361                                                                               | 536                                                                                                                                                                                                                                                   |                                                                                   | 1060                                                                                                                                                                    | 1908                                                                                                                                                                    |                                                                                     | 131                                                                                 | 1205                                                                                                                                                                    |                                                                                     |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                                                                                                                                                                                                  | 0.33                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 46.9                                                                              | 51.7                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.6                                                                              | 53.0                                                                                                                                                                                                                                                  | 0.0                                                                               | 45.4                                                                                                                                                                    | 17.8                                                                                                                                                                    | 0.0                                                                                 | 57.5                                                                                | 31.4                                                                                                                                                                    | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.1                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.3                                                                               | 0.5                                                                                                                                                                                                                                                   | 0.0                                                                               | 7.2                                                                                                                                                                     | 1.0                                                                                                                                                                     | 0.0                                                                                 | 1.5                                                                                 | 1.4                                                                                                                                                                     | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.4                                                                               | 1.9                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.8                                                                               | 2.4                                                                                                                                                                                                                                                   | 0.0                                                                               | 10.5                                                                                                                                                                    | 8.3                                                                                                                                                                     | 0.0                                                                                 | 0.4                                                                                 | 6.7                                                                                                                                                                     | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d),s/veh         | 48.7                                                                              | 51.8                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.9                                                                              | 53.4                                                                                                                                                                                                                                                  | 0.0                                                                               | 52.6                                                                                                                                                                    | 18.7                                                                                                                                                                    | 0.0                                                                                 | 59.0                                                                                | 32.8                                                                                                                                                                    | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                   | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                   | D                                                                                                                                                                       | B                                                                                                                                                                       |                                                                                     | E                                                                                   | C                                                                                                                                                                       |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 349                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 278                                                                                                                                                                                                                                                   |                                                                                   |                                                                                                                                                                         | 1676                                                                                                                                                                    |                                                                                     |                                                                                     | 597                                                                                                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 50.4                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   | 52.7                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                         | 32.8                                                                                                                                                                    |                                                                                     |                                                                                     | 33.4                                                                                                                                                                    |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         | C                                                                                                                                                                       |                                                                                     |                                                                                     | C                                                                                                                                                                       |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                                                                                                     | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.2                                                                              | 72.6                                                                                                                                                                                                                                                  | 12.6                                                                              | 23.6                                                                              | 34.9                                                                                                                                                                                                                                                  | 48.9                                                                              | 18.8                                                                                                                                                                    | 17.4                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 8.2                                                                               | 8.2                                                                                                                                                                                                                                                   | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                                                                                                                                                                                   | 8.2                                                                               | 7.4                                                                                                                                                                     | 7.4                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 8.8                                                                               | 48.8                                                                                                                                                                                                                                                  | 13.6                                                                              | 17.6                                                                              | 36.8                                                                                                                                                                                                                                                  | 20.8                                                                              | 18.6                                                                                                                                                                    | 12.6                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.9                                                                               | 23.1                                                                                                                                                                                                                                                  | 3.9                                                                               | 6.5                                                                               | 25.6                                                                                                                                                                                                                                                  | 17.6                                                                              | 11.3                                                                                                                                                                    | 7.6                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 12.5                                                                                                                                                                                                                                                  | 0.0                                                                               | 0.5                                                                               | 1.1                                                                                                                                                                                                                                                   | 1.6                                                                               | 0.2                                                                                                                                                                     | 0.4                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

### Intersection Summary

HCM 6th Ctrl Delay 37.0

HCM 6th LOS D

### Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

JR Engineering  
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|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 34                                                                                | 595                                                                               | 133                                                                               | 21                                                                                | 825                                                                               | 105                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 101                                                                                 | 16                                                                                  | 38                                                                                  |
| Future Volume (vph)        | 34                                                                                | 595                                                                               | 133                                                                               | 21                                                                                | 825                                                                               | 105                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 101                                                                                 | 16                                                                                  | 38                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 0                                                                                 |                                                                                   | 250                                                                               | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted              | 0.248                                                                             |                                                                                   |                                                                                   | 0.380                                                                             |                                                                                   |                                                                                   | 0.496                                                                              |                                                                                     |                                                                                     | 0.722                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 462                                                                               | 3539                                                                              | 1583                                                                              | 708                                                                               | 3539                                                                              | 1583                                                                              | 924                                                                                | 1863                                                                                | 1583                                                                                | 1345                                                                                | 1863                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                    |                                                                                     | 227                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 900                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 652                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 14.8                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor           | 0.78                                                                              | 0.92                                                                              | 0.83                                                                              | 0.78                                                                              | 0.92                                                                              | 0.83                                                                              | 0.84                                                                               | 0.78                                                                                | 0.78                                                                                | 0.82                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)            | 44                                                                                | 647                                                                               | 160                                                                               | 27                                                                                | 897                                                                               | 127                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 123                                                                                 | 21                                                                                  | 49                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 44                                                                                | 647                                                                               | 160                                                                               | 27                                                                                | 897                                                                               | 127                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 123                                                                                 | 21                                                                                  | 49                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases           | 2                                                                                 |                                                                                   | 2                                                                                 | 6                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                  |                                                                                     | 8                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

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|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                  | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 14.5                                                                               | 16.5                                                                                | 16.5                                                                                | 14.5                                                                                | 16.5                                                                                | 16.5                                                                                |
| Total Split (s)       | 18.0                                                                              | 57.0                                                                              | 57.0                                                                              | 13.0                                                                              | 52.0                                                                              | 52.0                                                                              | 25.0                                                                               | 17.0                                                                                | 17.0                                                                                | 33.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)       | 15.0%                                                                             | 47.5%                                                                             | 47.5%                                                                             | 10.8%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 20.8%                                                                              | 14.2%                                                                               | 14.2%                                                                               | 27.5%                                                                               | 20.8%                                                                               | 20.8%                                                                               |
| Maximum Green (s)     | 10.5                                                                              | 49.5                                                                              | 49.5                                                                              | 5.5                                                                               | 44.5                                                                              | 44.5                                                                              | 18.5                                                                               | 10.5                                                                                | 10.5                                                                                | 26.5                                                                                | 18.5                                                                                | 18.5                                                                                |
| Yellow Time (s)       | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 3.8                                                                                | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 |
| All-Red Time (s)      | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.7                                                                                | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 6.5                                                                                | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Recall Mode           | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)  | 72.7                                                                              | 68.9                                                                              | 68.9                                                                              | 70.4                                                                              | 65.9                                                                              | 65.9                                                                              | 28.0                                                                               | 14.0                                                                                | 14.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                |
| Actuated g/C Ratio    | 0.61                                                                              | 0.57                                                                              | 0.57                                                                              | 0.59                                                                              | 0.55                                                                              | 0.55                                                                              | 0.23                                                                               | 0.12                                                                                | 0.12                                                                                | 0.17                                                                                | 0.08                                                                                | 0.08                                                                                |
| v/c Ratio             | 0.13                                                                              | 0.32                                                                              | 0.16                                                                              | 0.06                                                                              | 0.46                                                                              | 0.13                                                                              | 0.66                                                                               | 0.25                                                                                | 0.13                                                                                | 0.46                                                                                | 0.14                                                                                | 0.17                                                                                |
| Control Delay         | 11.0                                                                              | 16.3                                                                              | 1.0                                                                               | 2.7                                                                               | 5.9                                                                               | 1.2                                                                               | 47.6                                                                               | 50.9                                                                                | 0.7                                                                                 | 41.2                                                                                | 53.2                                                                                | 1.3                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 11.0                                                                              | 16.3                                                                              | 1.0                                                                               | 2.7                                                                               | 5.9                                                                               | 1.2                                                                               | 47.6                                                                               | 50.9                                                                                | 0.7                                                                                 | 41.2                                                                                | 53.2                                                                                | 1.3                                                                                 |
| LOS                   | B                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay        | 13.1                                                                              |                                                                                   | 5.3                                                                               |                                                                                   | 40.9                                                                              |                                                                                   | 32.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   | D                                                                                 |                                                                                   | C                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 14.9

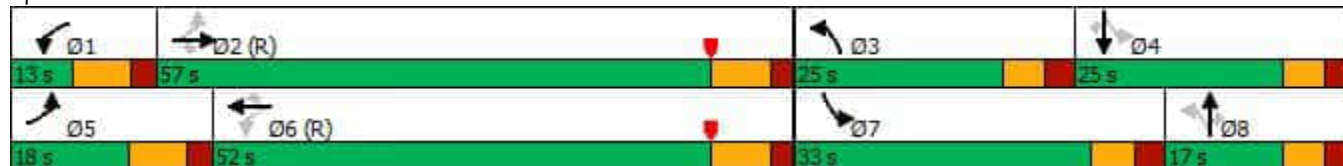
Intersection LOS: B

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Walden Street & 104th Avenue



Queues  
2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 44   | 647  | 160  | 27   | 897  | 127  | 215  | 53   | 49   | 123  | 21   | 49   |
| v/c Ratio               | 0.13 | 0.32 | 0.16 | 0.06 | 0.46 | 0.13 | 0.66 | 0.25 | 0.13 | 0.46 | 0.14 | 0.17 |
| Control Delay           | 11.0 | 16.3 | 1.0  | 2.7  | 5.9  | 1.2  | 47.6 | 50.9 | 0.7  | 41.2 | 53.2 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 11.0 | 16.3 | 1.0  | 2.7  | 5.9  | 1.2  | 47.6 | 50.9 | 0.7  | 41.2 | 53.2 | 1.3  |
| Queue Length 50th (ft)  | 13   | 156  | 0    | 2    | 119  | 0    | 137  | 37   | 0    | 74   | 15   | 0    |
| Queue Length 95th (ft)  | 25   | 210  | 4    | m3   | 142  | 8    | 191  | 69   | 0    | 112  | 36   | 0    |
| Internal Link Dist (ft) |      | 820  |      |      | 580  |      |      | 572  |      |      | 370  |      |
| Turn Bay Length (ft)    | 400  |      | 230  |      |      | 250  | 230  |      | 230  | 210  |      | 140  |
| Base Capacity (vph)     | 403  | 2030 | 1001 | 466  | 1944 | 968  | 359  | 218  | 386  | 453  | 287  | 386  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.11 | 0.32 | 0.16 | 0.06 | 0.46 | 0.13 | 0.60 | 0.24 | 0.13 | 0.27 | 0.07 | 0.13 |

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 2: Walden Street & 104th Avenue

JR Engineering

10/19/2023

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 34                                                                                | 595                                                                               | 133                                                                               | 21                                                                                | 825                                                                               | 105                                                                               | 181                                                                                 | 41                                                                                  | 38                                                                                  | 101                                                                                 | 16                                                                                  | 38                                                                                  |
| Future Volume (veh/h)        | 34                                                                                | 595                                                                               | 133                                                                               | 21                                                                                | 825                                                                               | 105                                                                               | 181                                                                                 | 41                                                                                  | 38                                                                                  | 101                                                                                 | 16                                                                                  | 38                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 44                                                                                | 647                                                                               | 160                                                                               | 27                                                                                | 897                                                                               | 127                                                                               | 215                                                                                 | 53                                                                                  | 49                                                                                  | 123                                                                                 | 21                                                                                  | 49                                                                                  |
| Peak Hour Factor             | 0.78                                                                              | 0.92                                                                              | 0.83                                                                              | 0.78                                                                              | 0.92                                                                              | 0.83                                                                              | 0.84                                                                                | 0.78                                                                                | 0.78                                                                                | 0.82                                                                                | 0.78                                                                                | 0.78                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 282                                                                               | 1896                                                                              | 846                                                                               | 394                                                                               | 1870                                                                              | 834                                                                               | 380                                                                                 | 243                                                                                 | 206                                                                                 | 308                                                                                 | 156                                                                                 | 132                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.53                                                                              | 0.53                                                                              | 0.01                                                                              | 0.17                                                                              | 0.17                                                                              | 0.12                                                                                | 0.13                                                                                | 0.13                                                                                | 0.08                                                                                | 0.08                                                                                | 0.08                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 44                                                                                | 647                                                                               | 160                                                                               | 27                                                                                | 897                                                                               | 127                                                                               | 215                                                                                 | 53                                                                                  | 49                                                                                  | 123                                                                                 | 21                                                                                  | 49                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 1.3                                                                               | 12.5                                                                              | 6.3                                                                               | 0.8                                                                               | 27.3                                                                              | 8.2                                                                               | 12.9                                                                                | 3.0                                                                                 | 3.3                                                                                 | 7.5                                                                                 | 1.2                                                                                 | 3.5                                                                                 |
| Cycle Q Clear(g_c), s        | 1.3                                                                               | 12.5                                                                              | 6.3                                                                               | 0.8                                                                               | 27.3                                                                              | 8.2                                                                               | 12.9                                                                                | 3.0                                                                                 | 3.3                                                                                 | 7.5                                                                                 | 1.2                                                                                 | 3.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 282                                                                               | 1896                                                                              | 846                                                                               | 394                                                                               | 1870                                                                              | 834                                                                               | 380                                                                                 | 243                                                                                 | 206                                                                                 | 308                                                                                 | 156                                                                                 | 132                                                                                 |
| V/C Ratio(X)                 | 0.16                                                                              | 0.34                                                                              | 0.19                                                                              | 0.07                                                                              | 0.48                                                                              | 0.15                                                                              | 0.57                                                                                | 0.22                                                                                | 0.24                                                                                | 0.40                                                                                | 0.13                                                                                | 0.37                                                                                |
| Avail Cap(c_a), veh/h        | 380                                                                               | 1896                                                                              | 846                                                                               | 432                                                                               | 1870                                                                              | 834                                                                               | 432                                                                                 | 243                                                                                 | 206                                                                                 | 561                                                                                 | 288                                                                                 | 244                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.4                                                                              | 16.0                                                                              | 14.5                                                                              | 13.1                                                                              | 34.8                                                                              | 26.9                                                                              | 41.8                                                                                | 46.8                                                                                | 46.9                                                                                | 45.3                                                                                | 51.0                                                                                | 52.0                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.5                                                                               | 0.5                                                                               | 0.0                                                                               | 0.9                                                                               | 0.4                                                                               | 0.5                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 0.3                                                                                 | 0.1                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 4.9                                                                               | 2.4                                                                               | 0.3                                                                               | 13.1                                                                              | 3.4                                                                               | 5.7                                                                                 | 1.4                                                                                 | 1.3                                                                                 | 3.3                                                                                 | 0.6                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 15.5                                                                              | 16.4                                                                              | 15.0                                                                              | 13.1                                                                              | 35.6                                                                              | 27.2                                                                              | 42.3                                                                                | 46.9                                                                                | 47.1                                                                                | 45.6                                                                                | 51.1                                                                                | 52.7                                                                                |
| LnGrp LOS                    | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          | 851                                                                               |                                                                                   |                                                                                   | 1051                                                                              |                                                                                   |                                                                                   | 317                                                                                 |                                                                                     |                                                                                     | 193                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 16.1                                                                              |                                                                                   |                                                                                   | 34.1                                                                              |                                                                                   |                                                                                   | 43.9                                                                                |                                                                                     |                                                                                     | 48.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.5                                                                              | 71.5                                                                              | 21.5                                                                              | 16.5                                                                              | 11.3                                                                              | 70.7                                                                              | 15.9                                                                                | 22.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                               | 6.5                                                                               | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                                 | 6.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.5                                                                             | * 50                                                                              | 18.5                                                                              | 18.5                                                                              | * 11                                                                              | * 45                                                                              | 26.5                                                                                | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.8                                                                               | 14.5                                                                              | 14.9                                                                              | 5.5                                                                               | 3.3                                                                               | 29.3                                                                              | 9.5                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.4                                                                              | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 8.9                                                                               | 0.1                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 30.1 |
| HCM 6th LOS        | C    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
3: Walden Street & 105th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 2                                                                                 | 0                                                                                 | 36                                                                                | 6                                                                                 | 0                                                                                 | 6                                                                                 | 59                                                                                 | 87                                                                                  | 0                                                                                   | 12                                                                                  | 87                                                                                  | 2                                                                                   |
| Future Volume (vph)               | 2                                                                                 | 0                                                                                 | 36                                                                                | 6                                                                                 | 0                                                                                 | 6                                                                                 | 59                                                                                 | 87                                                                                  | 0                                                                                   | 12                                                                                  | 87                                                                                  | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.873                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.997                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    | 0.980                                                                               |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1621                                                                              | 0                                                                                 | 0                                                                                 | 1694                                                                              | 0                                                                                 | 0                                                                                  | 1825                                                                                | 0                                                                                   | 0                                                                                   | 1846                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    | 0.980                                                                               |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1621                                                                              | 0                                                                                 | 0                                                                                 | 1694                                                                              | 0                                                                                 | 0                                                                                  | 1825                                                                                | 0                                                                                   | 0                                                                                   | 1846                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                    | 8.2                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.80                                                                                | 0.78                                                                                | 0.78                                                                                | 0.80                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 3                                                                                 | 0                                                                                 | 46                                                                                | 8                                                                                 | 0                                                                                 | 8                                                                                 | 76                                                                                 | 109                                                                                 | 0                                                                                   | 15                                                                                  | 109                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                  | 185                                                                                 | 0                                                                                   | 0                                                                                   | 127                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Yield                                                                             |                                                                                   |                                                                                   | Yield                                                                             |                                                                                   |                                                                                    | Yield                                                                               |                                                                                     |                                                                                     | Yield                                                                               |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Roundabout                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 24.5%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 3.7   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 49    | 16    | 185   | 127   |
| Demand Flow Rate, veh/h     | 50    | 16    | 189   | 129   |
| Vehicles Circulating, veh/h | 134   | 192   | 18    | 86    |
| Vehicles Exiting, veh/h     | 81    | 15    | 166   | 122   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.4   | 3.3   | 3.9   | 3.7   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 50    | 16    | 189   | 129   |
| Cap Entry Lane, veh/h       | 1204  | 1134  | 1355  | 1264  |
| Entry HV Adj Factor         | 0.980 | 1.000 | 0.978 | 0.983 |
| Flow Entry, veh/h           | 49    | 16    | 185   | 127   |
| Cap Entry, veh/h            | 1180  | 1134  | 1325  | 1243  |
| V/C Ratio                   | 0.042 | 0.014 | 0.140 | 0.102 |
| Control Delay, s/veh        | 3.4   | 3.3   | 3.9   | 3.7   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 0     | 0     | 0     | 0     |

Lanes, Volumes, Timings  
4: Walden Street & Homestead Trail

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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 2                                                                                 | 1                                                                                 | 14                                                                                | 7                                                                                 | 1                                                                                 | 1                                                                                 | 31                                                                                  | 56                                                                                  | 5                                                                                   | 1                                                                                   | 66                                                                                  | 2                                                                                   |
| Future Volume (vph)               | 2                                                                                 | 1                                                                                 | 14                                                                                | 7                                                                                 | 1                                                                                 | 1                                                                                 | 31                                                                                  | 56                                                                                  | 5                                                                                   | 1                                                                                   | 66                                                                                  | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.890                                                                             |                                                                                   |                                                                                   | 0.925                                                                             |                                                                                   |                                                                                     | 0.988                                                                               |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.993                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1646                                                                              | 0                                                                                 | 1770                                                                              | 1723                                                                              | 0                                                                                 | 1770                                                                                | 1840                                                                                | 0                                                                                   | 1770                                                                                | 1853                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.993                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1646                                                                              | 0                                                                                 | 1770                                                                              | 1723                                                                              | 0                                                                                 | 1770                                                                                | 1840                                                                                | 0                                                                                   | 1770                                                                                | 1853                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 666                                                                               |                                                                                   |                                                                                     | 395                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.2                                                                              |                                                                                   |                                                                                     | 10.8                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.79                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 3                                                                                 | 1                                                                                 | 18                                                                                | 9                                                                                 | 1                                                                                 | 1                                                                                 | 40                                                                                  | 72                                                                                  | 6                                                                                   | 1                                                                                   | 84                                                                                  | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 22                                                                                | 0                                                                                 | 9                                                                                 | 2                                                                                 | 0                                                                                 | 40                                                                                  | 78                                                                                  | 0                                                                                   | 1                                                                                   | 87                                                                                  | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 18.4%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.9 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                 | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 2    | 1                                                                                 | 14   | 7                                                                                 | 1                                                                                 | 1    | 31                                                                                  | 56                                                                                  | 5    | 1                                                                                   | 66                                                                                  | 2    |
| Future Vol, veh/h   | 2    | 1                                                                                 | 14   | 7                                                                                 | 1                                                                                 | 1    | 31                                                                                  | 56                                                                                  | 5    | 1                                                                                   | 66                                                                                  | 2    |
| Peak Hour Factor    | 0.78 | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                                | 0.78                                                                                | 0.78 | 0.78                                                                                | 0.79                                                                                | 0.78 |
| Heavy Vehicles, %   | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                   | 2                                                                                   | 2    | 2                                                                                   | 2                                                                                   | 2    |
| Mvmt Flow           | 3    | 1                                                                                 | 18   | 9                                                                                 | 1                                                                                 | 1    | 40                                                                                  | 72                                                                                  | 6    | 1                                                                                   | 84                                                                                  | 3    |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                   | 1                                                                                   | 0    | 1                                                                                   | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB |
|----------------------------|-----|-----|-----|----|
| Opposing Approach          | WB  | EB  | SB  | NB |
| Opposing Lanes             | 2   | 1   | 2   | 2  |
| Conflicting Approach Left  | SB  | NB  | EB  | WB |
| Conflicting Lanes Left     | 2   | 2   | 1   | 2  |
| Conflicting Approach Right | NB  | SB  | WB  | EB |
| Conflicting Lanes Right    | 2   | 2   | 2   | 1  |
| HCM Control Delay          | 7.7 | 8.1 | 7.9 | 8  |
| HCM LOS                    | A   | A   | A   | A  |

| Lane                   | NBLn1 | NBLn2 | EBLn1 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 100%  | 0%    | 12%   | 100%  | 0%    | 100%  | 0%    |
| Vol Thru, %            | 0%    | 92%   | 6%    | 0%    | 50%   | 0%    | 97%   |
| Vol Right, %           | 0%    | 8%    | 82%   | 0%    | 50%   | 0%    | 3%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 31    | 61    | 17    | 7     | 2     | 1     | 68    |
| LT Vol                 | 31    | 0     | 2     | 7     | 0     | 1     | 0     |
| Through Vol            | 0     | 56    | 1     | 0     | 1     | 0     | 66    |
| RT Vol                 | 0     | 5     | 14    | 0     | 1     | 0     | 2     |
| Lane Flow Rate         | 40    | 78    | 22    | 9     | 3     | 1     | 86    |
| Geometry Grp           | 7     | 7     | 6     | 7     | 7     | 7     | 7     |
| Degree of Util (X)     | 0.057 | 0.099 | 0.028 | 0.014 | 0.003 | 0.002 | 0.111 |
| Departure Headway (Hd) | 5.134 | 4.576 | 4.574 | 5.553 | 4.7   | 5.15  | 4.629 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 695   | 779   | 787   | 648   | 766   | 691   | 769   |
| Service Time           | 2.885 | 2.327 | 2.575 | 3.253 | 2.401 | 2.913 | 2.391 |
| HCM Lane V/C Ratio     | 0.058 | 0.1   | 0.028 | 0.014 | 0.004 | 0.001 | 0.112 |
| HCM Control Delay      | 8.2   | 7.8   | 7.7   | 8.3   | 7.4   | 7.9   | 8     |
| HCM Lane LOS           | A     | A     | A     | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.2   | 0.3   | 0.1   | 0     | 0     | 0     | 0.4   |

Lanes, Volumes, Timings  
11: Tower Road & 105th Avenue

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|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |                                                                                   |  |  |  |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 11                                                                                | 3                                                                                 | 973                                                                               | 590                                                                               | 9                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 11                                                                                | 3                                                                                 | 973                                                                               | 590                                                                               | 9                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 250                                                                               | 0                                                                                 | 150                                                                               |                                                                                   |                                                                                   | 150                                                                               |
| Storage Lanes                     | 0                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |
| Taper Length (ft)                 | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               |                                                                                   | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)                | 660                                                                               |                                                                                   |                                                                                   | 300                                                                               | 1403                                                                              |                                                                                   |
| Travel Time (s)                   | 15.0                                                                              |                                                                                   |                                                                                   | 6.8                                                                               | 31.9                                                                              |                                                                                   |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.92                                                                              | 0.78                                                                              |
| Adj. Flow (vph)                   | 0                                                                                 | 14                                                                                | 4                                                                                 | 1058                                                                              | 641                                                                               | 12                                                                                |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 14                                                                                | 4                                                                                 | 1058                                                                              | 641                                                                               | 12                                                                                |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Left                                                                              | Right                                                                             |
| Median Width(ft)                  | 0                                                                                 |                                                                                   |                                                                                   | 12                                                                                | 12                                                                                |                                                                                   |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                | 16                                                                                |                                                                                   |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 60                                                                                | 60                                                                                | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 54.5%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.1    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL    | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |        |  |  |  |  |  |
| Traffic Vol, veh/h       | 0      | 11                                                                                | 3                                                                                 | 973                                                                               | 590                                                                               | 9                                                                                 |
| Future Vol, veh/h        | 0      | 11                                                                                | 3                                                                                 | 973                                                                               | 590                                                                               | 9                                                                                 |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -      | 0                                                                                 | 150                                                                               | -                                                                                 | -                                                                                 | 150                                                                               |
| Veh in Median Storage, # | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 78     | 78                                                                                | 78                                                                                | 92                                                                                | 92                                                                                | 78                                                                                |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0      | 14                                                                                | 4                                                                                 | 1058                                                                              | 641                                                                               | 12                                                                                |
| Major/Minor              | Minor2 | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   |
| Conflicting Flow All     | -      | 641                                                                               | 653                                                                               | 0                                                                                 | -                                                                                 | 0                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy            | -      | 6.22                                                                              | 4.12                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | -      | 3.318                                                                             | 2.218                                                                             | -                                                                                 | -                                                                                 | -                                                                                 |
| Pot Cap-1 Maneuver       | 0      | 475                                                                               | 934                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Platoon blocked, %       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-1 Maneuver       | -      | 475                                                                               | 934                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Approach                 | EB     | NB                                                                                |                                                                                   | SB                                                                                |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 12.8   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |
| HCM LOS                  | B      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |                                                                                   |
| Capacity (veh/h)         | 934    | -                                                                                 | 475                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | 0.004  | -                                                                                 | 0.03                                                                              | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | 8.9    | -                                                                                 | 12.8                                                                              | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane LOS             | A      | -                                                                                 | B                                                                                 | -                                                                                 | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | 0      | -                                                                                 | 0.1                                                                               | -                                                                                 | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
13: Yampa Street & 104th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)              | 1                                                                                 | 718                                                                               | 5                                                                                 | 17                                                                                | 910                                                                               | 1                                                                                 | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Future Volume (vph)               | 1                                                                                 | 718                                                                               | 5                                                                                 | 17                                                                                | 910                                                                               | 1                                                                                 | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 150                                                                               |                                                                                   | 150                                                                               | 150                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 636                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.92                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 780                                                                               | 6                                                                                 | 22                                                                                | 989                                                                               | 1                                                                                 | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 1                                                                                 | 780                                                                               | 6                                                                                 | 22                                                                                | 989                                                                               | 1                                                                                 | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 27.6%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |      |        |       |      |        |       |      |        |      |      |
|--------------------------|--------|-------|------|--------|-------|------|--------|-------|------|--------|------|------|
| Int Delay, s/veh         | 0.2    |       |      |        |       |      |        |       |      |        |      |      |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT  | SBR  |
| Lane Configurations      | ↰      | ↑↑↑   | ↱    | ↰      | ↑↑↑   | ↱    |        |       | ↰    |        |      | ↱    |
| Traffic Vol, veh/h       | 1      | 718   | 5    | 17     | 910   | 1    | 0      | 0     | 4    | 0      | 0    | 1    |
| Future Vol, veh/h        | 1      | 718   | 5    | 17     | 910   | 1    | 0      | 0     | 4    | 0      | 0    | 1    |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0    | 0    |
| Sign Control             | Free   | Free  | Free | Free   | Free  | Free | Stop   | Stop  | Stop | Stop   | Stop | Stop |
| RT Channelized           | -      | -     | None | -      | -     | None | -      | -     | None | -      | -    | None |
| Storage Length           | 150    | -     | 150  | 150    | -     | 0    | -      | -     | 0    | -      | -    | 0    |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0    | -    |
| Grade, %                 | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0    | -    |
| Peak Hour Factor         | 78     | 92    | 78   | 78     | 92    | 78   | 78     | 78    | 78   | 78     | 78   | 78   |
| Heavy Vehicles, %        | 2      | 2     | 2    | 2      | 2     | 2    | 2      | 2     | 2    | 2      | 2    | 2    |
| Mvmt Flow                | 1      | 780   | 6    | 22     | 989   | 1    | 0      | 0     | 5    | 0      | 0    | 1    |
|                          |        |       |      |        |       |      |        |       |      |        |      |      |
| Major/Minor              | Major1 |       |      | Major2 |       |      | Minor1 |       |      | Minor2 |      |      |
| Conflicting Flow All     | 990    | 0     | 0    | 786    | 0     | 0    | -      | -     | 390  | -      | -    | 495  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Critical Hdwy            | 5.34   | -     | -    | 5.34   | -     | -    | -      | -     | 7.14 | -      | -    | 7.14 |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Follow-up Hdwy           | 3.12   | -     | -    | 3.12   | -     | -    | -      | -     | 3.92 | -      | -    | 3.92 |
| Pot Cap-1 Maneuver       | 396    | -     | -    | 496    | -     | -    | 0      | 0     | 520  | 0      | 0    | 445  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 0      | 0     | -    | 0      | 0    | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 0      | 0     | -    | 0      | 0    | -    |
| Platoon blocked, %       |        | -     | -    |        | -     | -    |        |       |      |        |      |      |
| Mov Cap-1 Maneuver       | 396    | -     | -    | 496    | -     | -    | -      | -     | 520  | -      | -    | 445  |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Stage 1                  | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
|                          |        |       |      |        |       |      |        |       |      |        |      |      |
|                          |        |       |      |        |       |      |        |       |      |        |      |      |
| Approach                 | EB     |       |      | WB     |       |      | NB     |       |      | SB     |      |      |
| HCM Control Delay, s     | 0      |       |      | 0.3    |       |      | 12     |       |      | 13.1   |      |      |
| HCM LOS                  |        |       |      |        |       |      | B      |       |      | B      |      |      |
|                          |        |       |      |        |       |      |        |       |      |        |      |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |      |        |      |      |
| Capacity (veh/h)         | 520    | 396   | -    | -      | 496   | -    | -      | 445   |      |        |      |      |
| HCM Lane V/C Ratio       | 0.01   | 0.003 | -    | -      | 0.044 | -    | -      | 0.003 |      |        |      |      |
| HCM Control Delay (s)    | 12     | 14.1  | -    | -      | 12.6  | -    | -      | 13.1  |      |        |      |      |
| HCM Lane LOS             | B      | B     | -    | -      | B     | -    | -      | B     |      |        |      |      |
| HCM 95th %tile Q(veh)    | 0      | 0     | -    | -      | 0.1   | -    | -      | 0     |      |        |      |      |

