Traffic Impact Study

CanAm

Commerce City, Colorado

Prepared for:

QuikTrip Corporation

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

CanAm

Commerce City, Colorado

Prepared for
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March 2021

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1.0 EXECUTIVE SUMMARY

CanAm is a mixed-use project proposed to be located on the southwest corner of the 112th Avenue and US Highway 85 intersection in Commerce City, Colorado. For the purpose of this analysis, the development is anticipated to include 160 single family housing dwelling units, 300 multifamily housing dwelling units, and a gas station with 20 fueling positions for passenger vehicles, six (6) fueling positions for trucks/heavy vehicles, and a convenience market with approximately 7,318 square feet of building space. For the purposes of this study, analysis was completed for the 2022 short term and 2040 long term horizons.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with the City of Commerce City and Colorado Department of Transportation (CDOT) standards and requirements:

- 112th Avenue and Brighton Road
- 112th Avenue and Belle Creek Boulevard
- 112th Avenue and Florence Street
- 112th Avenue and US Highway 85
- Florence Street and Belle Creek Boulevard (future)

In addition, one access intersection along 112th Avenue, two access intersections along Belle Creek Boulevard, and four access intersections along the future extension of Florence Street internal to the project development area were also evaluated.

Regional access to the project will be provided by US Highway 85 and Interstate 76 (I-76) while primary access will be provided by 112th Avenue, Belle Creek Boulevard, and Florence Street. Florence Street will be constructed through the development area to provide a connection between Belle Creek Boulevard and 112th Avenue to align as the south leg of the 112th Avenue and Florence Street intersection. The future intersection of Florence Street with Belle Creek Boulevard is anticipated to be located approximately 600 feet south of 112th Avenue (measured center to center).

Direct access to the site will be provided by one right-in/right-out access located along the south side of 112th Avenue, two full movement accesses along the east side of Belle Creek Boulevard, and four accesses along the future Florence Street extension. The right-in/right-out access along 112th Avenue is proposed to be located approximately 400 feet west of US Highway 85 and 300 feet east of the 112th Avenue/Florence Street intersection. The two full movement accesses along Belle Creek Boulevard are proposed to be approximately 300 feet and 900 feet south of 112th Avenue (measured center to center). Along the Florence Street extension, four accesses are proposed. The north access along Florence Street will serve the gas station with convenience market, the middle access will serve the multifamily housing on the west side of the street and the exit for the truck portion of the gas station on the east side of the street, the south access will be the entrance for the truck portion of the gas station, and the west access will serve both residential developments.

CanAm is expected to generate approximately 8,576 weekday driveway trips, with 542 of these trips occurring during the morning peak and 651 trips occurring during the afternoon peak hour. Accounting for pass-by, expected net new trips (non pass-by) to the surrounding street network results in approximately 5,586 new weekday daily trips, of which 341 and 447 new trips are anticipated during the weekday morning and afternoon peak hours, respectively.

Distribution of project traffic on the street system was based on the area street system characteristics, existing traffic patterns and volumes, demographic information, and the proposed access system for the project. Assignment of project traffic was based upon the trip generation described previously and the distributions developed.

Based on the analysis presented in this report, Kimley-Horn believes CanAm will be successfully incorporated into the existing and future roadway network. The proposed project development resulted in the following recommendations and conclusions:

Existing Condition Improvements

- In order to comply with City of Commerce City Engineering Construction Standards and Specifications, the following improvements are needed to serve existing traffic:
    - A 135-foot northbound right turn lane with a 180-foot taper, and a 310-foot southbound left turn lane with a 180-foot taper at the intersection of 112th Avenue and Brighton Road.
    - A 135-foot eastbound right turn lane with a 180-foot taper, a 235-foot westbound left turn lane with a 180-foot taper, a 150-foot northbound left turn lane, and a continuous northbound right turn lane at the intersection of 112th Avenue and Belle Creek Boulevard.
    - A 185-foot eastbound left turn lane with a 180-foot taper at the 112th Avenue and Florence Street intersection.
    - Eastbound and westbound left turn lanes at the 112th Avenue and US-85 intersection. The calculated westbound left turn length cannot be achieved at the 112th Avenue and US-85 intersection due to the railroad to the east; therefore, a length of 150 feet is recommended. The implementation of eastbound and westbound left turn lanes at this intersection will allow for removal of the existing split phase signal operation.
    - The existing southbound acceleration lane from the eastbound right turn does not meet current CDOT requirements with existing traffic at the 112th Avenue and US-85 intersection. The existing lane is approximately 675 feet long plus a 225-foot taper. CDOT requirements identify that an acceleration lane along an EX Category needs a length of 960 feet plus a 225-foot taper. Therefore, it is recommended that CDOT consider lengthening this acceleration lane along southbound US-85 to meet current standards.

2022 Recommendations

- With CanAm, Florence Street will be constructed as a public roadway internal to the site to provide a connection between Belle Creek Boulevard and 112th Avenue as the new south leg of the 112th Avenue and Florence Street intersection. The intersection of Florence Street and Belle Creek Boulevard will be located approximately 600 feet south of 112th Avenue. It is recommended that the new westbound Florence Street approach to Belle Creek Boulevard operate with stop control with an R1-1 “STOP” sign installed. Florence Street will

be constructed to meet City of Commerce City standards and requirements for public right-of-way roadways.

- Access to CanAm will be provided by one right-in/right-out access located along the south side of 112th Avenue, two full movement accesses along the east side of Belle Creek Boulevard, and four accesses along future Florence Street extension. All project accesses are recommended to have R1-1 "STOP" signs installed and include single lanes for the exiting approaches. To identify the restriction of the access along 112th Avenue to right-in/right-out turning movements only, it is recommended that a R3-2 No Left Turn sign be placed underneath the STOP sign and an additional No Left Turn sign be installed on the southwest corner facing westbound approaching traffic.

- The threshold for requiring an access permit along CDOT roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of 112th Avenue at US-85 is anticipated to increase existing access traffic volumes by more than 20 percent; therefore, it is believed that an access permit will be required by CDOT for this intersection in association with this project.

- By 2022, to maximize the back to back left turn lane lengths, it is recommended that the westbound left turn lane at the 112th Avenue and Florence Street intersection provide a length of 200 feet while the eastbound left turn lane at the 112th Avenue and US-85 intersection should provide a length of 275 feet. At the 112th Avenue and Florence Street intersection, a 150-foot northbound left turn lane should be constructed.

- The existing 600-foot plus 225-foot taper northbound left turn lane at the 112th Avenue and US-85 intersection will not meet CDOT requirements in the future based on existing and proposed project traffic volumes. Therefore, CDOT may require this northbound left turn lane to be lengthened to provide a length of is 1,160 feet (935-foot turn lane plus 225-foot taper) in 2022, which is defined by 335 feet of storage length, 600 feet of deceleration length, and a 225-foot taper.

2040 Recommendations

- If future traffic volumes are realized in the year 2040, the required northbound left turn lane length at the 112th Avenue and US-85 intersection is 1,210 feet (975-foot left turn lane plus 225-foot taper), which is defined by 385 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. However, dual northbound left turn lanes may be needed operationally; therefore, the required dual northbound left turn lane length is 1,025 feet (800-foot left turn lanes plus 225-foot taper) which is defined by 200 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. 112th Avenue is not anticipated to provide two through lanes in each direction in the future which would be needed to receive the dual left turn lane movements. Therefore, a continuous westbound left turn lane that drops at Florence Street may need to be provided if northbound dual left turn lanes are necessary at this intersection sometime in the future. It is recommended that CDOT and the City of Commerce City continue to monitor future traffic volumes to determine if this improvement is needed.

General Recommendations

- Any on-site and off-site improvements should be incorporated into the Civil Drawings and conform to standards of CDOT, Commerce City, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with CanAm proposed on the southwest corner of the 112th Avenue and US Highway 85 intersection in Commerce City, Colorado. A vicinity map illustrating the project site location is shown in **Figure 1**.

For this purposes of this analysis, the development is anticipated to include 160 single family housing dwelling units, 300 multifamily housing dwelling units, and a gas station with 20 fueling positions for passenger vehicles, six (6) fueling positions for trucks/heavy vehicles, and a convenience market with approximately 7,318 square feet of building space. For the purposes of this study, analysis was completed for the 2022 short term and 2040 long term horizons.

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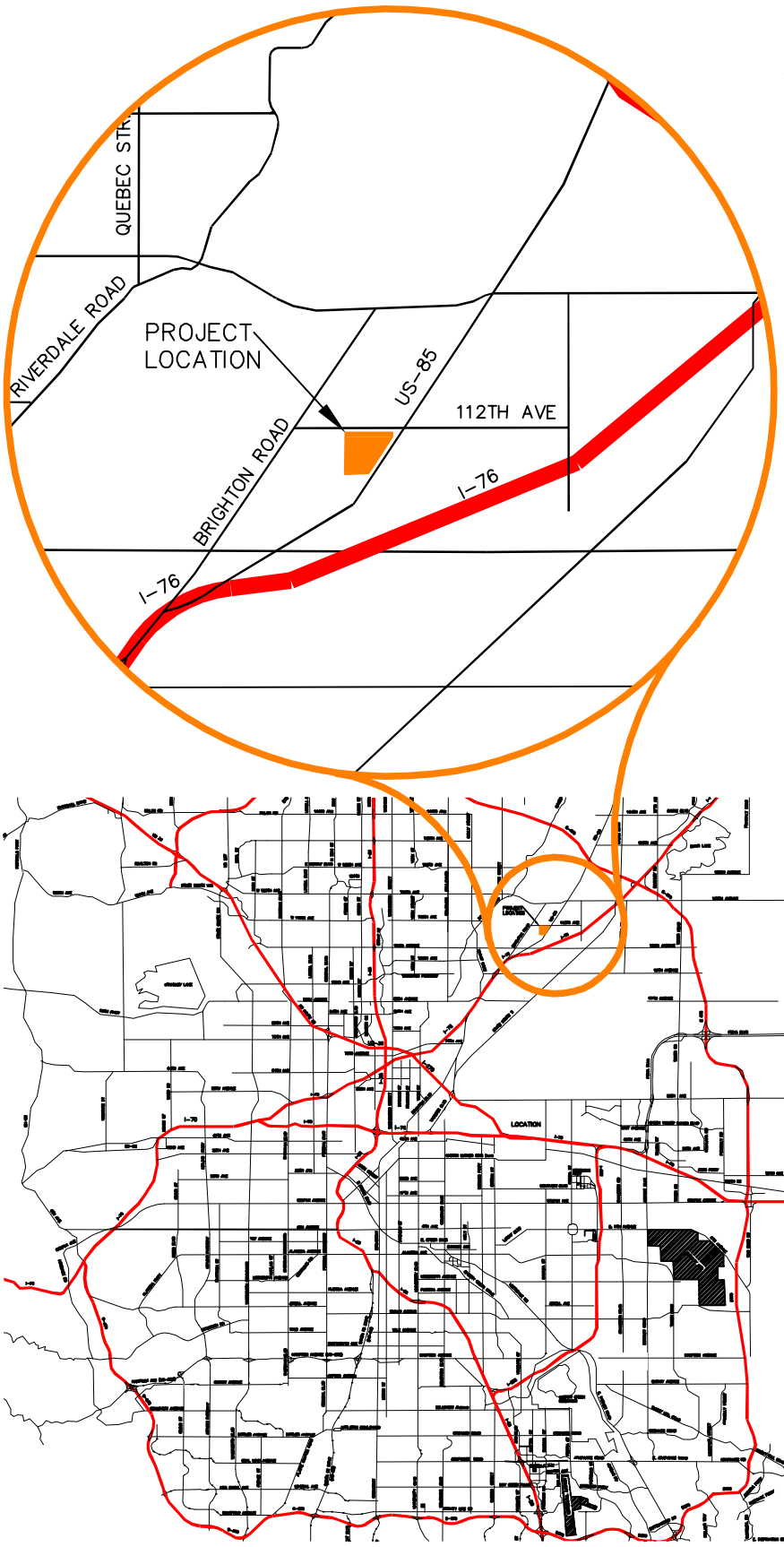

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CanAm
VICINITY MAP

FIGURE 1

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Regional access to the project will be provided by US Highway 85 and Interstate 76 (I-76) while primary access will be provided by 112th Avenue, Belle Creek Boulevard, and Florence Street. Florence Street will be constructed through the development area to provide a connection between Belle Creek Boulevard and 112th Avenue to align as the south leg of the 112th Avenue and Florence Street intersection. The future intersection of Florence Street with Belle Creek Boulevard is anticipated to be located approximately 600 feet south of 112th Avenue (measured center to center).

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3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is vacant land, with the surrounding area primarily vacant land as well. A residential development is located directly north of the site and shares the west access along 112th Avenue. Residential developments are located northeast and southwest of the site. Industrial land uses are located south of the site along Interstate 76 and US Highway 85. The land uses and roadway network surrounding the site within the study area are shown in the aerial of **Figure 2**.

3.2 Existing Roadway Network

US Highway 85 is classified as a Major Regional Arterial extending north-south with a four-lane section within the project limits. It has a CDOT Category Classification of E-X: Expressway, Major Bypass. 112th Avenue extends east-west with one through lane in each direction in the vicinity of the site and is classified as a future multimodal arterial which has a typical section of a one lane in each direction including bikes and a raised median at buildout according to the City of Commerce City Transportation C3 Vision Transportation Plan. 112th Avenue has a speed limit of 45 miles per hour with one lane of travel in each direction eastbound and westbound. Florence Street, Belle Creek Boulevard, and Brighton Road all provide one lane in each direction northbound and southbound with speed limits of 25 miles per hour, 30 miles per hour, and 45 miles per hour, respectively.

The signalized intersection of 112th Avenue and US Highway 85 operates with split phasing on the eastbound and westbound approaches and protected only left turn phasing on the northbound and southbound approaches. The eastbound and westbound approaches of this intersection provide a through/left turn lane and a channelized right turn lane. The northbound and southbound approaches provide a left turn lane, two through lanes, and a right turn lane.

The stop-controlled intersection of 112th Avenue and Florence Street is a three-leg intersection with stop control on the southbound approach. The eastbound and westbound approaches provide one lane for all movements. The southbound approach provides one left turn lane and one right turn lane.

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CanAm
SITE AREA

FIGURE 2

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The stop-controlled intersection of 112th Avenue and Belle Creek Boulevard is a three-leg intersection with stop control on the northbound approach. All approaches provide one lane for all movements.

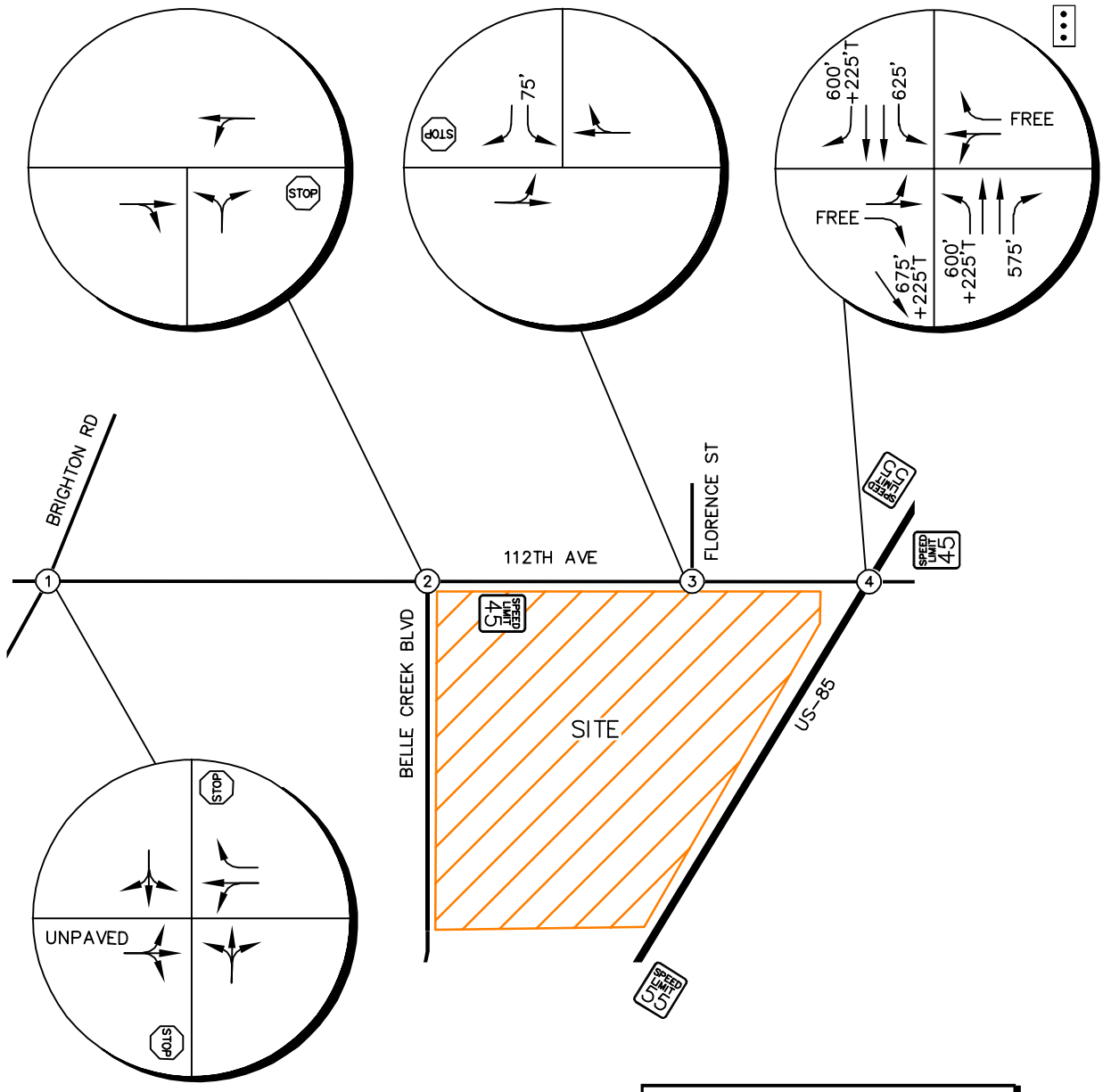
The stop-controlled intersection of 112th Avenue and Brighton Road is a four-leg intersection with stop control on the eastbound (assumed) and westbound approaches. All approaches provide one lane for all movements. The west leg of this intersection is unpaved and did not experience any traffic volumes during the peak hours. The intersection lane configuration and control for the study area intersections are shown in **Figure 3**.

3.3 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the intersections of 112th Avenue/US-85 and 112th Avenue/Florence Street on Wednesday, December 11, 2019 while the counts at the intersections of 112th Avenue/Brighton Road and 112th Avenue/Belle Creek Boulevard, and 112th Avenue/US-85 (repeat count) were collected on Wednesday, August 26, 2020. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The turning movement counts were grown based on comparing volumes on the west leg of the intersection of 112th Avenue and US Highway 85 on Wednesday, December 11, 2019 (Pre-COVID-19) and on Wednesday, August 28, 2020 (During COVID-19) for a COVID-19 adjustment for the intersections of 112th Avenue/Belle Creek Boulevard and 112th Avenue/Brighton Road. The morning and afternoon peak hour traffic counts collected during COVID-19 in 2020 were increased by 113 percent and 43 percent, respectively. The existing turning movement counts are shown in **Figure 4**, the adjusted turning movement counts are shown in **Figure 5,** and count sheets and COVID adjustment calculations are in **Appendix A**.

3.4 Unspecified Development Traffic Growth

According to traffic projections provided by the Colorado Department of Transportation (CDOT), US Highway 85 is expected to have a 20-year growth factor of 1.37 percent. This equates to an annual growth rate of approximately 1.59 percent. Therefore, an annual growth rate of 1.60 percent was used to calculate short term 2022 background traffic projections and future traffic volume projections in 2040. CDOT traffic information is included in **Appendix B**. Background traffic volumes for 2022 and 2040 are shown in **Figure 6** and **Figure 7**, respectively.



LEGEND

X	Study Area Key Intersection
	Signalized Intersection
STOP	Stop Controlled Approach
SPEED LIMIT XX	Roadway Speed Limit
100'	Turn Lane Length (feet)
T	Taper

CanAm
EXISTING LANE CONFIGURATIONS

FIGURE 3

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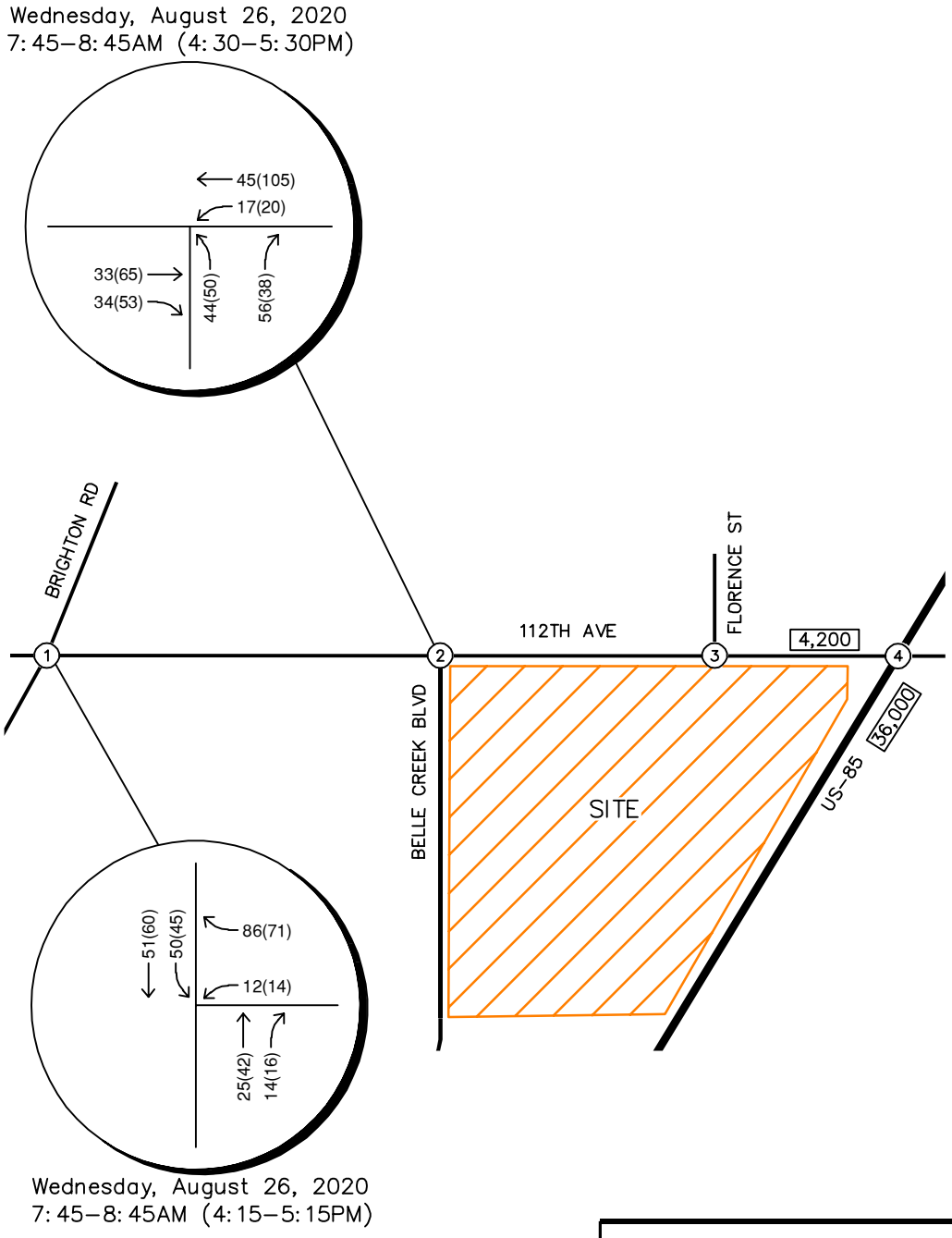

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2020 EXISTING TRAFFIC VOLUMES

FIGURE 4

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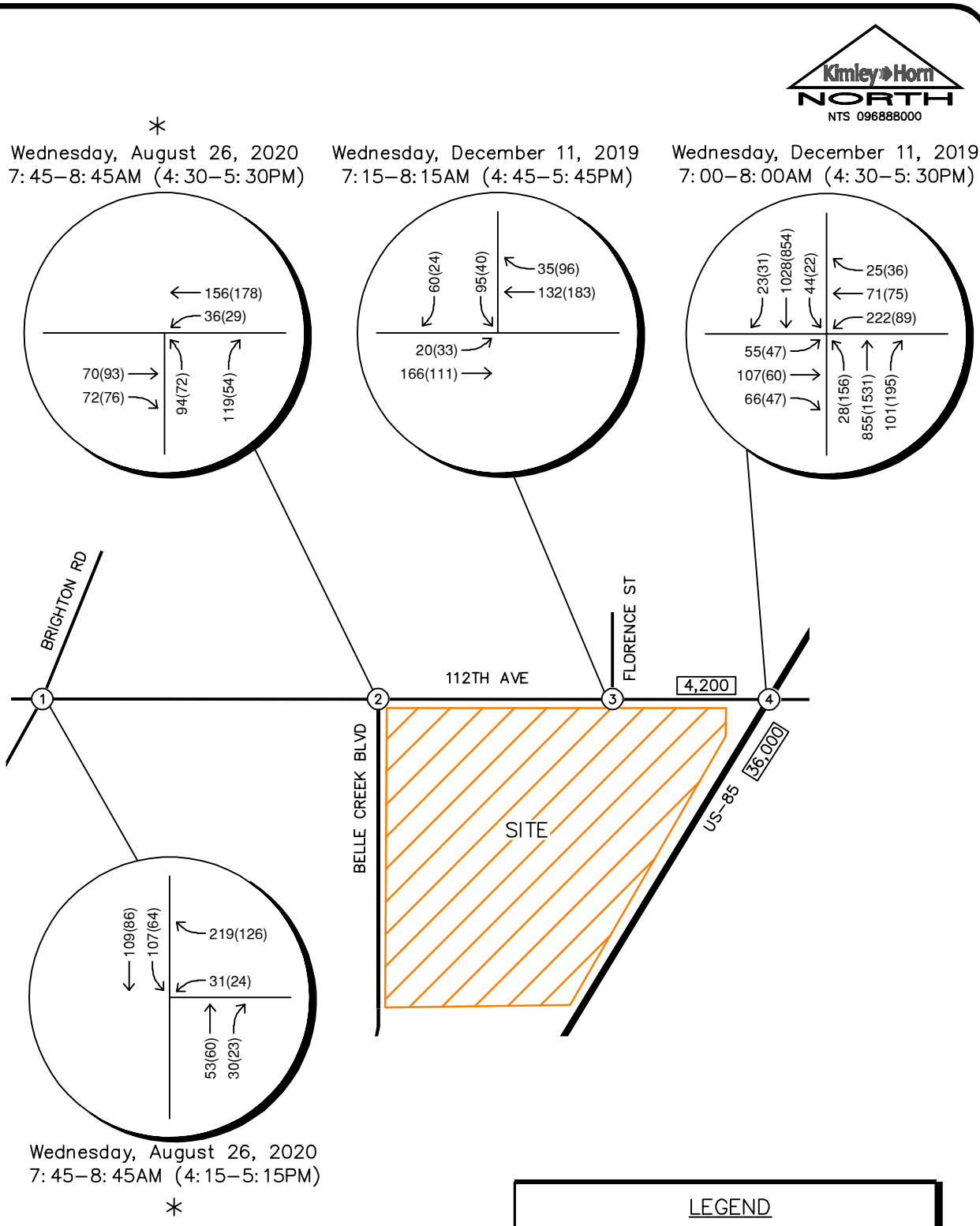

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

* NOTE: TRAFFIC VOLUMES WERE ADJUSTED TO ACCOUNT FOR COVID-19.

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2020 EXISTING ADJUSTED TRAFFIC VOLUMES

FIGURE 5

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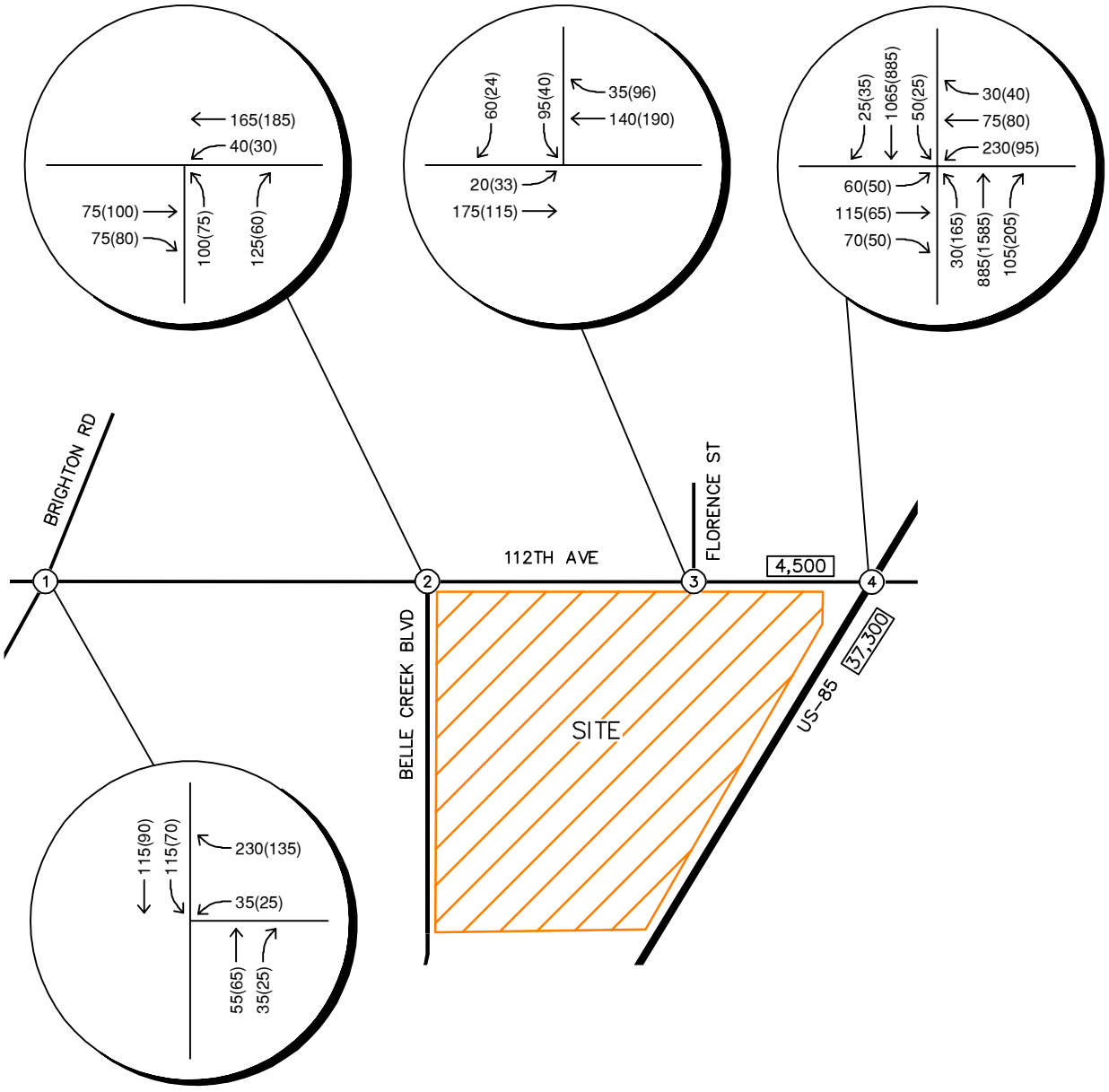

LEGEND

X	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

CanAm
2022 BACKGROUND TRAFFIC VOLUMES

FIGURE 6

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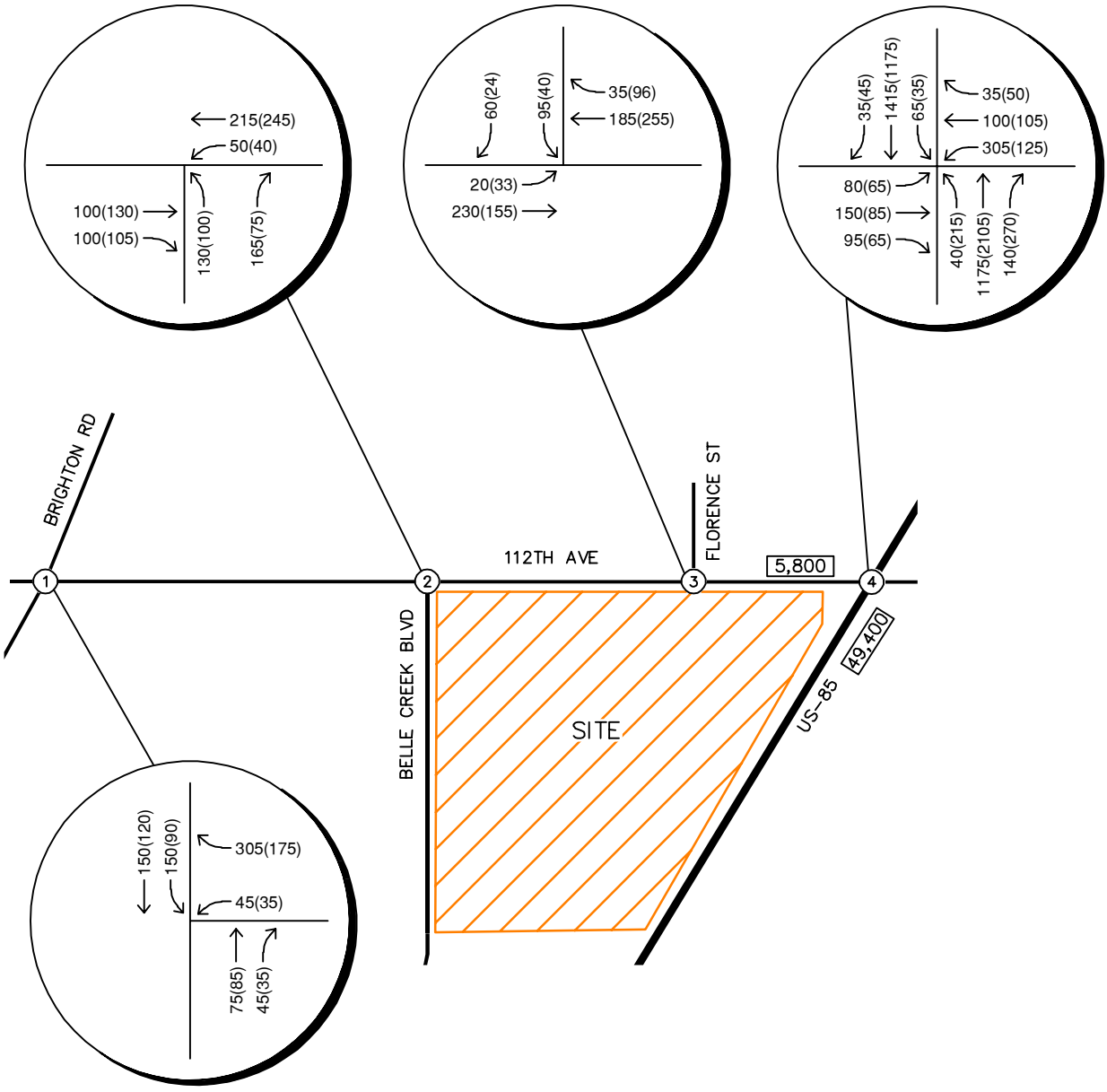

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

CanAm

2040 BACKGROUND TRAFFIC VOLUMES

FIGURE 7

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4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

For the purposes of this analysis, CanAm is anticipated to include 160 single family housing dwelling units, 300 multifamily housing dwelling units, and a gas station with 20 fueling positions for passenger vehicles, six (6) fueling positions for trucks/heavy vehicles, and a convenience market with approximately 7,318 square feet of building space.

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report equations that apply to Single-Family Detached Housing (ITE Code 210), Mid-Rise Multifamily Housing (ITE Code 221), and Gasoline Station with Convenience Market (ITE Code 945) for traffic associated with the development.

Since the project included commercial development; pass-by trips are expected. These pass-by trips are vehicles already on the street network that will be attracted to the gas station. The pass-by percentages were obtained from the ITE "Trip Generation Handbook", Third Edition.

CanAm is expected to generate approximately 8,576 weekday driveway trips, with 542 of these trips occurring during the morning peak and 651 trips occurring during the afternoon peak hour. Accounting for pass-by, expected net new trips (non pass-by) to the surrounding street network results in approximately 5,586 new weekday daily trips, of which 341 and 447 new trips are anticipated during the weekday morning and afternoon peak hours, respectively. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 10th Edition – Volume 1: User's Guide and Handbook*, 2017. **Table 1** summarizes the estimated trip generation for the proposed development. The trip generation worksheet is included in **Appendix C**.

[1] Institute of Transportation Engineers, *Trip Generation Manual*, Tenth Edition, Washington DC, 2017.

Table 1 – CanAm Traffic Generation

Land Use	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210) 160 Units	1,602	30	88	118	101	59	160
Mid-Rise Multi-Family Housing (ITE 221) – 300 Units	1,634	26	74	100	77	50	127
Gas Station w/ Market (ITE 945) – 26 Fueling Positions	5,340	165	159	324	186	178	364
Total Site Generated Trips	**8,576**	**221**	**321**	**542**	**364**	**287**	**651**
Total Pass-By Trips	**2,990**	**102**	**99**	**201**	**104**	**100**	**204**
Total Non Pass-By Trips	**5,586**	**119**	**222**	**341**	**260**	**187**	**447**

4.2 Trip Distribution

Distribution of site traffic was based on the area street system characteristics, existing traffic patterns and volumes, existing demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project non pass-by trip distribution is illustrated in **Figure 8.**

Since the project includes commercial development, a certain amount of traffic attracted to the gas station will be passing by the site. This pass-by distribution is a means to quantify the amount of traffic arriving to the site from a given direction and then leaving the site in the same original direction of travel, continuing the driver's trip. The expected weekday morning and afternoon peak hour pass-by trip distributions were calculated based on actual traffic volumes. Directional differences in the morning and afternoon peak hours were accounted for in the pass-by distributions as shown in **Figures 9** and **10**, respectively.

4.3 Traffic Assignment and Total (Background Plus Project) Traffic

Project traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Project non pass-by traffic assignment is shown in **Figure 11**, while **Figure 12** illustrates the expected pass-by traffic assignment for CanAm. Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2022 horizon and long term 2040 horizon. These total traffic volumes for the site are illustrated for the 2022 and 2040 horizon years in **Figures 13** and **14**, respectively.