Lanes, Volumes, Timings  
14: Walden Street & 104th Way

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 3                                                                                 | 0                                                                                 | 26                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 33                                                                                  | 144                                                                                 | 0                                                                                   | 0                                                                                   | 127                                                                                 | 2                                                                                   |
| Future Volume (vph)               | 3                                                                                 | 0                                                                                 | 26                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 33                                                                                  | 144                                                                                 | 0                                                                                   | 0                                                                                   | 127                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 150                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.880                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.997                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1631                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1857                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1631                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1857                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 501                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                     | 10.2                                                                                |                                                                                     |                                                                                     | 6.8                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 4                                                                                 | 0                                                                                 | 33                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 42                                                                                  | 171                                                                                 | 0                                                                                   | 0                                                                                   | 151                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 37                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 42                                                                                  | 171                                                                                 | 0                                                                                   | 0                                                                                   | 154                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                  |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 24.2%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔    |      |      | ↔    |      | ↔    | ↑    | ↑    | ↔    | ↔    |      |
| Traffic Vol, veh/h       | 3    | 0    | 26   | 0    | 0    | 0    | 33   | 144  | 0    | 0    | 127  | 2    |
| Future Vol, veh/h        | 3    | 0    | 26   | 0    | 0    | 0    | 33   | 144  | 0    | 0    | 127  | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 150  | -    | 150  | 150  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 78   | 78   | 78   | 78   | 78   | 78   | 78   | 84   | 78   | 78   | 84   | 78   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 4    | 0    | 33   | 0    | 0    | 0    | 42   | 171  | 0    | 0    | 151  | 3    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 408    | 408   | 153    | 424   | 409    | 171   | 154    | 0 | 0 | 171   | 0 | 0 |
| Stage 1              | 153    | 153   | -      | 255   | 255    | -     | -      | - | - | -     | - | - |
| Stage 2              | 255    | 255   | -      | 169   | 154    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 554    | 533   | 893    | 540   | 532    | 873   | 1426   | - | - | 1406  | - | - |
| Stage 1              | 849    | 771   | -      | 749   | 696    | -     | -      | - | - | -     | - | - |
| Stage 2              | 749    | 696   | -      | 833   | 770    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 542    | 518   | 893    | 508   | 517    | 873   | 1426   | - | - | 1406  | - | - |
| Mov Cap-2 Maneuver   | 542    | 518   | -      | 508   | 517    | -     | -      | - | - | -     | - | - |
| Stage 1              | 824    | 771   | -      | 727   | 676    | -     | -      | - | - | -     | - | - |
| Stage 2              | 727    | 676   | -      | 802   | 770    | -     | -      | - | - | -     | - | - |

| Approach             | EB  | WB | NB  | SB |
|----------------------|-----|----|-----|----|
| HCM Control Delay, s | 9.5 | 0  | 1.5 | 0  |
| HCM LOS              | A   | A  |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1426 | -   | -   | 837        | 1406 | -   | -   |
| HCM Lane V/C Ratio    | 0.03 | -   | -   | 0.044      | -    | -   | -   |
| HCM Control Delay (s) | 7.6  | -   | -   | 9.5        | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0.1  | -   | -   | 0.1        | -    | 0   | -   |

Lanes, Volumes, Timings  
15: Walden Street & 105th Place

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|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 1                                                                                 | 93                                                                                | 0                                                                                 | 1                                                                                 | 99                                                                                |
| Future Volume (vph)               | 0                                                                                 | 1                                                                                 | 93                                                                                | 0                                                                                 | 1                                                                                 | 99                                                                                |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   |
| Storage Lanes                     | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)                 | 1611                                                                              | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)                 | 1611                                                                              | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |
| Link Distance (ft)                | 229                                                                               |                                                                                   | 280                                                                               |                                                                                   |                                                                                   | 395                                                                               |
| Travel Time (s)                   | 5.2                                                                               |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   | 9.0                                                                               |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.80                                                                              | 0.78                                                                              | 0.78                                                                              | 0.80                                                                              |
| Adj. Flow (vph)                   | 0                                                                                 | 1                                                                                 | 116                                                                               | 0                                                                                 | 1                                                                                 | 124                                                                               |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 1                                                                                 | 0                                                                                 | 116                                                                               | 0                                                                                 | 1                                                                                 | 124                                                                               |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              |
| Median Width(ft)                  | 12                                                                                |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 15.2%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |                                                                                   |      |                                                                                   |      |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.1                                                                               |      |                                                                                   |      |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |      |  |      |  |  |
| Traffic Vol, veh/h       | 0                                                                                 | 1    | 93                                                                                | 0    | 1                                                                                 | 99                                                                                |
| Future Vol, veh/h        | 0                                                                                 | 1    | 93                                                                                | 0    | 1                                                                                 | 99                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | 100                                                                               | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 78                                                                                | 78   | 80                                                                                | 78   | 78                                                                                | 80                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 1    | 116                                                                               | 0    | 1                                                                                 | 124                                                                               |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 242    | 116    | 0      |
| Stage 1              | 116    | -      | -      |
| Stage 2              | 126    | -      | -      |
| Critical Hdwy        | 6.42   | 6.22   | -      |
| Critical Hdwy Stg 1  | 5.42   | -      | -      |
| Critical Hdwy Stg 2  | 5.42   | -      | -      |
| Follow-up Hdwy       | 3.518  | 3.318  | -      |
| Pot Cap-1 Maneuver   | 746    | 936    | -      |
| Stage 1              | 909    | -      | -      |
| Stage 2              | 900    | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 745    | 936    | -      |
| Mov Cap-2 Maneuver   | 745    | -      | -      |
| Stage 1              | 909    | -      | -      |
| Stage 2              | 899    | -      | -      |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.9 | 0  | 0.1 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 936   | 1473  |
| HCM Lane V/C Ratio    | -   | -        | 0.001 | 0.001 |
| HCM Control Delay (s) | -   | -        | 8.9   | 7.4   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0     | 0     |

Lanes, Volumes, Timings  
16: Yampa Street & 105th Avenue

JR Engineering  
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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 6                                                                                 | 6                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Future Volume (vph)               | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 6                                                                                 | 6                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 0.932                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1736                                                                              | 0                                                                                 | 0                                                                                  | 1863                                                                                | 0                                                                                   | 0                                                                                   | 1818                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1736                                                                              | 0                                                                                 | 0                                                                                  | 1863                                                                                | 0                                                                                   | 0                                                                                   | 1818                                                                                | 0                                                                                   |
| Link Speed (mph)                  | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)                | 660                                                                               |                                                                                   |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    |                                                                                     | 300                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)                   | 18.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 6.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 15                                                                                | 0                                                                                 | 0                                                                                 | 8                                                                                 | 8                                                                                 | 0                                                                                  | 3                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 15                                                                                | 0                                                                                 | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 13.3%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 1.3    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations      |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h       | 0      | 12                                                                                | 0    | 0      | 6                                                                                 | 6    | 0      | 2                                                                                 | 0     | 1      | 1                                                                                   | 0     |
| Future Vol, veh/h        | 0      | 12                                                                                | 0    | 0      | 6                                                                                 | 6    | 0      | 2                                                                                 | 0     | 1      | 1                                                                                   | 0     |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor         | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78    | 78     | 78                                                                                  | 78    |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                | 0      | 15                                                                                | 0    | 0      | 8                                                                                 | 8    | 0      | 3                                                                                 | 0     | 1      | 1                                                                                   | 0     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All     | 16     | 0                                                                                 | 0    | 15     | 0                                                                                 | 0    | 28     | 31                                                                                | 15    | 29     | 27                                                                                  | 12    |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 15     | 15                                                                                | -     | 12     | 12                                                                                  | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 13     | 16                                                                                | -     | 17     | 15                                                                                  | -     |
| Critical Hdwy            | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy           | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver       | 1602   | -                                                                                 | -    | 1603   | -                                                                                 | -    | 981    | 862                                                                               | 1065  | 980    | 866                                                                                 | 1069  |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1005   | 883                                                                               | -     | 1009   | 886                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1007   | 882                                                                               | -     | 1002   | 883                                                                                 | -     |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver       | 1602   | -                                                                                 | -    | 1603   | -                                                                                 | -    | 980    | 862                                                                               | 1065  | 978    | 866                                                                                 | 1069  |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 980    | 862                                                                               | -     | 978    | 866                                                                                 | -     |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1005   | 883                                                                               | -     | 1009   | 886                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 1006   | 882                                                                               | -     | 999    | 883                                                                                 | -     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s     | 0      |                                                                                   |      | 0      |                                                                                   |      | 9.2    |                                                                                   |       | 8.9    |                                                                                     |       |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | A      |                                                                                     |       |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)         | 862    | 1602                                                                              | -    | -      | 1603                                                                              | -    | -      | 919                                                                               |       |        |                                                                                     |       |
| HCM Lane V/C Ratio       | 0.003  | -                                                                                 | -    | -      | -                                                                                 | -    | -      | 0.003                                                                             |       |        |                                                                                     |       |
| HCM Control Delay (s)    | 9.2    | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 8.9                                                                               |       |        |                                                                                     |       |
| HCM Lane LOS             | A      | A                                                                                 | -    | -      | A                                                                                 | -    | -      | A                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)    | 0      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 |       |        |                                                                                     |       |

Lanes, Volumes, Timings  
17: Yampa Street & Homestead Trail

JR Engineering  
10/19/2023



| Lane Group                 | EBL   | EBR   | NBL  | NBT   | SBT   | SBR   |
|----------------------------|-------|-------|------|-------|-------|-------|
| Lane Configurations        |       |       |      |       |       |       |
| Traffic Volume (vph)       | 5     | 1     | 1    | 8     | 2     | 7     |
| Future Volume (vph)        | 5     | 1     | 1    | 8     | 2     | 7     |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 100   | 0     | 0    |       |       | 0     |
| Storage Lanes              | 1     | 1     | 0    |       |       | 0     |
| Taper Length (ft)          | 25    |       | 25   |       |       |       |
| Lane Util. Factor          | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                        |       | 0.850 |      |       | 0.899 |       |
| Flt Protected              | 0.950 |       |      | 0.995 |       |       |
| Satd. Flow (prot)          | 1770  | 1583  | 0    | 1853  | 1675  | 0     |
| Flt Permitted              | 0.950 |       |      | 0.995 |       |       |
| Satd. Flow (perm)          | 1770  | 1583  | 0    | 1853  | 1675  | 0     |
| Link Speed (mph)           | 25    |       |      | 30    | 30    |       |
| Link Distance (ft)         | 666   |       |      | 181   | 194   |       |
| Travel Time (s)            | 18.2  |       |      | 4.1   | 4.4   |       |
| Peak Hour Factor           | 0.78  | 0.78  | 0.78 | 0.78  | 0.78  | 0.78  |
| Adj. Flow (vph)            | 6     | 1     | 1    | 10    | 3     | 9     |
| Shared Lane Traffic (%)    |       |       |      |       |       |       |
| Lane Group Flow (vph)      | 6     | 1     | 0    | 11    | 12    | 0     |
| Enter Blocked Intersection | No    | No    | No   | No    | No    | No    |
| Lane Alignment             | Left  | Right | Left | Left  | Left  | Right |
| Median Width(ft)           | 12    |       |      | 0     | 0     |       |
| Link Offset(ft)            | 0     |       |      | 0     | 0     |       |
| Crosswalk Width(ft)        | 16    |       |      | 16    | 16    |       |
| Two way Left Turn Lane     |       |       |      |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    | 60    | 60   |       |       | 9     |
| Sign Control               | Stop  |       |      | Stop  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

| Intersection              |   |
|---------------------------|---|
| Intersection Delay, s/veh | 7 |
| Intersection LOS          | A |

| Movement            | EBL                                                                               | EBR                                                                               | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 5                                                                                 | 1                                                                                 | 1    | 8                                                                                 | 2                                                                                 | 7    |
| Future Vol, veh/h   | 5                                                                                 | 1                                                                                 | 1    | 8                                                                                 | 2                                                                                 | 7    |
| Peak Hour Factor    | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 |
| Heavy Vehicles, %   | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow           | 6                                                                                 | 1                                                                                 | 1    | 10                                                                                | 3                                                                                 | 9    |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    |

| Approach                   | EB  | NB | SB  |
|----------------------------|-----|----|-----|
| Opposing Approach          |     | SB | NB  |
| Opposing Lanes             | 0   | 1  | 1   |
| Conflicting Approach Left  | SB  | EB |     |
| Conflicting Lanes Left     | 1   | 2  | 0   |
| Conflicting Approach Right | NB  |    | EB  |
| Conflicting Lanes Right    | 1   | 0  | 2   |
| HCM Control Delay          | 7.6 | 7  | 6.5 |
| HCM LOS                    | A   | A  | A   |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 11%   | 100%  | 0%    | 0%    |
| Vol Thru, %            | 89%   | 0%    | 0%    | 22%   |
| Vol Right, %           | 0%    | 0%    | 100%  | 78%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 9     | 5     | 1     | 9     |
| LT Vol                 | 1     | 5     | 0     | 0     |
| Through Vol            | 8     | 0     | 0     | 2     |
| RT Vol                 | 0     | 0     | 1     | 7     |
| Lane Flow Rate         | 12    | 6     | 1     | 12    |
| Geometry Grp           | 2     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.013 | 0.009 | 0.001 | 0.011 |
| Departure Headway (Hd) | 3.978 | 5.073 | 3.873 | 3.489 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 904   | 709   | 928   | 1029  |
| Service Time           | 1.985 | 2.781 | 1.581 | 1.498 |
| HCM Lane V/C Ratio     | 0.013 | 0.008 | 0.001 | 0.012 |
| HCM Control Delay      | 7     | 7.8   | 6.6   | 6.5   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0     | 0     | 0     | 0     |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                            |  |                                                                                                                                                                      |  |  |                                                                                                                                                                      |   |                                                                                       |                                                                                      |  |  |                                                                                      |  |
|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                                                                                                   | WBR                                                                                | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations        |  |    |  |  |    |  |   |   |  |  |   |  |
| Traffic Volume (vph)       | 252                                                                               | 349                                                                                                                                                                                                                                                   | 660                                                                               | 33                                                                                | 159                                                                                                                                                                                                                                                   | 10                                                                                 | 497                                                                                                                                                                     | 560                                                                                                                                                                     | 63                                                                                  | 48                                                                                  | 849                                                                                                                                                                     | 118                                                                                 |
| Future Volume (vph)        | 252                                                                               | 349                                                                                                                                                                                                                                                   | 660                                                                               | 33                                                                                | 159                                                                                                                                                                                                                                                   | 10                                                                                 | 497                                                                                                                                                                     | 560                                                                                                                                                                     | 63                                                                                  | 48                                                                                  | 849                                                                                                                                                                     | 118                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                                                                                                                                                                                                  | 1900                                                                              | 1900                                                                              | 1900                                                                                                                                                                                                                                                  | 1900                                                                               | 1900                                                                                                                                                                    | 1900                                                                                                                                                                    | 1900                                                                                | 1900                                                                                | 1900                                                                                                                                                                    | 1900                                                                                |
| Storage Length (ft)        | 350                                                                               |                                                                                                                                                                                                                                                       | 590                                                                               | 330                                                                               |                                                                                                                                                                                                                                                       | 440                                                                                | 320                                                                                                                                                                     |                                                                                                                                                                         | 290                                                                                 | 290                                                                                 |                                                                                                                                                                         | 190                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                                                                                                                                                                                       | 1                                                                                 | 1                                                                                 |                                                                                                                                                                                                                                                       | 1                                                                                  | 2                                                                                                                                                                       |                                                                                                                                                                         | 1                                                                                   | 1                                                                                   |                                                                                                                                                                         | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                                                                                                                                                                                       |                                                                                   | 25                                                                                |                                                                                                                                                                                                                                                       |                                                                                    | 25                                                                                                                                                                      |                                                                                                                                                                         |                                                                                     | 25                                                                                  |                                                                                                                                                                         |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.91                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 0.91                                                                                                                                                                                                                                                  | 1.00                                                                               | 0.97                                                                                                                                                                    | 0.95                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                                                                                                    | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                                                                                                                                                                                       | 0.850                                                                             |                                                                                   |                                                                                                                                                                                                                                                       | 0.850                                                                              |                                                                                                                                                                         |                                                                                                                                                                         | 0.850                                                                               |                                                                                     |                                                                                                                                                                         | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                                                                                                                                                                                       |                                                                                   | 0.950                                                                             |                                                                                                                                                                                                                                                       |                                                                                    | 0.950                                                                                                                                                                   |                                                                                                                                                                         |                                                                                     | 0.950                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 5085                                                                                                                                                                                                                                                  | 1583                                                                              | 1770                                                                              | 5085                                                                                                                                                                                                                                                  | 1583                                                                               | 3433                                                                                                                                                                    | 3539                                                                                                                                                                    | 1583                                                                                | 1770                                                                                | 3539                                                                                                                                                                    | 1583                                                                                |
| Flt Permitted              | 0.415                                                                             |                                                                                                                                                                                                                                                       |                                                                                   | 0.509                                                                             |                                                                                                                                                                                                                                                       |                                                                                    | 0.950                                                                                                                                                                   |                                                                                                                                                                         |                                                                                     | 0.950                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (perm)          | 773                                                                               | 5085                                                                                                                                                                                                                                                  | 1583                                                                              | 948                                                                               | 5085                                                                                                                                                                                                                                                  | 1583                                                                               | 3433                                                                                                                                                                    | 3539                                                                                                                                                                    | 1583                                                                                | 1770                                                                                | 3539                                                                                                                                                                    | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                                                                                                                                                                                       | Yes                                                                               |                                                                                   |                                                                                                                                                                                                                                                       | Yes                                                                                |                                                                                                                                                                         |                                                                                                                                                                         | Yes                                                                                 |                                                                                     |                                                                                                                                                                         | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                                                                                                                                                                                       | 612                                                                               |                                                                                   |                                                                                                                                                                                                                                                       | 331                                                                                |                                                                                                                                                                         |                                                                                                                                                                         | 249                                                                                 |                                                                                     |                                                                                                                                                                         | 324                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | 45                                                                                                                                                                                                                                                    |                                                                                    |                                                                                                                                                                         | 45                                                                                                                                                                      |                                                                                     |                                                                                     | 45                                                                                                                                                                      |                                                                                     |
| Link Distance (ft)         |                                                                                   | 660                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 1515                                                                                                                                                                                                                                                  |                                                                                    |                                                                                                                                                                         | 645                                                                                                                                                                     |                                                                                     |                                                                                     | 450                                                                                                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   | 19.9                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   | 8.8                                                                                                                                                                                                                                                   |                                                                                    |                                                                                                                                                                         | 9.6                                                                                                                                                                     |                                                                                     |                                                                                     | 7.6                                                                                                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.87                                                                              | 0.88                                                                                                                                                                                                                                                  | 0.92                                                                              | 0.78                                                                              | 0.84                                                                                                                                                                                                                                                  | 0.78                                                                               | 0.88                                                                                                                                                                    | 0.92                                                                                                                                                                    | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                                                                                                    | 0.83                                                                                |
| Heavy Vehicles (%)         | 2%                                                                                | 2%                                                                                                                                                                                                                                                    | 2%                                                                                | 2%                                                                                | 2%                                                                                                                                                                                                                                                    | 2%                                                                                 | 2%                                                                                                                                                                      | 2%                                                                                                                                                                      | 2%                                                                                  | 2%                                                                                  | 2%                                                                                                                                                                      | 2%                                                                                  |
| Adj. Flow (vph)            | 290                                                                               | 397                                                                                                                                                                                                                                                   | 717                                                                               | 42                                                                                | 189                                                                                                                                                                                                                                                   | 13                                                                                 | 565                                                                                                                                                                     | 609                                                                                                                                                                     | 81                                                                                  | 62                                                                                  | 923                                                                                                                                                                     | 142                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Lane Group Flow (vph)      | 290                                                                               | 397                                                                                                                                                                                                                                                   | 717                                                                               | 42                                                                                | 189                                                                                                                                                                                                                                                   | 13                                                                                 | 565                                                                                                                                                                     | 609                                                                                                                                                                     | 81                                                                                  | 62                                                                                  | 923                                                                                                                                                                     | 142                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                                                                                                                                                                                    | No                                                                                | No                                                                                | No                                                                                                                                                                                                                                                    | No                                                                                 | No                                                                                                                                                                      | No                                                                                                                                                                      | No                                                                                  | No                                                                                  | No                                                                                                                                                                      | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                                                                                                                                                                                                  | Right                                                                             | Left                                                                              | Left                                                                                                                                                                                                                                                  | Right                                                                              | Left                                                                                                                                                                    | Left                                                                                                                                                                    | Right                                                                               | Left                                                                                | Left                                                                                                                                                                    | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | 12                                                                                                                                                                                                                                                    |                                                                                    |                                                                                                                                                                         | 24                                                                                                                                                                      |                                                                                     |                                                                                     | 24                                                                                                                                                                      |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | 0                                                                                                                                                                                                                                                     |                                                                                    |                                                                                                                                                                         | 0                                                                                                                                                                       |                                                                                     |                                                                                     | 0                                                                                                                                                                       |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | 16                                                                                                                                                                                                                                                    |                                                                                    |                                                                                                                                                                         | 16                                                                                                                                                                      |                                                                                     |                                                                                     | 16                                                                                                                                                                      |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                                                                                                                                                                                       | 9                                                                                 | 15                                                                                |                                                                                                                                                                                                                                                       | 9                                                                                  | 15                                                                                                                                                                      |                                                                                                                                                                         | 9                                                                                   | 15                                                                                  |                                                                                                                                                                         | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                                                                                                                                                                                     | 1                                                                                 | 1                                                                                 | 2                                                                                                                                                                                                                                                     | 1                                                                                  | 1                                                                                                                                                                       | 2                                                                                                                                                                       | 1                                                                                   | 1                                                                                   | 2                                                                                                                                                                       | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                                                                                                                                                                                                  | Right                                                                             | Left                                                                              | Thru                                                                                                                                                                                                                                                  | Right                                                                              | Left                                                                                                                                                                    | Thru                                                                                                                                                                    | Right                                                                               | Left                                                                                | Thru                                                                                                                                                                    | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                                                                                                                                                                                                   | 20                                                                                | 20                                                                                | 100                                                                                                                                                                                                                                                   | 20                                                                                 | 20                                                                                                                                                                      | 100                                                                                                                                                                     | 20                                                                                  | 20                                                                                  | 100                                                                                                                                                                     | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                  | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                  | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                                                                                                                                                                                     | 20                                                                                | 20                                                                                | 6                                                                                                                                                                                                                                                     | 20                                                                                 | 20                                                                                                                                                                      | 6                                                                                                                                                                       | 20                                                                                  | 20                                                                                  | 6                                                                                                                                                                       | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                                                                                                                                                                                                 | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                                                                                                                                                                                                 | Cl+Ex                                                                              | Cl+Ex                                                                                                                                                                   | Cl+Ex                                                                                                                                                                   | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                                                                                                                   | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | 94                                                                                                                                                                                                                                                    |                                                                                    |                                                                                                                                                                         | 94                                                                                                                                                                      |                                                                                     |                                                                                     | 94                                                                                                                                                                      |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | 6                                                                                                                                                                                                                                                     |                                                                                    |                                                                                                                                                                         | 6                                                                                                                                                                       |                                                                                     |                                                                                     | 6                                                                                                                                                                       |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                                                                                                                                                                                                 |                                                                                   |                                                                                   | Cl+Ex                                                                                                                                                                                                                                                 |                                                                                    |                                                                                                                                                                         | Cl+Ex                                                                                                                                                                   |                                                                                     |                                                                                     | Cl+Ex                                                                                                                                                                   |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                                                                                                                                                                                   |                                                                                    |                                                                                                                                                                         | 0.0                                                                                                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                                                                                                     |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                                                                                                                                                                                    | Perm                                                                              | pm+pt                                                                             | NA                                                                                                                                                                                                                                                    | Perm                                                                               | Prot                                                                                                                                                                    | NA                                                                                                                                                                      | Perm                                                                                | Prot                                                                                | NA                                                                                                                                                                      | Perm                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                                                                                                                                                                                     |                                                                                   | 3                                                                                 | 8                                                                                                                                                                                                                                                     |                                                                                    | 5                                                                                                                                                                       | 2                                                                                                                                                                       |                                                                                     | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |       |       |       |       |       |       |       |       |       |       |       |
|-----------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group            | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Permitted Phases      | 4                                                                                  |       | 4     | 8     |       | 8     |       |       | 2     |       |       | 6     |
| Detector Phase        | 7                                                                                  | 4     | 4     | 3     | 8     | 8     | 5     | 2     | 2     | 1     | 6     | 6     |
| Switch Phase          |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)   | 8.0                                                                                | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  |
| Minimum Split (s)     | 15.4                                                                               | 17.4  | 17.4  | 15.4  | 17.4  | 17.4  | 16.2  | 18.2  | 18.2  | 16.2  | 18.2  | 18.2  |
| Total Split (s)       | 28.0                                                                               | 37.0  | 37.0  | 16.0  | 25.0  | 25.0  | 39.0  | 47.0  | 47.0  | 20.0  | 28.0  | 28.0  |
| Total Split (%)       | 23.3%                                                                              | 30.8% | 30.8% | 13.3% | 20.8% | 20.8% | 32.5% | 39.2% | 39.2% | 16.7% | 23.3% | 23.3% |
| Maximum Green (s)     | 20.6                                                                               | 29.6  | 29.6  | 8.6   | 17.6  | 17.6  | 30.8  | 38.8  | 38.8  | 11.8  | 19.8  | 19.8  |
| Yellow Time (s)       | 5.0                                                                                | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.1   | 5.1   | 5.1   | 5.1   | 5.1   | 5.1   |
| All-Red Time (s)      | 2.4                                                                                | 2.4   | 2.4   | 2.4   | 2.4   | 2.4   | 3.1   | 3.1   | 3.1   | 3.1   | 3.1   | 3.1   |
| Lost Time Adjust (s)  | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)   | 7.4                                                                                | 7.4   | 7.4   | 7.4   | 7.4   | 7.4   | 8.2   | 8.2   | 8.2   | 8.2   | 8.2   | 8.2   |
| Lead/Lag              | Lead                                                                               | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?    | Yes                                                                                | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Vehicle Extension (s) | 2.0                                                                                | 2.0   | 2.0   | 3.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 5.0   | 5.0   |
| Recall Mode           | None                                                                               | None  | None  | None  | None  | None  | None  | C-Max | C-Max | None  | C-Max | C-Max |
| Act Effect Green (s)  | 39.8                                                                               | 27.3  | 27.3  | 21.2  | 13.0  | 13.0  | 24.1  | 50.3  | 50.3  | 9.3   | 32.3  | 32.3  |
| Actuated g/C Ratio    | 0.33                                                                               | 0.23  | 0.23  | 0.18  | 0.11  | 0.11  | 0.20  | 0.42  | 0.42  | 0.08  | 0.27  | 0.27  |
| v/c Ratio             | 0.70                                                                               | 0.34  | 0.86  | 0.19  | 0.34  | 0.03  | 0.82  | 0.41  | 0.10  | 0.45  | 0.97  | 0.21  |
| Control Delay         | 30.1                                                                               | 30.4  | 21.3  | 29.2  | 50.4  | 0.1   | 56.0  | 27.8  | 0.3   | 63.3  | 66.9  | 0.7   |
| Queue Delay           | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay           | 30.1                                                                               | 30.4  | 21.3  | 29.2  | 50.4  | 0.1   | 56.0  | 27.8  | 0.3   | 63.3  | 66.9  | 0.7   |
| LOS                   | C                                                                                  | C     | C     | C     | D     | A     | E     | C     | A     | E     | E     | A     |
| Approach Delay        |                                                                                    | 25.7  |       |       | 44.1  |       |       | 38.7  |       |       | 58.3  |       |
| Approach LOS          |                                                                                    | C     |       |       | D     |       |       | D     |       |       | E     |       |