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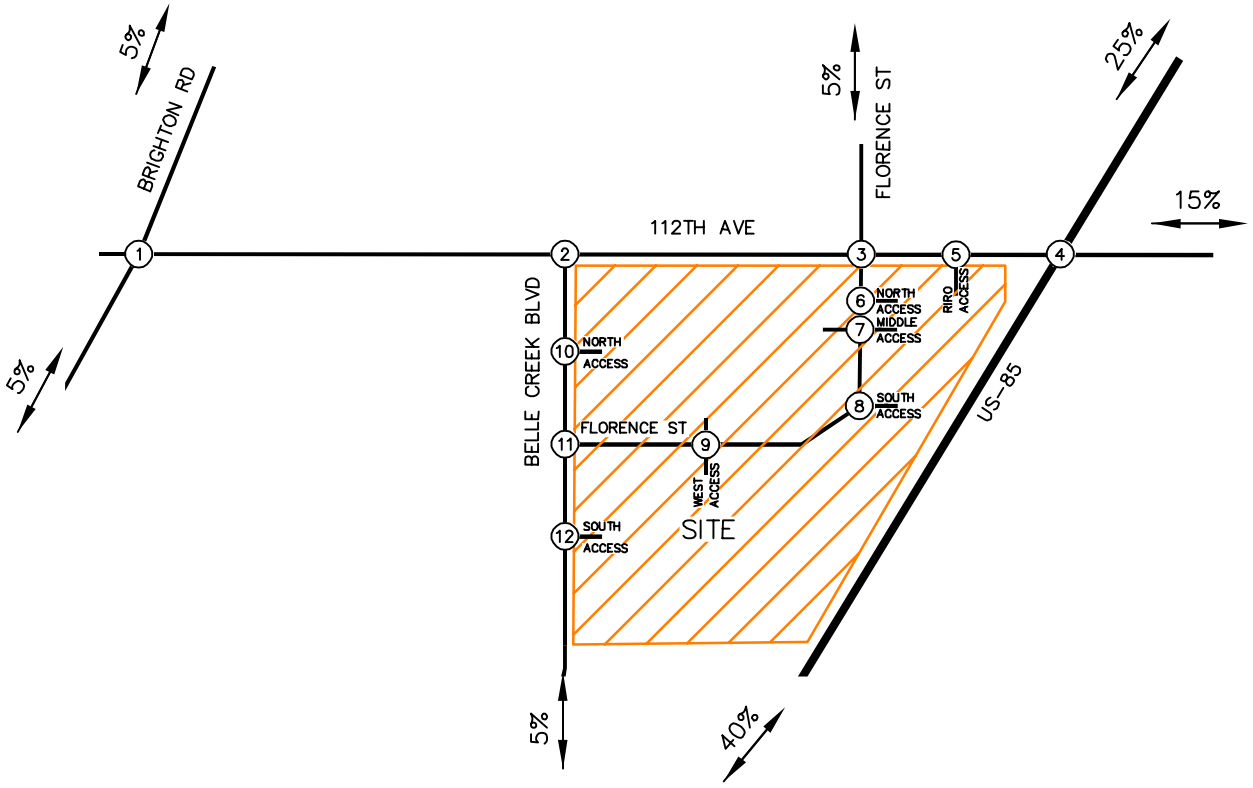

LEGEND

(X) Study Area Key Intersection

XX% External Trip Distribution

CanAm
PROJECT TRIP DISTRIBUTION

FIGURE 8

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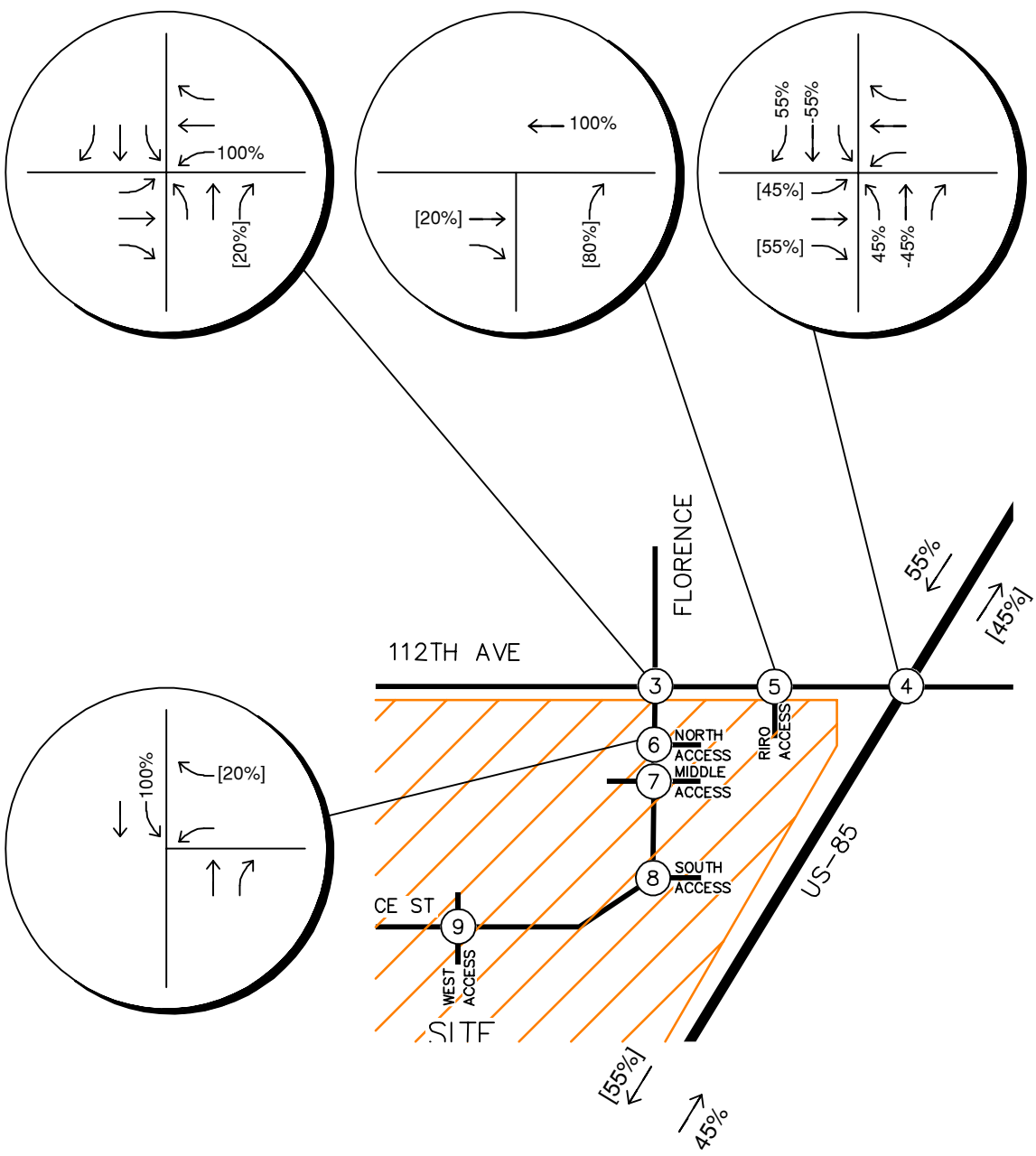


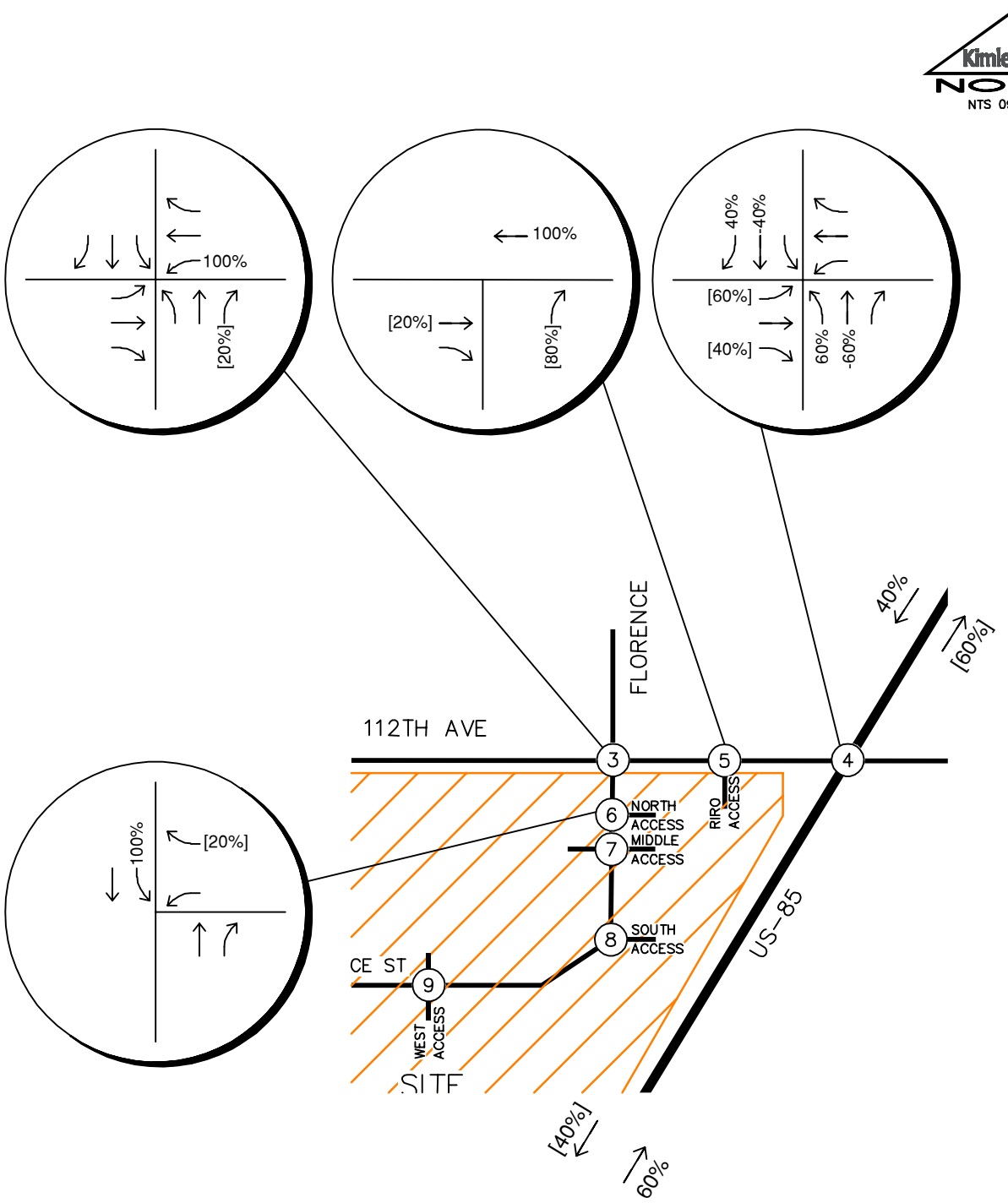
LEGEND

(X) Study Area Key Intersection

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

CanAm
AM PASS-BY TRIP DISTRIBUTION

FIGURE 9



LEGEND

(X) Study Area Key Intersection

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

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PM PASS-BY TRIP DISTRIBUTION

FIGURE 10

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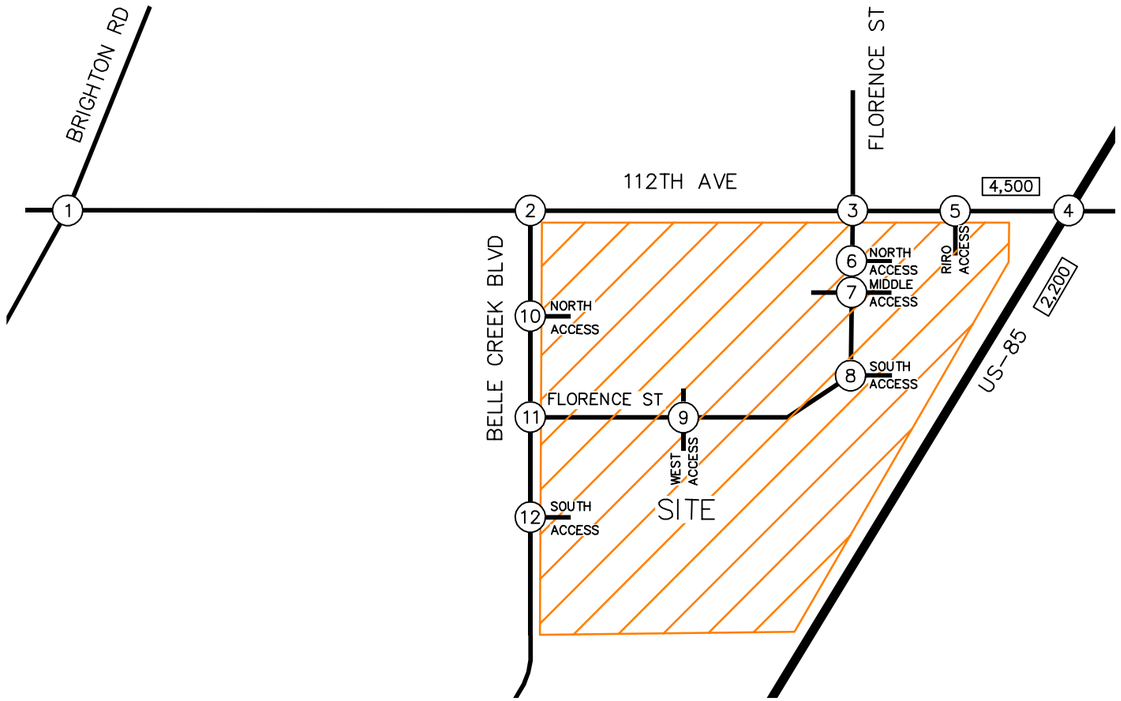
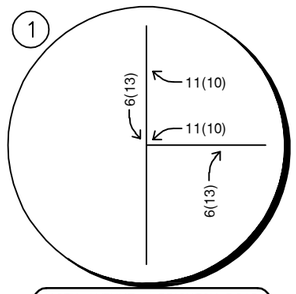
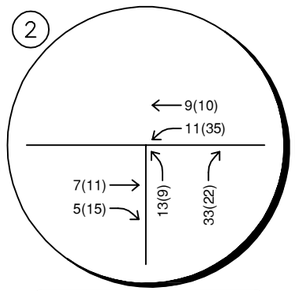
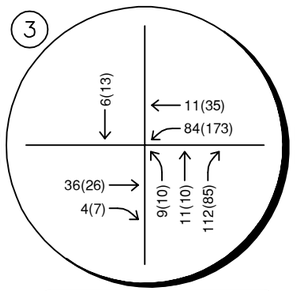




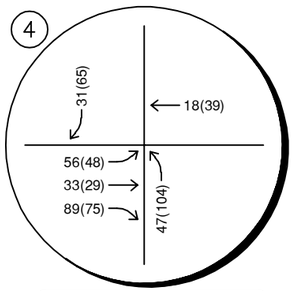
1 — 112TH AVENUE / BRIGHTON ROAD



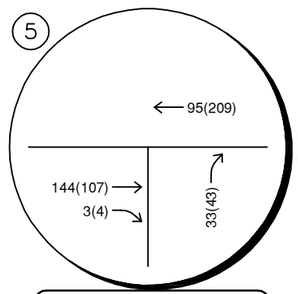
2 — 112TH AVE / BELLE CREEK BLVD



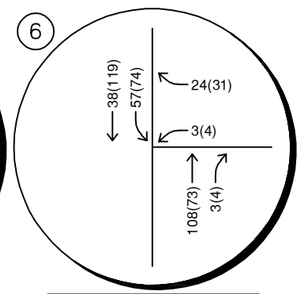
3 — 112TH AVENUE / FLORENCE ST



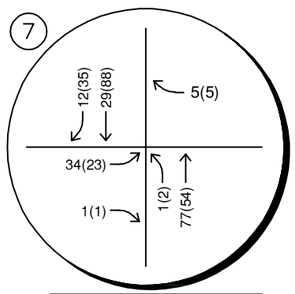
4 — 112TH AVENUE / US-85



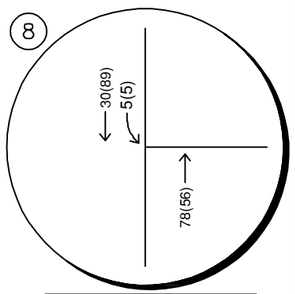
5 — 112TH AVENUE RIRO ACCESS



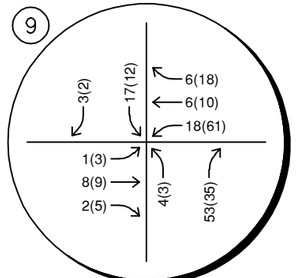
6 — FLORENCE STREET NORTH ACCESS



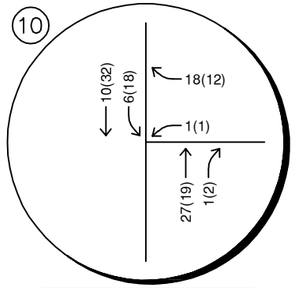
7 — FLORENCE STREET MIDDLE ACCESS



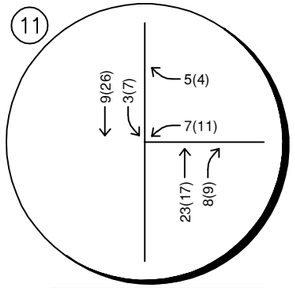
8 — FLORENCE STREET SOUTH ACCESS



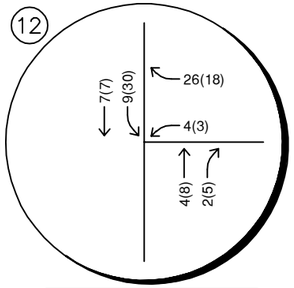
9 — FLORENCE ST WEST ACCESS



10 — BELLE CREEK BLVD NORTH ACCESS



11 — FLORENCE ST / BELLE CREEK BLVD



12 — BELLE CREEK BLVD SOUTH ACCESS

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

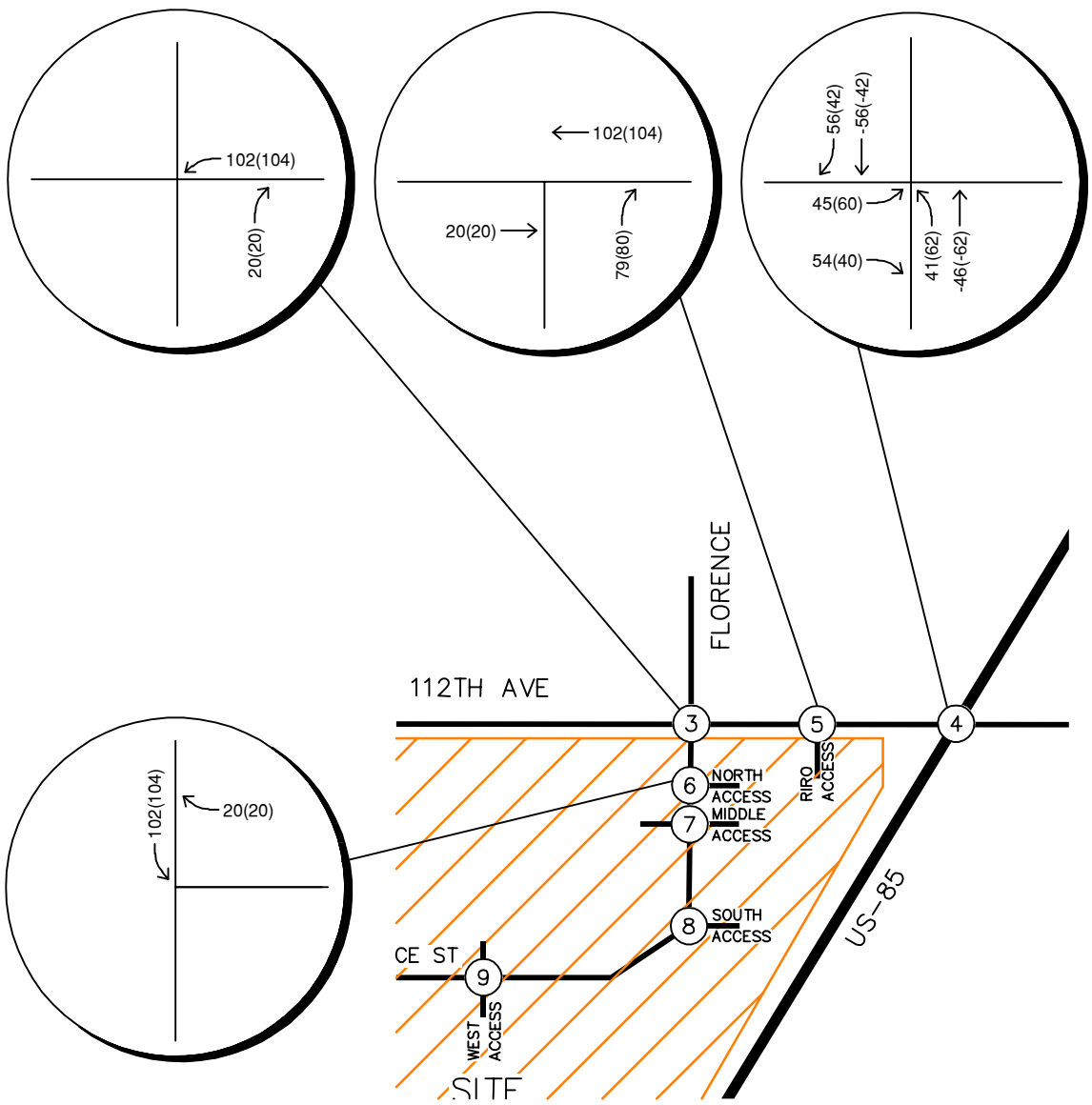
[XX,X00] Estimated Daily Traffic Volume

CanAm

NON PASS-BY PROJECT TRAFFIC ASSIGNMENT VOLUMES

FIGURE 11

Kimley»Horn



LEGEND

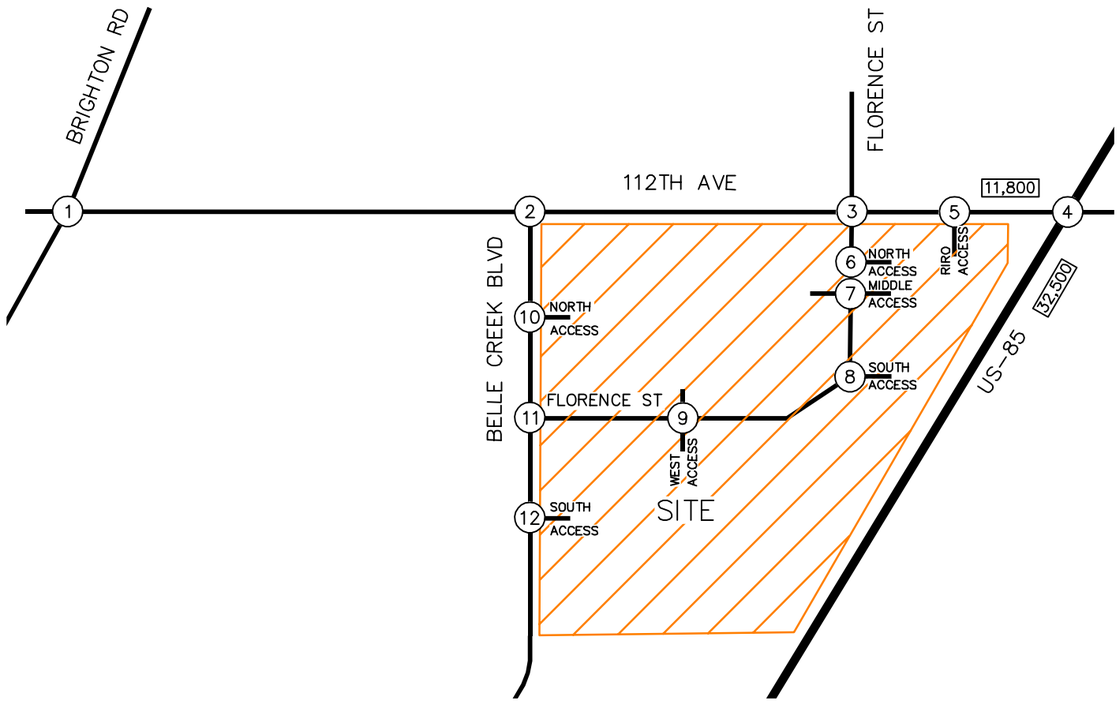
(X) Study Area Key Intersection

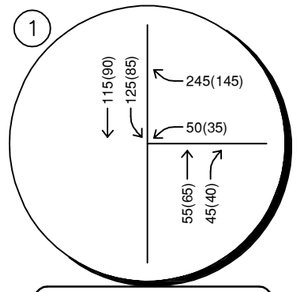
XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