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 40.0

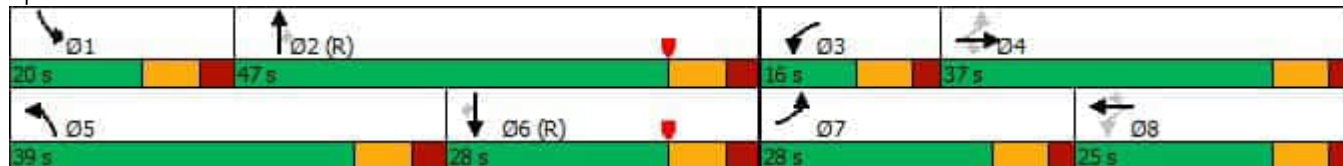
Intersection LOS: D

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Tower Road & 104th Avenue



## 1: Tower Road &amp; 104th Avenue



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 290  | 397  | 717  | 42   | 189  | 13   | 565  | 609  | 81   | 62   | 923  | 142  |
| v/c Ratio               | 0.70 | 0.34 | 0.86 | 0.19 | 0.34 | 0.03 | 0.82 | 0.41 | 0.10 | 0.45 | 0.97 | 0.21 |
| Control Delay           | 30.1 | 30.4 | 21.3 | 29.2 | 50.4 | 0.1  | 56.0 | 27.8 | 0.3  | 63.3 | 66.9 | 0.7  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 30.1 | 30.4 | 21.3 | 29.2 | 50.4 | 0.1  | 56.0 | 27.8 | 0.3  | 63.3 | 66.9 | 0.7  |
| Queue Length 50th (ft)  | 124  | 91   | 304  | 23   | 52   | 0    | 217  | 173  | 0    | 47   | 365  | 0    |
| Queue Length 95th (ft)  | 122  | 92   | #438 | 39   | 68   | 0    | 258  | 260  | 0    | 78   | #652 | 0    |
| Internal Link Dist (ft) |      | 580  |      |      | 1435 |      |      | 565  |      |      | 370  |      |
| Turn Bay Length (ft)    | 350  |      | 590  | 330  |      | 440  | 320  |      | 290  | 290  |      | 190  |
| Base Capacity (vph)     | 427  | 1291 | 858  | 229  | 745  | 514  | 881  | 1484 | 808  | 174  | 952  | 662  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.68 | 0.31 | 0.84 | 0.18 | 0.25 | 0.03 | 0.64 | 0.41 | 0.10 | 0.36 | 0.97 | 0.21 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 1: Tower Road & 104th Avenue

JR Engineering

10/19/2023

|                              |  |                                                                                                                                                                      |  |  |                                                                                                                                                                      |   |                                                                                      |                                                                                      |  |  |                                                                                      |  |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                                                                                                   | WBR                                                                                | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |  |    |  |  |    |  |   |   |  |  |   |  |
| Traffic Volume (veh/h)       | 252                                                                               | 349                                                                                                                                                                                                                                                   | 660                                                                               | 33                                                                                | 159                                                                                                                                                                                                                                                   | 10                                                                                 | 497                                                                                                                                                                     | 560                                                                                                                                                                     | 63                                                                                  | 48                                                                                  | 849                                                                                                                                                                     | 118                                                                                 |
| Future Volume (veh/h)        | 252                                                                               | 349                                                                                                                                                                                                                                                   | 660                                                                               | 33                                                                                | 159                                                                                                                                                                                                                                                   | 10                                                                                 | 497                                                                                                                                                                     | 560                                                                                                                                                                     | 63                                                                                  | 48                                                                                  | 849                                                                                                                                                                     | 118                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                  | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                               | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                    |                                                                                                                                                                         | No                                                                                                                                                                      |                                                                                     |                                                                                     | No                                                                                                                                                                      |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                               | 1870                                                                                                                                                                    | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 290                                                                               | 397                                                                                                                                                                                                                                                   | 0                                                                                 | 42                                                                                | 189                                                                                                                                                                                                                                                   | 0                                                                                  | 565                                                                                                                                                                     | 609                                                                                                                                                                     | 0                                                                                   | 62                                                                                  | 923                                                                                                                                                                     | 0                                                                                   |
| Peak Hour Factor             | 0.87                                                                              | 0.88                                                                                                                                                                                                                                                  | 0.92                                                                              | 0.78                                                                              | 0.84                                                                                                                                                                                                                                                  | 0.78                                                                               | 0.88                                                                                                                                                                    | 0.92                                                                                                                                                                    | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                                                                                                    | 0.83                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                  | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 404                                                                               | 990                                                                                                                                                                                                                                                   |                                                                                   | 232                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                    | 633                                                                                                                                                                     | 1555                                                                                                                                                                    |                                                                                     | 104                                                                                 | 1111                                                                                                                                                                    |                                                                                     |
| Arrive On Green              | 0.05                                                                              | 0.06                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.05                                                                              | 0.08                                                                                                                                                                                                                                                  | 0.00                                                                               | 0.18                                                                                                                                                                    | 0.44                                                                                                                                                                    | 0.00                                                                                | 0.06                                                                                | 0.31                                                                                                                                                                    | 0.00                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                               | 3456                                                                                                                                                                    | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 290                                                                               | 397                                                                                                                                                                                                                                                   | 0                                                                                 | 42                                                                                | 189                                                                                                                                                                                                                                                   | 0                                                                                  | 565                                                                                                                                                                     | 609                                                                                                                                                                     | 0                                                                                   | 62                                                                                  | 923                                                                                                                                                                     | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                               | 1728                                                                                                                                                                    | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 17.2                                                                              | 9.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 2.5                                                                               | 4.2                                                                                                                                                                                                                                                   | 0.0                                                                                | 19.2                                                                                                                                                                    | 14.0                                                                                                                                                                    | 0.0                                                                                 | 4.1                                                                                 | 28.9                                                                                                                                                                    | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 17.2                                                                              | 9.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 2.5                                                                               | 4.2                                                                                                                                                                                                                                                   | 0.0                                                                                | 19.2                                                                                                                                                                    | 14.0                                                                                                                                                                    | 0.0                                                                                 | 4.1                                                                                 | 28.9                                                                                                                                                                    | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                               | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 404                                                                               | 990                                                                                                                                                                                                                                                   |                                                                                   | 232                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                    | 633                                                                                                                                                                     | 1555                                                                                                                                                                    |                                                                                     | 104                                                                                 | 1111                                                                                                                                                                    |                                                                                     |
| V/C Ratio(X)                 | 0.72                                                                              | 0.40                                                                                                                                                                                                                                                  |                                                                                   | 0.18                                                                              | 0.44                                                                                                                                                                                                                                                  |                                                                                    | 0.89                                                                                                                                                                    | 0.39                                                                                                                                                                    |                                                                                     | 0.60                                                                                | 0.83                                                                                                                                                                    |                                                                                     |
| Avail Cap(c_a), veh/h        | 423                                                                               | 1260                                                                                                                                                                                                                                                  |                                                                                   | 270                                                                               | 749                                                                                                                                                                                                                                                   |                                                                                    | 887                                                                                                                                                                     | 1555                                                                                                                                                                    |                                                                                     | 175                                                                                 | 1111                                                                                                                                                                    |                                                                                     |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                                                                                                                                                                                                  | 0.33                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 44.4                                                                              | 49.5                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.1                                                                              | 52.4                                                                                                                                                                                                                                                  | 0.0                                                                                | 47.8                                                                                                                                                                    | 22.9                                                                                                                                                                    | 0.0                                                                                 | 55.1                                                                                | 38.3                                                                                                                                                                    | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 4.6                                                                               | 0.1                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.4                                                                               | 0.3                                                                                                                                                                                                                                                   | 0.0                                                                                | 6.8                                                                                                                                                                     | 0.7                                                                                                                                                                     | 0.0                                                                                 | 2.0                                                                                 | 7.3                                                                                                                                                                     | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 8.7                                                                               | 3.9                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.1                                                                               | 1.8                                                                                                                                                                                                                                                   | 0.0                                                                                | 8.6                                                                                                                                                                     | 5.7                                                                                                                                                                     | 0.0                                                                                 | 1.8                                                                                 | 13.2                                                                                                                                                                    | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d),s/veh         | 49.0                                                                              | 49.6                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.5                                                                              | 52.6                                                                                                                                                                                                                                                  | 0.0                                                                                | 54.7                                                                                                                                                                    | 23.6                                                                                                                                                                    | 0.0                                                                                 | 57.2                                                                                | 45.6                                                                                                                                                                    | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                   | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                    | D                                                                                                                                                                       | C                                                                                                                                                                       |                                                                                     | E                                                                                   | D                                                                                                                                                                       |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 687                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 231                                                                                                                                                                                                                                                   |                                                                                    |                                                                                                                                                                         | 1174                                                                                                                                                                    |                                                                                     |                                                                                     | 985                                                                                                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 49.3                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   | 51.5                                                                                                                                                                                                                                                  |                                                                                    |                                                                                                                                                                         | 38.6                                                                                                                                                                    |                                                                                     |                                                                                     | 46.3                                                                                                                                                                    |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                    |                                                                                                                                                                         | D                                                                                                                                                                       |                                                                                     |                                                                                     | D                                                                                                                                                                       |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                                                                                                     | 6                                                                                  | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.2                                                                              | 60.7                                                                                                                                                                                                                                                  | 13.4                                                                              | 30.7                                                                              | 30.2                                                                                                                                                                                                                                                  | 45.7                                                                               | 26.7                                                                                                                                                                    | 17.4                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 8.2                                                                               | 8.2                                                                                                                                                                                                                                                   | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                                                                                                                                                                                   | 8.2                                                                                | 7.4                                                                                                                                                                     | 7.4                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 11.8                                                                              | 38.8                                                                                                                                                                                                                                                  | 8.6                                                                               | 29.6                                                                              | 30.8                                                                                                                                                                                                                                                  | 19.8                                                                               | 20.6                                                                                                                                                                    | 17.6                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.1                                                                               | 16.0                                                                                                                                                                                                                                                  | 4.5                                                                               | 11.0                                                                              | 21.2                                                                                                                                                                                                                                                  | 30.9                                                                               | 19.2                                                                                                                                                                    | 6.2                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.4                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.5                                                                               | 0.8                                                                                                                                                                                                                                                   | 0.0                                                                                | 0.1                                                                                                                                                                     | 0.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

### Intersection Summary

HCM 6th Ctrl Delay 44.4

HCM 6th LOS D

### Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
2: Walden Street & 104th Avenue

JR Engineering

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|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 149                                                                               | 921                                                                               | 85                                                                                | 18                                                                                | 469                                                                               | 165                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 340                                                                                 | 36                                                                                  | 142                                                                                 |
| Future Volume (vph)        | 149                                                                               | 921                                                                               | 85                                                                                | 18                                                                                | 469                                                                               | 165                                                                               | 139                                                                                | 38                                                                                  | 71                                                                                  | 340                                                                                 | 36                                                                                  | 142                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 0                                                                                 |                                                                                   | 250                                                                               | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted              | 0.342                                                                             |                                                                                   |                                                                                   | 0.190                                                                             |                                                                                   |                                                                                   | 0.727                                                                              |                                                                                     |                                                                                     | 0.441                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 637                                                                               | 3539                                                                              | 1583                                                                              | 354                                                                               | 3539                                                                              | 1583                                                                              | 1354                                                                               | 1863                                                                                | 1583                                                                                | 821                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                    |                                                                                     | 227                                                                                 |                                                                                     |                                                                                     | 169                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 900                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 652                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 14.8                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor           | 0.84                                                                              | 0.92                                                                              | 0.80                                                                              | 0.78                                                                              | 0.91                                                                              | 0.84                                                                              | 0.84                                                                               | 0.78                                                                                | 0.80                                                                                | 0.88                                                                                | 0.78                                                                                | 0.84                                                                                |
| Heavy Vehicles (%)         | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                 | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)            | 177                                                                               | 1001                                                                              | 106                                                                               | 23                                                                                | 515                                                                               | 196                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 386                                                                                 | 46                                                                                  | 169                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 177                                                                               | 1001                                                                              | 106                                                                               | 23                                                                                | 515                                                                               | 196                                                                               | 165                                                                                | 49                                                                                  | 89                                                                                  | 386                                                                                 | 46                                                                                  | 169                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |

Lanes, Volumes, Timings  
2: Walden Street & 104th Avenue

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|                       |  |       |       |       |       |       |       |       |       |       |       |       |
|-----------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group            | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Permitted Phases      | 2                                                                                  |       | 2     | 6     |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase        | 5                                                                                  | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase          |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)   | 3.0                                                                                | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  | 8.0   | 10.0  | 10.0  |
| Minimum Split (s)     | 10.5                                                                               | 17.5  | 17.5  | 12.5  | 17.5  | 17.5  | 14.5  | 16.5  | 16.5  | 14.5  | 16.5  | 16.5  |
| Total Split (s)       | 19.0                                                                               | 50.0  | 50.0  | 13.0  | 44.0  | 44.0  | 20.0  | 17.0  | 17.0  | 40.0  | 37.0  | 37.0  |
| Total Split (%)       | 15.8%                                                                              | 41.7% | 41.7% | 10.8% | 36.7% | 36.7% | 16.7% | 14.2% | 14.2% | 33.3% | 30.8% | 30.8% |
| Maximum Green (s)     | 11.5                                                                               | 42.5  | 42.5  | 5.5   | 36.5  | 36.5  | 13.5  | 10.5  | 10.5  | 33.5  | 30.5  | 30.5  |
| Yellow Time (s)       | 5.3                                                                                | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   |
| All-Red Time (s)      | 2.2                                                                                | 2.2   | 2.2   | 2.2   | 2.2   | 2.2   | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   |
| Lost Time Adjust (s)  | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)   | 7.5                                                                                | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   |
| Lead/Lag              | Lead                                                                               | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?    | Yes                                                                                | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Vehicle Extension (s) | 2.0                                                                                | 5.0   | 5.0   | 2.0   | 5.0   | 5.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Recall Mode           | None                                                                               | C-Max | C-Max | None  | C-Max | C-Max | None  | None  | None  | None  | None  | None  |
| Act Effect Green (s)  | 60.0                                                                               | 53.1  | 53.1  | 48.5  | 43.2  | 43.2  | 21.9  | 10.1  | 10.1  | 45.1  | 26.8  | 26.8  |
| Actuated g/C Ratio    | 0.50                                                                               | 0.44  | 0.44  | 0.40  | 0.36  | 0.36  | 0.18  | 0.08  | 0.08  | 0.38  | 0.22  | 0.22  |
| v/c Ratio             | 0.43                                                                               | 0.64  | 0.13  | 0.11  | 0.40  | 0.28  | 0.57  | 0.31  | 0.26  | 0.72  | 0.11  | 0.35  |
| Control Delay         | 20.8                                                                               | 30.7  | 0.3   | 12.1  | 22.7  | 6.9   | 35.9  | 57.4  | 1.9   | 37.7  | 36.3  | 7.3   |
| Queue Delay           | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay           | 20.8                                                                               | 30.7  | 0.3   | 12.1  | 22.7  | 6.9   | 35.9  | 57.4  | 1.9   | 37.7  | 36.3  | 7.3   |
| LOS                   | C                                                                                  | C     | A     | B     | C     | A     | D     | E     | A     | D     | D     | A     |
| Approach Delay        | 26.9                                                                               |       |       | 18.2  |       |       | 29.4  |       |       | 29.1  |       |       |
| Approach LOS          | C                                                                                  |       |       | B     |       |       | C     |       |       | C     |       |       |

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 16 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 25.4

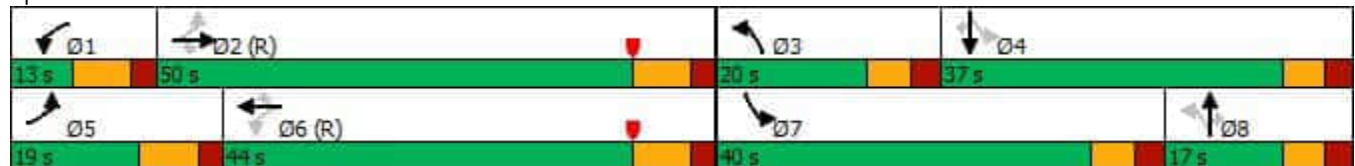
Intersection LOS: C

Intersection Capacity Utilization 73.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Walden Street & 104th Avenue



Queues  
2: Walden Street & 104th Avenue

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| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 177  | 1001 | 106  | 23   | 515  | 196  | 165  | 49   | 89   | 386  | 46   | 169  |
| v/c Ratio               | 0.43 | 0.64 | 0.13 | 0.11 | 0.40 | 0.28 | 0.57 | 0.31 | 0.26 | 0.72 | 0.11 | 0.35 |
| Control Delay           | 20.8 | 30.7 | 0.3  | 12.1 | 22.7 | 6.9  | 35.9 | 57.4 | 1.9  | 37.7 | 36.3 | 7.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.8 | 30.7 | 0.3  | 12.1 | 22.7 | 6.9  | 35.9 | 57.4 | 1.9  | 37.7 | 36.3 | 7.3  |
| Queue Length 50th (ft)  | 74   | 342  | 0    | 6    | 210  | 66   | 86   | 36   | 0    | 232  | 28   | 0    |
| Queue Length 95th (ft)  | 118  | 449  | 0    | m11  | 267  | 68   | 120  | 66   | 0    | 303  | 50   | 43   |
| Internal Link Dist (ft) |      | 820  |      |      | 580  |      |      | 572  |      |      | 370  |      |
| Turn Bay Length (ft)    | 400  |      | 230  |      |      | 250  | 230  |      | 230  | 210  |      | 140  |
| Base Capacity (vph)     | 428  | 1566 | 821  | 209  | 1274 | 709  | 312  | 163  | 345  | 573  | 473  | 528  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.41 | 0.64 | 0.13 | 0.11 | 0.40 | 0.28 | 0.53 | 0.30 | 0.26 | 0.67 | 0.10 | 0.32 |

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

## HCM 6th Signalized Intersection Summary

### 2: Walden Street & 104th Avenue

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10/19/2023

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 149                                                                               | 921                                                                               | 85                                                                                | 18                                                                                | 469                                                                               | 165                                                                               | 139                                                                                 | 38                                                                                  | 71                                                                                  | 340                                                                                 | 36                                                                                  | 142                                                                                 |
| Future Volume (veh/h)        | 149                                                                               | 921                                                                               | 85                                                                                | 18                                                                                | 469                                                                               | 165                                                                               | 139                                                                                 | 38                                                                                  | 71                                                                                  | 340                                                                                 | 36                                                                                  | 142                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 177                                                                               | 1001                                                                              | 106                                                                               | 23                                                                                | 515                                                                               | 196                                                                               | 165                                                                                 | 49                                                                                  | 89                                                                                  | 386                                                                                 | 46                                                                                  | 169                                                                                 |
| Peak Hour Factor             | 0.84                                                                              | 0.92                                                                              | 0.80                                                                              | 0.78                                                                              | 0.91                                                                              | 0.84                                                                              | 0.84                                                                                | 0.78                                                                                | 0.80                                                                                | 0.88                                                                                | 0.78                                                                                | 0.84                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 389                                                                               | 1600                                                                              | 713                                                                               | 219                                                                               | 1414                                                                              | 631                                                                               | 335                                                                                 | 156                                                                                 | 132                                                                                 | 509                                                                                 | 363                                                                                 | 308                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.45                                                                              | 0.45                                                                              | 0.01                                                                              | 0.13                                                                              | 0.13                                                                              | 0.10                                                                                | 0.08                                                                                | 0.08                                                                                | 0.21                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 177                                                                               | 1001                                                                              | 106                                                                               | 23                                                                                | 515                                                                               | 196                                                                               | 165                                                                                 | 49                                                                                  | 89                                                                                  | 386                                                                                 | 46                                                                                  | 169                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 6.9                                                                               | 25.9                                                                              | 4.7                                                                               | 0.9                                                                               | 15.9                                                                              | 13.4                                                                              | 10.0                                                                                | 3.0                                                                                 | 6.5                                                                                 | 22.9                                                                                | 2.4                                                                                 | 11.5                                                                                |
| Cycle Q Clear(g_c), s        | 6.9                                                                               | 25.9                                                                              | 4.7                                                                               | 0.9                                                                               | 15.9                                                                              | 13.4                                                                              | 10.0                                                                                | 3.0                                                                                 | 6.5                                                                                 | 22.9                                                                                | 2.4                                                                                 | 11.5                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 389                                                                               | 1600                                                                              | 713                                                                               | 219                                                                               | 1414                                                                              | 631                                                                               | 335                                                                                 | 156                                                                                 | 132                                                                                 | 509                                                                                 | 363                                                                                 | 308                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                              | 0.63                                                                              | 0.15                                                                              | 0.10                                                                              | 0.36                                                                              | 0.31                                                                              | 0.49                                                                                | 0.31                                                                                | 0.67                                                                                | 0.76                                                                                | 0.13                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h        | 427                                                                               | 1600                                                                              | 713                                                                               | 261                                                                               | 1414                                                                              | 631                                                                               | 358                                                                                 | 164                                                                                 | 139                                                                                 | 631                                                                                 | 475                                                                                 | 403                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 19.6                                                                              | 25.3                                                                              | 19.4                                                                              | 22.4                                                                              | 38.3                                                                              | 37.2                                                                              | 44.1                                                                                | 51.8                                                                                | 53.4                                                                                | 36.5                                                                                | 39.9                                                                                | 43.6                                                                                |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 1.9                                                                               | 0.4                                                                               | 0.1                                                                               | 0.7                                                                               | 1.3                                                                               | 0.4                                                                                 | 0.4                                                                                 | 9.0                                                                                 | 3.1                                                                                 | 0.1                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 10.7                                                                              | 1.8                                                                               | 0.4                                                                               | 7.7                                                                               | 5.9                                                                               | 4.5                                                                                 | 1.4                                                                                 | 2.9                                                                                 | 10.3                                                                                | 1.1                                                                                 | 4.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 19.9                                                                              | 27.1                                                                              | 19.9                                                                              | 22.5                                                                              | 39.0                                                                              | 38.5                                                                              | 44.5                                                                                | 52.2                                                                                | 62.5                                                                                | 39.6                                                                                | 40.0                                                                                | 44.2                                                                                |
| LnGrp LOS                    | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          | 1284                                                                              |                                                                                   |                                                                                   | 734                                                                               |                                                                                   |                                                                                   | 303                                                                                 |                                                                                     |                                                                                     | 601                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.5                                                                              |                                                                                   |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 51.0                                                                                |                                                                                     |                                                                                     | 40.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 61.5                                                                              | 18.5                                                                              | 29.8                                                                              | 16.4                                                                              | 55.3                                                                              | 31.8                                                                                | 16.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                               | 6.5                                                                               | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                                 | 6.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.5                                                                             | * 43                                                                              | 13.5                                                                              | 30.5                                                                              | * 12                                                                              | * 37                                                                              | 33.5                                                                                | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.9                                                                               | 27.9                                                                              | 12.0                                                                              | 13.5                                                                              | 8.9                                                                               | 17.9                                                                              | 24.9                                                                                | 8.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.1                                                                               | 6.7                                                                               | 0.4                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 34.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Lanes, Volumes, Timings  
3: Walden Street & 105th Avenue

JR Engineering  
10/19/2023

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 12                                                                                | 1                                                                                 | 90                                                                                | 23                                                                                | 0                                                                                 | 19                                                                                | 31                                                                                 | 257                                                                                 | 2                                                                                   | 9                                                                                   | 243                                                                                 | 7                                                                                   |
| Future Volume (vph)               | 12                                                                                | 1                                                                                 | 90                                                                                | 23                                                                                | 0                                                                                 | 19                                                                                | 31                                                                                 | 257                                                                                 | 2                                                                                   | 9                                                                                   | 243                                                                                 | 7                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.882                                                                             |                                                                                   |                                                                                   | 0.939                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.973                                                                             |                                                                                   |                                                                                    | 0.994                                                                               |                                                                                     |                                                                                     | 0.998                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1633                                                                              | 0                                                                                 | 0                                                                                 | 1702                                                                              | 0                                                                                 | 0                                                                                  | 1850                                                                                | 0                                                                                   | 0                                                                                   | 1852                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.973                                                                             |                                                                                   |                                                                                    | 0.994                                                                               |                                                                                     |                                                                                     | 0.998                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1633                                                                              | 0                                                                                 | 0                                                                                 | 1702                                                                              | 0                                                                                 | 0                                                                                  | 1850                                                                                | 0                                                                                   | 0                                                                                   | 1852                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 45                                                                                  |                                                                                     |                                                                                     | 45                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 4.5                                                                                 |                                                                                     |                                                                                     | 4.2                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.80                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.87                                                                                | 0.78                                                                                | 0.78                                                                                | 0.87                                                                                | 0.78                                                                                |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                 | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)                   | 15                                                                                | 1                                                                                 | 113                                                                               | 29                                                                                | 0                                                                                 | 24                                                                                | 40                                                                                 | 295                                                                                 | 3                                                                                   | 12                                                                                  | 279                                                                                 | 9                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 129                                                                               | 0                                                                                 | 0                                                                                 | 53                                                                                | 0                                                                                 | 0                                                                                  | 338                                                                                 | 0                                                                                   | 0                                                                                   | 300                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Yield                                                                             |                                                                                   |                                                                                   | Yield                                                                             |                                                                                   |                                                                                    | Yield                                                                               |                                                                                     |                                                                                     | Yield                                                                               |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Roundabout                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 41.6%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service A            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 4.9   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 128   | 53    | 338   | 300   |
| Demand Flow Rate, veh/h     | 130   | 54    | 345   | 306   |
| Vehicles Circulating, veh/h | 327   | 357   | 28    | 71    |
| Vehicles Exiting, veh/h     | 50    | 16    | 429   | 340   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.9   | 4.3   | 5.0   | 4.9   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 130   | 54    | 345   | 306   |
| Cap Entry Lane, veh/h       | 989   | 959   | 1341  | 1283  |
| Entry HV Adj Factor         | 0.984 | 0.981 | 0.980 | 0.982 |
| Flow Entry, veh/h           | 128   | 53    | 338   | 300   |
| Cap Entry, veh/h            | 973   | 941   | 1314  | 1260  |
| V/C Ratio                   | 0.132 | 0.056 | 0.257 | 0.238 |
| Control Delay, s/veh        | 4.9   | 4.3   | 5.0   | 4.9   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 0     | 0     | 1     | 1     |

Lanes, Volumes, Timings  
4: Walden Street & Homestead Trail

JR Engineering

10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 20                                                                                | 2                                                                                 | 28                                                                                | 13                                                                                | 2                                                                                 | 1                                                                                 | 20                                                                                 | 245                                                                                 | 16                                                                                  | 1                                                                                   | 187                                                                                 | 12                                                                                  |
| Future Volume (vph)               | 20                                                                                | 2                                                                                 | 28                                                                                | 13                                                                                | 2                                                                                 | 1                                                                                 | 20                                                                                 | 245                                                                                 | 16                                                                                  | 1                                                                                   | 187                                                                                 | 12                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 150                                                                                |                                                                                     | 0                                                                                   | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.925                                                                             |                                                                                   |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                    | 0.990                                                                               |                                                                                     |                                                                                     | 0.991                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.980                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1689                                                                              | 0                                                                                 | 1770                                                                              | 1792                                                                              | 0                                                                                 | 1770                                                                               | 1844                                                                                | 0                                                                                   | 1770                                                                                | 1846                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.980                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1689                                                                              | 0                                                                                 | 1770                                                                              | 1792                                                                              | 0                                                                                 | 1770                                                                               | 1844                                                                                | 0                                                                                   | 1770                                                                                | 1846                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 45                                                                                  |                                                                                     |                                                                                     | 45                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 666                                                                               |                                                                                   |                                                                                    | 395                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     | 9.0                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.87                                                                                | 0.78                                                                                | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                 | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)                   | 26                                                                                | 3                                                                                 | 36                                                                                | 17                                                                                | 3                                                                                 | 1                                                                                 | 26                                                                                 | 282                                                                                 | 21                                                                                  | 1                                                                                   | 223                                                                                 | 15                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 65                                                                                | 0                                                                                 | 17                                                                                | 4                                                                                 | 0                                                                                 | 26                                                                                 | 303                                                                                 | 0                                                                                   | 1                                                                                   | 238                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 32.9%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service A            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 10.4 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                 | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 20   | 2                                                                                 | 28   | 13                                                                                | 2                                                                                 | 1    | 20                                                                                  | 245                                                                                 | 16   | 1                                                                                   | 187                                                                                 | 12   |
| Future Vol, veh/h   | 20   | 2                                                                                 | 28   | 13                                                                                | 2                                                                                 | 1    | 20                                                                                  | 245                                                                                 | 16   | 1                                                                                   | 187                                                                                 | 12   |
| Peak Hour Factor    | 0.78 | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                                | 0.87                                                                                | 0.78 | 0.78                                                                                | 0.84                                                                                | 0.78 |
| Heavy Vehicles, %   | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                   | 2                                                                                   | 2    | 2                                                                                   | 2                                                                                   | 2    |
| Mvmt Flow           | 26   | 3                                                                                 | 36   | 17                                                                                | 3                                                                                 | 1    | 26                                                                                  | 282                                                                                 | 21   | 1                                                                                   | 223                                                                                 | 15   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                   | 1                                                                                   | 0    | 1                                                                                   | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB   | SB   |
|----------------------------|-----|-----|------|------|
| Opposing Approach          | WB  | EB  | SB   | NB   |
| Opposing Lanes             | 2   | 1   | 2    | 2    |
| Conflicting Approach Left  | SB  | NB  | EB   | WB   |
| Conflicting Lanes Left     | 2   | 2   | 1    | 2    |
| Conflicting Approach Right | NB  | SB  | WB   | EB   |
| Conflicting Lanes Right    | 2   | 2   | 2    | 1    |
| HCM Control Delay          | 9.4 | 9.3 | 10.9 | 10.2 |
| HCM LOS                    | A   | A   | B    | B    |

| Lane                   | NBLn1 | NBLn2 | EBLn1 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 100%  | 0%    | 40%   | 100%  | 0%    | 100%  | 0%    |
| Vol Thru, %            | 0%    | 94%   | 4%    | 0%    | 67%   | 0%    | 94%   |
| Vol Right, %           | 0%    | 6%    | 56%   | 0%    | 33%   | 0%    | 6%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 20    | 261   | 50    | 13    | 3     | 1     | 199   |
| LT Vol                 | 20    | 0     | 20    | 13    | 0     | 1     | 0     |
| Through Vol            | 0     | 245   | 2     | 0     | 2     | 0     | 187   |
| RT Vol                 | 0     | 16    | 28    | 0     | 1     | 0     | 12    |
| Lane Flow Rate         | 26    | 302   | 64    | 17    | 4     | 1     | 238   |
| Geometry Grp           | 7     | 7     | 6     | 7     | 7     | 7     | 7     |
| Degree of Util (X)     | 0.039 | 0.414 | 0.101 | 0.03  | 0.006 | 0.002 | 0.332 |
| Departure Headway (Hd) | 5.481 | 4.936 | 5.666 | 6.492 | 5.752 | 5.562 | 5.017 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 654   | 728   | 631   | 550   | 620   | 644   | 716   |
| Service Time           | 3.212 | 2.667 | 3.717 | 4.251 | 3.51  | 3.294 | 2.749 |
| HCM Lane V/C Ratio     | 0.04  | 0.415 | 0.101 | 0.031 | 0.006 | 0.002 | 0.332 |
| HCM Control Delay      | 8.4   | 11.1  | 9.4   | 9.5   | 8.5   | 8.3   | 10.2  |
| HCM Lane LOS           | A     | B     | A     | A     | A     | A     | B     |
| HCM 95th-tile Q        | 0.1   | 2     | 0.3   | 0.1   | 0     | 0     | 1.5   |

Lanes, Volumes, Timings  
11: Tower Road & 105th Avenue

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| Lane Group                              | EBL          | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
|-----------------------------------------|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations                     |              |  |  |  |  |  |
| Traffic Volume (vph)                    | 0            | 197                                                                               | 42                                                                                | 736                                                                               | 787                                                                               | 139                                                                               |
| Future Volume (vph)                     | 0            | 197                                                                               | 42                                                                                | 736                                                                               | 787                                                                               | 139                                                                               |
| Ideal Flow (vphpl)                      | 1900         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)                     | 250          | 0                                                                                 | 150                                                                               |                                                                                   |                                                                                   | 150                                                                               |
| Storage Lanes                           | 0            | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |
| Taper Length (ft)                       | 25           |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor                       | 1.00         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                                     |              | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected                           |              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)                       | 0            | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Flt Permitted                           |              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)                       | 0            | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Link Speed (mph)                        | 30           |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)                      | 660          |                                                                                   |                                                                                   | 300                                                                               | 1403                                                                              |                                                                                   |
| Travel Time (s)                         | 15.0         |                                                                                   |                                                                                   | 6.8                                                                               | 31.9                                                                              |                                                                                   |
| Peak Hour Factor                        | 0.78         | 0.80                                                                              | 0.78                                                                              | 0.92                                                                              | 0.92                                                                              | 0.78                                                                              |
| Heavy Vehicles (%)                      | 2%           | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                |
| Adj. Flow (vph)                         | 0            | 246                                                                               | 54                                                                                | 800                                                                               | 855                                                                               | 178                                                                               |
| Shared Lane Traffic (%)                 |              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)                   | 0            | 246                                                                               | 54                                                                                | 800                                                                               | 855                                                                               | 178                                                                               |
| Enter Blocked Intersection              | No           | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                          | Left         | Right                                                                             | Left                                                                              | Left                                                                              | Left                                                                              | Right                                                                             |
| Median Width(ft)                        | 0            |                                                                                   |                                                                                   | 12                                                                                | 12                                                                                |                                                                                   |
| Link Offset(ft)                         | 0            |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Crosswalk Width(ft)                     | 16           |                                                                                   |                                                                                   | 16                                                                                | 16                                                                                |                                                                                   |
| Two way Left Turn Lane                  |              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                          | 1.00         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)                     | 60           | 60                                                                                | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |
| Sign Control                            | Stop         |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Intersection Summary                    |              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                              | Other        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                           | Unsignalized |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization 60.3% |              |                                                                                   |                                                                                   | ICU Level of Service B                                                            |                                                                                   |                                                                                   |
| Analysis Period (min) 15                |              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.3    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL    | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |        |  |  |  |  |  |
| Traffic Vol, veh/h       | 0      | 197                                                                               | 42                                                                                | 736                                                                               | 787                                                                               | 139                                                                               |
| Future Vol, veh/h        | 0      | 197                                                                               | 42                                                                                | 736                                                                               | 787                                                                               | 139                                                                               |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -      | 0                                                                                 | 150                                                                               | -                                                                                 | -                                                                                 | 150                                                                               |
| Veh in Median Storage, # | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 78     | 80                                                                                | 78                                                                                | 92                                                                                | 92                                                                                | 78                                                                                |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0      | 246                                                                               | 54                                                                                | 800                                                                               | 855                                                                               | 178                                                                               |
| Major/Minor              | Minor2 | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   |
| Conflicting Flow All     | -      | 855                                                                               | 1033                                                                              | 0                                                                                 | -                                                                                 | 0                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy            | -      | 6.22                                                                              | 4.12                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | -      | 3.318                                                                             | 2.218                                                                             | -                                                                                 | -                                                                                 | -                                                                                 |
| Pot Cap-1 Maneuver       | 0      | 358                                                                               | 673                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Platoon blocked, %       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-1 Maneuver       | -      | 358                                                                               | 673                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Approach                 | EB     | NB                                                                                |                                                                                   | SB                                                                                |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 34.5   | 0.7                                                                               |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |
| HCM LOS                  | D      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |                                                                                   |
| Capacity (veh/h)         | 673    | -                                                                                 | 358                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | 0.08   | -                                                                                 | 0.688                                                                             | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | 10.8   | -                                                                                 | 34.5                                                                              | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane LOS             | B      | -                                                                                 | D                                                                                 | -                                                                                 | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | 0.3    | -                                                                                 | 4.9                                                                               | -                                                                                 | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
13: Yampa Street & 104th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)              | 73                                                                                | 1232                                                                              | 5                                                                                 | 12                                                                                | 588                                                                               | 166                                                                               | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 49                                                                                  |
| Future Volume (vph)               | 73                                                                                | 1232                                                                              | 5                                                                                 | 12                                                                                | 588                                                                               | 166                                                                               | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 49                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 150                                                                               |                                                                                   | 150                                                                               | 150                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 636                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.93                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.84                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                 | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)                   | 94                                                                                | 1325                                                                              | 6                                                                                 | 15                                                                                | 639                                                                               | 198                                                                               | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 63                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 94                                                                                | 1325                                                                              | 6                                                                                 | 15                                                                                | 639                                                                               | 198                                                                               | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 63                                                                                  |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 33.8%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |       |                                                                                   |      |      |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |       |                                                                                   |      |      |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL  | NBT   | NBR                                                                               | SBL  | SBT  | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |  |      |       |  |      |      |  |
| Traffic Vol, veh/h       | 73                                                                                | 1232                                                                              | 5                                                                                 | 12                                                                                | 588                                                                               | 166                                                                               | 0    | 0     | 4                                                                                 | 0    | 0    | 49                                                                                  |
| Future Vol, veh/h        | 73                                                                                | 1232                                                                              | 5                                                                                 | 12                                                                                | 588                                                                               | 166                                                                               | 0    | 0     | 4                                                                                 | 0    | 0    | 49                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0     | 0                                                                                 | 0    | 0    | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Stop | Stop  | Stop                                                                              | Stop | Stop | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None                                                                              | -    | -     | None                                                                              | -    | -    | None                                                                                |
| Storage Length           | 150                                                                               | -                                                                                 | 150                                                                               | 150                                                                               | -                                                                                 | 0                                                                                 | -    | -     | 0                                                                                 | -    | -    | 0                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0     | -                                                                                 | -    | 0    | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0     | -                                                                                 | -    | 0    | -                                                                                   |
| Peak Hour Factor         | 78                                                                                | 93                                                                                | 78                                                                                | 78                                                                                | 92                                                                                | 84                                                                                | 78   | 78    | 78                                                                                | 78   | 78   | 78                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    | 2     | 2                                                                                 | 2    | 2    | 2                                                                                   |
| Mvmt Flow                | 94                                                                                | 1325                                                                              | 6                                                                                 | 15                                                                                | 639                                                                               | 198                                                                               | 0    | 0     | 5                                                                                 | 0    | 0    | 63                                                                                  |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |       |                                                                                   |      |      |                                                                                     |
| Major/Minor              | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   | Minor1                                                                            |      |       | Minor2                                                                            |      |      |                                                                                     |
| Conflicting Flow All     | 837                                                                               | 0                                                                                 | 0                                                                                 | 1331                                                                              | 0                                                                                 | 0                                                                                 | -    | -     | 663                                                                               | -    | -    | 320                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Critical Hdwy            | 5.34                                                                              | -                                                                                 | -                                                                                 | 5.34                                                                              | -                                                                                 | -                                                                                 | -    | -     | 7.14                                                                              | -    | -    | 7.14                                                                                |
| Critical Hdwy Stg 1      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Critical Hdwy Stg 2      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Follow-up Hdwy           | 3.12                                                                              | -                                                                                 | -                                                                                 | 3.12                                                                              | -                                                                                 | -                                                                                 | -    | -     | 3.92                                                                              | -    | -    | 3.92                                                                                |
| Pot Cap-1 Maneuver       | 469                                                                               | -                                                                                 | -                                                                                 | 270                                                                               | -                                                                                 | -                                                                                 | 0    | 0     | 346                                                                               | 0    | 0    | 577                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0    | 0     | -                                                                                 | 0    | 0    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0    | 0     | -                                                                                 | 0    | 0    | -                                                                                   |
| Platoon blocked, %       |                                                                                   | -                                                                                 | -                                                                                 |                                                                                   | -                                                                                 | -                                                                                 |      |       |                                                                                   |      |      |                                                                                     |
| Mov Cap-1 Maneuver       | 469                                                                               | -                                                                                 | -                                                                                 | 270                                                                               | -                                                                                 | -                                                                                 | -    | -     | 346                                                                               | -    | -    | 577                                                                                 |
| Mov Cap-2 Maneuver       | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -    | -     | -                                                                                 | -    | -    | -                                                                                   |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |       |                                                                                   |      |      |                                                                                     |
| Approach                 | EB                                                                                |                                                                                   | WB                                                                                |                                                                                   |                                                                                   | NB                                                                                |      |       | SB                                                                                |      |      |                                                                                     |
| HCM Control Delay, s     | 1                                                                                 |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   | 15.6                                                                              |      |       | 12                                                                                |      |      |                                                                                     |
| HCM LOS                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |      |       | B                                                                                 |      |      |                                                                                     |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |       |                                                                                   |      |      |                                                                                     |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | SBLn1 |                                                                                   |      |      |                                                                                     |
| Capacity (veh/h)         | 346                                                                               | 469                                                                               | -                                                                                 | -                                                                                 | 270                                                                               | -                                                                                 | -    | 577   |                                                                                   |      |      |                                                                                     |
| HCM Lane V/C Ratio       | 0.015                                                                             | 0.2                                                                               | -                                                                                 | -                                                                                 | 0.057                                                                             | -                                                                                 | -    | 0.109 |                                                                                   |      |      |                                                                                     |
| HCM Control Delay (s)    | 15.6                                                                              | 14.6                                                                              | -                                                                                 | -                                                                                 | 19.1                                                                              | -                                                                                 | -    | 12    |                                                                                   |      |      |                                                                                     |
| HCM Lane LOS             | C                                                                                 | B                                                                                 | -                                                                                 | -                                                                                 | C                                                                                 | -                                                                                 | -    | B     |                                                                                   |      |      |                                                                                     |
| HCM 95th %tile Q(veh)    | 0                                                                                 | 0.7                                                                               | -                                                                                 | -                                                                                 | 0.2                                                                               | -                                                                                 | -    | 0.4   |                                                                                   |      |      |                                                                                     |

Lanes, Volumes, Timings  
14: Walden Street & 104th Way

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 7                                                                                 | 1                                                                                 | 47                                                                                | 118                                                                               | 1                                                                                 | 1                                                                                 | 15                                                                                  | 285                                                                                 | 53                                                                                  | 0                                                                                   | 349                                                                                 | 2                                                                                   |
| Future Volume (vph)               | 7                                                                                 | 1                                                                                 | 47                                                                                | 118                                                                               | 1                                                                                 | 1                                                                                 | 15                                                                                  | 285                                                                                 | 53                                                                                  | 0                                                                                   | 349                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 150                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.884                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1637                                                                              | 0                                                                                 | 0                                                                                 | 1773                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1583                                                                                | 1863                                                                                | 1861                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1637                                                                              | 0                                                                                 | 0                                                                                 | 1773                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1583                                                                                | 1863                                                                                | 1861                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 501                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                     | 10.2                                                                                |                                                                                     |                                                                                     | 6.8                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.83                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.88                                                                                | 0.78                                                                                | 0.78                                                                                | 0.88                                                                                | 0.78                                                                                |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)                   | 9                                                                                 | 1                                                                                 | 60                                                                                | 142                                                                               | 1                                                                                 | 1                                                                                 | 19                                                                                  | 324                                                                                 | 68                                                                                  | 0                                                                                   | 397                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 70                                                                                | 0                                                                                 | 0                                                                                 | 144                                                                               | 0                                                                                 | 19                                                                                  | 324                                                                                 | 68                                                                                  | 0                                                                                   | 400                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                  |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 38.5%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔    |      |      | ↔    |      | ↗    | ↑    | ↖    | ↗    | ↖    |      |
| Traffic Vol, veh/h       | 7    | 1    | 47   | 118  | 1    | 1    | 15   | 285  | 53   | 0    | 349  | 2    |
| Future Vol, veh/h        | 7    | 1    | 47   | 118  | 1    | 1    | 15   | 285  | 53   | 0    | 349  | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 150  | -    | 150  | 150  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 78   | 78   | 78   | 83   | 78   | 78   | 78   | 88   | 78   | 78   | 88   | 78   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 9    | 1    | 60   | 142  | 1    | 1    | 19   | 324  | 68   | 0    | 397  | 3    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 796    | 829   | 399    | 791   | 762    | 324   | 400    | 0 | 0 | 392   | 0 | 0 |
| Stage 1              | 399    | 399   | -      | 362   | 362    | -     | -      | - | - | -     | - | - |
| Stage 2              | 397    | 430   | -      | 429   | 400    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 305    | 306   | 651    | 307   | 335    | 717   | 1159   | - | - | 1167  | - | - |
| Stage 1              | 627    | 602   | -      | 657   | 625    | -     | -      | - | - | -     | - | - |
| Stage 2              | 629    | 583   | -      | 604   | 602    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - |       | - | - |
| Mov Cap-1 Maneuver   | 300    | 301   | 651    | 274   | 330    | 717   | 1159   | - | - | 1167  | - | - |
| Mov Cap-2 Maneuver   | 300    | 301   | -      | 274   | 330    | -     | -      | - | - | -     | - | - |
| Stage 1              | 617    | 602   | -      | 646   | 615    | -     | -      | - | - | -     | - | - |
| Stage 2              | 616    | 574   | -      | 547   | 602    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB  |  | SB |  |
|----------------------|------|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 12.4 |  | 31.6 |  | 0.4 |  | 0  |  |
| HCM LOS              | B    |  | D    |  |     |  |    |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1  | SBL  | SBT | SBR |
|-----------------------|-------|-----|-----|-------------|------|-----|-----|
| Capacity (veh/h)      | 1159  | -   | -   | 556 276     | 1167 | -   | -   |
| HCM Lane V/C Ratio    | 0.017 | -   | -   | 0.127 0.524 | -    | -   | -   |
| HCM Control Delay (s) | 8.2   | -   | -   | 12.4 31.6   | 0    | -   | -   |
| HCM Lane LOS          | A     | -   | -   | B D         | A    | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | 0.4 2.8     | 0    | -   | -   |

Lanes, Volumes, Timings  
15: Walden Street & 105th Place

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|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (vph)              | 23                                                                                | 1                                                                                 | 279                                                                               | 2                                                                                 | 1                                                                                 | 233                                                                               |
| Future Volume (vph)               | 23                                                                                | 1                                                                                 | 279                                                                               | 2                                                                                 | 1                                                                                 | 233                                                                               |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   |
| Storage Lanes                     | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               | 0.995                                                                             |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected                     | 0.954                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)                 | 1768                                                                              | 0                                                                                 | 1861                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Flt Permitted                     | 0.954                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)                 | 1768                                                                              | 0                                                                                 | 1861                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Link Speed (mph)                  | 45                                                                                |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |
| Link Distance (ft)                | 229                                                                               |                                                                                   | 280                                                                               |                                                                                   |                                                                                   | 395                                                                               |
| Travel Time (s)                   | 3.5                                                                               |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 6.0                                                                               |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.88                                                                              | 0.78                                                                              | 0.78                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                |
| Adj. Flow (vph)                   | 29                                                                                | 1                                                                                 | 317                                                                               | 3                                                                                 | 1                                                                                 | 268                                                                               |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 30                                                                                | 0                                                                                 | 320                                                                               | 0                                                                                 | 1                                                                                 | 268                                                                               |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              |
| Median Width(ft)                  | 12                                                                                |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 24.8%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.6                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 23                                                                                | 1        | 279                                                                               | 2      | 1                                                                                 | 233                                                                               |
| Future Vol, veh/h        | 23                                                                                | 1        | 279                                                                               | 2      | 1                                                                                 | 233                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 100                                                                               | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 78                                                                                | 78       | 88                                                                                | 78     | 78                                                                                | 87                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2        | 2                                                                                 | 2      | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 29                                                                                | 1        | 317                                                                               | 3      | 1                                                                                 | 268                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 589                                                                               | 319      | 0                                                                                 | 0      | 320                                                                               | 0                                                                                 |
| Stage 1                  | 319                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 270                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22     | -                                                                                 | -      | 4.12                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318    | -                                                                                 | -      | 2.218                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 471                                                                               | 722      | -                                                                                 | -      | 1240                                                                              | -                                                                                 |
| Stage 1                  | 737                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 775                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 471                                                                               | 722      | -                                                                                 | -      | 1240                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 471                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 737                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 774                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 13                                                                                | 0        |                                                                                   | 0      |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 478    |                                                                                   | 1240   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.064  |                                                                                   | 0.001  | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 13     |                                                                                   | 7.9    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - B      |                                                                                   | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.2    |                                                                                   | 0      | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
16: Yampa Street & 105th Avenue

JR Engineering  
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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 2                                                                                 | 44                                                                                | 1                                                                                 | 80                                                                                | 59                                                                                | 42                                                                                | 1                                                                                  | 10                                                                                  | 131                                                                                 | 53                                                                                  | 8                                                                                   | 18                                                                                  |
| Future Volume (vph)               | 2                                                                                 | 44                                                                                | 1                                                                                 | 80                                                                                | 59                                                                                | 42                                                                                | 1                                                                                  | 10                                                                                  | 131                                                                                 | 53                                                                                  | 8                                                                                   | 18                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.969                                                                             |                                                                                   |                                                                                    | 0.875                                                                               |                                                                                     |                                                                                     | 0.969                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.978                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.967                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1855                                                                              | 0                                                                                 | 0                                                                                 | 1765                                                                              | 0                                                                                 | 0                                                                                  | 1630                                                                                | 0                                                                                   | 0                                                                                   | 1745                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.978                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.967                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1855                                                                              | 0                                                                                 | 0                                                                                 | 1765                                                                              | 0                                                                                 | 0                                                                                  | 1630                                                                                | 0                                                                                   | 0                                                                                   | 1745                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 6.8                                                                                 |                                                                                     |                                                                                     | 6.4                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                | 2%                                                                                 | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)                   | 3                                                                                 | 56                                                                                | 1                                                                                 | 103                                                                               | 76                                                                                | 54                                                                                | 1                                                                                  | 13                                                                                  | 168                                                                                 | 68                                                                                  | 10                                                                                  | 23                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 60                                                                                | 0                                                                                 | 0                                                                                 | 233                                                                               | 0                                                                                 | 0                                                                                  | 182                                                                                 | 0                                                                                   | 0                                                                                   | 101                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                 |                                                                                     | 60                                                                                  | 60                                                                                  |                                                                                     | 60                                                                                  |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 39.9%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service A            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 7.1    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations      |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h       | 2      | 44                                                                                | 1    | 80     | 59                                                                                | 42   | 1      | 10                                                                                | 131   | 53     | 8                                                                                   | 18    |
| Future Vol, veh/h        | 2      | 44                                                                                | 1    | 80     | 59                                                                                | 42   | 1      | 10                                                                                | 131   | 53     | 8                                                                                   | 18    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor         | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 78    | 78     | 78                                                                                  | 78    |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                | 3      | 56                                                                                | 1    | 103    | 76                                                                                | 54   | 1      | 13                                                                                | 168   | 68     | 10                                                                                  | 23    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All     | 130    | 0                                                                                 | 0    | 57     | 0                                                                                 | 0    | 389    | 399                                                                               | 57    | 462    | 372                                                                                 | 103   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 63     | 63                                                                                | -     | 309    | 309                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 326    | 336                                                                               | -     | 153    | 63                                                                                  | -     |
| Critical Hdwy            | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy           | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver       | 1455   | -                                                                                 | -    | 1547   | -                                                                                 | -    | 570    | 539                                                                               | 1009  | 510    | 558                                                                                 | 952   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 948    | 842                                                                               | -     | 701    | 660                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 687    | 642                                                                               | -     | 849    | 842                                                                                 | -     |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver       | 1455   | -                                                                                 | -    | 1547   | -                                                                                 | -    | 517    | 499                                                                               | 1009  | 393    | 517                                                                                 | 952   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 517    | 499                                                                               | -     | 393    | 517                                                                                 | -     |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 946    | 840                                                                               | -     | 700    | 612                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 612    | 596                                                                               | -     | 695    | 840                                                                                 | -     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s     | 0.3    |                                                                                   |      | 3.3    |                                                                                   |      | 9.8    |                                                                                   |       | 14.8   |                                                                                     |       |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | B      |                                                                                     |       |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)         | 935    | 1455                                                                              | -    | -      | 1547                                                                              | -    | -      | 467                                                                               |       |        |                                                                                     |       |
| HCM Lane V/C Ratio       | 0.195  | 0.002                                                                             | -    | -      | 0.066                                                                             | -    | -      | 0.217                                                                             |       |        |                                                                                     |       |
| HCM Control Delay (s)    | 9.8    | 7.5                                                                               | 0    | -      | 7.5                                                                               | 0    | -      | 14.8                                                                              |       |        |                                                                                     |       |
| HCM Lane LOS             | A      | A                                                                                 | A    | -      | A                                                                                 | A    | -      | B                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)    | 0.7    | 0                                                                                 | -    | -      | 0.2                                                                               | -    | -      | 0.8                                                                               |       |        |                                                                                     |       |