CanAm
PASS-BY TRAFFIC ASSIGNMENT

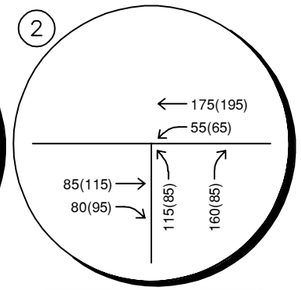
FIGURE 12

Kimley»Horn
NORTH
NTS 096888000

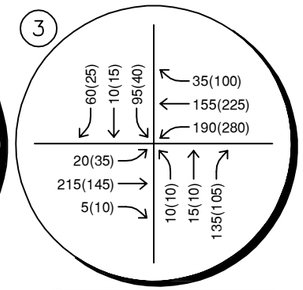




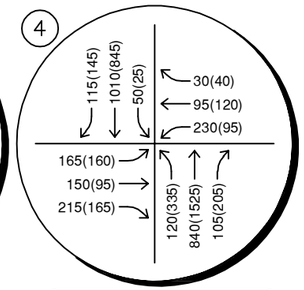
1 — 112TH AVENUE / BRIGHTON ROAD



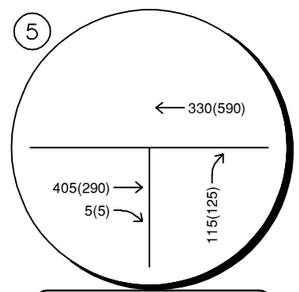
2 — 112TH AVE / BELLE CREEK BLVD



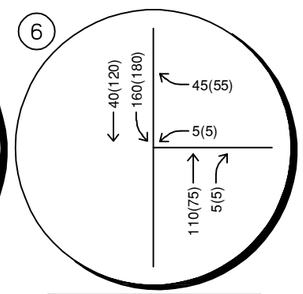
3 — 112TH AVENUE / FLORENCE ST



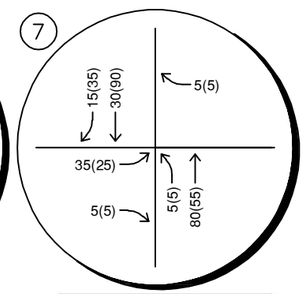
4 — 112TH AVENUE / US-85



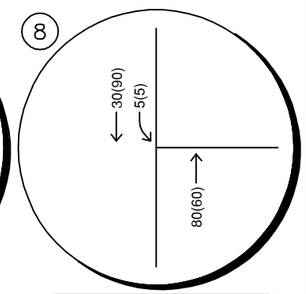
5 — 112TH AVENUE RIRO ACCESS



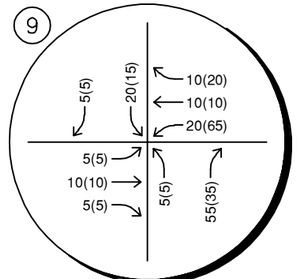
6 — FLORENCE STREET NORTH ACCESS



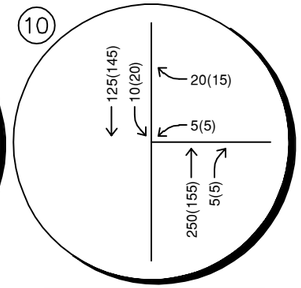
7 — FLORENCE STREET MIDDLE ACCESS



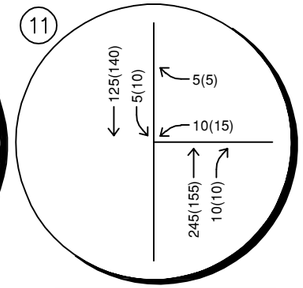
8 — FLORENCE STREET SOUTH ACCESS



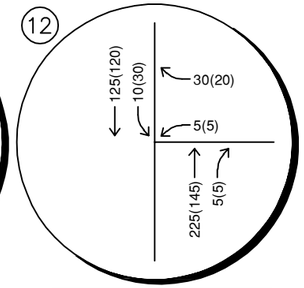
9 — FLORENCE ST WEST ACCESS



10 — BELLE CREEK BLVD NORTH ACCESS



11 — FLORENCE ST / BELLE CREEK BLVD



12 — BELLE CREEK BLVD SOUTH ACCESS

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

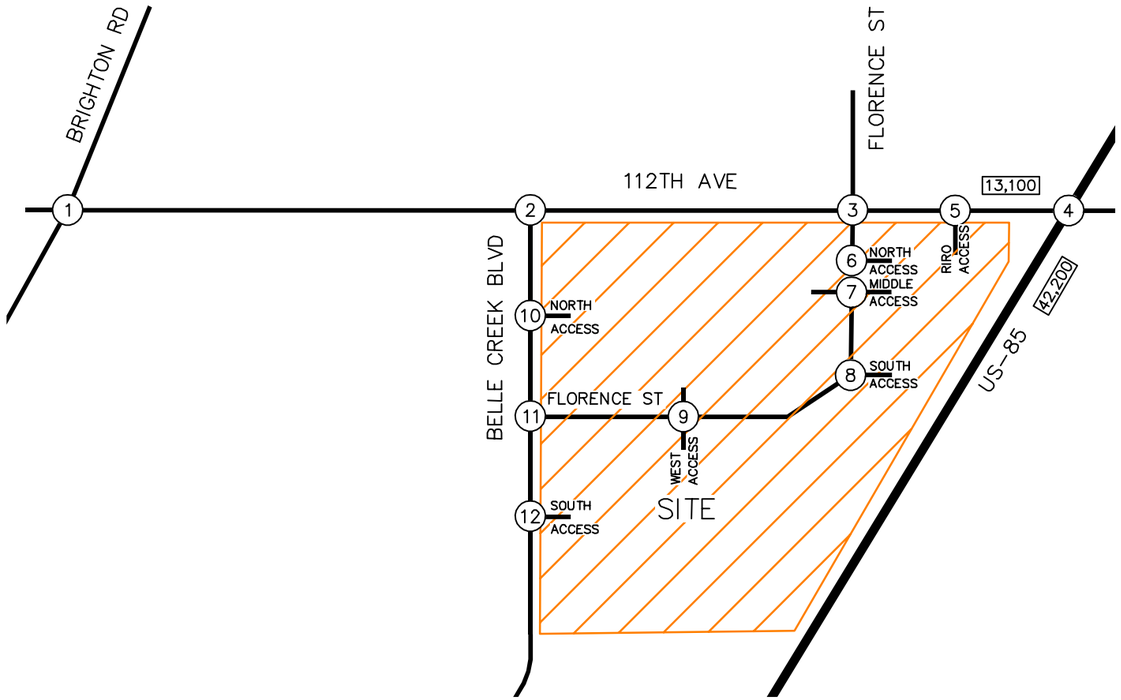
[XX,X00] Estimated Daily Traffic Volume

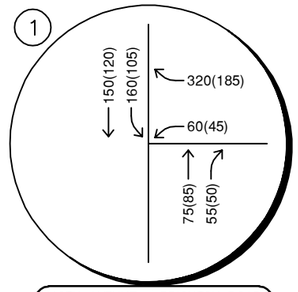
CanAm
2022 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 13

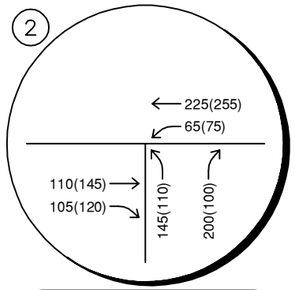
Kimley»Horn

NORTH
NTS 096888000

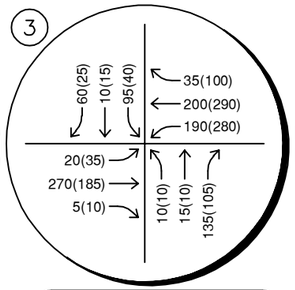




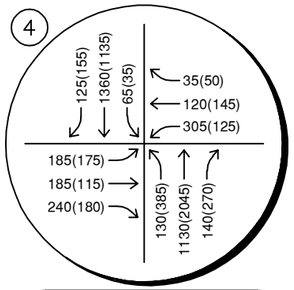
112TH AVENUE / BRIGHTON ROAD



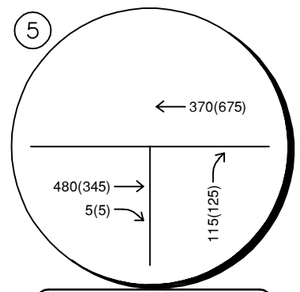
112TH AVE / BELLE CREEK BLVD



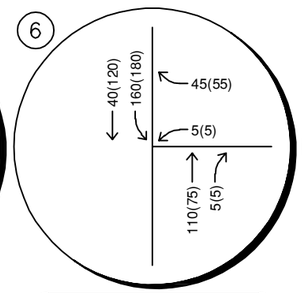
112TH AVENUE / FLORENCE ST



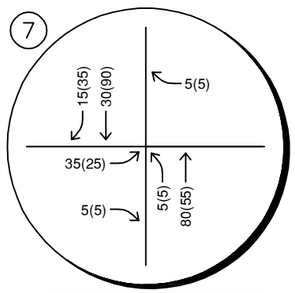
112TH AVENUE / US-85



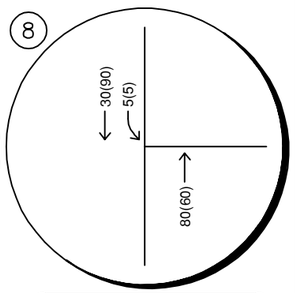
112TH AVENUE RIRO ACCESS



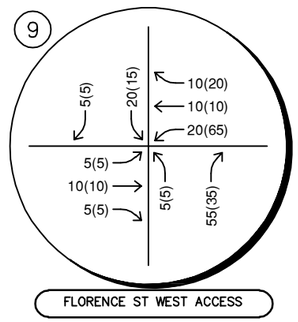
FLORENCE STREET NORTH ACCESS



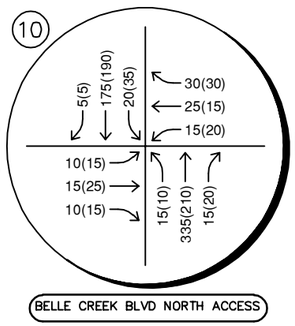
FLORENCE STREET MIDDLE ACCESS



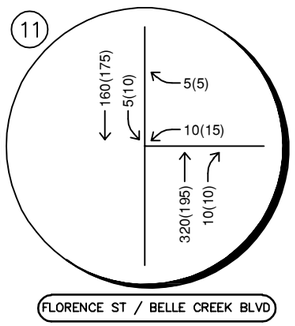
FLORENCE STREET SOUTH ACCESS



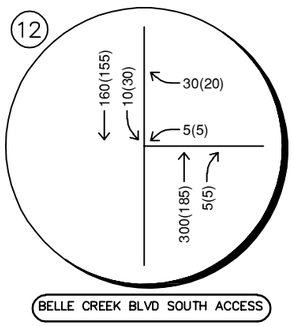
FLORENCE ST WEST ACCESS



BELLE CREEK BLVD NORTH ACCESS



FLORENCE ST / BELLE CREEK BLVD



BELLE CREEK BLVD SOUTH ACCESS

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

CanAm
2040 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 14

Kimley»Horn

5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2022 and 2040 development horizons at the identified key intersections and access driveways. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*[2].

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, standard traffic engineering practice identifies overall LOS D for signalized intersections and LOS E for movements and approaches of unsignalized intersections as the minimum threshold for acceptable operations. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the level of service (LOS) for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service for a two-way stop-controlled intersection is not defined for the intersection as a whole. Level of service for a signalized and four-way stop controlled intersection is defined for each approach and for the intersection.

[2] Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections for the study area are provided in **Appendix D**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 3.** Based on national attention given on appropriate yellow and all-red clearance intervals to improve intersection safety, these have been calculated and are applied for the approaches to the signalized intersections. The increase in the yellow and all red time sacrifices intersection capacity for improved safety. The existing peak hour factors were utilized in the existing and short-term horizon (2022) analysis while the existing signalized intersection analyses used the observed cycle lengths and phasing. The recommended HCM urban area peak hour factor of 0.92 was used for the 2040 horizon analysis. Synchro traffic analysis software was used to analyze the study intersections and access driveway for level of service.

112th Avenue and Brighton Road

The stop-controlled intersection of 112th Avenue and Brighton Road operates with stop control on the westbound approach. The movements at this intersection currently operate acceptably with LOS C or better during the morning and afternoon peaks with the existing lane configuration. In order to comply with City of Commerce City Engineering Construction Standards and Specifications, a northbound right turn lane and a southbound left turn lane should have previously been constructed and are needed based on existing conditions. It should be noted that these improvements have minimal impacts on the operations of this intersection. With these improvements, the movements at this intersection are anticipated to operate acceptably with LOS C or better throughout 2040 with or without project traffic. **Table 3** shows the level of service results at this intersection.

Table 3 – 112th Avenue and Brighton Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing				
Westbound Left	16.4	C	12.1	B
Westbound Right	10.3	B	9.6	A
Southbound Left	7.8	A	7.6	A
2022 Background				
Westbound Left	17.9	C	12.5	B
Westbound Right	10.5	B	9.7	A
Southbound Left	7.9	A	7.7	A
2022 Background Plus Project				
Westbound Left	21.4	C	13.7	B
Westbound Right	10.8	B	9.9	A
Southbound Left	8.0	A	7.8	A
2022 Background Plus Project #				
Westbound Left	19.4	C	13.3	B
Westbound Right	10.2	B	9.7	A
Southbound Left	8.0	A	7.8	A
2040 Background #				
Westbound Left	18.6	C	12.7	B
Westbound Right	11.0	B	9.7	A
Southbound Left	8.0	A	7.7	A
2040 Background Plus Project #				
Westbound Left	21.1	C	13.6	B
Westbound Right	11.2	B	9.8	A
Southbound Left	8.1	A	7.8	A

= Northbound Right and Southbound Left Turn Lanes

112th Avenue and Belle Creek Boulevard

The stop-controlled intersection of 112th Avenue and Belle Creek Boulevard operates with stop control on the northbound approach. The movements at this intersection currently operate acceptably with LOS B or better during the morning and afternoon peak hours with the existing lane configuration. In order to comply with City of Commerce City Engineering Construction Standards and Specifications, an eastbound right turn lane, a westbound left turn lane, a northbound left turn lane, and a northbound right turn lane should have previously been constructed and are needed based on existing conditions. With these improvements, the movements at this intersection are anticipated to operate acceptably with LOS C or better throughout 2040 with or without project traffic. **Table 4** shows the level of service results at this intersection.

Table 4 – 112th Avenue and Belle Creek Boulevard LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing				
Northbound Approach	14.6	B	11.9	B
Westbound Left	7.9	A	7.7	A
2022 Background				
Northbound Approach	15.9	B	12.2	B
Westbound Left	7.9	A	7.8	A
2022 Background Plus Project				
Northbound Approach	21.9	C	15.0	C
Westbound Left	8.1	A	8.0	A
2022 Background Plus Project #				
Northbound Left	17.8	C	15.4	C
Northbound Right	10.2	B	9.4	A
Westbound Left	8.1	A	8.0	A
2040 Background #				
Northbound Left	17.2	B	13.0	B
Northbound Right	10.1	A	9.5	A
Westbound Left	7.9	A	7.9	A
2040 Background Plus Project #				
Northbound Left	21.5	C	15.5	C
Northbound Right	10.6	B	9.8	A
Westbound Left	8.1	A	8.1	A

= Eastbound Right, Westbound Left, Northbound Left and Northbound Right Turn Lanes

112th Avenue and Florence Street

The stop-controlled intersection of 112th Avenue and Florence Street currently operates with stop control on the southbound approach. The movements at this intersection currently operate acceptably with LOS B or better during the morning and afternoon peak hours. With construction of this project, Florence Street is proposed to be extended south, eventually transitioning west to tie-in with Belle Creek Boulevard. With construction of the south leg, it is recommended that exclusive left turn lanes be constructed on the eastbound, westbound, and northbound approaches to comply with City of Commerce City Engineering Construction Standards and Specifications. With these improvements, the movements at this intersection are anticipated to operate acceptably during the peak hours throughout 2040. It is believed that since this intersection operates acceptably under two-way stop control it will not warrant a signal. Also, the minor street approach volumes are not anticipated to produce 200 units of travel for eight (8) hours of the day; therefore, this intersection will not meet warrants for all-way stop control. Further, it is not desired to stop traffic (in an all-way stop control condition) along a multimodal arterial for a minor collector roadway. **Table 5** shows the level of service results at this intersection.

Table 5 – 112th Avenue and Florence Street LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing				
Eastbound Left	7.7	A	8.0	A
Southbound Left	14.0	B	12.6	B
Southbound Right	9.4	A	9.4	A
2022 Background				
Eastbound Left	7.7	A	8.1	A
Southbound Left	14.4	B	12.8	B
Southbound Right	9.5	A	9.4	A
2022 Background Plus Project #				
Northbound Left	20.2	C	33.1	D
Northbound Right	12.3	B	12.1	B
Eastbound Left	7.7	A	8.2	A
Westbound Left	8.3	A	8.4	A
Southbound Left	38.9	E	36.6	E
Southbound Right	11.1	B	16.0	C
2040 Background				
Eastbound Left	7.9	A	8.3	A
Southbound Left	14.2	B	12.4	B
Southbound Right	9.7	A	9.7	A
2040 Background Plus Project #				
Northbound Left	20.6	C	33.5	D
Northbound Right	12.8	B	12.6	B
Eastbound Left	7.8	A	8.4	A
Westbound Left	8.5	A	8.5	A
Southbound Left	43.7	E	39.3	E
Southbound Right	11.6	B	17.7	C

= EB Left Turn Lane, WB Left Turn Lane, and NB Left Turn Lane

112th Avenue and US Highway 85

The signalized intersection of 112th Avenue and US Highway 85 operates with protected only left turn phasing on the northbound and southbound approaches and split phasing on the eastbound and westbound approaches. This intersection currently operates acceptably with LOS D during the morning and afternoon peak hours. With the existing lane configurations and control, this intersection is expected to continue to operate acceptably with LOS D during the morning and afternoon peak hours in 2022. With addition of project traffic and the existing intersection configuration, this intersection is anticipated to operate with long delays during the peak hours in 2022. Eastbound and westbound left turn lanes are recommended at this intersection in the future to comply with City of Commerce City Engineering Construction Standards and Specifications. These eastbound and westbound left turn lanes will allow for removal of the existing split phase operation for the minor street approaches. With the recommended improvements by 2022, this intersection is expected to operate acceptably with LOS D during the morning and afternoon peak hours. By 2040, dual northbound left turn lanes may need to be constructed for the intersection to operate acceptably. 112th Avenue is not anticipated to have two through lanes in each direction in the future which would be needed to have two receiving lanes for the dual left turn lanes. Therefore, a continuous westbound left turn lane that drops at Florence Street may need to be provided if northbound dual left turn lanes are necessary at this intersection in the future. With dual northbound left turn lanes, this intersection operates acceptably with LOS D during both peak hours in 2040. **Table 6** shows the level of service results at this intersection.

Table 6 – 112th Avenue and US Highway 85 LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	38.4	D	39.9	D
2022 Background	41.1	D	44.8	D
2022 Background Plus Project	65.6	E	74.5	E
2022 Background Plus Project #	35.9	D	42.5	D
2040 Background #	38.1	D	37.6	D
2040 Background Plus Project #	45.4	D	57.1	E
2040 Background Plus Project ##	42.1	D	47.6	D

= Includes designated EB and WB Through and Left Turn Lane with Split Phase Removal
= Dual Northbound Left Turn Lanes

5.3 Project Accesses Operational Analysis

With CanAm, access to the site will be provided by one right-in/right-out access located along the south side of 112th Avenue, two full movement accesses along the east side of Belle Creek Boulevard, and four accesses along the future Florence Street extension. The right-in/right-out access along 112th Avenue is proposed to be located approximately 400 feet west of US Highway 85 and 300 feet east of the 112th Avenue/Florence Street intersection. The two full movement accesses along Belle Creek Boulevard are proposed to be approximately 300 feet and 900 feet south of 112th Avenue (measured center to center). Along the Florence Street extension, four accesses are proposed. The north access along Florence Street will serve the gas station with convenience market, the middle access will serve the multifamily housing on the west side of the street and the exit for the truck portion of the gas station on the east side of the street, the south access will be the entrance for the truck portion of the gas station, and the west access will serve both residential developments. All project accesses are recommended to have R1-1 "STOP" signs installed and single approach lanes for the exiting approaches. To identify the restriction of the access along 112th Avenue to right-in/right-out turning movements only, it is recommended that a R3-2 No Left Turn sign be placed underneath the STOP sign and an additional "No Left Turn" sign be installed on the southwest corner facing westbound approaching traffic.