Lanes, Volumes, Timings  
17: Yampa Street & Homestead Trail

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| Lane Group                        | EBL                                                                               | EBR                                                                               | NBL  | NBT                                                                               | SBT                                                                               | SBR   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Lane Configurations               |  |  |      |  |  |       |
| Traffic Volume (vph)              | 14                                                                                | 3                                                                                 | 8    | 23                                                                                | 2                                                                                 | 6     |
| Future Volume (vph)               | 14                                                                                | 3                                                                                 | 8    | 23                                                                                | 2                                                                                 | 6     |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900 | 1900                                                                              | 1900                                                                              | 1900  |
| Storage Length (ft)               | 100                                                                               | 0                                                                                 | 0    |                                                                                   |                                                                                   | 0     |
| Storage Lanes                     | 1                                                                                 | 1                                                                                 | 0    |                                                                                   |                                                                                   | 0     |
| Taper Length (ft)                 | 25                                                                                |                                                                                   | 25   |                                                                                   |                                                                                   |       |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  |
| Frt                               |                                                                                   | 0.850                                                                             |      |                                                                                   | 0.902                                                                             |       |
| Flt Protected                     | 0.950                                                                             |                                                                                   |      | 0.987                                                                             |                                                                                   |       |
| Satd. Flow (prot)                 | 1770                                                                              | 1583                                                                              | 0    | 1839                                                                              | 1680                                                                              | 0     |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |      | 0.987                                                                             |                                                                                   |       |
| Satd. Flow (perm)                 | 1770                                                                              | 1583                                                                              | 0    | 1839                                                                              | 1680                                                                              | 0     |
| Link Speed (mph)                  | 45                                                                                |                                                                                   |      | 45                                                                                | 45                                                                                |       |
| Link Distance (ft)                | 666                                                                               |                                                                                   |      | 181                                                                               | 194                                                                               |       |
| Travel Time (s)                   | 10.1                                                                              |                                                                                   |      | 2.7                                                                               | 2.9                                                                               |       |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78  |
| Heavy Vehicles (%)                | 2%                                                                                | 2%                                                                                | 2%   | 2%                                                                                | 2%                                                                                | 2%    |
| Adj. Flow (vph)                   | 18                                                                                | 4                                                                                 | 10   | 29                                                                                | 3                                                                                 | 8     |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |
| Lane Group Flow (vph)             | 18                                                                                | 4                                                                                 | 0    | 39                                                                                | 11                                                                                | 0     |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No   | No                                                                                | No                                                                                | No    |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left | Left                                                                              | Left                                                                              | Right |
| Median Width(ft)                  | 12                                                                                |                                                                                   |      | 0                                                                                 | 0                                                                                 |       |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |      | 0                                                                                 | 0                                                                                 |       |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |      | 16                                                                                | 16                                                                                |       |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  |
| Turning Speed (mph)               | 15                                                                                | 60                                                                                | 60   |                                                                                   |                                                                                   | 9     |
| Sign Control                      | Stop                                                                              |                                                                                   |      | Stop                                                                              | Stop                                                                              |       |
| Intersection Summary              |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |
| Area Type:                        | Other                                                                             |                                                                                   |      |                                                                                   |                                                                                   |       |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |      |                                                                                   |                                                                                   |       |
| Intersection Capacity Utilization | 18.2%                                                                             |                                                                                   |      | ICU Level of Service A                                                            |                                                                                   |       |
| Analysis Period (min)             | 15                                                                                |                                                                                   |      |                                                                                   |                                                                                   |       |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.3 |
| Intersection LOS          | A   |

| Movement            | EBL                                                                               | EBR                                                                               | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 14                                                                                | 3                                                                                 | 8    | 23                                                                                | 2                                                                                 | 6    |
| Future Vol, veh/h   | 14                                                                                | 3                                                                                 | 8    | 23                                                                                | 2                                                                                 | 6    |
| Peak Hour Factor    | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 |
| Heavy Vehicles, %   | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow           | 18                                                                                | 4                                                                                 | 10   | 29                                                                                | 3                                                                                 | 8    |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    |

| Approach                   | EB  | NB  | SB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          |     | SB  | NB  |
| Opposing Lanes             | 0   | 1   | 1   |
| Conflicting Approach Left  | SB  | EB  |     |
| Conflicting Lanes Left     | 1   | 2   | 0   |
| Conflicting Approach Right | NB  |     | EB  |
| Conflicting Lanes Right    | 1   | 0   | 2   |
| HCM Control Delay          | 7.8 | 7.2 | 6.6 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 26%   | 100%  | 0%    | 0%    |
| Vol Thru, %            | 74%   | 0%    | 0%    | 25%   |
| Vol Right, %           | 0%    | 0%    | 100%  | 75%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 31    | 14    | 3     | 8     |
| LT Vol                 | 8     | 14    | 0     | 0     |
| Through Vol            | 23    | 0     | 0     | 2     |
| RT Vol                 | 0     | 0     | 3     | 6     |
| Lane Flow Rate         | 40    | 18    | 4     | 10    |
| Geometry Grp           | 2     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.044 | 0.026 | 0.004 | 0.01  |
| Departure Headway (Hd) | 4.03  | 5.121 | 3.92  | 3.55  |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 889   | 701   | 914   | 1006  |
| Service Time           | 2.052 | 2.84  | 1.639 | 1.579 |
| HCM Lane V/C Ratio     | 0.045 | 0.026 | 0.004 | 0.01  |
| HCM Control Delay      | 7.2   | 8     | 6.7   | 6.6   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.1   | 0.1   | 0     | 0     |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

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10/19/2023

|                            |  |                                                                                                                                                                            |  |  |                                                                                                                                                                            |  |                                                                                         |                                                                                                                                                                                |  |  |                                                                                                                                                                                |  |
|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                                                                                                                                                                                                         | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                                                                                                         | WBR                                                                               | NBL                                                                                                                                                                        | NBT                                                                                                                                                                                                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                                                                                                               | SBR                                                                                 |
| Lane Configurations        |  | <br><br> |  |  | <br><br> |  | <br> | <br><br> |  |  | <br><br> |  |
| Traffic Volume (vph)       | 226                                                                               | 183                                                                                                                                                                                                                                                         | 480                                                                               | 24                                                                                | 249                                                                                                                                                                                                                                                         | 25                                                                                | 749                                                                                                                                                                        | 963                                                                                                                                                                                                                                                               | 29                                                                                  | 38                                                                                  | 653                                                                                                                                                                                                                                                               | 96                                                                                  |
| Future Volume (vph)        | 226                                                                               | 183                                                                                                                                                                                                                                                         | 480                                                                               | 24                                                                                | 249                                                                                                                                                                                                                                                         | 25                                                                                | 749                                                                                                                                                                        | 963                                                                                                                                                                                                                                                               | 29                                                                                  | 38                                                                                  | 653                                                                                                                                                                                                                                                               | 96                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                                                                                                                                                                                                        | 1900                                                                              | 1900                                                                              | 1900                                                                                                                                                                                                                                                        | 1900                                                                              | 1900                                                                                                                                                                       | 1900                                                                                                                                                                                                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                                                                                                                                                                                              | 1900                                                                                |
| Storage Length (ft)        | 350                                                                               |                                                                                                                                                                                                                                                             | 590                                                                               | 330                                                                               |                                                                                                                                                                                                                                                             | 440                                                                               | 320                                                                                                                                                                        |                                                                                                                                                                                                                                                                   | 290                                                                                 | 290                                                                                 |                                                                                                                                                                                                                                                                   | 190                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                                                                                                                                                                                             | 1                                                                                 | 1                                                                                 |                                                                                                                                                                                                                                                             | 1                                                                                 | 2                                                                                                                                                                          |                                                                                                                                                                                                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                                                                                                                                                                                                   | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                                                                                                                                                                                             |                                                                                   | 25                                                                                |                                                                                                                                                                                                                                                             |                                                                                   | 25                                                                                                                                                                         |                                                                                                                                                                                                                                                                   |                                                                                     | 25                                                                                  |                                                                                                                                                                                                                                                                   |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.91                                                                                                                                                                                                                                                        | 1.00                                                                              | 1.00                                                                              | 0.91                                                                                                                                                                                                                                                        | 1.00                                                                              | 0.97                                                                                                                                                                       | 0.95                                                                                                                                                                                                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                                                                                                                                                                                              | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                                                                                                                                                                                             | 0.850                                                                             |                                                                                   |                                                                                                                                                                                                                                                             | 0.850                                                                             |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   | 0.850                                                                               |                                                                                     |                                                                                                                                                                                                                                                                   | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                                                                                                                                                                                             |                                                                                   | 0.950                                                                             |                                                                                                                                                                                                                                                             |                                                                                   | 0.950                                                                                                                                                                      |                                                                                                                                                                                                                                                                   |                                                                                     | 0.950                                                                               |                                                                                                                                                                                                                                                                   |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 5085                                                                                                                                                                                                                                                        | 1583                                                                              | 1770                                                                              | 5085                                                                                                                                                                                                                                                        | 1583                                                                              | 3433                                                                                                                                                                       | 3539                                                                                                                                                                                                                                                              | 1583                                                                                | 1770                                                                                | 3539                                                                                                                                                                                                                                                              | 1583                                                                                |
| Flt Permitted              | 0.375                                                                             |                                                                                                                                                                                                                                                             |                                                                                   | 0.610                                                                             |                                                                                                                                                                                                                                                             |                                                                                   | 0.950                                                                                                                                                                      |                                                                                                                                                                                                                                                                   |                                                                                     | 0.950                                                                               |                                                                                                                                                                                                                                                                   |                                                                                     |
| Satd. Flow (perm)          | 699                                                                               | 5085                                                                                                                                                                                                                                                        | 1583                                                                              | 1136                                                                              | 5085                                                                                                                                                                                                                                                        | 1583                                                                              | 3433                                                                                                                                                                       | 3539                                                                                                                                                                                                                                                              | 1583                                                                                | 1770                                                                                | 3539                                                                                                                                                                                                                                                              | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                                                                                                                                                                                             | Yes                                                                               |                                                                                   |                                                                                                                                                                                                                                                             | Yes                                                                               |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   | Yes                                                                                 |                                                                                     |                                                                                                                                                                                                                                                                   | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                                                                                                                                                                                             | 545                                                                               |                                                                                   |                                                                                                                                                                                                                                                             | 264                                                                               |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   | 182                                                                                 |                                                                                     |                                                                                                                                                                                                                                                                   | 256                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   | 45                                                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                            | 45                                                                                                                                                                                                                                                                |                                                                                     |                                                                                     | 45                                                                                                                                                                                                                                                                |                                                                                     |
| Link Distance (ft)         |                                                                                   | 660                                                                                                                                                                                                                                                         |                                                                                   |                                                                                   | 1515                                                                                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                            | 645                                                                                                                                                                                                                                                               |                                                                                     |                                                                                     | 450                                                                                                                                                                                                                                                               |                                                                                     |
| Travel Time (s)            |                                                                                   | 10.0                                                                                                                                                                                                                                                        |                                                                                   |                                                                                   | 23.0                                                                                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                            | 9.8                                                                                                                                                                                                                                                               |                                                                                     |                                                                                     | 6.8                                                                                                                                                                                                                                                               |                                                                                     |
| Peak Hour Factor           | 0.87                                                                              | 0.84                                                                                                                                                                                                                                                        | 0.88                                                                              | 0.78                                                                              | 0.88                                                                                                                                                                                                                                                        | 0.78                                                                              | 0.92                                                                                                                                                                       | 0.92                                                                                                                                                                                                                                                              | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                                                                                                                                                                                              | 0.80                                                                                |
| Adj. Flow (vph)            | 260                                                                               | 218                                                                                                                                                                                                                                                         | 545                                                                               | 31                                                                                | 283                                                                                                                                                                                                                                                         | 32                                                                                | 814                                                                                                                                                                        | 1047                                                                                                                                                                                                                                                              | 37                                                                                  | 49                                                                                  | 710                                                                                                                                                                                                                                                               | 120                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                   |                                                                                     |
| Lane Group Flow (vph)      | 260                                                                               | 218                                                                                                                                                                                                                                                         | 545                                                                               | 31                                                                                | 283                                                                                                                                                                                                                                                         | 32                                                                                | 814                                                                                                                                                                        | 1047                                                                                                                                                                                                                                                              | 37                                                                                  | 49                                                                                  | 710                                                                                                                                                                                                                                                               | 120                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                                                                                                                                                                                          | No                                                                                | No                                                                                | No                                                                                                                                                                                                                                                          | No                                                                                | No                                                                                                                                                                         | No                                                                                                                                                                                                                                                                | No                                                                                  | No                                                                                  | No                                                                                                                                                                                                                                                                | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                                                                                                                                                                                                        | Right                                                                             | Left                                                                              | Left                                                                                                                                                                                                                                                        | Right                                                                             | Left                                                                                                                                                                       | Left                                                                                                                                                                                                                                                              | Right                                                                               | Left                                                                                | Left                                                                                                                                                                                                                                                              | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   | 12                                                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                            | 24                                                                                                                                                                                                                                                                |                                                                                     |                                                                                     | 24                                                                                                                                                                                                                                                                |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                                                                                                                                                                                           |                                                                                   |                                                                                   | 0                                                                                                                                                                                                                                                           |                                                                                   |                                                                                                                                                                            | 0                                                                                                                                                                                                                                                                 |                                                                                     |                                                                                     | 0                                                                                                                                                                                                                                                                 |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   | 16                                                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                            | 16                                                                                                                                                                                                                                                                |                                                                                     |                                                                                     | 16                                                                                                                                                                                                                                                                |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                   |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                        | 1.00                                                                              | 1.00                                                                                                                                                                       | 1.00                                                                                                                                                                                                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                                                                                                              | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                                                                                                                                                                                             | 9                                                                                 | 15                                                                                |                                                                                                                                                                                                                                                             | 9                                                                                 | 15                                                                                                                                                                         |                                                                                                                                                                                                                                                                   | 9                                                                                   | 15                                                                                  |                                                                                                                                                                                                                                                                   | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                                                                                                                                                                                           | 1                                                                                 | 1                                                                                 | 2                                                                                                                                                                                                                                                           | 1                                                                                 | 1                                                                                                                                                                          | 2                                                                                                                                                                                                                                                                 | 1                                                                                   | 1                                                                                   | 2                                                                                                                                                                                                                                                                 | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                                                                                                                                                                                                        | Right                                                                             | Left                                                                              | Thru                                                                                                                                                                                                                                                        | Right                                                                             | Left                                                                                                                                                                       | Thru                                                                                                                                                                                                                                                              | Right                                                                               | Left                                                                                | Thru                                                                                                                                                                                                                                                              | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                                                                                                                                                                                                         | 20                                                                                | 20                                                                                | 100                                                                                                                                                                                                                                                         | 20                                                                                | 20                                                                                                                                                                         | 100                                                                                                                                                                                                                                                               | 20                                                                                  | 20                                                                                  | 100                                                                                                                                                                                                                                                               | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                                                                                                                                                                                           | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                           | 0                                                                                 | 0                                                                                                                                                                          | 0                                                                                                                                                                                                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                                                                                                                 | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                                                                                                                                                                                           | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                           | 0                                                                                 | 0                                                                                                                                                                          | 0                                                                                                                                                                                                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                                                                                                                 | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                                                                                                                                                                                           | 20                                                                                | 20                                                                                | 6                                                                                                                                                                                                                                                           | 20                                                                                | 20                                                                                                                                                                         | 6                                                                                                                                                                                                                                                                 | 20                                                                                  | 20                                                                                  | 6                                                                                                                                                                                                                                                                 | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                                                                                                                                                                                                       | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                                                                                                                                                                                                       | Cl+Ex                                                                             | Cl+Ex                                                                                                                                                                      | Cl+Ex                                                                                                                                                                                                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                                                                                                                                                                                                             | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                   |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                                                                                                                        | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                                                                                                                        | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                         | 0.0                                                                               | 0.0                                                                                                                                                                        | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                                                                                                               | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   | 94                                                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                            | 94                                                                                                                                                                                                                                                                |                                                                                     |                                                                                     | 94                                                                                                                                                                                                                                                                |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                                                                                                                                                                                           |                                                                                   |                                                                                   | 6                                                                                                                                                                                                                                                           |                                                                                   |                                                                                                                                                                            | 6                                                                                                                                                                                                                                                                 |                                                                                     |                                                                                     | 6                                                                                                                                                                                                                                                                 |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   | Cl+Ex                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                            | Cl+Ex                                                                                                                                                                                                                                                             |                                                                                     |                                                                                     | Cl+Ex                                                                                                                                                                                                                                                             |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                   |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                   |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                                                                                                                                                                                                         |                                                                                   |                                                                                   | 0.0                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                                                            | 0.0                                                                                                                                                                                                                                                               |                                                                                     |                                                                                     | 0.0                                                                                                                                                                                                                                                               |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                                                                                                                                                                                          | Perm                                                                              | pm+pt                                                                             | NA                                                                                                                                                                                                                                                          | Perm                                                                              | Prot                                                                                                                                                                       | NA                                                                                                                                                                                                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                                                                                                                                                                                                | Perm                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                                                                                                                                                                                           |                                                                                   | 3                                                                                 | 8                                                                                                                                                                                                                                                           |                                                                                   | 5                                                                                                                                                                          | 2                                                                                                                                                                                                                                                                 |                                                                                     | 1                                                                                   | 6                                                                                                                                                                                                                                                                 |                                                                                     |
| Permitted Phases           | 4                                                                                 |                                                                                                                                                                                                                                                             | 4                                                                                 | 8                                                                                 |                                                                                                                                                                                                                                                             | 8                                                                                 |                                                                                                                                                                            |                                                                                                                                                                                                                                                                   | 2                                                                                   |                                                                                     |                                                                                                                                                                                                                                                                   | 6                                                                                   |

Lanes, Volumes, Timings  
1: Tower Road & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 15.4                                                                              | 17.4                                                                              | 17.4                                                                              | 16.2                                                                               | 18.2                                                                                | 18.2                                                                                | 16.2                                                                                | 18.2                                                                                | 18.2                                                                                |
| Total Split (s)       | 26.0                                                                              | 25.0                                                                              | 25.0                                                                              | 21.0                                                                              | 20.0                                                                              | 20.0                                                                              | 45.0                                                                               | 57.0                                                                                | 57.0                                                                                | 17.0                                                                                | 29.0                                                                                | 29.0                                                                                |
| Total Split (%)       | 21.7%                                                                             | 20.8%                                                                             | 20.8%                                                                             | 17.5%                                                                             | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                              | 47.5%                                                                               | 47.5%                                                                               | 14.2%                                                                               | 24.2%                                                                               | 24.2%                                                                               |
| Maximum Green (s)     | 18.6                                                                              | 17.6                                                                              | 17.6                                                                              | 13.6                                                                              | 12.6                                                                              | 12.6                                                                              | 36.8                                                                               | 48.8                                                                                | 48.8                                                                                | 8.8                                                                                 | 20.8                                                                                | 20.8                                                                                |
| Yellow Time (s)       | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.1                                                                                | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 | 5.1                                                                                 |
| All-Red Time (s)      | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 2.4                                                                               | 3.1                                                                                | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 | 3.1                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 | 8.2                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 3.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Recall Mode           | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effect Green (s)  | 36.3                                                                              | 27.1                                                                              | 27.1                                                                              | 19.1                                                                              | 11.1                                                                              | 11.1                                                                              | 32.3                                                                               | 54.6                                                                                | 54.6                                                                                | 8.6                                                                                 | 27.6                                                                                | 27.6                                                                                |
| Actuated g/C Ratio    | 0.30                                                                              | 0.23                                                                              | 0.23                                                                              | 0.16                                                                              | 0.09                                                                              | 0.09                                                                              | 0.27                                                                               | 0.46                                                                                | 0.46                                                                                | 0.07                                                                                | 0.23                                                                                | 0.23                                                                                |
| v/c Ratio             | 0.70                                                                              | 0.19                                                                              | 0.70                                                                              | 0.14                                                                              | 0.60                                                                              | 0.08                                                                              | 0.88                                                                               | 0.65                                                                                | 0.05                                                                                | 0.39                                                                                | 0.87                                                                                | 0.21                                                                                |
| Control Delay         | 41.9                                                                              | 37.0                                                                              | 18.0                                                                              | 31.6                                                                              | 57.8                                                                              | 0.4                                                                               | 53.7                                                                               | 29.3                                                                                | 0.1                                                                                 | 62.5                                                                                | 58.2                                                                                | 0.9                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 41.9                                                                              | 37.0                                                                              | 18.0                                                                              | 31.6                                                                              | 57.8                                                                              | 0.4                                                                               | 53.7                                                                               | 29.3                                                                                | 0.1                                                                                 | 62.5                                                                                | 58.2                                                                                | 0.9                                                                                 |
| LOS                   | D                                                                                 | D                                                                                 | B                                                                                 | C                                                                                 | E                                                                                 | A                                                                                 | D                                                                                  | C                                                                                   | A                                                                                   | E                                                                                   | E                                                                                   | A                                                                                   |
| Approach Delay        | 28.1                                                                              |                                                                                   | 50.1                                                                              |                                                                                   | 39.2                                                                              |                                                                                   | 50.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS          | C                                                                                 |                                                                                   | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   | D                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 39.8

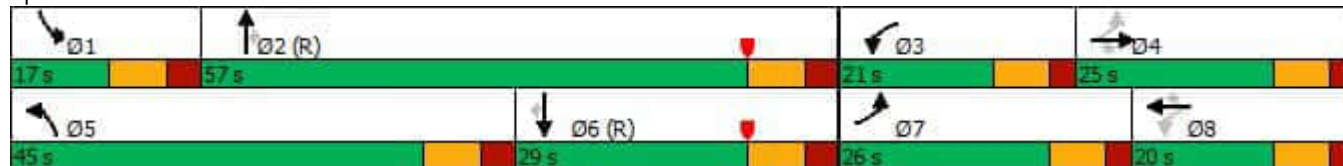
Intersection LOS: D

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Tower Road & 104th Avenue



## Queues

JR Engineering

10/19/2023

## 1: Tower Road &amp; 104th Avenue



| Lane Group              | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 260  | 218  | 545  | 31   | 283  | 32   | 814  | 1047 | 37   | 49   | 710  | 120  |
| v/c Ratio               | 0.70 | 0.19 | 0.70 | 0.14 | 0.60 | 0.08 | 0.88 | 0.65 | 0.05 | 0.39 | 0.87 | 0.21 |
| Control Delay           | 41.9 | 37.0 | 18.0 | 31.6 | 57.8 | 0.4  | 53.7 | 29.3 | 0.1  | 62.5 | 58.2 | 0.9  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 41.9 | 37.0 | 18.0 | 31.6 | 57.8 | 0.4  | 53.7 | 29.3 | 0.1  | 62.5 | 58.2 | 0.9  |
| Queue Length 50th (ft)  | 165  | 53   | 161  | 17   | 78   | 0    | 309  | 345  | 0    | 37   | 284  | 0    |
| Queue Length 95th (ft)  | 244  | 75   | 249  | 34   | 106  | 0    | 370  | 435  | 0    | 67   | #465 | 0    |
| Internal Link Dist (ft) |      | 580  |      |      | 1435 |      |      | 565  |      |      | 370  |      |
| Turn Bay Length (ft)    | 350  |      | 590  | 330  |      | 440  | 320  |      | 290  | 290  |      | 190  |
| Base Capacity (vph)     | 377  | 1146 | 779  | 306  | 533  | 402  | 1052 | 1609 | 819  | 131  | 814  | 561  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.69 | 0.19 | 0.70 | 0.10 | 0.53 | 0.08 | 0.77 | 0.65 | 0.05 | 0.37 | 0.87 | 0.21 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 1: Tower Road & 104th Avenue