With the recommended configuration of the project accesses in the opening year of 2022, all movements at the access intersections are anticipated to operate acceptably with LOS B or better during the weekday peak hours. By 2040, all movements at the access intersections are expected to continue to operate acceptably with LOS B or better during the peak hours. The operational analysis at the proposed project accesses is summarized in **Table 7** for the short-term 2022 horizon and for the long-term 2040 horizon. Detailed results of the operational analysis are also provided in **Appendix D**.

Table 7 – Project Access LOS Results

Access and Movement	2022 Total Traffic				2040 Total Traffic			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS
112th Ave Right-In/Right-Out Access (#5)								
Northbound Right	12.3	B	11.1	B	13.4	B	11.7	B
Florence St North Access (#6)								
Westbound Approach	9.6	A	9.5	A	9.6	A	9.5	A
Southbound Left	7.8	A	7.7	A	7.8	A	7.7	A
Florence St Middle Access (#7)								
Eastbound Approach	9.4	A	9.8	A	9.5	A	9.8	A
Westbound Approach	8.7	A	8.6	A	8.7	A	8.6	A
Northbound Left	7.3	A	7.5	A	7.3	A	7.5	A
Florence St South Access (#8)								
Southbound Left	7.4	A	7.4	A	7.4	A	7.4	A
Florence St West Access (#9)								
Eastbound Left	7.3	A	7.3	A	7.3	A	7.3	A
Westbound Left	7.3	A	7.4	A	7.3	A	7.4	A
Northbound Approach	8.7	A	8.8	A	8.7	A	8.8	A
Southbound Approach	9.5	A	9.8	A	9.5	A	9.8	A
Belle Creek Blvd North Access (#10)								
Westbound Approach	10.2	B	9.7	A	11.8	B	11.1	B
Southbound Left	7.8	A	7.6	A	8.1	A	7.8	A
Florence St and Belle Creek Blvd (#11)								
Westbound Approach	10.8	B	10.4	B	11.7	B	11.0	B
Southbound Left	7.8	A	7.6	A	8.0	A	7.7	A
Belle Creek Blvd South Access (#12)								
Westbound Approach	10.0	B	9.6	A	10.7	B	9.9	A
Southbound Left	7.8	A	7.6	A	8.0	A	7.7	A

5.4 Impacts to Belle Creek Boulevard

As requested by the City of Commerce City, impacts to Belle Creek Boulevard south of the project has been included in this study. It is anticipated that less than 150 project trips per day will utilize Belle Creek Boulevard to the south of this development. Delay issues presently at the intersection of 104th Avenue and Belle Creek Boulevard as well as traffic calming devices in place along Belle Creek Boulevard south of the project will deter project traffic to use Belle Creek Boulevard to the south. It is anticipated that the only project trips to occur to and from the south along Belle Creek Boulevard will be from residences to the south using retail services on the project site. It is more direct for project traffic to use the intersection of 112th Avenue and

US-85 for travel to and from the south. Further, the 112th Avenue and US-85 intersection has reserved capacity to reduce travel times compared to other routes. Therefore, it is believed that project traffic will not utilize (or nominal at most) the intersection of 104th Avenue and Belle Creek Boulevard and minimal impacts will occur along Belle Creek Boulevard from residences to the south.

5.5 Turn Bay Length Analysis

The threshold for requiring an access permit along CDOT roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the east and west leg of 112th Avenue at US-85 is anticipated to increase existing access traffic volumes by more than 20 percent; therefore, it is believed that an access permit will be required by CDOT for this intersection in association with this project.

Since US-85 is a state owned and maintained facility, it is recommended that auxiliary turn lanes along US-85 be constructed in accordance with the current CDOT State Highway Access Code (SHAC). CDOT categorizes the segment of US-85 through the study area as E-X: Expressway, Major Bypass. According to the State Highway Access Code for category E-X, the following thresholds apply for implementation of auxiliary turn lanes:

- A left turn deceleration lane is required for any access with a projected average daily left turn ingress volume greater than 10. If the projected left ingress turning volume is greater than 10 vehicles per day (vpd), a left turn lane with deceleration, storage, and transition taper lengths is required for any access.
- A right turn lane with deceleration and taper lengths is required for any access with a projected peak hour right turn ingress turning volume greater than 10 vph.
- A right turn lane with acceleration and taper lengths is required for any access with a projected peak hour right turning volume greater than 10 vph.

Based on traffic projections and the above thresholds, auxiliary turn lane requirements were calculated for the 112th Avenue and US-85 intersection. US-85 provides two through lanes of travel in each direction and has a speed limit of 55 miles with the study area. As such, turn lane

requirements at the 112th Avenue/US-85 intersection that are anticipated to include project traffic volumes are as follows:

- A northbound left turn deceleration lane **is** warranted and exists today with a length of approximately 600 feet plus a 225-foot taper. Since US-85 has an EX category, the left turn lane requirement is storage length plus deceleration length (600 feet) plus taper length (225 feet at 18.5 to 1 taper). The storage length required is one (1) foot per vehicle (rounded to nearest 25-foot increment to equate to one vehicle). Based on the projected northbound left turn volume being 335 vehicles per hour in 2022, the storage length requirement is 335 feet. Of note, the northbound left turn volume projected in 2040 is 385 vehicles per hour, which would identify a storage length requirement of 385 feet. Therefore, the required northbound left turn lane length is 1,160 feet (935-foot turn lane plus 225-foot taper) in 2022, which is defined by 335 feet of storage length, 600 feet of deceleration length, and a 225-foot taper. The required northbound left turn lane length is 1,210 feet (985-foot left turn lane plus 225-foot taper) in 2040, which is defined by 385 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. However, by 2040 dual northbound left turn lanes may be needed, therefore the required dual northbound left turn lane length is 1,025 feet (800-foot left turn lane plus 225-foot taper) which is defined by 200 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. Therefore, CDOT may require extension of this existing northbound left turn lane.

- A southbound right turn deceleration lane **is** warranted and exists today with a length of 600 feet plus a 225-foot taper. Since US-85 has an EX category, the right turn deceleration lane requirement is deceleration length (600 feet) plus taper length (225 feet at 18.5 to 1 taper). Therefore, CDOT the existing southbound right turn lane is in compliance with CDOT standards.

- A southbound acceleration lane from the eastbound right turn **is** warranted and exists today with a length of approximately 675 feet plus a 225-foot taper. CDOT SHAC requirements identify that an acceleration lane along an EX Category highway with a speed limit of 55 miles per hour as needing a length of 960 feet plus a 225-foot taper.

Therefore, CDOT may require the lengthening of this acceleration lane along southbound US-85 to 960 feet plus a 225-foot taper.

5.6 Vehicle Queuing Analysis

Queuing analysis was conducted for the study area intersections per Commerce City standards and requirements. Results were obtained from the 95th percentile queue lengths obtained from the Synchro analysis. Queue analysis worksheets at the signalized intersections are provided in **Appendix E**. Queue length calculations for unsignalized intersections are provided within the level of service operational sheets provided in **Appendix D**. Results of the queuing analysis and recommendations at the study area intersections are provided in **Table 8.** Of note, any queue lengths calculated at less than one vehicle were rounded up to 25 feet to account for one vehicle of storage needed.

Table 8 – Turn Lane Queuing Analysis Results

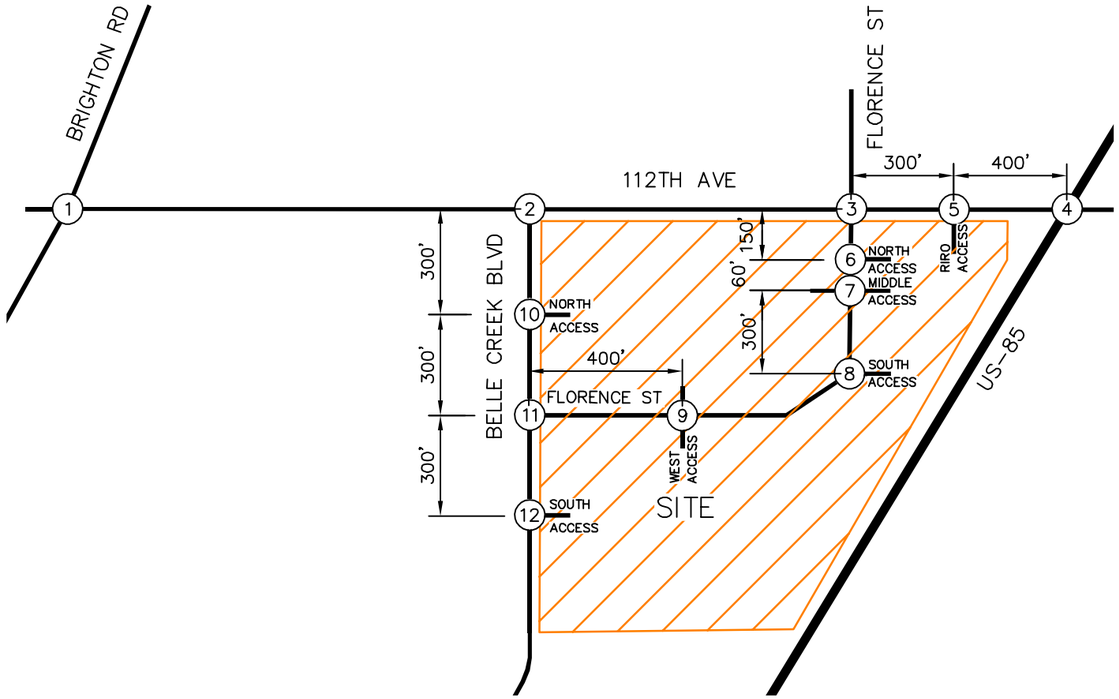
Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Calculated Queue (feet)	2022 Recommended Length (feet)	2040 Calculated Queue (feet)	2040 Recommended Length (feet)
112th Ave & Brighton Rd					
Northbound Right	DNE	25’	**135’+180’T (CC)**	25’	135’+180’T (CC)
Southbound Left	DNE	25’	**310’+180’T (CC)**	25’	310’+180’T (CC)
112th Ave & Belle Creek Blvd					
Northbound Left	DNE	50’	**150’**	75’	150’
Northbound Right	DNE	25’	**C**	50’	C
Eastbound Right	DNE	25’	**135’+180’T (CC)**	25’	135’+180’T (CC)
Westbound Left	DNE	25’	**235’+180’T(CC)**	25’	235’+180’T(CC)
112th Ave & Florence St					
Eastbound Left	DNE	25’	**185’+180’T(CC)**	25’	185’+180’T(CC)
Westbound Left	DNE	25’	**200’**	25’	**C**
Northbound Left	DNE	25’	**150’**	25’	150’
Southbound Left	75’	75’	75’	75’	75’
112th Ave & US-85					
Eastbound Left	DNE	182’	**275’**	242’	**385’+180’T(CC)**
Eastbound Right	FREE	FREE	FREE	FREE	FREE
Westbound Left	DNE	264’	***150’**	404’	*150’
Westbound Right	FREE	FREE	FREE	FREE	FREE
Northbound Left	600’+225’T	412’	**935’+225’T(CDOT)**	254’ DL	**800’+225’T DL (CDOT)**
Northbound Right	575’	30’	575’	43’	575’
Southbound Left	625’	94’	625’	133’	625’
Southbound Right	600’+225’T	59’	600’+225’T (CDOT)	46’	600’+225’T (CDOT)

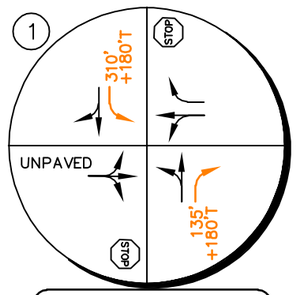
DNE = Does Not Exist; C = Continuous Lane, DL = Dual Left Turn Lane, CC = City of Commerce City Standards, CDOT = CDOT State Highway Access Code, * = Constrained due to Railroad to East

As shown in the table representing the queuing results, all anticipated queues are accommodated or managed within existing turn bay lengths with project traffic in the 2022 project build out year except for the westbound left turn lane at the 112th Avenue and US-85 intersection. The calculated westbound left turn length cannot be achieved at the 112th Avenue and US-85 intersection due to the railroad to the east. To maximize the back to back left turn lane lengths in 2022, it is recommended that the westbound left turn lane at the 112th Avenue and Florence Street intersection should provide a length of 200 feet while the eastbound left turn lane at the 112th Avenue and US-85 intersection should provide a length of 275 feet. Recommended auxiliary turn lanes and lengths based on the City of Commerce City Engineering Construction Standards and Specifications have been incorporated in **Figure 15** for the 2022 horizon and **Figure 16** for the 2040 horizon, applicable standards are included in **Appendix F.**

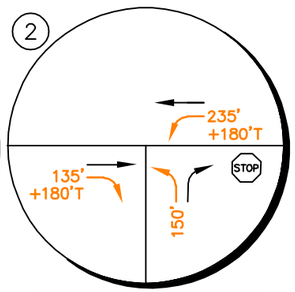
Based on the results of the intersection operational and vehicle queuing analysis, the key intersection recommended improvements and control are shown in **Figure 15** for the 2022 horizon and **Figure 16** for the 2040 horizon. It should also be noted that distance dimensions between access intersections is also provided in **Figure 15**.

Kimley»Horn
NORTH
NTS 096888000

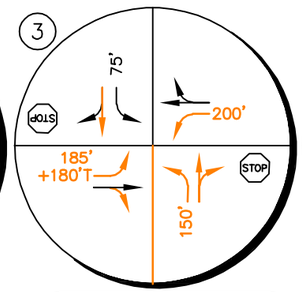




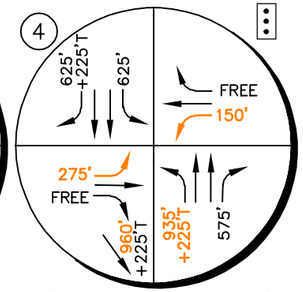
112TH AVENUE / BRIGHTON ROAD



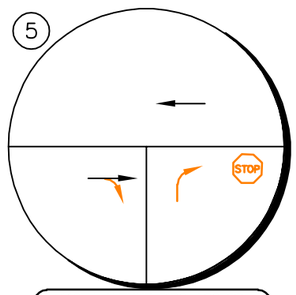
112TH AVE / BELLE CREEK BLVD



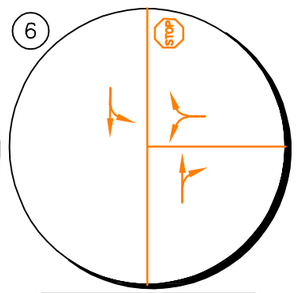
112TH AVENUE / FLORENCE ST



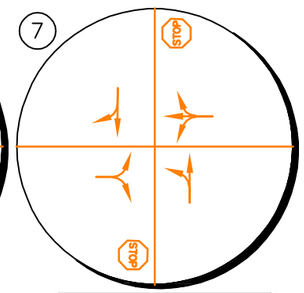
112TH AVENUE / US-85



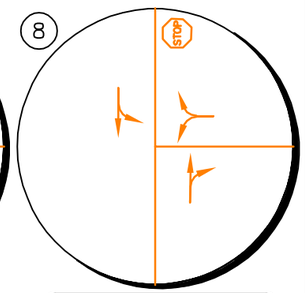
112TH AVENUE RIRO ACCESS



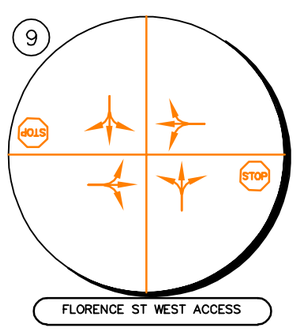
FLORENCE STREET NORTH ACCESS



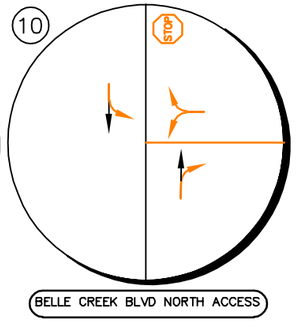
FLORENCE STREET MIDDLE ACCESS



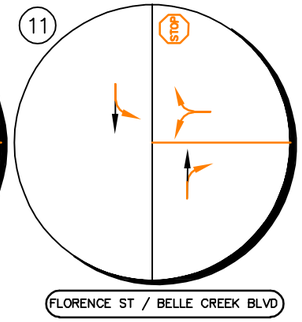
FLORENCE STREET SOUTH ACCESS



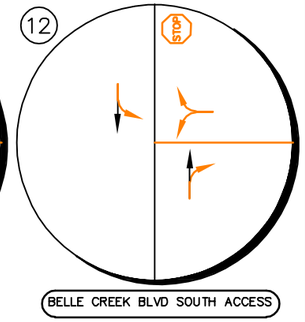
FLORENCE ST WEST ACCESS



BELLE CREEK BLVD NORTH ACCESS



FLORENCE ST / BELLE CREEK BLVD



BELLE CREEK BLVD SOUTH ACCESS

LEGEND

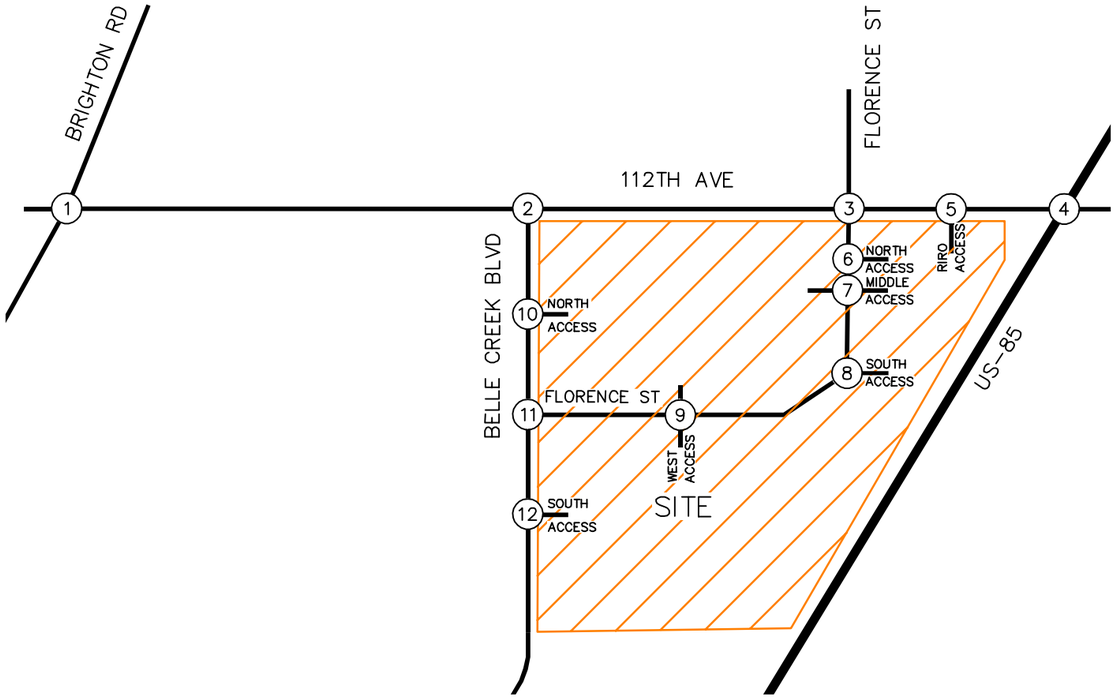
X	Study Area Key Intersection
	Signalized Intersection
STOP	Stop Controlled Approach
	Improvement
T	Taper
100'	Turn Lane Length (feet)

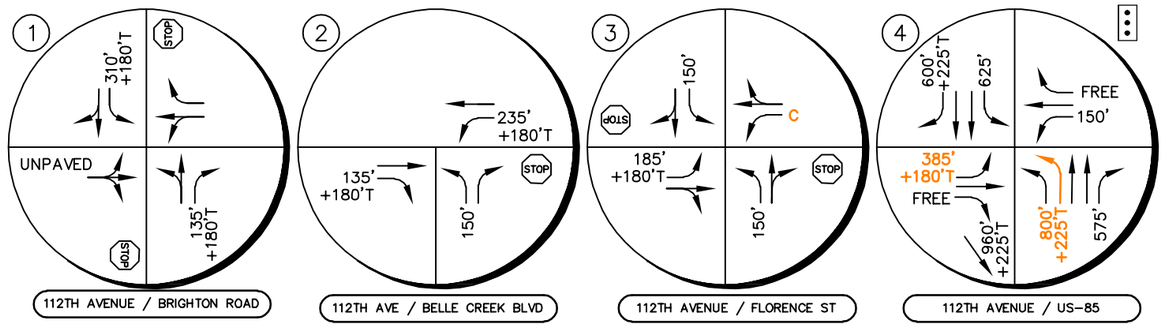
CanAm
2022 RECOMMENDED LANE CONFIGURATIONS AND CONTROL

FIGURE 15

Kimley»Horn

Kimley»Horn
NORTH
NTS 096888000





LEGEND

X	Study Area Key Intersection
	Signalized Intersection
STOP	Stop Controlled Approach
	Improvement
T	Taper
100'	Turn Lane Length (feet)

CanAm
2040 RECOMMENDED LANE CONFIGURATIONS AND CONTROL

FIGURE 16

Kimley»Horn

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes CanAm will be successfully incorporated into the existing and future roadway network. The proposed project development resulted in the following recommendations and conclusions:

Existing Condition Improvements

- In order to comply with City of Commerce City Engineering Construction Standards and Specifications, the following improvements are needed to serve existing traffic:
    - A 135-foot northbound right turn lane with a 180-foot taper, and a 310-foot southbound left turn lane with a 180-foot taper at the intersection of 112th Avenue and Brighton Road.
    - A 135-foot eastbound right turn lane with a 180-foot taper, a 235-foot westbound left turn lane with a 180-foot taper, a 150-foot northbound left turn lane, and a continuous northbound right turn lane at the intersection of 112th Avenue and Belle Creek Boulevard.
    - A 185-foot eastbound left turn lane with a 180-foot taper at the 112th Avenue and Florence Street intersection.
    - Eastbound and westbound left turn lanes at the 112th Avenue and US-85 intersection. The calculated westbound left turn length cannot be achieved at the 112th Avenue and US-85 intersection due to the railroad to the east; therefore, a length of 150 feet is recommended. The implementation of eastbound and westbound left turn lanes at this intersection will allow for removal of the existing split phase signal operation.
    - The existing southbound acceleration lane from the eastbound right turn does not meet current CDOT requirements with existing traffic at the 112th Avenue and US-85 intersection. The existing lane is approximately 675 feet long plus a 225-foot taper. CDOT requirements identify that an acceleration lane along an EX Category needs a length of 960 feet plus a 225-foot taper. Therefore, it is recommended that CDOT consider lengthening this acceleration lane along southbound US-85 to meet current standards.

2022 Recommendations

- With CanAm, Florence Street will be constructed as a public roadway internal to the site to provide a connection between Belle Creek Boulevard and 112th Avenue as the new south leg of the 112th Avenue and Florence Street intersection. The intersection of Florence Street and Belle Creek Boulevard will be located approximately 600 feet south of 112th Avenue. It is recommended that the new westbound Florence Street approach to Belle Creek Boulevard operate with stop control with an R1-1 "STOP" sign installed. Florence Street will be constructed to meet City of Commerce City standards and requirements for public right-of-way roadways.

- Access to CanAm will be provided by one right-in/right-out access located along the south side of 112th Avenue, two full movement accesses along the east side of Belle Creek Boulevard, and four accesses along future Florence Street extension. All project accesses are recommended to have R1-1 "STOP" signs installed and include single lanes for the exiting approaches. To identify the restriction of the access along 112th Avenue to right-in/right-out turning movements only, it is recommended that a R3-2 No Left Turn sign be placed underneath the STOP sign and an additional No Left Turn sign be installed on the southwest corner facing westbound approaching traffic.

- The threshold for requiring an access permit along CDOT roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of 112th Avenue at US-85 is anticipated to increase existing access traffic volumes by more than 20 percent; therefore, it is believed that an access permit will be required by CDOT for this intersection in association with this project.

- By 2022, to maximize the back to back left turn lane lengths, it is recommended that the westbound left turn lane at the 112th Avenue and Florence Street intersection provide a length of 200 feet while the eastbound left turn lane at the 112th Avenue and US-85 intersection should provide a length of 275 feet. At the 112th Avenue and Florence Street intersection, a 150-foot northbound left turn lane should be constructed.

- The existing 600-foot plus 225-foot taper northbound left turn lane at the 112th Avenue and US-85 intersection will not meet CDOT requirements in the future based on existing and proposed project traffic volumes. Therefore, CDOT may require this northbound left turn lane to be lengthened to provide a length of is 1,160 feet (935-foot turn lane plus 225-foot taper) in 2022, which is defined by 335 feet of storage length, 600 feet of deceleration length, and a 225-foot taper.

2040 Recommendations

- If future traffic volumes are realized in the year 2040, the required northbound left turn lane length at the 112th Avenue and US-85 intersection is 1,210 feet (975-foot left turn lane plus 225-foot taper), which is defined by 385 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. However, dual northbound left turn lanes may be needed operationally; therefore, the required dual northbound left turn lane length is 1,025 feet (800-foot left turn lanes plus 225-foot taper) which is defined by 200 feet of storage length, 600 feet of deceleration length, plus a 225-foot taper. 112th Avenue is not anticipated to provide two through lanes in each direction in the future which would be needed to receive the dual left turn lane movements. Therefore, a continuous westbound left turn lane that drops at Florence Street may need to be provided if northbound dual left turn lanes are necessary at this intersection sometime in the future. It is recommended that CDOT and the City of Commerce City continue to monitor future traffic volumes to determine if this improvement is needed.

General Recommendations

- Any on-site and off-site improvements should be incorporated into the Civil Drawings and conform to standards of CDOT, Commerce City, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

Intersection Count Sheets

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

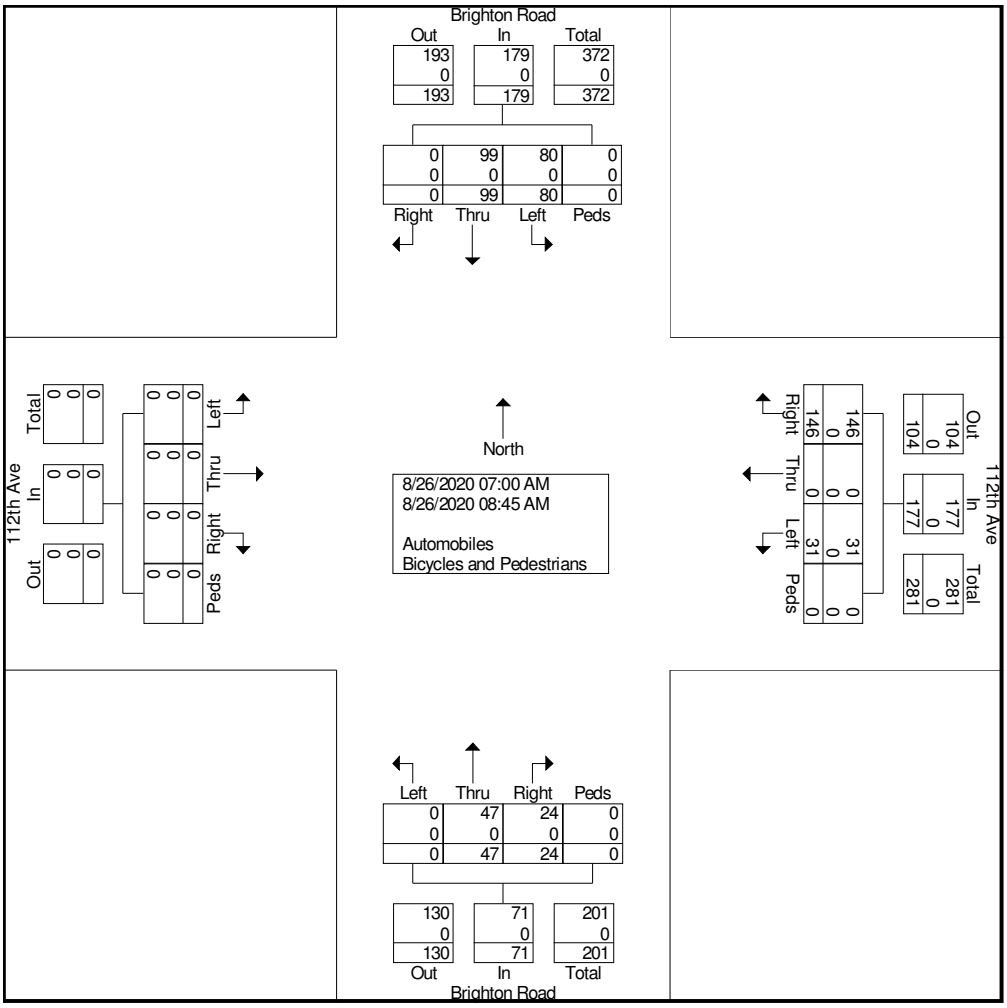
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					Brighton Road Northbound					Brighton Road Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	9	0	16	0	25	0	8	2	0	10	7	14	0	0	21	56
07:15 AM	0	0	0	0	0	4	0	9	0	13	0	6	6	0	12	9	12	0	0	21	46
07:30 AM	0	0	0	0	0	5	0	16	0	21	0	5	0	0	5	5	10	0	0	15	41
07:45 AM	0	0	0	0	0	2	0	26	0	28	0	6	1	0	7	3	21	0	0	24	59
Total	0	0	0	0	0	20	0	67	0	87	0	25	9	0	34	24	57	0	0	81	202
08:00 AM	0	0	0	0	0	1	0	20	0	21	0	9	8	0	17	20	13	0	0	33	71
08:15 AM	0	0	0	0	0	2	0	16	0	18	0	3	3	0	6	17	10	0	0	27	51
08:30 AM	0	0	0	0	0	7	0	24	0	31	0	7	2	0	9	10	7	0	0	17	57
08:45 AM	0	0	0	0	0	1	0	19	0	20	0	3	2	0	5	9	12	0	0	21	46
Total	0	0	0	0	0	11	0	79	0	90	0	22	15	0	37	56	42	0	0	98	225
Grand Total	0	0	0	0	0	31	0	146	0	177	0	47	24	0	71	80	99	0	0	179	427
Apprch %	0	0	0	0		17.5	0	82.5	0		0	66.2	33.8	0		44.7	55.3	0	0		
Total %	0	0	0	0	0	7.3	0	34.2	0	41.5	0	11	5.6	0	16.6	18.7	23.2	0	0	41.9	
Automobiles	0	0	0	0	0	31	0	146	0	177	0	47	24	0	71	80	99	0	0	179	427
% Automobiles	0	0	0	0	0	100	0	100	0	100	0	100	100	0	100	100	100	0	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

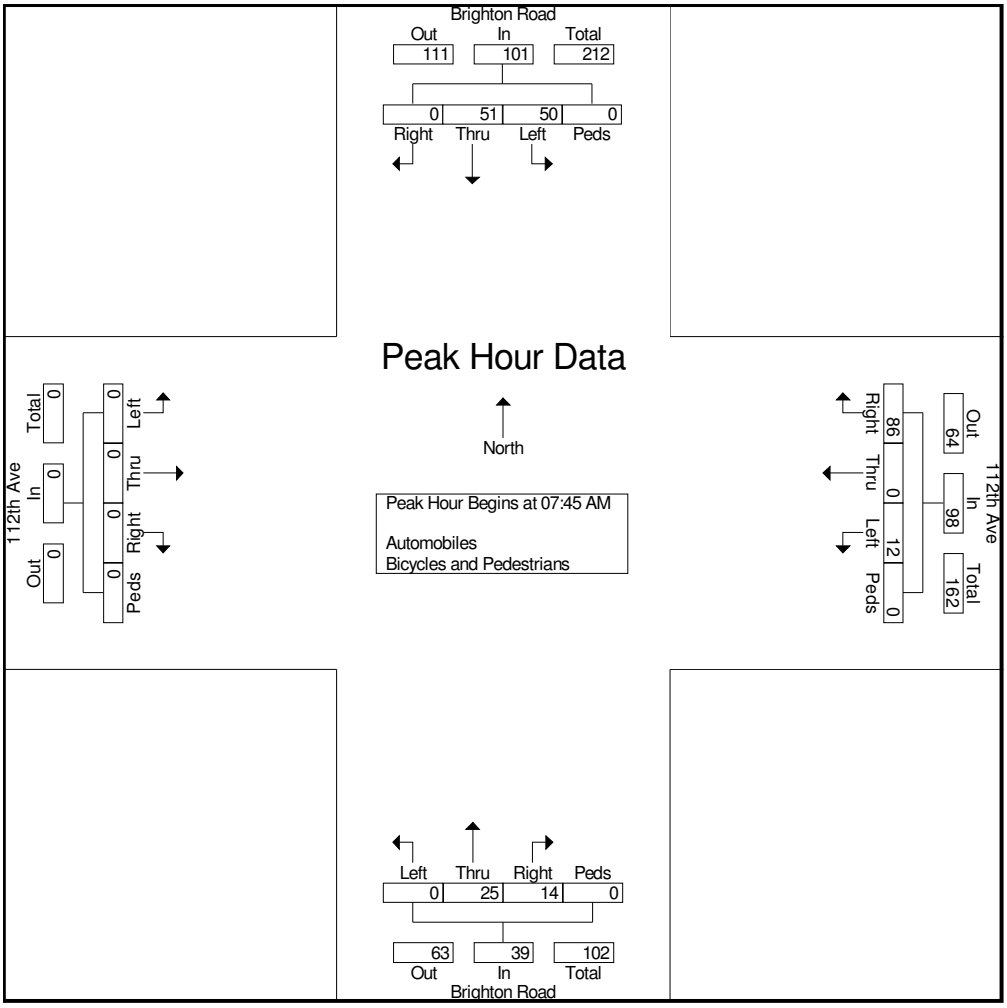


Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					Brighton Road Northbound					Brighton Road Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	2	0	**26**	0	28	0	6	1	0	7	3	**21**	0	0	24	59
08:00 AM	0	0	0	0	0	1	0	20	0	21	0	**9**	**8**	0	**17**	**20**	13	0	0	**33**	**71**
08:15 AM	0	0	0	0	0	2	0	16	0	18	0	3	3	0	6	17	10	0	0	27	51
08:30 AM	0	0	0	0	0	**7**	0	24	0	**31**	0	7	2	0	9	10	7	0	0	17	57
Total Volume	0	0	0	0	0	12	0	86	0	98	0	25	14	0	39	50	51	0	0	101	238
% App. Total	0	0	0	0		12.2	0	87.8	0		0	64.1	35.9	0		49.5	50.5	0	0		
PHF	.000	.000	.000	.000	.000	.429	.000	.827	.000	.790	.000	.694	.438	.000	.574	.625	.607	.000	.000	.765	.838



Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

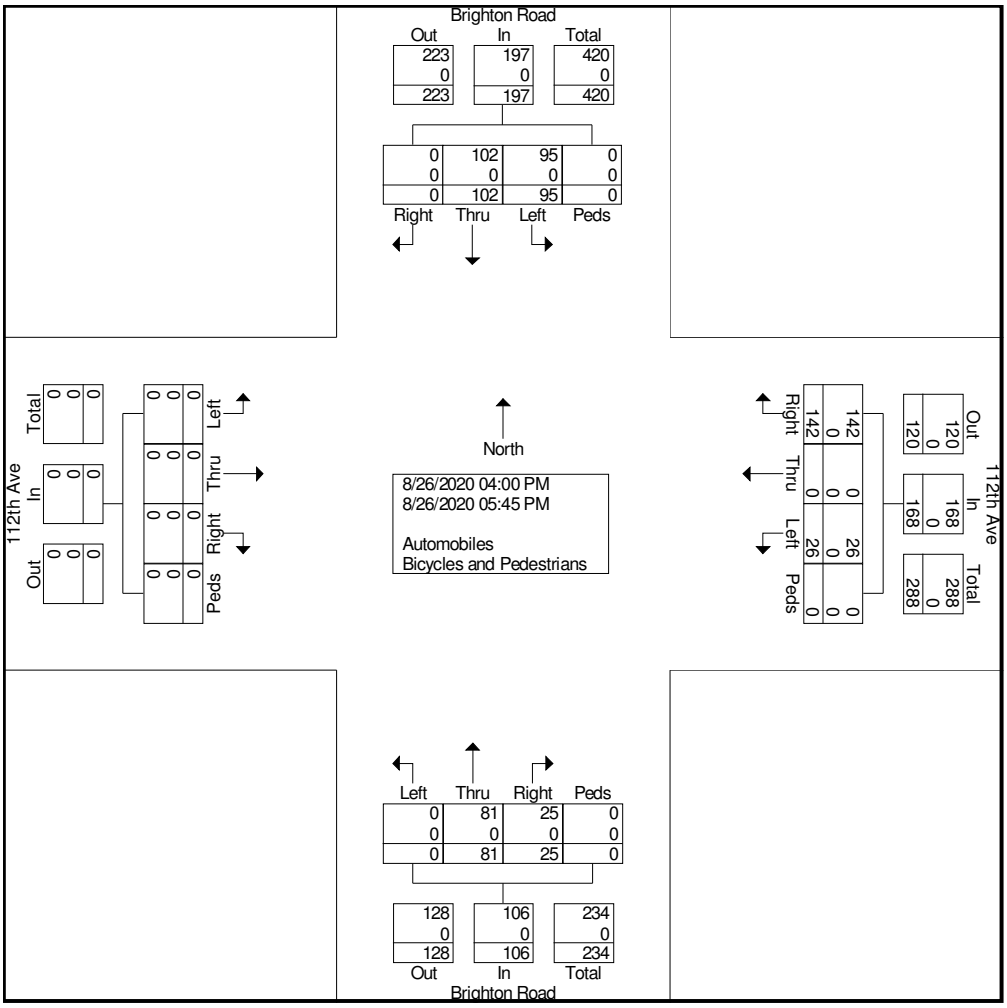
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					Brighton Road Northbound					Brighton Road Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	2	0	18	0	20	0	9	1	0	10	12	9	0	0	21	51
04:15 PM	0	0	0	0	0	7	0	11	0	18	0	16	5	0	21	17	13	0	0	30	69
04:30 PM	0	0	0	0	0	2	0	21	0	23	0	10	5	0	15	11	13	0	0	24	62
04:45 PM	0	0	0	0	0	4	0	23	0	27	0	8	2	0	10	4	19	0	0	23	60
Total	0	0	0	0	0	15	0	73	0	88	0	43	13	0	56	44	54	0	0	98	242
05:00 PM	0	0	0	0	0	1	0	16	0	17	0	8	4	0	12	13	15	0	0	28	57
05:15 PM	0	0	0	0	0	2	0	17	0	19	0	14	4	0	18	12	10	0	0	22	59
05:30 PM	0	0	0	0	0	5	0	18	0	23	0	10	3	0	13	18	11	0	0	29	65
05:45 PM	0	0	0	0	0	3	0	18	0	21	0	6	1	0	7	8	12	0	0	20	48
Total	0	0	0	0	0	11	0	69	0	80	0	38	12	0	50	51	48	0	0	99	229
Grand Total	0	0	0	0	0	26	0	142	0	168	0	81	25	0	106	95	102	0	0	197	471
Apprch %	0	0	0	0		15.5	0	84.5	0		0	76.4	23.6	0		48.2	51.8	0	0		
Total %	0	0	0	0	0	5.5	0	30.1	0	35.7	0	17.2	5.3	0	22.5	20.2	21.7	0	0	41.8	
Automobiles	0	0	0	0	0	26	0	142	0	168	0	81	25	0	106	95	102	0	0	197	471
% Automobiles	0	0	0	0	0	100	0	100	0	100	0	100	100	0	100	100	100	0	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