JR Engineering

10/19/2023

|                                                                                                                         |  |                                                                                                                                                                      |  |  |                                                                                                                                                                      |  |                                                                                      |                                                                                      |  |  |                                                                                      |  |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                                | EBL                                                                               | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                                                                                                   | WBR                                                                               | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations                                                                                                     |  |    |  |  |    |  |   |   |  |  |   |  |
| Traffic Volume (veh/h)                                                                                                  | 226                                                                               | 183                                                                                                                                                                                                                                                   | 480                                                                               | 24                                                                                | 249                                                                                                                                                                                                                                                   | 25                                                                                | 749                                                                                                                                                                     | 963                                                                                                                                                                     | 29                                                                                  | 38                                                                                  | 653                                                                                                                                                                     | 96                                                                                  |
| Future Volume (veh/h)                                                                                                   | 226                                                                               | 183                                                                                                                                                                                                                                                   | 480                                                                               | 24                                                                                | 249                                                                                                                                                                                                                                                   | 25                                                                                | 749                                                                                                                                                                     | 963                                                                                                                                                                     | 29                                                                                  | 38                                                                                  | 653                                                                                                                                                                     | 96                                                                                  |
| Initial Q (Qb), veh                                                                                                     | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                                     | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj                                                                                                        | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach                                                                                                   |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                   |                                                                                   | No                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                         | No                                                                                                                                                                      |                                                                                     |                                                                                     | No                                                                                                                                                                      |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                                  | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                                                                                                  | 1870                                                                              | 1870                                                                                                                                                                    | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h                                                                                                    | 260                                                                               | 218                                                                                                                                                                                                                                                   | 0                                                                                 | 31                                                                                | 283                                                                                                                                                                                                                                                   | 0                                                                                 | 814                                                                                                                                                                     | 1047                                                                                                                                                                    | 0                                                                                   | 49                                                                                  | 710                                                                                                                                                                     | 0                                                                                   |
| Peak Hour Factor                                                                                                        | 0.87                                                                              | 0.84                                                                                                                                                                                                                                                  | 0.88                                                                              | 0.78                                                                              | 0.88                                                                                                                                                                                                                                                  | 0.78                                                                              | 0.92                                                                                                                                                                    | 0.92                                                                                                                                                                    | 0.78                                                                                | 0.78                                                                                | 0.92                                                                                                                                                                    | 0.80                                                                                |
| Percent Heavy Veh, %                                                                                                    | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                                                                                                              | 352                                                                               | 951                                                                                                                                                                                                                                                   |                                                                                   | 233                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                   | 883                                                                                                                                                                     | 1624                                                                                                                                                                    |                                                                                     | 96                                                                                  | 907                                                                                                                                                                     |                                                                                     |
| Arrive On Green                                                                                                         | 0.05                                                                              | 0.06                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.04                                                                              | 0.08                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.26                                                                                                                                                                    | 0.46                                                                                                                                                                    | 0.00                                                                                | 0.05                                                                                | 0.26                                                                                                                                                                    | 0.00                                                                                |
| Sat Flow, veh/h                                                                                                         | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 5106                                                                                                                                                                                                                                                  | 1585                                                                              | 3456                                                                                                                                                                    | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h                                                                                                    | 260                                                                               | 218                                                                                                                                                                                                                                                   | 0                                                                                 | 31                                                                                | 283                                                                                                                                                                                                                                                   | 0                                                                                 | 814                                                                                                                                                                     | 1047                                                                                                                                                                    | 0                                                                                   | 49                                                                                  | 710                                                                                                                                                                     | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                                                | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                              | 1781                                                                              | 1702                                                                                                                                                                                                                                                  | 1585                                                                              | 1728                                                                                                                                                                    | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s                                                                                                         | 15.5                                                                              | 4.9                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.9                                                                               | 6.5                                                                                                                                                                                                                                                   | 0.0                                                                               | 27.5                                                                                                                                                                    | 27.2                                                                                                                                                                    | 0.0                                                                                 | 3.2                                                                                 | 22.3                                                                                                                                                                    | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                                                   | 15.5                                                                              | 4.9                                                                                                                                                                                                                                                   | 0.0                                                                               | 1.9                                                                               | 6.5                                                                                                                                                                                                                                                   | 0.0                                                                               | 27.5                                                                                                                                                                    | 27.2                                                                                                                                                                    | 0.0                                                                                 | 3.2                                                                                 | 22.3                                                                                                                                                                    | 0.0                                                                                 |
| Prop In Lane                                                                                                            | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                                                  | 352                                                                               | 951                                                                                                                                                                                                                                                   |                                                                                   | 233                                                                               | 426                                                                                                                                                                                                                                                   |                                                                                   | 883                                                                                                                                                                     | 1624                                                                                                                                                                    |                                                                                     | 96                                                                                  | 907                                                                                                                                                                     |                                                                                     |
| V/C Ratio(X)                                                                                                            | 0.74                                                                              | 0.23                                                                                                                                                                                                                                                  |                                                                                   | 0.13                                                                              | 0.67                                                                                                                                                                                                                                                  |                                                                                   | 0.92                                                                                                                                                                    | 0.64                                                                                                                                                                    |                                                                                     | 0.51                                                                                | 0.78                                                                                                                                                                    |                                                                                     |
| Avail Cap(c_a), veh/h                                                                                                   | 368                                                                               | 951                                                                                                                                                                                                                                                   |                                                                                   | 359                                                                               | 536                                                                                                                                                                                                                                                   |                                                                                   | 1060                                                                                                                                                                    | 1624                                                                                                                                                                    |                                                                                     | 131                                                                                 | 907                                                                                                                                                                     |                                                                                     |
| HCM Platoon Ratio                                                                                                       | 0.33                                                                              | 0.33                                                                                                                                                                                                                                                  | 0.33                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)                                                                                                      | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 0.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                                                | 45.0                                                                              | 48.1                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.6                                                                              | 53.4                                                                                                                                                                                                                                                  | 0.0                                                                               | 43.5                                                                                                                                                                    | 25.1                                                                                                                                                                    | 0.0                                                                                 | 55.3                                                                                | 41.6                                                                                                                                                                    | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                                                  | 6.3                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.1                                                                               | 1.1                                                                                                                                                                                                                                                   | 0.0                                                                               | 10.5                                                                                                                                                                    | 2.0                                                                                                                                                                     | 0.0                                                                                 | 4.2                                                                                 | 6.7                                                                                                                                                                     | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                                | 7.9                                                                               | 2.1                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.8                                                                               | 2.7                                                                                                                                                                                                                                                   | 0.0                                                                               | 12.6                                                                                                                                                                    | 11.2                                                                                                                                                                    | 0.0                                                                                 | 1.5                                                                                 | 10.3                                                                                                                                                                    | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh                                                                                            |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d),s/veh                                                                                                    | 51.2                                                                              | 48.2                                                                                                                                                                                                                                                  | 0.0                                                                               | 46.7                                                                              | 54.5                                                                                                                                                                                                                                                  | 0.0                                                                               | 54.0                                                                                                                                                                    | 27.1                                                                                                                                                                    | 0.0                                                                                 | 59.5                                                                                | 48.3                                                                                                                                                                    | 0.0                                                                                 |
| LnGrp LOS                                                                                                               | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                   | D                                                                                 | D                                                                                                                                                                                                                                                     |                                                                                   | D                                                                                                                                                                       | C                                                                                                                                                                       |                                                                                     | E                                                                                   | D                                                                                                                                                                       |                                                                                     |
| Approach Vol, veh/h                                                                                                     |                                                                                   | 478                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 314                                                                                                                                                                                                                                                   |                                                                                   |                                                                                                                                                                         | 1861                                                                                                                                                                    |                                                                                     |                                                                                     | 759                                                                                                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                                                                   |                                                                                   | 49.8                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   | 53.7                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                         | 38.9                                                                                                                                                                    |                                                                                     |                                                                                     | 49.0                                                                                                                                                                    |                                                                                     |
| Approach LOS                                                                                                            |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         | D                                                                                                                                                                       |                                                                                     |                                                                                     | D                                                                                                                                                                       |                                                                                     |
| Timer - Assigned Phs                                                                                                    | 1                                                                                 | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                                                                                                     | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                                | 14.6                                                                              | 63.1                                                                                                                                                                                                                                                  | 12.6                                                                              | 29.8                                                                              | 38.9                                                                                                                                                                                                                                                  | 38.8                                                                              | 24.9                                                                                                                                                                    | 17.4                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s                                                                                                 | 8.2                                                                               | 8.2                                                                                                                                                                                                                                                   | 7.4                                                                               | 7.4                                                                               | 8.2                                                                                                                                                                                                                                                   | 8.2                                                                               | 7.4                                                                                                                                                                     | 7.4                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s                                                                                             | 8.8                                                                               | 48.8                                                                                                                                                                                                                                                  | 13.6                                                                              | 17.6                                                                              | 36.8                                                                                                                                                                                                                                                  | 20.8                                                                              | 18.6                                                                                                                                                                    | 12.6                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                                            | 5.2                                                                               | 29.2                                                                                                                                                                                                                                                  | 3.9                                                                               | 6.9                                                                               | 29.5                                                                                                                                                                                                                                                  | 24.3                                                                              | 17.5                                                                                                                                                                    | 8.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s                                                                                                 | 0.0                                                                               | 11.3                                                                                                                                                                                                                                                  | 0.0                                                                               | 0.6                                                                               | 1.2                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                     | 0.4                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| <b>Intersection Summary</b>                                                                                             |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th Ctrl Delay                                                                                                      |                                                                                   |                                                                                                                                                                                                                                                       | 44.0                                                                              |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 6th LOS                                                                                                             |                                                                                   |                                                                                                                                                                                                                                                       | D                                                                                 |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| <b>Notes</b>                                                                                                            |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

JR Engineering

10/19/2023

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 97                                                                                | 633                                                                               | 133                                                                               | 21                                                                                | 872                                                                               | 159                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 256                                                                                 | 16                                                                                  | 90                                                                                  |
| Future Volume (vph)        | 97                                                                                | 633                                                                               | 133                                                                               | 21                                                                                | 872                                                                               | 159                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 256                                                                                 | 16                                                                                  | 90                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 400                                                                               |                                                                                   | 230                                                                               | 0                                                                                 |                                                                                   | 250                                                                               | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted              | 0.175                                                                             |                                                                                   |                                                                                   | 0.363                                                                             |                                                                                   |                                                                                   | 0.744                                                                              |                                                                                     |                                                                                     | 0.401                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 326                                                                               | 3539                                                                              | 1583                                                                              | 676                                                                               | 3539                                                                              | 1583                                                                              | 1386                                                                               | 1863                                                                                | 1583                                                                                | 747                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                    |                                                                                     | 227                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)           |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 900                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 652                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 17.8                                                                                |                                                                                     |                                                                                     | 12.3                                                                                |                                                                                     |
| Peak Hour Factor           | 0.80                                                                              | 0.92                                                                              | 0.84                                                                              | 0.78                                                                              | 0.92                                                                              | 0.84                                                                              | 0.84                                                                               | 0.78                                                                                | 0.78                                                                                | 0.87                                                                                | 0.78                                                                                | 0.80                                                                                |
| Adj. Flow (vph)            | 121                                                                               | 688                                                                               | 158                                                                               | 27                                                                                | 948                                                                               | 189                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 294                                                                                 | 21                                                                                  | 113                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 121                                                                               | 688                                                                               | 158                                                                               | 27                                                                                | 948                                                                               | 189                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 294                                                                                 | 21                                                                                  | 113                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                  | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases           | 2                                                                                 |                                                                                   | 2                                                                                 | 6                                                                                 |                                                                                   | 6                                                                                 | 8                                                                                  |                                                                                     | 8                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |

# Lanes, Volumes, Timings

## 2: Walden Street & 104th Avenue

JR Engineering  
10/19/2023

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase        | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                   | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 8.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)     | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 12.5                                                                              | 17.5                                                                              | 17.5                                                                              | 14.5                                                                                | 16.5                                                                                | 16.5                                                                                | 14.5                                                                                | 16.5                                                                                | 16.5                                                                                |
| Total Split (s)       | 18.0                                                                              | 57.0                                                                              | 57.0                                                                              | 13.0                                                                              | 52.0                                                                              | 52.0                                                                              | 25.0                                                                                | 17.0                                                                                | 17.0                                                                                | 33.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)       | 15.0%                                                                             | 47.5%                                                                             | 47.5%                                                                             | 10.8%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 20.8%                                                                               | 14.2%                                                                               | 14.2%                                                                               | 27.5%                                                                               | 20.8%                                                                               | 20.8%                                                                               |
| Maximum Green (s)     | 10.5                                                                              | 49.5                                                                              | 49.5                                                                              | 5.5                                                                               | 44.5                                                                              | 44.5                                                                              | 18.5                                                                                | 10.5                                                                                | 10.5                                                                                | 26.5                                                                                | 18.5                                                                                | 18.5                                                                                |
| Yellow Time (s)       | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 | 3.8                                                                                 |
| All-Red Time (s)      | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.2                                                                               | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)   | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 7.5                                                                               | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 | 6.5                                                                                 |
| Lead/Lag              | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?    | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s) | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                               | 5.0                                                                               | 5.0                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Recall Mode           | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)  | 66.4                                                                              | 60.7                                                                              | 60.7                                                                              | 58.1                                                                              | 52.8                                                                              | 52.8                                                                              | 23.8                                                                                | 10.1                                                                                | 10.1                                                                                | 37.0                                                                                | 15.2                                                                                | 15.2                                                                                |
| Actuated g/C Ratio    | 0.55                                                                              | 0.51                                                                              | 0.51                                                                              | 0.48                                                                              | 0.44                                                                              | 0.44                                                                              | 0.20                                                                                | 0.08                                                                                | 0.08                                                                                | 0.31                                                                                | 0.13                                                                                | 0.13                                                                                |
| v/c Ratio             | 0.43                                                                              | 0.38                                                                              | 0.17                                                                              | 0.07                                                                              | 0.61                                                                              | 0.23                                                                              | 0.66                                                                                | 0.34                                                                                | 0.14                                                                                | 0.67                                                                                | 0.09                                                                                | 0.33                                                                                |
| Control Delay         | 18.1                                                                              | 21.0                                                                              | 1.2                                                                               | 4.0                                                                               | 15.9                                                                              | 3.2                                                                               | 43.9                                                                                | 58.1                                                                                | 0.9                                                                                 | 41.5                                                                                | 45.6                                                                                | 4.0                                                                                 |
| Queue Delay           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay           | 18.1                                                                              | 21.0                                                                              | 1.2                                                                               | 4.0                                                                               | 15.9                                                                              | 3.2                                                                               | 43.9                                                                                | 58.1                                                                                | 0.9                                                                                 | 41.5                                                                                | 45.6                                                                                | 4.0                                                                                 |
| LOS                   | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 | D                                                                                   | E                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay        |                                                                                   | 17.4                                                                              |                                                                                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                     | 39.6                                                                                |                                                                                     |                                                                                     | 31.8                                                                                |                                                                                     |
| Approach LOS          |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 20.5

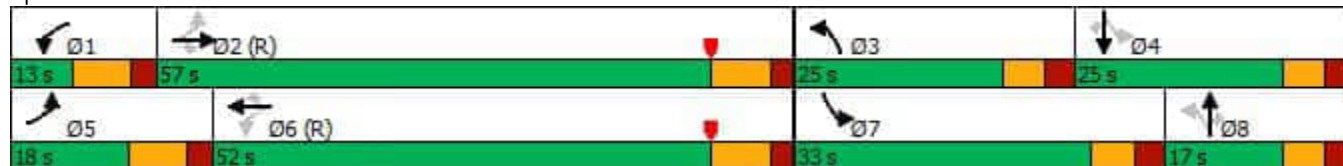
Intersection LOS: C

Intersection Capacity Utilization 68.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Walden Street & 104th Avenue



Queues  
2: Walden Street & 104th Avenue

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|                                                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                                                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)                                             | 121                                                                               | 688                                                                               | 158                                                                               | 27                                                                                | 948                                                                               | 189                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 294                                                                                 | 21                                                                                  | 113                                                                                 |
| v/c Ratio                                                         | 0.43                                                                              | 0.38                                                                              | 0.17                                                                              | 0.07                                                                              | 0.61                                                                              | 0.23                                                                              | 0.66                                                                               | 0.34                                                                                | 0.14                                                                                | 0.67                                                                                | 0.09                                                                                | 0.33                                                                                |
| Control Delay                                                     | 18.1                                                                              | 21.0                                                                              | 1.2                                                                               | 4.0                                                                               | 15.9                                                                              | 3.2                                                                               | 43.9                                                                               | 58.1                                                                                | 0.9                                                                                 | 41.5                                                                                | 45.6                                                                                | 4.0                                                                                 |
| Queue Delay                                                       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay                                                       | 18.1                                                                              | 21.0                                                                              | 1.2                                                                               | 4.0                                                                               | 15.9                                                                              | 3.2                                                                               | 43.9                                                                               | 58.1                                                                                | 0.9                                                                                 | 41.5                                                                                | 45.6                                                                                | 4.0                                                                                 |
| Queue Length 50th (ft)                                            | 42                                                                                | 184                                                                               | 0                                                                                 | 2                                                                                 | 334                                                                               | 2                                                                                 | 128                                                                                | 39                                                                                  | 0                                                                                   | 185                                                                                 | 15                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)                                            | 70                                                                                | 256                                                                               | 5                                                                                 | m6                                                                                | 473                                                                               | m16                                                                               | 170                                                                                | 70                                                                                  | 0                                                                                   | 245                                                                                 | 33                                                                                  | 0                                                                                   |
| Internal Link Dist (ft)                                           |                                                                                   | 820                                                                               |                                                                                   |                                                                                   | 580                                                                               |                                                                                   |                                                                                    | 572                                                                                 |                                                                                     |                                                                                     | 370                                                                                 |                                                                                     |
| Turn Bay Length (ft)                                              | 400                                                                               |                                                                                   | 230                                                                               |                                                                                   |                                                                                   | 250                                                                               | 230                                                                                |                                                                                     | 230                                                                                 | 210                                                                                 |                                                                                     | 140                                                                                 |
| Base Capacity (vph)                                               | 308                                                                               | 1790                                                                              | 908                                                                               | 379                                                                               | 1557                                                                              | 819                                                                               | 366                                                                                | 163                                                                                 | 345                                                                                 | 462                                                                                 | 287                                                                                 | 386                                                                                 |
| Starvation Cap Reductn                                            | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn                                             | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio                                                 | 0.39                                                                              | 0.38                                                                              | 0.17                                                                              | 0.07                                                                              | 0.61                                                                              | 0.23                                                                              | 0.59                                                                               | 0.33                                                                                | 0.14                                                                                | 0.64                                                                                | 0.07                                                                                | 0.29                                                                                |
| <b>Intersection Summary</b>                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| m Volume for 95th percentile queue is metered by upstream signal. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: Walden Street & 104th Avenue

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10/19/2023

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 97                                                                                | 633                                                                               | 133                                                                               | 21                                                                                | 872                                                                               | 159                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 256                                                                                 | 16                                                                                  | 90                                                                                  |
| Future Volume (veh/h)        | 97                                                                                | 633                                                                               | 133                                                                               | 21                                                                                | 872                                                                               | 159                                                                               | 181                                                                                | 41                                                                                  | 38                                                                                  | 256                                                                                 | 16                                                                                  | 90                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 121                                                                               | 688                                                                               | 158                                                                               | 27                                                                                | 948                                                                               | 189                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 294                                                                                 | 21                                                                                  | 112                                                                                 |
| Peak Hour Factor             | 0.80                                                                              | 0.92                                                                              | 0.84                                                                              | 0.78                                                                              | 0.92                                                                              | 0.84                                                                              | 0.84                                                                               | 0.78                                                                                | 0.78                                                                                | 0.87                                                                                | 0.78                                                                                | 0.80                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 259                                                                               | 1748                                                                              | 780                                                                               | 345                                                                               | 1654                                                                              | 738                                                                               | 389                                                                                | 156                                                                                 | 132                                                                                 | 430                                                                                 | 232                                                                                 | 196                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.49                                                                              | 0.49                                                                              | 0.01                                                                              | 0.15                                                                              | 0.15                                                                              | 0.13                                                                               | 0.08                                                                                | 0.08                                                                                | 0.17                                                                                | 0.12                                                                                | 0.12                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                               | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 121                                                                               | 688                                                                               | 158                                                                               | 27                                                                                | 948                                                                               | 189                                                                               | 215                                                                                | 53                                                                                  | 49                                                                                  | 294                                                                                 | 21                                                                                  | 112                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                               | 1870                                                                                | 1585                                                                                | 1781                                                                                | 1870                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.2                                                                               | 14.6                                                                              | 6.7                                                                               | 0.9                                                                               | 29.7                                                                              | 12.6                                                                              | 13.0                                                                               | 3.2                                                                                 | 3.5                                                                                 | 17.7                                                                                | 1.2                                                                                 | 8.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.2                                                                               | 14.6                                                                              | 6.7                                                                               | 0.9                                                                               | 29.7                                                                              | 12.6                                                                              | 13.0                                                                               | 3.2                                                                                 | 3.5                                                                                 | 17.7                                                                                | 1.2                                                                                 | 8.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 259                                                                               | 1748                                                                              | 780                                                                               | 345                                                                               | 1654                                                                              | 738                                                                               | 389                                                                                | 156                                                                                 | 132                                                                                 | 430                                                                                 | 232                                                                                 | 196                                                                                 |
| V/C Ratio(X)                 | 0.47                                                                              | 0.39                                                                              | 0.20                                                                              | 0.08                                                                              | 0.57                                                                              | 0.26                                                                              | 0.55                                                                               | 0.34                                                                                | 0.37                                                                                | 0.68                                                                                | 0.09                                                                                | 0.57                                                                                |
| Avail Cap(c_a), veh/h        | 324                                                                               | 1748                                                                              | 780                                                                               | 383                                                                               | 1654                                                                              | 738                                                                               | 439                                                                                | 164                                                                                 | 139                                                                                 | 527                                                                                 | 288                                                                                 | 244                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 19.9                                                                              | 19.2                                                                              | 17.2                                                                              | 16.7                                                                              | 39.7                                                                              | 32.5                                                                              | 42.7                                                                               | 51.9                                                                                | 52.0                                                                                | 40.2                                                                                | 46.6                                                                                | 49.6                                                                                |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.7                                                                               | 0.6                                                                               | 0.0                                                                               | 1.5                                                                               | 0.8                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.6                                                                                 | 1.7                                                                                 | 0.1                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.7                                                                               | 5.9                                                                               | 2.6                                                                               | 0.4                                                                               | 14.4                                                                              | 5.5                                                                               | 5.8                                                                                | 1.5                                                                                 | 1.4                                                                                 | 8.0                                                                                 | 0.6                                                                                 | 3.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 20.4                                                                              | 19.9                                                                              | 17.8                                                                              | 16.7                                                                              | 41.2                                                                              | 33.3                                                                              | 43.1                                                                               | 52.4                                                                                | 52.7                                                                                | 41.8                                                                                | 46.6                                                                                | 50.5                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          | 967                                                                               |                                                                                   |                                                                                   | 1164                                                                              |                                                                                   |                                                                                   | 317                                                                                |                                                                                     |                                                                                     | 427                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 19.6                                                                              |                                                                                   |                                                                                   | 39.3                                                                              |                                                                                   |                                                                                   | 46.1                                                                               |                                                                                     |                                                                                     | 44.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.5                                                                              | 66.5                                                                              | 21.6                                                                              | 21.4                                                                              | 13.7                                                                              | 63.3                                                                              | 26.5                                                                               | 16.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                               | 6.5                                                                               | * 7.5                                                                             | * 7.5                                                                             | 6.5                                                                                | 6.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.5                                                                             | * 50                                                                              | 18.5                                                                              | 18.5                                                                              | * 11                                                                              | * 45                                                                              | 26.5                                                                               | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.9                                                                               | 16.6                                                                              | 15.0                                                                              | 10.0                                                                              | 6.2                                                                               | 31.7                                                                              | 19.7                                                                               | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.8                                                                              | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 8.4                                                                               | 0.3                                                                                | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 34.2 |
| HCM 6th LOS        | C    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
3: Walden Street & 105th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 2                                                                                 | 0                                                                                 | 36                                                                                | 27                                                                                | 1                                                                                 | 6                                                                                 | 59                                                                                 | 102                                                                                 | 8                                                                                   | 12                                                                                  | 106                                                                                 | 2                                                                                   |
| Future Volume (vph)               | 2                                                                                 | 0                                                                                 | 36                                                                                | 27                                                                                | 1                                                                                 | 6                                                                                 | 59                                                                                 | 102                                                                                 | 8                                                                                   | 12                                                                                  | 106                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.873                                                                             |                                                                                   |                                                                                   | 0.975                                                                             |                                                                                   |                                                                                    | 0.994                                                                               |                                                                                     |                                                                                     | 0.997                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                    | 0.982                                                                               |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1621                                                                              | 0                                                                                 | 0                                                                                 | 1747                                                                              | 0                                                                                 | 0                                                                                  | 1818                                                                                | 0                                                                                   | 0                                                                                   | 1848                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                    | 0.982                                                                               |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1621                                                                              | 0                                                                                 | 0                                                                                 | 1747                                                                              | 0                                                                                 | 0                                                                                  | 1818                                                                                | 0                                                                                   | 0                                                                                   | 1848                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                    | 8.2                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.83                                                                                | 0.78                                                                                | 0.78                                                                                | 0.83                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 3                                                                                 | 0                                                                                 | 46                                                                                | 35                                                                                | 1                                                                                 | 8                                                                                 | 76                                                                                 | 123                                                                                 | 10                                                                                  | 15                                                                                  | 128                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 49                                                                                | 0                                                                                 | 0                                                                                 | 44                                                                                | 0                                                                                 | 0                                                                                  | 209                                                                                 | 0                                                                                   | 0                                                                                   | 146                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Yield                                                                             |                                                                                   |                                                                                   | Yield                                                                             |                                                                                   |                                                                                    | Yield                                                                               |                                                                                     |                                                                                     | Yield                                                                               |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Roundabout                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 31.0%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 3.9   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 49    | 44    | 209   | 146   |
| Demand Flow Rate, veh/h     | 50    | 45    | 213   | 149   |
| Vehicles Circulating, veh/h | 182   | 206   | 18    | 115   |
| Vehicles Exiting, veh/h     | 82    | 25    | 214   | 136   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.6   | 3.6   | 4.0   | 4.0   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 50    | 45    | 213   | 149   |
| Cap Entry Lane, veh/h       | 1146  | 1118  | 1355  | 1227  |
| Entry HV Adj Factor         | 0.980 | 0.977 | 0.979 | 0.983 |
| Flow Entry, veh/h           | 49    | 44    | 209   | 146   |
| Cap Entry, veh/h            | 1123  | 1093  | 1326  | 1206  |
| V/C Ratio                   | 0.044 | 0.040 | 0.157 | 0.121 |
| Control Delay, s/veh        | 3.6   | 3.6   | 4.0   | 4.0   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 0     | 0     | 1     | 0     |

Lanes, Volumes, Timings  
4: Walden Street & Homestead Trail

JR Engineering  
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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 3                                                                                 | 2                                                                                 | 14                                                                                | 11                                                                                | 2                                                                                 | 1                                                                                 | 31                                                                                  | 56                                                                                  | 13                                                                                  | 1                                                                                   | 66                                                                                  | 2                                                                                   |
| Future Volume (vph)               | 3                                                                                 | 2                                                                                 | 14                                                                                | 11                                                                                | 2                                                                                 | 1                                                                                 | 31                                                                                  | 56                                                                                  | 13                                                                                  | 1                                                                                   | 66                                                                                  | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.903                                                                             |                                                                                   |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                     | 0.970                                                                               |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.992                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1669                                                                              | 0                                                                                 | 1770                                                                              | 1792                                                                              | 0                                                                                 | 1770                                                                                | 1807                                                                                | 0                                                                                   | 1770                                                                                | 1853                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.992                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1669                                                                              | 0                                                                                 | 1770                                                                              | 1792                                                                              | 0                                                                                 | 1770                                                                                | 1807                                                                                | 0                                                                                   | 1770                                                                                | 1853                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 500                                                                               |                                                                                   |                                                                                   | 666                                                                               |                                                                                   |                                                                                     | 395                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 18.2                                                                              |                                                                                   |                                                                                     | 10.8                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.79                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 4                                                                                 | 3                                                                                 | 18                                                                                | 14                                                                                | 3                                                                                 | 1                                                                                 | 40                                                                                  | 67                                                                                  | 17                                                                                  | 1                                                                                   | 79                                                                                  | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 25                                                                                | 0                                                                                 | 14                                                                                | 4                                                                                 | 0                                                                                 | 40                                                                                  | 84                                                                                  | 0                                                                                   | 1                                                                                   | 82                                                                                  | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 18.9%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.9 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                 | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 3    | 2                                                                                 | 14   | 11                                                                                | 2                                                                                 | 1    | 31                                                                                  | 56                                                                                  | 13   | 1                                                                                   | 66                                                                                  | 2    |
| Future Vol, veh/h   | 3    | 2                                                                                 | 14   | 11                                                                                | 2                                                                                 | 1    | 31                                                                                  | 56                                                                                  | 13   | 1                                                                                   | 66                                                                                  | 2    |
| Peak Hour Factor    | 0.78 | 0.78                                                                              | 0.78 | 0.79                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                                | 0.84                                                                                | 0.78 | 0.78                                                                                | 0.84                                                                                | 0.78 |
| Heavy Vehicles, %   | 2    | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                   | 2                                                                                   | 2    | 2                                                                                   | 2                                                                                   | 2    |
| Mvmt Flow           | 4    | 3                                                                                 | 18   | 14                                                                                | 3                                                                                 | 1    | 40                                                                                  | 67                                                                                  | 17   | 1                                                                                   | 79                                                                                  | 3    |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                   | 1                                                                                   | 0    | 1                                                                                   | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB |
|----------------------------|-----|-----|-----|----|
| Opposing Approach          | WB  | EB  | SB  | NB |
| Opposing Lanes             | 2   | 1   | 2   | 2  |
| Conflicting Approach Left  | SB  | NB  | EB  | WB |
| Conflicting Lanes Left     | 2   | 2   | 1   | 2  |
| Conflicting Approach Right | NB  | SB  | WB  | EB |
| Conflicting Lanes Right    | 2   | 2   | 2   | 1  |
| HCM Control Delay          | 7.8 | 8.2 | 7.9 | 8  |
| HCM LOS                    | A   | A   | A   | A  |

| Lane                   | NBLn1 | NBLn2 | EBLn1 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, %            | 100%  | 0%    | 16%   | 100%  | 0%    | 100%  | 0%    |
| Vol Thru, %            | 0%    | 81%   | 11%   | 0%    | 67%   | 0%    | 97%   |
| Vol Right, %           | 0%    | 19%   | 74%   | 0%    | 33%   | 0%    | 3%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 31    | 69    | 19    | 11    | 3     | 1     | 68    |
| LT Vol                 | 31    | 0     | 3     | 11    | 0     | 1     | 0     |
| Through Vol            | 0     | 56    | 2     | 0     | 2     | 0     | 66    |
| RT Vol                 | 0     | 13    | 14    | 0     | 1     | 0     | 2     |
| Lane Flow Rate         | 40    | 83    | 24    | 14    | 4     | 1     | 81    |
| Geometry Grp           | 7     | 7     | 6     | 7     | 7     | 7     | 7     |
| Degree of Util (X)     | 0.057 | 0.104 | 0.031 | 0.021 | 0.005 | 0.002 | 0.105 |
| Departure Headway (Hd) | 5.147 | 4.514 | 4.642 | 5.553 | 4.818 | 5.168 | 4.647 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 692   | 788   | 776   | 648   | 747   | 687   | 764   |
| Service Time           | 2.906 | 2.274 | 2.642 | 3.254 | 2.518 | 2.94  | 2.419 |
| HCM Lane V/C Ratio     | 0.058 | 0.105 | 0.031 | 0.022 | 0.005 | 0.001 | 0.106 |
| HCM Control Delay      | 8.2   | 7.8   | 7.8   | 8.4   | 7.5   | 8     | 8     |
| HCM Lane LOS           | A     | A     | A     | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.2   | 0.3   | 0.1   | 0.1   | 0     | 0     | 0.4   |

Lanes, Volumes, Timings  
11: Tower Road & 105th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |                                                                                   |  |  |  |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 161                                                                               | 72                                                                                | 1072                                                                              | 601                                                                               | 110                                                                               |
| Future Volume (vph)               | 0                                                                                 | 161                                                                               | 72                                                                                | 1072                                                                              | 601                                                                               | 110                                                                               |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 250                                                                               | 0                                                                                 | 150                                                                               |                                                                                   |                                                                                   | 150                                                                               |
| Storage Lanes                     | 0                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |
| Taper Length (ft)                 | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               |                                                                                   | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)                 | 0                                                                                 | 1611                                                                              | 1770                                                                              | 1863                                                                              | 1863                                                                              | 1583                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   |                                                                                   | 50                                                                                | 50                                                                                |                                                                                   |
| Link Distance (ft)                | 660                                                                               |                                                                                   |                                                                                   | 300                                                                               | 1403                                                                              |                                                                                   |
| Travel Time (s)                   | 15.0                                                                              |                                                                                   |                                                                                   | 4.1                                                                               | 19.1                                                                              |                                                                                   |
| Peak Hour Factor                  | 0.78                                                                              | 0.79                                                                              | 0.78                                                                              | 0.93                                                                              | 0.92                                                                              | 0.80                                                                              |
| Adj. Flow (vph)                   | 0                                                                                 | 204                                                                               | 92                                                                                | 1153                                                                              | 653                                                                               | 138                                                                               |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 204                                                                               | 92                                                                                | 1153                                                                              | 653                                                                               | 138                                                                               |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Left                                                                              | Right                                                                             |
| Median Width(ft)                  | 0                                                                                 |                                                                                   |                                                                                   | 12                                                                                | 12                                                                                |                                                                                   |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                | 16                                                                                |                                                                                   |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 15                                                                                | 9                                                                                 | 15                                                                                |                                                                                   |                                                                                   | 9                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 59.8%                                                                             |                                                                                   |                                                                                   | ICU Level of Service B                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.1    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL    | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |        |  |  |  |  |  |
| Traffic Vol, veh/h       | 0      | 161                                                                               | 72                                                                                | 1072                                                                              | 601                                                                               | 110                                                                               |
| Future Vol, veh/h        | 0      | 161                                                                               | 72                                                                                | 1072                                                                              | 601                                                                               | 110                                                                               |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -      | 0                                                                                 | 150                                                                               | -                                                                                 | -                                                                                 | 150                                                                               |
| Veh in Median Storage, # | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 78     | 79                                                                                | 78                                                                                | 93                                                                                | 92                                                                                | 80                                                                                |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 0      | 204                                                                               | 92                                                                                | 1153                                                                              | 653                                                                               | 138                                                                               |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Major/Minor              | Minor2 | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   |
| Conflicting Flow All     | -      | 653                                                                               | 791                                                                               | 0                                                                                 | -                                                                                 | 0                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy            | -      | 6.22                                                                              | 4.12                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | -      | 3.318                                                                             | 2.218                                                                             | -                                                                                 | -                                                                                 | -                                                                                 |
| Pot Cap-1 Maneuver       | 0      | 467                                                                               | 829                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |        |                                                                                   |                                                                                   | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-1 Maneuver       | -      | 467                                                                               | 829                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach                 | EB     | NB                                                                                |                                                                                   | SB                                                                                |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 18.5   | 0.7                                                                               |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |
| HCM LOS                  | C      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|                          |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |                                                                                   |
| Capacity (veh/h)         | 829    | -                                                                                 | 467                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | 0.111  | -                                                                                 | 0.436                                                                             | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | 9.9    | -                                                                                 | 18.5                                                                              | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane LOS             | A      | -                                                                                 | C                                                                                 | -                                                                                 | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | 0.4    | -                                                                                 | 2.2                                                                               | -                                                                                 | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
13: Yampa Street & 104th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)              | 44                                                                                | 873                                                                               | 5                                                                                 | 17                                                                                | 970                                                                               | 93                                                                                | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 42                                                                                  |
| Future Volume (vph)               | 44                                                                                | 873                                                                               | 5                                                                                 | 17                                                                                | 970                                                                               | 93                                                                                | 0                                                                                  | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   | 42                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 150                                                                               |                                                                                   | 150                                                                               | 150                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 5085                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                              | 1583                                                                              | 0                                                                                  | 0                                                                                   | 1611                                                                                | 0                                                                                   | 0                                                                                   | 1611                                                                                |
| Link Speed (mph)                  |                                                                                   | 45                                                                                |                                                                                   |                                                                                   | 45                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 636                                                                                 |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.92                                                                              | 0.78                                                                              | 0.78                                                                              | 0.92                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 56                                                                                | 949                                                                               | 6                                                                                 | 22                                                                                | 1054                                                                              | 119                                                                               | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 54                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 56                                                                                | 949                                                                               | 6                                                                                 | 22                                                                                | 1054                                                                              | 119                                                                               | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 54                                                                                  |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 28.7%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|--------|------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL    | NBT   | NBR                                                                               | SBL    | SBT  | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |  |        |       |  |        |      |  |
| Traffic Vol, veh/h       | 44                                                                                | 873                                                                               | 5                                                                                 | 17                                                                                | 970                                                                               | 93                                                                                | 0      | 0     | 4                                                                                 | 0      | 0    | 42                                                                                  |
| Future Vol, veh/h        | 44                                                                                | 873                                                                               | 5                                                                                 | 17                                                                                | 970                                                                               | 93                                                                                | 0      | 0     | 4                                                                                 | 0      | 0    | 42                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0      | 0    | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Stop   | Stop  | Stop                                                                              | Stop   | Stop | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None                                                                              | -      | -     | None                                                                              | -      | -    | None                                                                                |
| Storage Length           | 150                                                                               | -                                                                                 | 150                                                                               | 150                                                                               | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -      | -    | 0                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -      | 0     | -                                                                                 | -      | 0    | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -      | 0     | -                                                                                 | -      | 0    | -                                                                                   |
| Peak Hour Factor         | 78                                                                                | 92                                                                                | 78                                                                                | 78                                                                                | 92                                                                                | 78                                                                                | 78     | 78    | 78                                                                                | 78     | 78   | 78                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2      | 2     | 2                                                                                 | 2      | 2    | 2                                                                                   |
| Mvmt Flow                | 56                                                                                | 949                                                                               | 6                                                                                 | 22                                                                                | 1054                                                                              | 119                                                                               | 0      | 0     | 5                                                                                 | 0      | 0    | 54                                                                                  |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Major/Minor              | Major1                                                                            |                                                                                   |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   | Minor1 |       |                                                                                   | Minor2 |      |                                                                                     |
| Conflicting Flow All     | 1173                                                                              | 0                                                                                 | 0                                                                                 | 955                                                                               | 0                                                                                 | 0                                                                                 | -      | -     | 475                                                                               | -      | -    | 527                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Critical Hdwy            | 5.34                                                                              | -                                                                                 | -                                                                                 | 5.34                                                                              | -                                                                                 | -                                                                                 | -      | -     | 7.14                                                                              | -      | -    | 7.14                                                                                |
| Critical Hdwy Stg 1      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Critical Hdwy Stg 2      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Follow-up Hdwy           | 3.12                                                                              | -                                                                                 | -                                                                                 | 3.12                                                                              | -                                                                                 | -                                                                                 | -      | -     | 3.92                                                                              | -      | -    | 3.92                                                                                |
| Pot Cap-1 Maneuver       | 323                                                                               | -                                                                                 | -                                                                                 | 411                                                                               | -                                                                                 | -                                                                                 | 0      | 0     | 459                                                                               | 0      | 0    | 424                                                                                 |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0      | 0     | -                                                                                 | 0      | 0    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 0      | 0     | -                                                                                 | 0      | 0    | -                                                                                   |
| Platoon blocked, %       |                                                                                   | -                                                                                 | -                                                                                 |                                                                                   | -                                                                                 | -                                                                                 |        |       |                                                                                   |        |      |                                                                                     |
| Mov Cap-1 Maneuver       | 323                                                                               | -                                                                                 | -                                                                                 | 411                                                                               | -                                                                                 | -                                                                                 | -      | -     | 459                                                                               | -      | -    | 424                                                                                 |
| Mov Cap-2 Maneuver       | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 1                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
| Stage 2                  | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -      | -     | -                                                                                 | -      | -    | -                                                                                   |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Approach                 | EB                                                                                |                                                                                   |                                                                                   | WB                                                                                |                                                                                   |                                                                                   | NB     |       |                                                                                   | SB     |      |                                                                                     |
| HCM Control Delay, s     | 1                                                                                 |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   | 12.9   |       |                                                                                   | 14.7   |      |                                                                                     |
| HCM LOS                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B      |       |                                                                                   | B      |      |                                                                                     |
|                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |        |       |                                                                                   |        |      |                                                                                     |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR    | SBLn1 |                                                                                   |        |      |                                                                                     |
| Capacity (veh/h)         | 459                                                                               | 323                                                                               | -                                                                                 | -                                                                                 | 411                                                                               | -                                                                                 | -      | 424   |                                                                                   |        |      |                                                                                     |
| HCM Lane V/C Ratio       | 0.011                                                                             | 0.175                                                                             | -                                                                                 | -                                                                                 | 0.053                                                                             | -                                                                                 | -      | 0.127 |                                                                                   |        |      |                                                                                     |
| HCM Control Delay (s)    | 12.9                                                                              | 18.5                                                                              | -                                                                                 | -                                                                                 | 14.2                                                                              | -                                                                                 | -      | 14.7  |                                                                                   |        |      |                                                                                     |
| HCM Lane LOS             | B                                                                                 | C                                                                                 | -                                                                                 | -                                                                                 | B                                                                                 | -                                                                                 | -      | B     |                                                                                   |        |      |                                                                                     |
| HCM 95th %tile Q(veh)    | 0                                                                                 | 0.6                                                                               | -                                                                                 | -                                                                                 | 0.2                                                                               | -                                                                                 | -      | 0.4   |                                                                                   |        |      |                                                                                     |

Lanes, Volumes, Timings  
14: Walden Street & 104th Way

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 3                                                                                 | 1                                                                                 | 26                                                                                | 177                                                                               | 1                                                                                 | 1                                                                                 | 33                                                                                  | 167                                                                                 | 46                                                                                  | 10                                                                                  | 157                                                                                 | 2                                                                                   |
| Future Volume (vph)               | 3                                                                                 | 1                                                                                 | 26                                                                                | 177                                                                               | 1                                                                                 | 1                                                                                 | 33                                                                                  | 167                                                                                 | 46                                                                                  | 10                                                                                  | 157                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                                 |                                                                                     | 150                                                                                 | 150                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.883                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     | 0.998                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1637                                                                              | 0                                                                                 | 0                                                                                 | 1773                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1859                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1637                                                                              | 0                                                                                 | 0                                                                                 | 1773                                                                              | 0                                                                                 | 1770                                                                                | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1859                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 501                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                     | 12.3                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.84                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                | 0.78                                                                                | 0.84                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 4                                                                                 | 1                                                                                 | 33                                                                                | 211                                                                               | 1                                                                                 | 1                                                                                 | 42                                                                                  | 199                                                                                 | 59                                                                                  | 13                                                                                  | 187                                                                                 | 3                                                                                   |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 38                                                                                | 0                                                                                 | 0                                                                                 | 213                                                                               | 0                                                                                 | 42                                                                                  | 199                                                                                 | 59                                                                                  | 13                                                                                  | 190                                                                                 | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 38.7%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service A                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |        |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|--------|------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 7      |                                                                                   |        |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR    | WBL        | WBT                                                                               | WBR    | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |        |            |  |        |  |  |  |  |  |      |
| Traffic Vol, veh/h       | 3      | 1                                                                                 | 26     | 177        | 1                                                                                 | 1      | 33                                                                                | 167                                                                               | 46                                                                                | 10                                                                                  | 157                                                                                 | 2    |
| Future Vol, veh/h        | 3      | 1                                                                                 | 26     | 177        | 1                                                                                 | 1      | 33                                                                                | 167                                                                               | 46                                                                                | 10                                                                                  | 157                                                                                 | 2    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0    |
| Sign Control             | Stop   | Stop                                                                              | Stop   | Stop       | Stop                                                                              | Stop   | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                                | Free                                                                                | Free |
| RT Channelized           | -      | -                                                                                 | None   | -          | -                                                                                 | None   | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                   | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -      | -          | -                                                                                 | -      | 150                                                                               | -                                                                                 | 150                                                                               | 150                                                                                 | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -      | -          | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                   | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -      | -          | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                   | 0                                                                                   | -    |
| Peak Hour Factor         | 78     | 78                                                                                | 78     | 84         | 78                                                                                | 78     | 78                                                                                | 84                                                                                | 78                                                                                | 78                                                                                  | 84                                                                                  | 78   |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2      | 2          | 2                                                                                 | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2    |
| Mvmt Flow                | 4      | 1                                                                                 | 33     | 211        | 1                                                                                 | 1      | 42                                                                                | 199                                                                               | 59                                                                                | 13                                                                                  | 187                                                                                 | 3    |
|                          |        |                                                                                   |        |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
| Major/Minor              | Minor2 |                                                                                   | Minor1 |            |                                                                                   | Major1 |                                                                                   |                                                                                   | Major2                                                                            |                                                                                     |                                                                                     |      |
| Conflicting Flow All     | 529    | 557                                                                               | 189    | 515        | 499                                                                               | 199    | 190                                                                               | 0                                                                                 | 0                                                                                 | 258                                                                                 | 0                                                                                   | 0    |
| Stage 1                  | 215    | 215                                                                               | -      | 283        | 283                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Stage 2                  | 314    | 342                                                                               | -      | 232        | 216                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Critical Hdwy            | 7.12   | 6.52                                                                              | 6.22   | 7.12       | 6.52                                                                              | 6.22   | 4.12                                                                              | -                                                                                 | -                                                                                 | 4.12                                                                                | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.12   | 5.52                                                                              | -      | 6.12       | 5.52                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.12   | 5.52                                                                              | -      | 6.12       | 5.52                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Follow-up Hdwy           | 3.518  | 4.018                                                                             | 3.318  | 3.518      | 4.018                                                                             | 3.318  | 2.218                                                                             | -                                                                                 | -                                                                                 | 2.218                                                                               | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 460    | 439                                                                               | 853    | 470        | 473                                                                               | 842    | 1384                                                                              | -                                                                                 | -                                                                                 | 1307                                                                                | -                                                                                   | -    |
| Stage 1                  | 787    | 725                                                                               | -      | 724        | 677                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Stage 2                  | 697    | 638                                                                               | -      | 771        | 724                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Platoon blocked, %       |        |                                                                                   |        |            |                                                                                   |        |                                                                                   | -                                                                                 | -                                                                                 |                                                                                     | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 444    | 421                                                                               | 853    | 437        | 454                                                                               | 842    | 1384                                                                              | -                                                                                 | -                                                                                 | 1307                                                                                | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 444    | 421                                                                               | -      | 437        | 454                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Stage 1                  | 763    | 718                                                                               | -      | 702        | 657                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
| Stage 2                  | 674    | 619                                                                               | -      | 732        | 717                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                   | -                                                                                   | -    |
|                          |        |                                                                                   |        |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
| Approach                 | EB     |                                                                                   | WB     |            |                                                                                   | NB     |                                                                                   |                                                                                   | SB                                                                                |                                                                                     |                                                                                     |      |
| HCM Control Delay, s     | 10     |                                                                                   | 20.8   |            |                                                                                   | 1.1    |                                                                                   |                                                                                   | 0.5                                                                               |                                                                                     |                                                                                     |      |
| HCM LOS                  | B      |                                                                                   | C      |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | NBR    | EBLn1WBLn1 | SBL                                                                               | SBT    | SBR                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |      |
| Capacity (veh/h)         | 1384   | -                                                                                 | -      | 757        | 438                                                                               | 1307   | -                                                                                 | -                                                                                 |                                                                                   |                                                                                     |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.031  | -                                                                                 | -      | 0.051      | 0.487                                                                             | 0.01   | -                                                                                 | -                                                                                 |                                                                                   |                                                                                     |                                                                                     |      |
| HCM Control Delay (s)    | 7.7    | -                                                                                 | -      | 10         | 20.8                                                                              | 7.8    | -                                                                                 | -                                                                                 |                                                                                   |                                                                                     |                                                                                     |      |
| HCM Lane LOS             | A      | -                                                                                 | -      | B          | C                                                                                 | A      | -                                                                                 | -                                                                                 |                                                                                   |                                                                                     |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -      | 0.2        | 2.6                                                                               | 0      | -                                                                                 | -                                                                                 |                                                                                   |                                                                                     |                                                                                     |      |

Lanes, Volumes, Timings  
15: Walden Street & 105th Place

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (vph)              | 14                                                                                | 2                                                                                 | 101                                                                               | 8                                                                                 | 1                                                                                 | 103                                                                               |
| Future Volume (vph)               | 14                                                                                | 2                                                                                 | 101                                                                               | 8                                                                                 | 1                                                                                 | 103                                                                               |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Storage Length (ft)               | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   |
| Storage Lanes                     | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)                 | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               | 0.981                                                                             |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected                     | 0.959                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)                 | 1752                                                                              | 0                                                                                 | 1844                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Flt Permitted                     | 0.959                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)                 | 1752                                                                              | 0                                                                                 | 1844                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |
| Link Distance (ft)                | 229                                                                               |                                                                                   | 280                                                                               |                                                                                   |                                                                                   | 395                                                                               |
| Travel Time (s)                   | 5.2                                                                               |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   | 9.0                                                                               |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.83                                                                              | 0.78                                                                              | 0.78                                                                              | 0.83                                                                              |
| Adj. Flow (vph)                   | 18                                                                                | 3                                                                                 | 122                                                                               | 10                                                                                | 1                                                                                 | 124                                                                               |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 21                                                                                | 0                                                                                 | 132                                                                               | 0                                                                                 | 1                                                                                 | 124                                                                               |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                |
| Lane Alignment                    | Left                                                                              | Right                                                                             | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              |
| Median Width(ft)                  | 12                                                                                |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |
| Link Offset(ft)                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Crosswalk Width(ft)               | 16                                                                                |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Turning Speed (mph)               | 60                                                                                | 60                                                                                |                                                                                   | 60                                                                                | 60                                                                                |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 15.8%                                                                             |                                                                                   |                                                                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.8                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 14                                                                                | 2        | 101                                                                               | 8     | 1                                                                                 | 103                                                                               |
| Future Vol, veh/h        | 14                                                                                | 2        | 101                                                                               | 8     | 1                                                                                 | 103                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 100                                                                               | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 78                                                                                | 78       | 83                                                                                | 78    | 78                                                                                | 83                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2        | 2                                                                                 | 2     | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 18                                                                                | 3        | 122                                                                               | 10    | 1                                                                                 | 124                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 253                                                                               | 127      | 0                                                                                 | 0     | 132                                                                               | 0                                                                                 |
| Stage 1                  | 127                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 126                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22     | -                                                                                 | -     | 4.12                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318    | -                                                                                 | -     | 2.218                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 736                                                                               | 923      | -                                                                                 | -     | 1453                                                                              | -                                                                                 |
| Stage 1                  | 899                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 900                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 735                                                                               | 923      | -                                                                                 | -     | 1453                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 735                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 899                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 899                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 9.9                                                                               | 0        | 0.1                                                                               |       |                                                                                   |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 754                                                                               | 1453  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.027                                                                             | 0.001 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.9                                                                               | 7.5   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.1                                                                               | 0     | -                                                                                 |                                                                                   |

Lanes, Volumes, Timings  
16: Yampa Street & 105th Avenue

JR Engineering  
10/19/2023

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)              | 8                                                                                 | 53                                                                                | 1                                                                                 | 41                                                                                | 52                                                                                | 89                                                                                | 1                                                                                  | 16                                                                                  | 109                                                                                 | 35                                                                                  | 5                                                                                   | 11                                                                                  |
| Future Volume (vph)               | 8                                                                                 | 53                                                                                | 1                                                                                 | 41                                                                                | 52                                                                                | 89                                                                                | 1                                                                                  | 16                                                                                  | 109                                                                                 | 35                                                                                  | 5                                                                                   | 11                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.935                                                                             |                                                                                   |                                                                                    | 0.883                                                                               |                                                                                     |                                                                                     | 0.971                                                                               |                                                                                     |
| Flt Protected                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.967                                                                               |                                                                                     |
| Satd. Flow (prot)                 | 0                                                                                 | 1848                                                                              | 0                                                                                 | 0                                                                                 | 1723                                                                              | 0                                                                                 | 0                                                                                  | 1645                                                                                | 0                                                                                   | 0                                                                                   | 1749                                                                                | 0                                                                                   |
| Flt Permitted                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.967                                                                               |                                                                                     |
| Satd. Flow (perm)                 | 0                                                                                 | 1848                                                                              | 0                                                                                 | 0                                                                                 | 1723                                                                              | 0                                                                                 | 0                                                                                  | 1645                                                                                | 0                                                                                   | 0                                                                                   | 1749                                                                                | 0                                                                                   |
| Link Speed (mph)                  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 660                                                                               |                                                                                   |                                                                                   | 660                                                                               |                                                                                   |                                                                                    | 300                                                                                 |                                                                                     |                                                                                     | 280                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 6.8                                                                                 |                                                                                     |                                                                                     | 6.4                                                                                 |                                                                                     |
| Peak Hour Factor                  | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.80                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Adj. Flow (vph)                   | 10                                                                                | 68                                                                                | 1                                                                                 | 53                                                                                | 67                                                                                | 111                                                                               | 1                                                                                  | 21                                                                                  | 140                                                                                 | 45                                                                                  | 6                                                                                   | 14                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 0                                                                                 | 79                                                                                | 0                                                                                 | 0                                                                                 | 231                                                                               | 0                                                                                 | 0                                                                                  | 162                                                                                 | 0                                                                                   | 0                                                                                   | 65                                                                                  | 0                                                                                   |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 38.1%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 5.4    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR   |
| Lane Configurations      |        |  |      |        |  |      |        |  |       |        |  |       |
| Traffic Vol, veh/h       | 8      | 53                                                                                | 1    | 41     | 52                                                                                | 89   | 1      | 16                                                                                | 109   | 35     | 5                                                                                   | 11    |
| Future Vol, veh/h        | 8      | 53                                                                                | 1    | 41     | 52                                                                                | 89   | 1      | 16                                                                                | 109   | 35     | 5                                                                                   | 11    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0     |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop  |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None  |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -     |
| Peak Hour Factor         | 78     | 78                                                                                | 78   | 78     | 78                                                                                | 80   | 78     | 78                                                                                | 78    | 78     | 78                                                                                  | 78    |
| Heavy Vehicles, %        | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2    | 2      | 2                                                                                 | 2     | 2      | 2                                                                                   | 2     |
| Mvmt Flow                | 10     | 68                                                                                | 1    | 53     | 67                                                                                | 111  | 1      | 21                                                                                | 140   | 45     | 6                                                                                   | 14    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |       |
| Conflicting Flow All     | 178    | 0                                                                                 | 0    | 69     | 0                                                                                 | 0    | 328    | 373                                                                               | 69    | 398    | 318                                                                                 | 123   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 89     | 89                                                                                | -     | 229    | 229                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 239    | 284                                                                               | -     | 169    | 89                                                                                  | -     |
| Critical Hdwy            | 4.12   | -                                                                                 | -    | 4.12   | -                                                                                 | -    | 7.12   | 6.52                                                                              | 6.22  | 7.12   | 6.52                                                                                | 6.22  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.12   | 5.52                                                                              | -     | 6.12   | 5.52                                                                                | -     |
| Follow-up Hdwy           | 2.218  | -                                                                                 | -    | 2.218  | -                                                                                 | -    | 3.518  | 4.018                                                                             | 3.318 | 3.518  | 4.018                                                                               | 3.318 |
| Pot Cap-1 Maneuver       | 1398   | -                                                                                 | -    | 1532   | -                                                                                 | -    | 625    | 557                                                                               | 994   | 562    | 598                                                                                 | 928   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 918    | 821                                                                               | -     | 774    | 715                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 764    | 676                                                                               | -     | 833    | 821                                                                                 | -     |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |       |
| Mov Cap-1 Maneuver       | 1398   | -                                                                                 | -    | 1532   | -                                                                                 | -    | 589    | 531                                                                               | 994   | 452    | 570                                                                                 | 928   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 589    | 531                                                                               | -     | 452    | 570                                                                                 | -     |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 912    | 815                                                                               | -     | 769    | 687                                                                                 | -     |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 716    | 650                                                                               | -     | 693    | 815                                                                                 | -     |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |       |
| HCM Control Delay, s     | 1      |                                                                                   |      | 1.7    |                                                                                   |      | 9.9    |                                                                                   |       | 12.9   |                                                                                     |       |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | B      |                                                                                     |       |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |       |
| Capacity (veh/h)         | 891    | 1398                                                                              | -    | -      | 1532                                                                              | -    | -      | 520                                                                               |       |        |                                                                                     |       |
| HCM Lane V/C Ratio       | 0.181  | 0.007                                                                             | -    | -      | 0.034                                                                             | -    | -      | 0.126                                                                             |       |        |                                                                                     |       |
| HCM Control Delay (s)    | 9.9    | 7.6                                                                               | 0    | -      | 7.4                                                                               | 0    | -      | 12.9                                                                              |       |        |                                                                                     |       |
| HCM Lane LOS             | A      | A                                                                                 | A    | -      | A                                                                                 | A    | -      | B                                                                                 |       |        |                                                                                     |       |
| HCM 95th %tile Q(veh)    | 0.7    | 0                                                                                 | -    | -      | 0.1                                                                               | -    | -      | 0.4                                                                               |       |        |                                                                                     |       |

Lanes, Volumes, Timings  
17: Yampa Street & Homestead Trail

JR Engineering  
10/19/2023



| Lane Group                 | EBL   | EBR   | NBL  | NBT   | SBT   | SBR   |
|----------------------------|-------|-------|------|-------|-------|-------|
| Lane Configurations        |       |       |      |       |       |       |
| Traffic Volume (vph)       | 5     | 9     | 5    | 8     | 2     | 7     |
| Future Volume (vph)        | 5     | 9     | 5    | 8     | 2     | 7     |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 100   | 0     | 0    |       |       | 0     |
| Storage Lanes              | 1     | 1     | 0    |       |       | 0     |
| Taper Length (ft)          | 25    |       | 25   |       |       |       |
| Lane Util. Factor          | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                        |       | 0.850 |      |       | 0.899 |       |
| Flt Protected              | 0.950 |       |      | 0.982 |       |       |
| Satd. Flow (prot)          | 1770  | 1583  | 0    | 1829  | 1675  | 0     |
| Flt Permitted              | 0.950 |       |      | 0.982 |       |       |
| Satd. Flow (perm)          | 1770  | 1583  | 0    | 1829  | 1675  | 0     |
| Link Speed (mph)           | 25    |       |      | 30    | 30    |       |
| Link Distance (ft)         | 666   |       |      | 181   | 194   |       |
| Travel Time (s)            | 18.2  |       |      | 4.1   | 4.4   |       |
| Peak Hour Factor           | 0.78  | 0.78  | 0.78 | 0.78  | 0.78  | 0.78  |
| Adj. Flow (vph)            | 6     | 12    | 6    | 10    | 3     | 9     |
| Shared Lane Traffic (%)    |       |       |      |       |       |       |
| Lane Group Flow (vph)      | 6     | 12    | 0    | 16    | 12    | 0     |
| Enter Blocked Intersection | No    | No    | No   | No    | No    | No    |
| Lane Alignment             | Left  | Right | Left | Left  | Left  | Right |
| Median Width(ft)           | 12    |       |      | 0     | 0     |       |
| Link Offset(ft)            | 0     |       |      | 0     | 0     |       |
| Crosswalk Width(ft)        | 16    |       |      | 16    | 16    |       |
| Two way Left Turn Lane     |       |       |      |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    | 60    | 60   |       |       | 9     |
| Sign Control               | Stop  |       |      | Stop  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.9% ICU Level of Service A

Analysis Period (min) 15

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 6.9 |
| Intersection LOS          | A   |

| Movement            | EBL                                                                               | EBR                                                                               | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |  |  |      |  |  |      |
| Traffic Vol, veh/h  | 5                                                                                 | 9                                                                                 | 5    | 8                                                                                 | 2                                                                                 | 7    |
| Future Vol, veh/h   | 5                                                                                 | 9                                                                                 | 5    | 8                                                                                 | 2                                                                                 | 7    |
| Peak Hour Factor    | 0.78                                                                              | 0.78                                                                              | 0.78 | 0.78                                                                              | 0.78                                                                              | 0.78 |
| Heavy Vehicles, %   | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow           | 6                                                                                 | 12                                                                                | 6    | 10                                                                                | 3                                                                                 | 9    |
| Number of Lanes     | 1                                                                                 | 1                                                                                 | 0    | 1                                                                                 | 1                                                                                 | 0    |

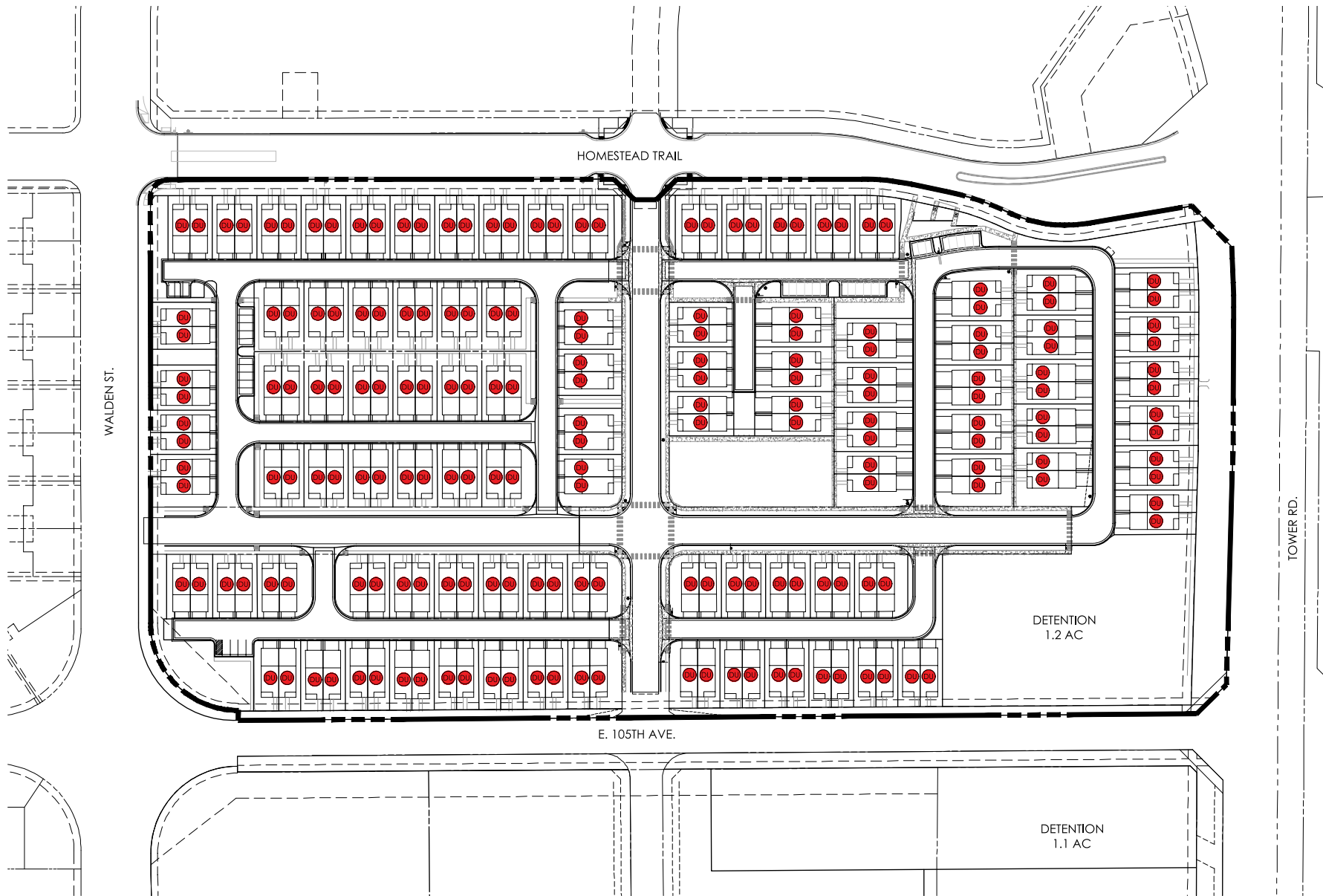
| Approach                   | EB | NB  | SB  |
|----------------------------|----|-----|-----|
| Opposing Approach          |    | SB  | NB  |
| Opposing Lanes             | 0  | 1   | 1   |
| Conflicting Approach Left  | SB | EB  |     |
| Conflicting Lanes Left     | 1  | 2   | 0   |
| Conflicting Approach Right | NB |     | EB  |
| Conflicting Lanes Right    | 1  | 0   | 2   |
| HCM Control Delay          | 7  | 7.1 | 6.6 |
| HCM LOS                    | A  | A   | A   |

| Lane                   | NBLn1 | EBLn1 | EBLn2 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 38%   | 100%  | 0%    | 0%    |
| Vol Thru, %            | 62%   | 0%    | 0%    | 22%   |
| Vol Right, %           | 0%    | 0%    | 100%  | 78%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 13    | 5     | 9     | 9     |
| LT Vol                 | 5     | 5     | 0     | 0     |
| Through Vol            | 8     | 0     | 0     | 2     |
| RT Vol                 | 0     | 0     | 9     | 7     |
| Lane Flow Rate         | 17    | 6     | 12    | 12    |
| Geometry Grp           | 2     | 7     | 7     | 2     |
| Degree of Util (X)     | 0.019 | 0.009 | 0.012 | 0.011 |
| Departure Headway (Hd) | 4.05  | 5.083 | 3.883 | 3.511 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 887   | 707   | 925   | 1022  |
| Service Time           | 2.061 | 2.793 | 1.592 | 1.524 |
| HCM Lane V/C Ratio     | 0.019 | 0.008 | 0.013 | 0.012 |
| HCM Control Delay      | 7.1   | 7.8   | 6.6   | 6.6   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.1   | 0     | 0     | 0     |

## **APPENDIX E**

### *REUNION CENTER – DUET TOWNHOMES & COMMERCIAL PARCEL SITE PLANS*





**LEGEND**  
 ● STERLING DUETS  
 190 UNITS

SITE PLAN

# REUNION CENTER DUETS

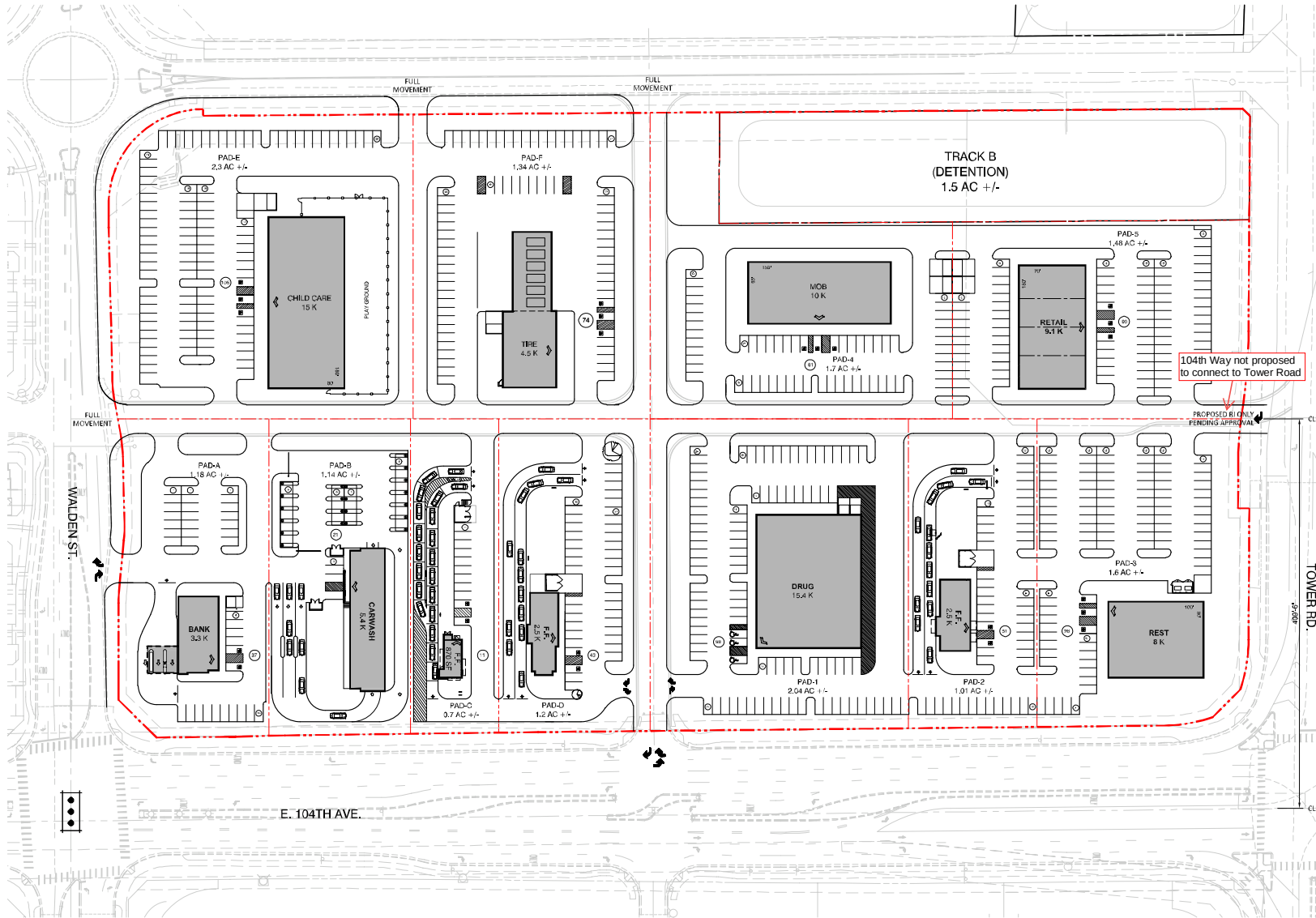
COMMERCE CITY, CO

JANUARY 27, 2023

**td** terracina  
 design  
 10200 E. Girard Ave. Ste A-314  
 Denver, CO 80231  
 ph: 303.630.8867



Scale: 1"= 50'-0"  
 0 25 50 75 100



## PROJECT SUMMARY

|                        |             |
|------------------------|-------------|
| SITE                   | 17.2 AC +/- |
| COMMERCIAL             | 15.7 AC +/- |
| TRACK B ( DETENTION )  | 1.5 AC +/-  |
| PAD-1 ( DRUG/RETAIL )  | 2.04 AC     |
| BUILDING               | 15,400 SF   |
| PARKING PROVIDED       | 99          |
| PARKING RATIO PROVIDED | 6.4/1,000   |
| PAD-2 ( F.F. )         | 1.01 AC     |
| BUILDING               | 2,500 SF    |
| PARKING PROVIDED       | 51          |
| PARKING RATIO PROVIDED | 20/1,000    |
| PAD-3 ( RESTAURANT )   | 1.6 AC      |
| BUILDING               | 8,000 SF    |
| PARKING PROVIDED       | 98          |
| PARKING RATIO PROVIDED | 12 /1,000   |
| PAD-4 ( MOB )          | 1.7 AC      |
| BUILDING               | 9,000 SF    |
| PARKING PROVIDED       | 61          |
| PARKING RATIO PROVIDED | 6.8/1,000   |
| PAD-5 ( RETAIL )       | 1.48 AC     |
| BUILDING               | 9,100 SF    |
| PARKING PROVIDED       | 90          |
| PARKING RATIO PROVIDED | 9.9/1,000   |
| PAD-A ( BANK )         | 1.18 AC     |
| BUILDING               | 3,300 SF    |
| PARKING PROVIDED       | 37          |
| PARKING RATIO PROVIDED | 11.2/1,000  |
| PAD-B ( CAR WASH )     | 1.14 AC     |
| BUILDING               | 5,400 SF    |
| PARKING PROVIDED       | 21          |
| PARKING RATIO PROVIDED | 3.9/1,000   |
| PAD-C ( FAST FOOD )    | 0.7 AC      |
| BUILDING               | 870 SF      |
| PARKING PROVIDED       | 11          |
| PARKING RATIO PROVIDED | 12.6/1,000  |
| PAD-D ( FAST FOOD )    | 1.2 AC      |
| BUILDING               | 2,500 SF    |
| PARKING PROVIDED       | 43          |
| PARKING RATIO PROVIDED | 17.2/1,000  |
| PAD-E ( CHILD CARE )   | 2.3 AC      |
| BUILDING               | 15,000 SF   |
| PARKING PROVIDED       | 106         |
| PARKING RATIO PROVIDED | 7/1,000     |
| PAD-F ( AUTO CARE )    | 1.34 AC     |
| BUILDING               | 4,500 SF    |
| PARKING PROVIDED       | 74          |
| PARKING RATIO PROVIDED | 16.4/1,000  |

## Reunion Center - Commercial Parcel Commerce City, CO

Oakwood Homes

G3 JOB #: 11/28/2022  
21-027

DATE REVISIONS

## Site Scheme - L

SCALE: 1" = 50' - 0"

0 25 50 100



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G3 ARCHITECTURE  
architecture | planning | interiors

7700 E. 104th Ave., Suite 400  
Commerce City, CO 80011

## **APPENDIX F**

### *REUNION CENTER VILLAGE PLAN*





| SITE DATA     |                              |              |                        |                   |            |
|---------------|------------------------------|--------------|------------------------|-------------------|------------|
| PLANNING AREA | LAND USE                     | ACREAGE      | COMMERCIAL SQUARE FEET | RESIDENTIAL UNITS | DU/AC FAR  |
| 1             | SCHOOL/LIBRARY               | 18.9         | 127,700                |                   | 0.15       |
| 2             | RESIDENTIAL                  | 20.1         |                        | 291               | 14.5       |
| 3             | RESIDENTIAL                  | 24.6         |                        | 440               | 17.9       |
| 4             | RETAIL/SPORTS COMPLEX        | 19.1         | 232,000                |                   | 0.30       |
| 5             | RETAIL/LODGING/ENTERTAINMENT | 33.5         | 207,300                |                   | 0.13       |
| 6             | SPORTS COMPLEX               | 42.2         | 30,000                 |                   | 0.02       |
| <b>TOTAL</b>  |                              | <b>158.4</b> | <b>597,000</b>         | <b>731</b>        | <b>4.6</b> |

| PARKING DATA  |                                  |                  |                      |
|---------------|----------------------------------|------------------|----------------------|
| PLANNING AREA | LAND USE                         | PARKING REQUIRED | PARKING PROVIDED (5) |
| 1             | SCHOOL/LIBRARY (1)               | 335              | 607                  |
| 2             | RESIDENTIAL                      | 537              | 554                  |
| 3             | RESIDENTIAL                      | 770              | 785                  |
| 4             | RETAIL/SPORTS COMPLEX (2)(3)     | 600              | 575                  |
| 5             | RETAIL/LODGING/ENTERTAINMENT (2) | 1,489            | 1,258                |
| 6             | SPORTS COMPLEX (3)               | 230              | 230                  |
| <b>TOTAL</b>  |                                  | <b>3,961</b>     | <b>4,009</b>         |

**NOTES:**  
 (1) LARGE INDOOR SPORTS VENUES WILL BE PARKED USING OUTDOOR RECREATION PARKING REQUIREMENTS.  
 (2) PARKING NUMBERS ARE CONCEPTUAL AND SUBJECT TO CHANGE AT TIME OF PUD PERMIT.  
 (3) SHARED PARKING PERCENTAGE HAS NOT BEEN APPLIED TO PARKING PROVIDED.  
 (4) THE MINIMUM NUMBER OF PARKING SPACES FOR A MIXED USE DEVELOPMENT OR WHERE SHARED PARKING STRATEGIES ARE PROPOSED SHALL BE DETERMINED BY A STUDY PREPARED BY THE APPLICANT FOLLOWING THE PROCEDURES OF THE URBAN LAND INSTITUTE SHARED PARKING REPORT, ITS SHARED PARKING GUIDELINES, OR OTHER APPROVED PROCEDURES. A FORMAL PARKING STUDY MAY BE WAIVED FOR SMALL DEVELOPMENTS WHERE THERE IS ESTABLISHED EXPERIENCE WITH THE LAND USE MIX AND ITS IMPACT IS EXPECTED TO BE MINIMAL. THE ACTUAL NUMBER OF PARKING SPACES REQUIRED SHALL BE BASED ON WELL-RECOGNIZED SOURCES OF PARKING DATA SUCH AS THE ULI OR ITE REPORTS. IF STANDARD RATES ARE NOT AVAILABLE OR LIMITED, THE APPLICANT MAY COLLECT DATA AT SIMILAR SITES TO ESTABLISH LOCAL PARKING DEMAND RATES. IF THE SHARED PARKING PLAN ASSUMES USE OF AN EXISTING PARKING FACILITY, THEN FIELD SURVEYS SHALL BE CONDUCTED TO DETERMINE ACTUAL PARKING ACCUMULATION, IF POSSIBLE. THESE SURVEYS SHOULD CONSIDER THE SEASONAL PEAK PERIOD FOR THE COMBINATION OF LAND USES INVOLVED.

**SITE PLAN NOTES:**  
 1. RESIDENTIAL DENSITIES AND COMMERCIAL SQUARE FOOTAGE SHOWN ARE CONCEPTUAL. DENSITIES TO MEET THE REQUIREMENTS OF REUNION PUD ZONE DOCUMENT AMENDMENT #5.

**ROAD SECTION NOTES:**  
 1. REFER TO "ALTERNATE ROADWAY DESIGN STANDARDS REUNION CENTER - SOUTH" FOR PROPOSED ROAD AND INTERSECTION STANDARDS.

**CITY STAFF CERTIFICATE**  
 APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE CITY OF COMMERCE CITY, THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2019.

DEPARTMENT OF COMMUNITY DEVELOPMENT



**REUNION**  
 REAL HOMETOWN  
 ILLUSTRATIVE SITE PLAN



Scale: 1" = 200'  
 0 200 400 800  
 January 22, 2020

## **APPENDIX G**

### *REUNION CENTER - SOUTH TIS EXCERPTS*





#### LEGEND

- PROPOSED INTERSECTION
- EXISTING INTERSECTION
- PROJECT SITE
- PHASE 1 TAZ
- PHASE 2 TAZ
- PHASE 3 TAZ
- FUTURE PHASE TAZ

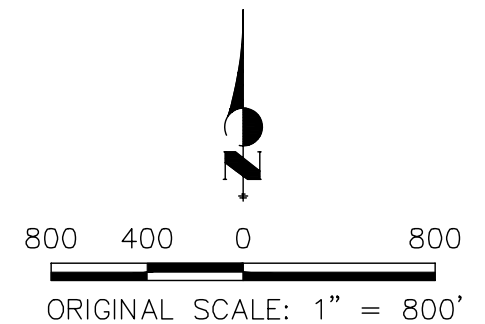


FIGURE 6 – TRAFFIC ANALYSIS  
ZONES MAP  
REUNION CENTER – SOUTH  
PROJ. NO. 14421.49  
PAGE 15

## Project Traffic

### Trip Generation

Trip generation has been calculated from the latest data contained within the Institute of Transportation Engineers' (ITE) *Trip Generation Manual 10<sup>th</sup> Edition, 2017*. Based on the land use and the guidelines within the *Trip Generation Manual*, JR used the appropriate fitted curve equation or average rate for the AM peak hour traffic, PM peak hour traffic, and weekday average daily traffic (ADT) for each land use.

A map of the assigned traffic analysis zones is shown in Figure 6. These zones are based on the currently anticipated phases 1, 2, and 3, as well as future phases.

Based on the Reunion Center concept plans, Table 1 shows a summary of land use and external vehicle trips generated. Adjustments were made for internal site trips, but adjustments were not made for pass-by trips.

Table 1 – Trip Generation Table

| Parcel | Land Use Code No.        | Number of Units     | Weekday Trips | AM Peak Hour Trips  | PM Peak Hour Trips  |
|--------|--------------------------|---------------------|---------------|---------------------|---------------------|
| 1-1a   | 530<br>(High School)     | 650<br>Students     | 1,608         | 338<br>67% entering | 91<br>48% entering  |
| 1-1b   | 590<br>(Library)         | 29,000<br>sq ft GFA | 2,089         | 29<br>71% entering  | 237<br>48% entering |
| 1-1c   | 444<br>(Movie Theater)   | 2<br>Screens        | 440           | 0                   | 29<br>44% entering  |
| 1-2    | 220<br>(MFH Low-Rise)    | 97<br>DU            | 692           | 46<br>23% entering  | 57<br>63% entering  |
| 1-3a   | 220<br>(MFH Low-Rise)    | 122<br>DU           | 881           | 58<br>23% entering  | 70<br>63% entering  |
| 1-3b   | 820<br>(Shopping Center) | 8,000<br>sq ft GFA  | 1,079         | 156<br>62% entering | 84<br>48% entering  |
| 2-1    | 488<br>(Soccer Complex)  | 7<br>Fields         | 499           | 7<br>61% entering   | 115<br>66% entering |
| 3-1a   | 310<br>(Hotel)           | 130<br>Rooms        | 1,087         | 60<br>59% entering  | 71<br>51% entering  |
| 3-1b   | 820<br>(Shopping Center) | 26,000<br>sq ft GFA | 2,405         | 165<br>62% entering | 201<br>48% entering |
| 3-1c   | 435<br>(MPRF)            | 50,000<br>sq ft GFA | N/A           | 0                   | 179<br>55% entering |
| 3-1d   | 850<br>(Supermarket)     | 16,000<br>sq ft GFA | 1,708         | 61<br>60% entering  | 198<br>51% entering |

Notes: DU = Dwelling Units, GFA = Gross Floor Area  
 MFH = Multifamily Housing, SFH = Single Family Housing  
 MPRF = Multipurpose Recreational Facility  
 N/A = Not Applicable; Data Not Given

| Parcel    | Land Use Code No.           | Number of Units      | Weekday Trips | AM Peak Hour Trips  | PM Peak Hour Trips  |
|-----------|-----------------------------|----------------------|---------------|---------------------|---------------------|
| 3-2a      | 310<br>(Hotel)              | 130<br>Rooms         | 1,087         | 61<br>59% entering  | 78<br>51% entering  |
| 3-2b      | 931<br>(Quality Restaurant) | 7,000<br>sq ft GFA   | 587           | 5<br>50% entering   | 55<br>51% entering  |
| 3-2c      | 437<br>(Bowling Alley)      | 38,000<br>sq ft GFA  | N/A           | 31<br>95% entering  | 44<br>65% entering  |
| 3-2d      | 444<br>(Movie Theater)      | 9<br>Screens         | 1,980         | 0                   | 131<br>44% entering |
| 3-2e      | 431<br>(Mini Golf Course)   | 18<br>Holes          | N/A           | 0                   | 6<br>33% entering   |
| Future-1  | 435<br>(MPRF)               | 213,000<br>sq ft GFA | 6,139         | 277<br>66% entering | 435<br>47% entering |
| Future-2a | 220<br>(MFH Low-Rise)       | 82<br>DU             | 579           | 40<br>23% entering  | 50<br>63% entering  |
| Future-2b | 820<br>(Shopping Center)    | 19,000<br>sq ft GFA  | 1,943         | 161<br>62% entering | 159<br>48% entering |
| Future-3  | 221<br>(MFH Mid-Rise)       | 139<br>DU            | 756           | 47<br>26% entering  | 61<br>61% entering  |

Notes: DU = Dwelling Units, GFA = Gross Floor Area  
 MFH = Multifamily Housing, SFH = Single Family Housing  
 MPRF = Multipurpose Recreational Facility  
 N/A = Not Applicable; Data Not Given

In summary, Reunion Center – South is expected to generate approximately 26,000 weekday trips, including 1,519 AM peak hour trips and 1,979 PM peak hour trips.

The Trip Generation summary, detailed land use reports, and internal capture report are included in **Appendix C**.

## Project Trip Distribution

An important element in the determination of the proposed project's traffic impact is the directional distribution of its traffic onto the surrounding roadway system. The relative location of the site, the type of land use, and specific characteristics of the roadway and access system will dictate this distribution of traffic. Note that in this analysis, the distribution was based on the Reunion Center master traffic study, which utilized the traffic counts along E 104<sup>th</sup> Avenue and Tower Road, the DRCOG Travel Demand Model, and the approved *Reunion, Colorado Phase 3 (Villages 5 & 6) Traffic Study*, prepared by Carter and Burgess in 2005.