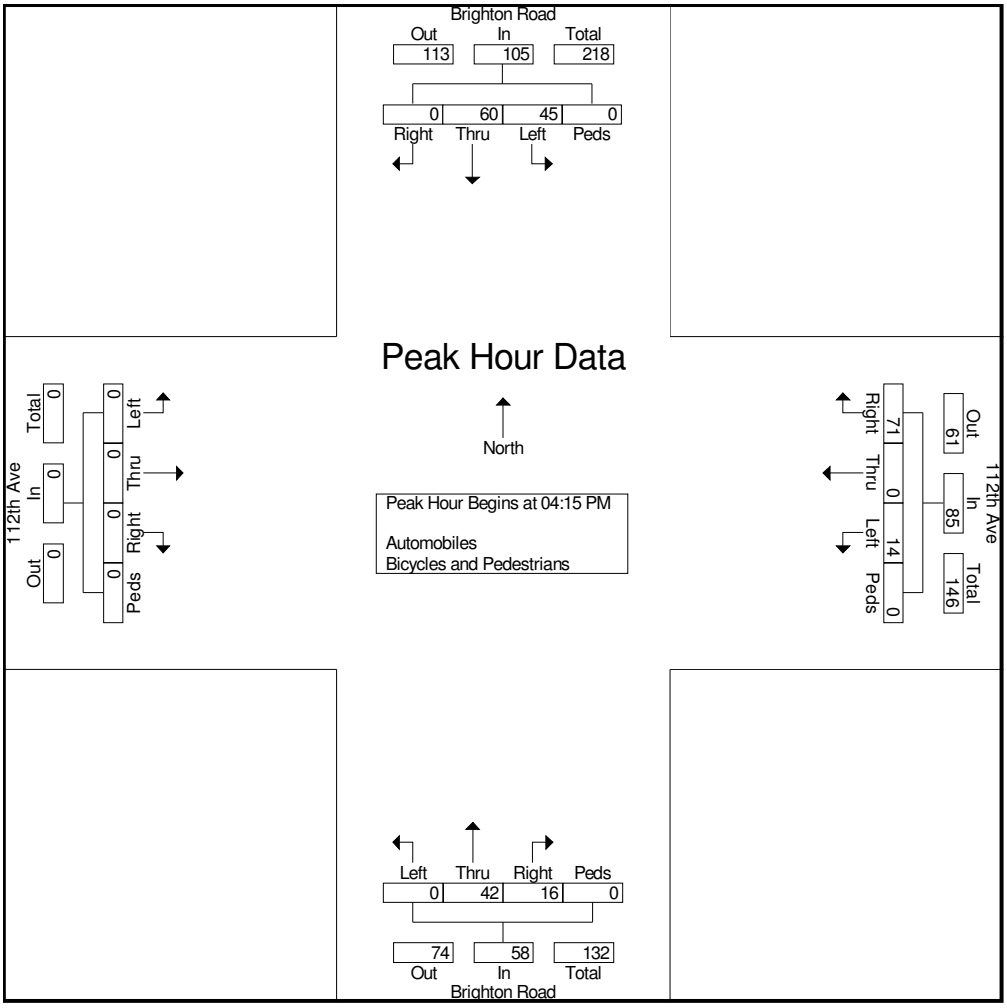


Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Brighton Rd

File Name : 112th and Brighton PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					Brighton Road Northbound					Brighton Road Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	**7**	0	11	0	18	0	**16**	**5**	0	**21**	**17**	13	0	0	**30**	**69**
04:30 PM	0	0	0	0	0	2	0	21	0	23	0	10	5	0	15	11	13	0	0	24	62
04:45 PM	0	0	0	0	0	4	0	**23**	0	**27**	0	8	2	0	10	4	**19**	0	0	23	60
05:00 PM	0	0	0	0	0	1	0	16	0	17	0	8	4	0	12	13	15	0	0	28	57
Total Volume	0	0	0	0	0	14	0	71	0	85	0	42	16	0	58	45	60	0	0	105	248
% App. Total	0	0	0	0		16.5	0	83.5	0		0	72.4	27.6	0		42.9	57.1	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.772	.000	.787	.000	.656	.800	.000	.690	.662	.789	.000	.000	.875	.899



Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

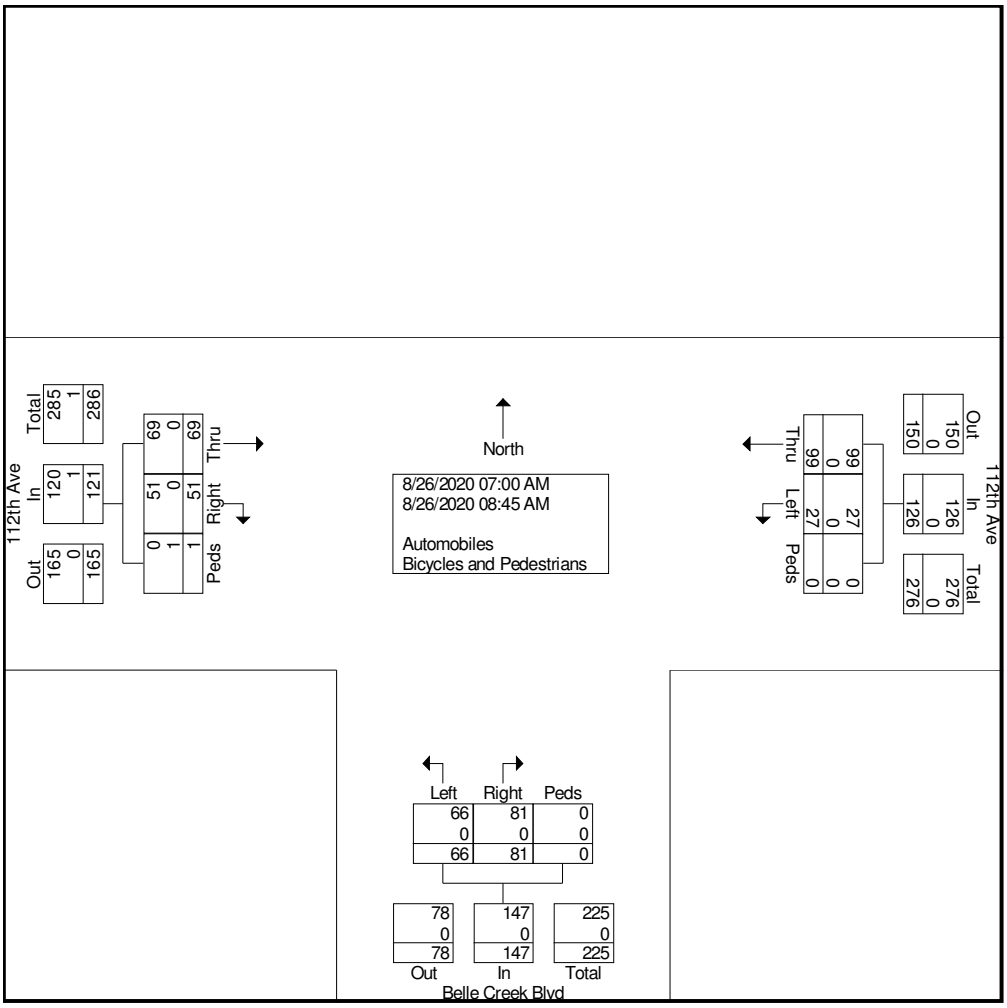
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound				112th Ave Westbound				Belle Creek Blvd Northbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	9	1	0	10	3	18	0	21	5	6	0	11	42
07:15 AM	15	7	0	22	3	11	0	14	3	4	0	7	43
07:30 AM	3	7	0	10	2	14	0	16	7	4	0	11	37
07:45 AM	2	6	1	9	4	15	0	19	10	10	0	20	48
Total	29	21	1	51	12	58	0	70	25	24	0	49	170
08:00 AM	15	13	0	28	7	16	0	23	8	14	0	22	73
08:15 AM	7	10	0	17	3	2	0	5	12	18	0	30	52
08:30 AM	9	5	0	14	3	12	0	15	14	14	0	28	57
08:45 AM	9	2	0	11	2	11	0	13	7	11	0	18	42
Total	40	30	0	70	15	41	0	56	41	57	0	98	224
Grand Total	69	51	1	121	27	99	0	126	66	81	0	147	394
Apprch %	57	42.1	0.8		21.4	78.6	0		44.9	55.1	0		
Total %	17.5	12.9	0.3	30.7	6.9	25.1	0	32	16.8	20.6	0	37.3	
Automobiles	69	51	0	120	27	99	0	126	66	81	0	147	393
% Automobiles	100	100	0	99.2	100	100	0	100	100	100	0	100	99.7
Bicycles and Pedestrians	0	0	1	1	0	0	0	0	0	0	0	0	1
% Bicycles and Pedestrians	0	0	100	0.8	0	0	0	0	0	0	0	0	0.3

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

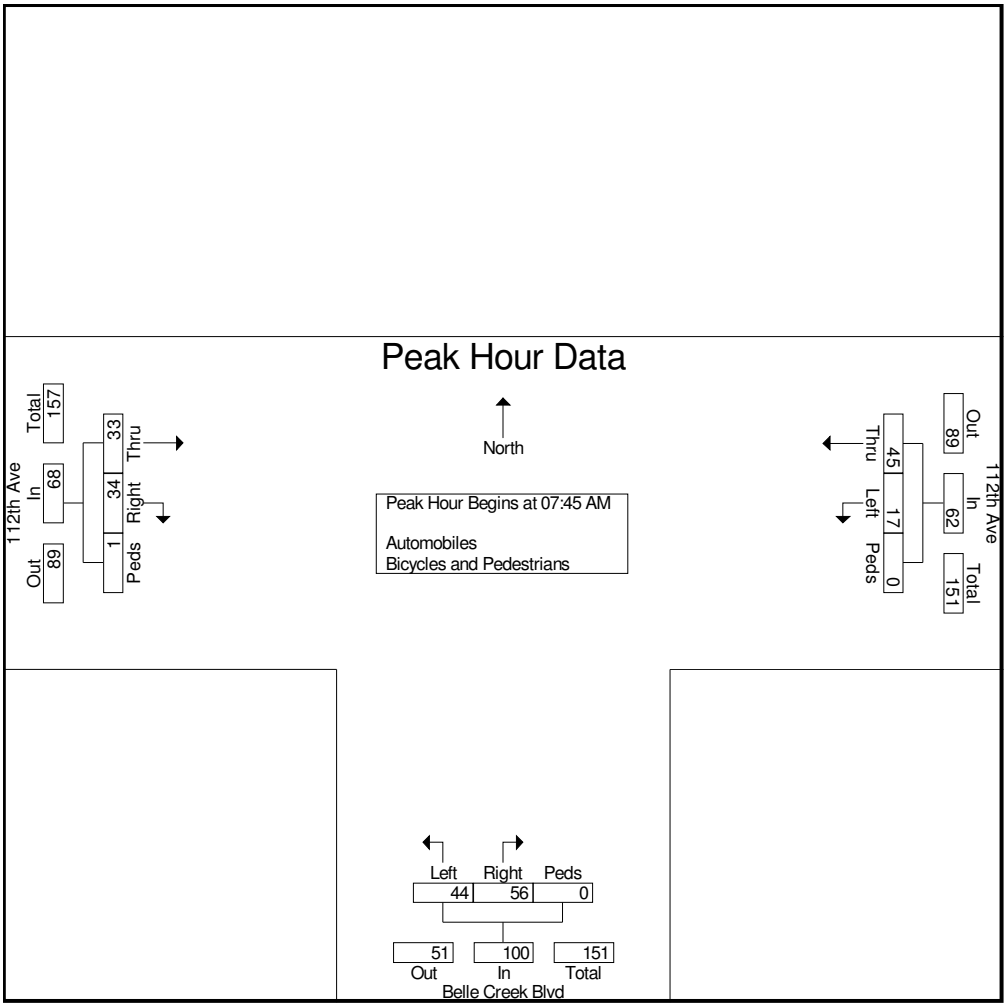


Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk AM
Site Code : IPO 509
Start Date : 8/26/2020

	112th Ave Eastbound				112th Ave Westbound				Belle Creek Blvd Northbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	2	6	**1**	9	4	15	0	19	10	10	0	20	48
08:00 AM	**15**	**13**	0	**28**	**7**	**16**	0	**23**	8	14	0	22	**73**
08:15 AM	7	10	0	17	3	2	0	5	12	**18**	0	**30**	52
08:30 AM	9	5	0	14	3	12	0	15	**14**	14	0	28	57
Total Volume	33	34	1	68	17	45	0	62	44	56	0	100	230
% App. Total	48.5	50	1.5		27.4	72.6	0		44	56	0		
PHF	.550	.654	.250	.607	.607	.703	.000	.674	.786	.778	.000	.833	.788



Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

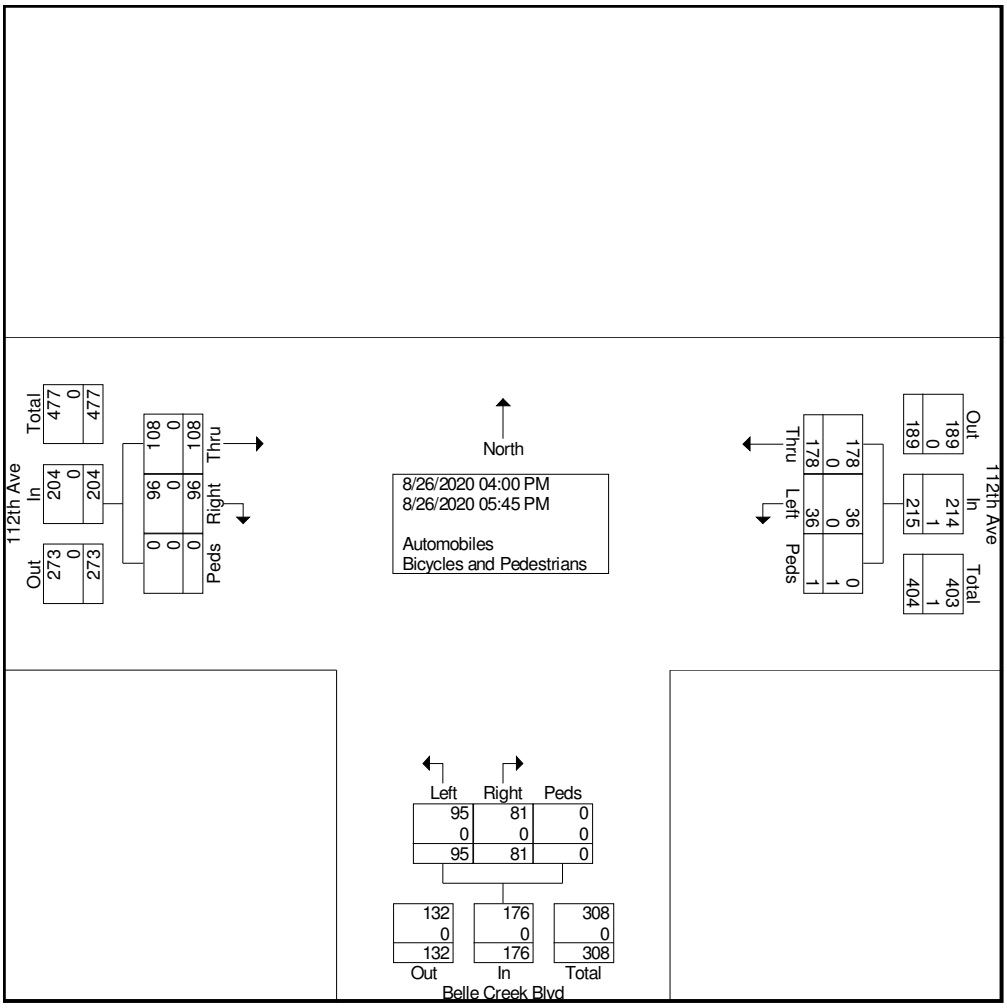
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound				112th Ave Westbound				Belle Creek Blvd Northbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	8	8	0	16	3	22	0	25	12	8	0	20	61
04:15 PM	12	9	0	21	7	23	0	30	14	18	0	32	83
04:30 PM	13	9	0	22	5	37	0	42	13	9	0	22	86
04:45 PM	10	18	0	28	2	14	0	16	13	9	0	22	66
Total	43	44	0	87	17	96	0	113	52	44	0	96	296
05:00 PM	20	16	0	36	5	25	1	31	11	11	0	22	89
05:15 PM	22	10	0	32	8	29	0	37	13	9	0	22	91
05:30 PM	11	16	0	27	1	12	0	13	10	13	0	23	63
05:45 PM	12	10	0	22	5	16	0	21	9	4	0	13	56
Total	65	52	0	117	19	82	1	102	43	37	0	80	299
Grand Total	108	96	0	204	36	178	1	215	95	81	0	176	595
Apprch %	52.9	47.1	0		16.7	82.8	0.5		54	46	0		
Total %	18.2	16.1	0	34.3	6.1	29.9	0.2	36.1	16	13.6	0	29.6	
Automobiles	108	96	0	204	36	178	0	214	95	81	0	176	594
% Automobiles	100	100	0	100	100	100	0	99.5	100	100	0	100	99.8
Bicycles and Pedestrians	0	0	0	0	0	0	1	1	0	0	0	0	1
% Bicycles and Pedestrians	0	0	0	0	0	0	100	0.5	0	0	0	0	0.2

Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

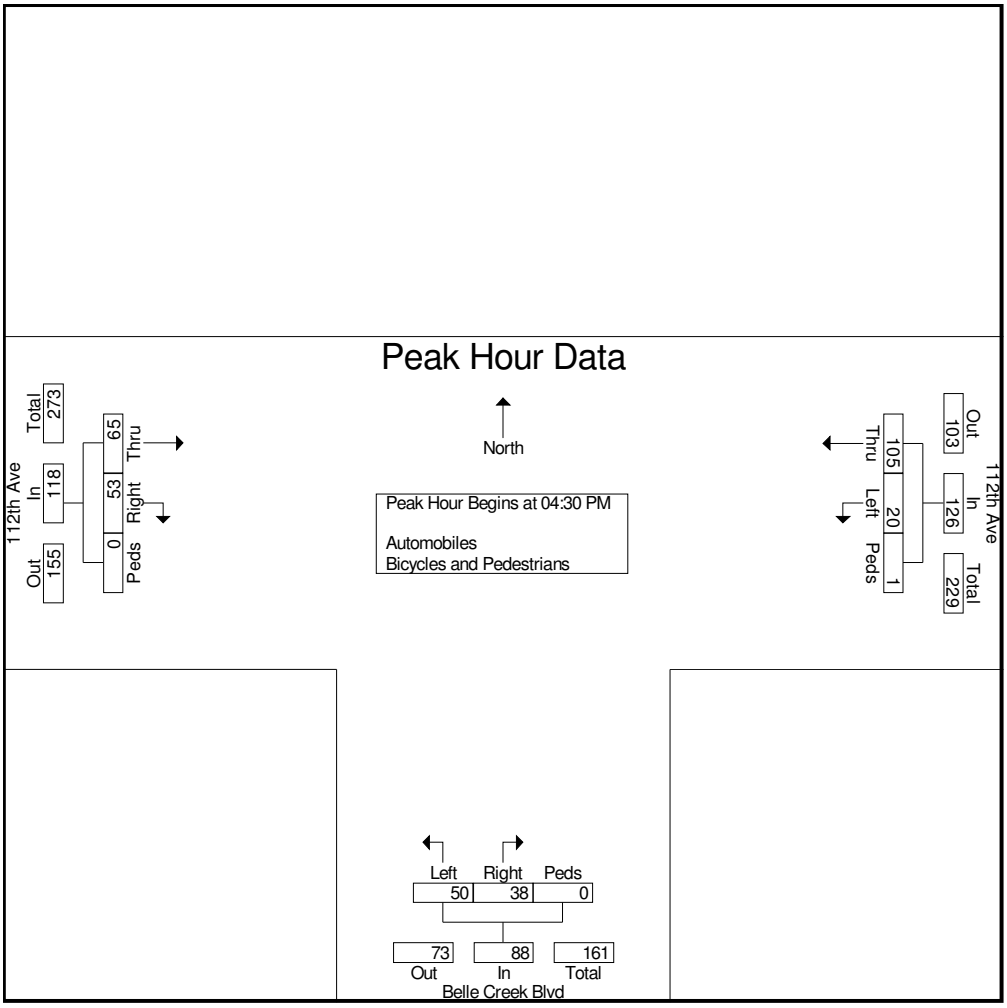


Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Belle Creek Blvd

File Name : 112th and Belle Crk PM
Site Code : IPO 509
Start Date : 8/26/2020

	112th Ave Eastbound				112th Ave Westbound				Belle Creek Blvd Northbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	13	9	0	22	5	**37**	0	**42**	**13**	9	0	**22**	86
04:45 PM	10	**18**	0	28	2	14	0	16	13	9	0	22	66
05:00 PM	20	16	0	**36**	5	25	**1**	31	11	**11**	0	22	89
05:15 PM	**22**	10	0	32	**8**	29	0	37	13	9	0	22	**91**
Total Volume	65	53	0	118	20	105	1	126	50	38	0	88	332
% App. Total	55.1	44.9	0		15.9	83.3	0.8		56.8	43.2	0		
PHF	.739	.736	.000	.819	.625	.709	.250	.750	.962	.864	.000	1.00	.912



Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 1

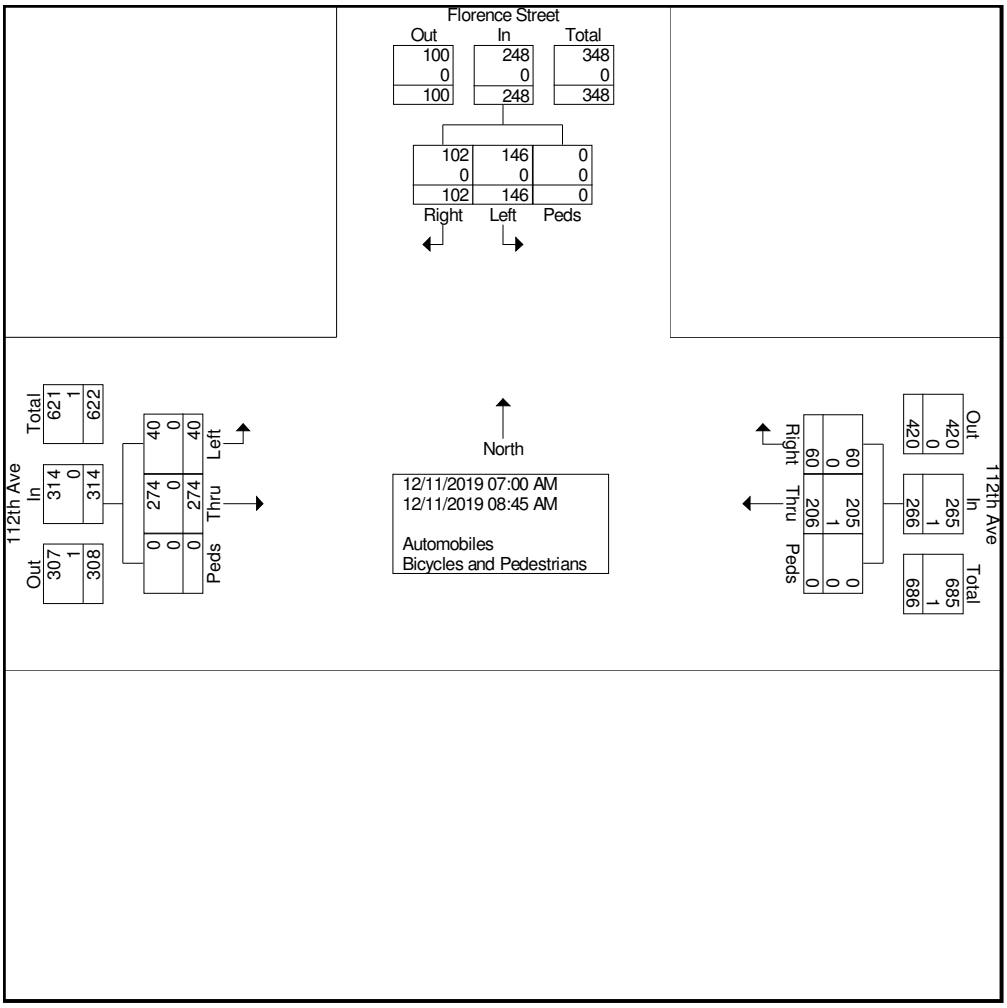
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound				112th Ave Westbound				Florence Street Southbound				
Start Time	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	4	31	0	35	17	4	0	21	19	15	0	34	90
07:15 AM	1	29	0	30	24	5	0	29	34	15	0	49	108
07:30 AM	4	39	0	43	30	11	0	41	22	13	0	35	119
07:45 AM	5	42	0	47	43	10	0	53	19	7	0	26	126
Total	14	141	0	155	114	30	0	144	94	50	0	144	443
08:00 AM	10	56	0	66	35	9	0	44	20	25	0	45	155
08:15 AM	8	40	0	48	26	6	0	32	11	13	0	24	104
08:30 AM	8	24	0	32	22	7	0	29	16	10	0	26	87
08:45 AM	0	13	0	13	9	8	0	17	5	4	0	9	39
Total	26	133	0	159	92	30	0	122	52	52	0	104	385
Grand Total	40	274	0	314	206	60	0	266	146	102	0	248	828
Apprch %	12.7	87.3	0		77.4	22.6	0		58.9	41.1	0		
Total %	4.8	33.1	0	37.9	24.9	7.2	0	32.1	17.6	12.3	0	30	
Automobiles	40	274	0	314	205	60	0	265	146	102	0	248	827
% Automobiles	100	100	0	100	99.5	100	0	99.6	100	100	0	100	99.9
Bicycles and Pedestrians	0	0	0	0	1	0	0	1	0	0	0	0	1
% Bicycles and Pedestrians	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0.1

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 2

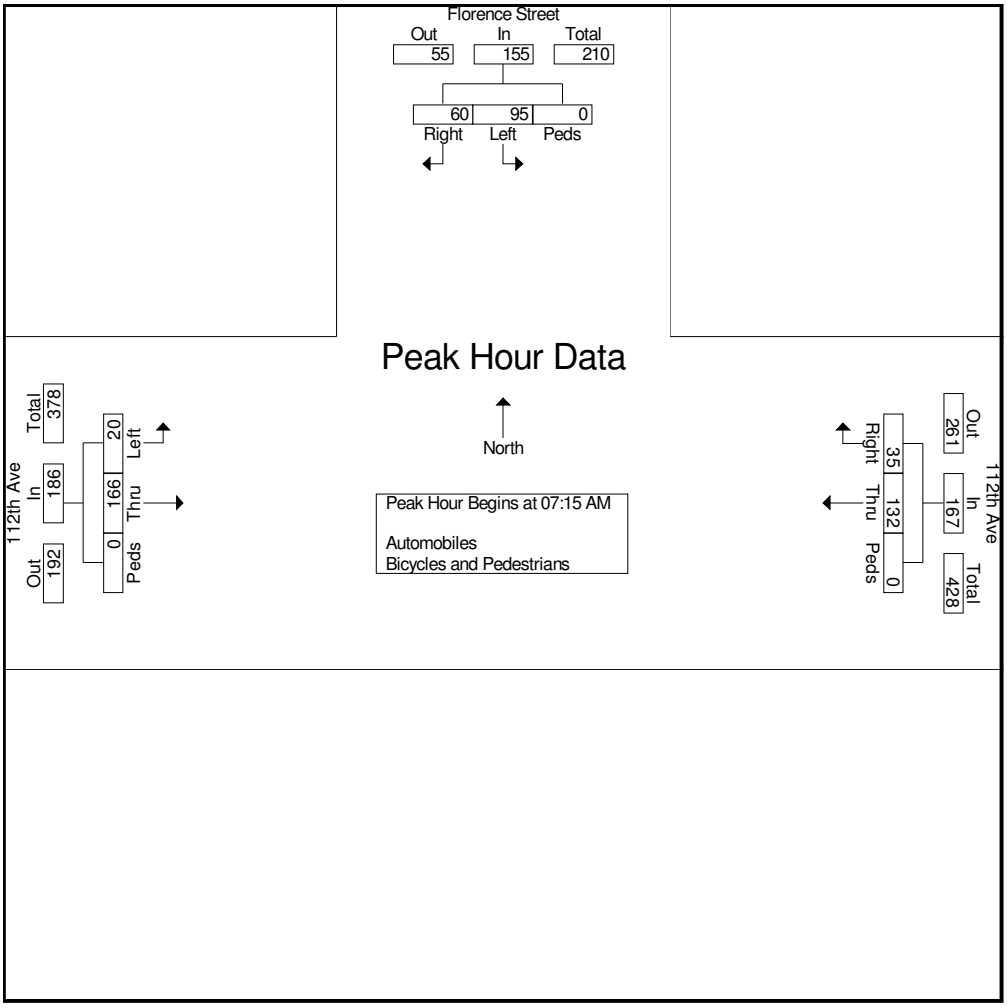


Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 3

	112th Ave Eastbound				112th Ave Westbound				Florence Street Southbound				
Start Time	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	1	29	0	30	24	5	0	29	**34**	15	0	**49**	108
07:30 AM	4	39	0	43	30	**11**	0	41	22	13	0	35	119
07:45 AM	5	42	0	47	**43**	10	0	**53**	19	7	0	26	126
08:00 AM	**10**	**56**	0	**66**	35	9	0	44	20	**25**	0	45	**155**
Total Volume	20	166	0	186	132	35	0	167	95	60	0	155	508
% App. Total	10.8	89.2	0		79	21	0		61.3	38.7	0		
PHF	.500	.741	.000	.705	.767	.795	.000	.788	.699	.600	.000	.791	.819



Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 1

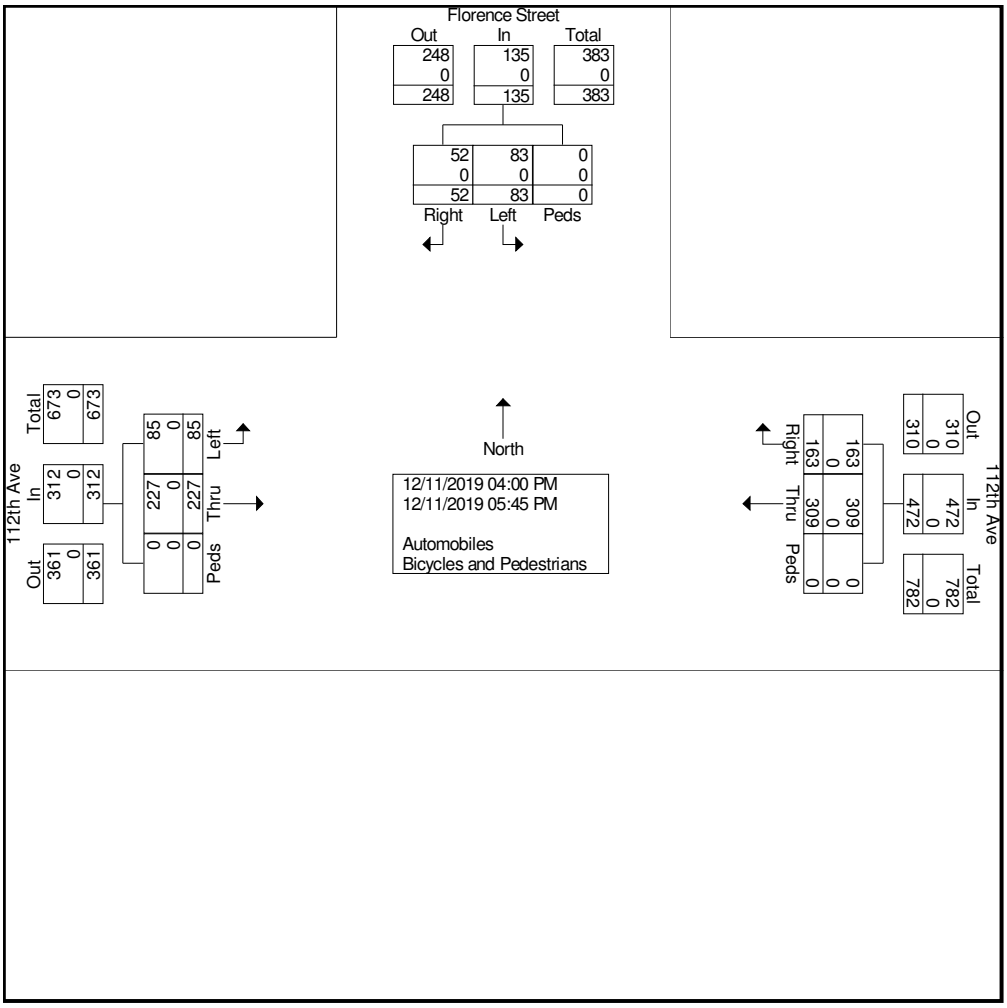
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound				112th Ave Westbound				Florence Street Southbound				
Start Time	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	12	33	0	45	43	14	0	57	11	7	0	18	120
04:15 PM	16	28	0	44	26	18	0	44	9	12	0	21	109
04:30 PM	8	26	0	34	25	20	0	45	15	3	0	18	97
04:45 PM	14	35	0	49	54	24	0	78	11	8	0	19	146
Total	50	122	0	172	148	76	0	224	46	30	0	76	472
05:00 PM	6	34	0	40	39	28	0	67	9	5	0	14	121
05:15 PM	10	21	0	31	45	23	0	68	11	7	0	18	117
05:30 PM	3	21	0	24	45	21	0	66	9	4	0	13	103
05:45 PM	16	29	0	45	32	15	0	47	8	6	0	14	106
Total	35	105	0	140	161	87	0	248	37	22	0	59	447
Grand Total	85	227	0	312	309	163	0	472	83	52	0	135	919
Apprch %	27.2	72.8	0		65.5	34.5	0		61.5	38.5	0		
Total %	9.2	24.7	0	33.9	33.6	17.7	0	51.4	9	5.7	0	14.7	
Automobiles	85	227	0	312	309	163	0	472	83	52	0	135	919
% Automobiles	100	100	0	100	100	100	0	100	100	100	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 2

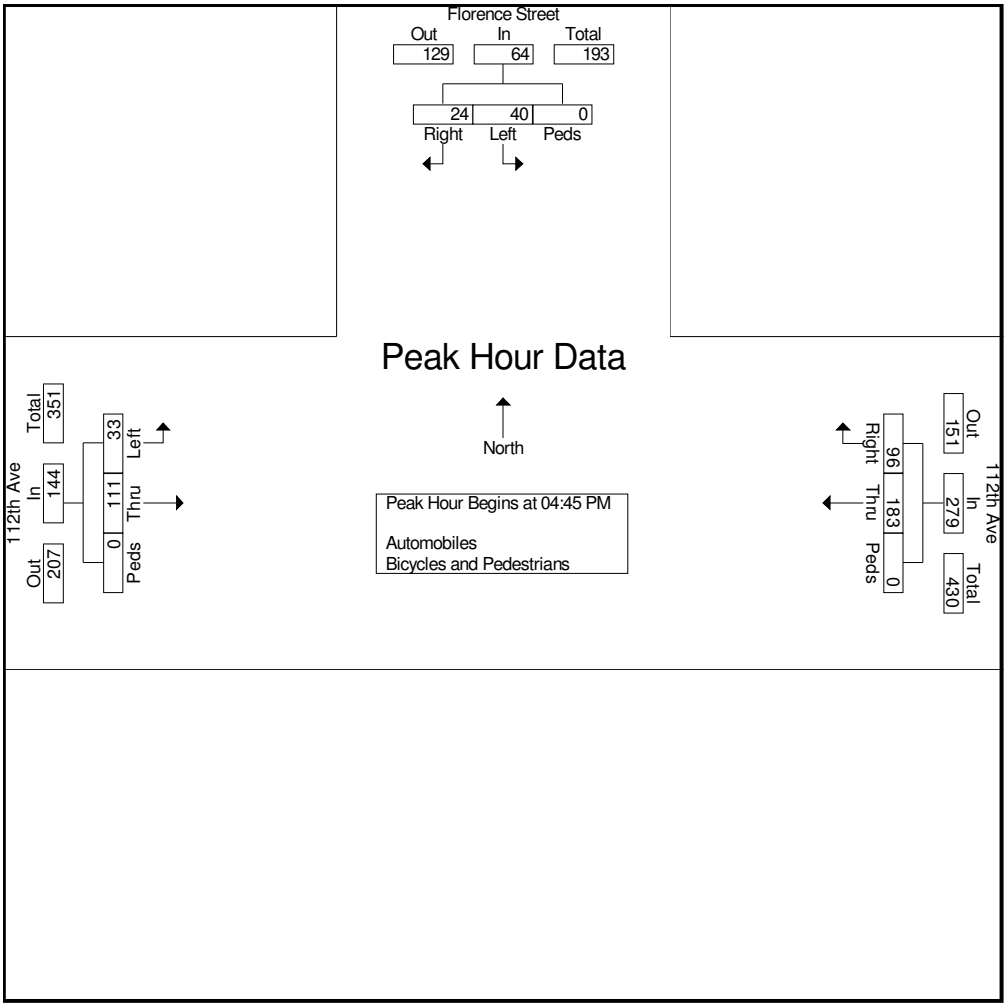


Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and Florence St

File Name : 112th Ave and Florence PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 3

	112th Ave Eastbound				112th Ave Westbound				Florence Street Southbound				
Start Time	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	**14**	**35**	0	**49**	**54**	24	0	**78**	**11**	**8**	0	**19**	**146**
05:00 PM	6	34	0	40	39	**28**	0	67	9	5	0	14	121
05:15 PM	10	21	0	31	45	23	0	68	11	7	0	18	117
05:30 PM	3	21	0	24	45	21	0	66	9	4	0	13	103
Total Volume	33	111	0	144	183	96	0	279	40	24	0	64	487
% App. Total	22.9	77.1	0		65.6	34.4	0		62.5	37.5	0		
PHF	.589	.793	.000	.735	.847	.857	.000	.894	.909	.750	.000	.842	.834



Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 1

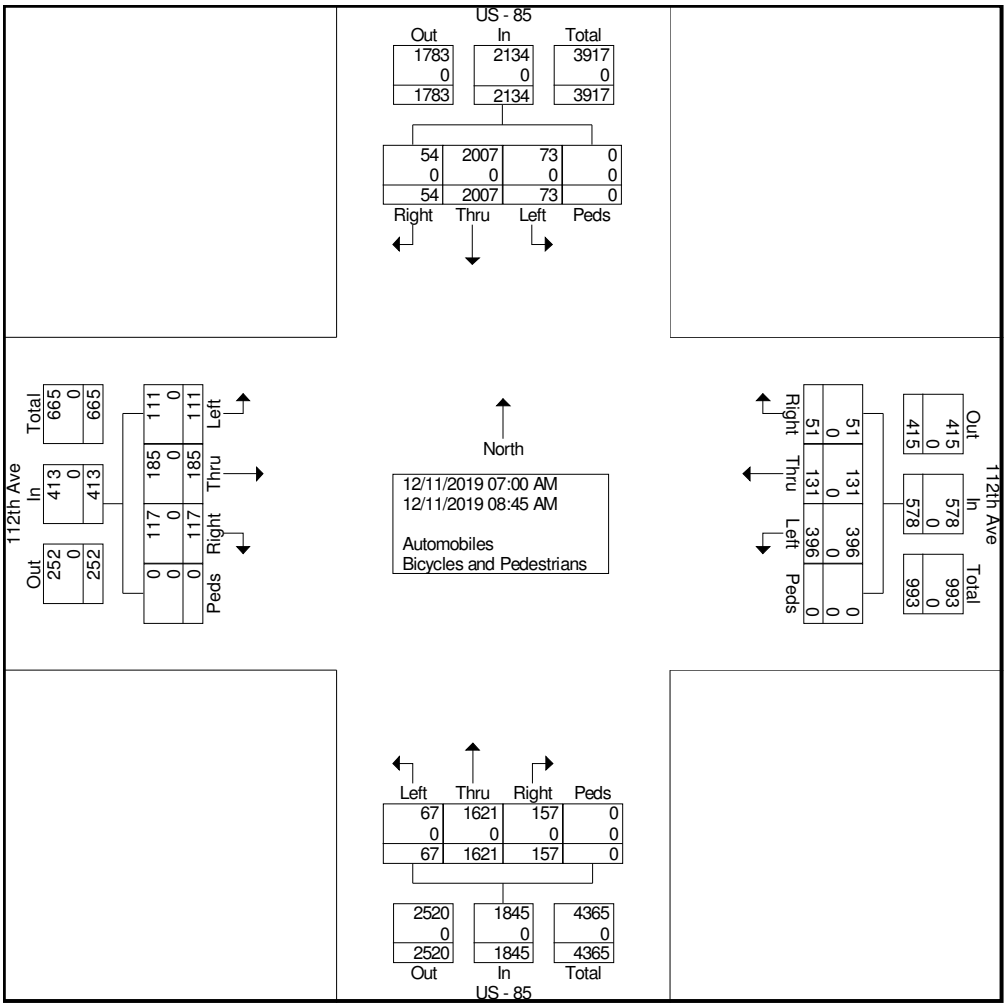
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	19	19	0	43	50	9	10	0	69	5	213	23	0	241	16	304	5	0	325	678
07:15 AM	16	25	18	0	59	71	11	8	0	90	7	227	27	0	261	5	225	6	0	236	646
07:30 AM	19	30	11	0	60	53	21	5	0	79	12	223	28	0	263	14	250	2	0	266	668
07:45 AM	15	33	18	0	66	48	30	2	0	80	4	192	23	0	219	9	249	10	0	268	633
Total	55	107	66	0	228	222	71	25	0	318	28	855	101	0	984	44	1028	23	0	1095	2625
08:00 AM	21	27	12	0	60	60	27	4	0	91	12	203	17	0	232	10	257	16	0	283	666
08:15 AM	19	28	12	0	59	57	12	6	0	75	12	204	15	0	231	8	254	7	0	269	634
08:30 AM	12	17	20	0	49	40	16	6	0	62	8	164	13	0	185	10	241	3	0	254	550
08:45 AM	4	6	7	0	17	17	5	10	0	32	7	195	11	0	213	1	227	5	0	233	495
Total	56	78	51	0	185	174	60	26	0	260	39	766	56	0	861	29	979	31	0	1039	2345
Grand Total	111	185	117	0	413	396	131	51	0	578	67	1621	157	0	1845	73	2007	54	0	2134	4970
Apprch %	26.9	44.8	28.3	0		68.5	22.7	8.8	0		3.6	87.9	8.5	0		3.4	94	2.5	0		
Total %	2.2	3.7	2.4	0	8.3	8	2.6	1	0	11.6	1.3	32.6	3.2	0	37.1	1.5	40.4	1.1	0	42.9	
Automobiles	111	185	117	0	413	396	131	51	0	578	67	1621	157	0	1845	73	2007	54	0	2134	4970
% Automobiles	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 2

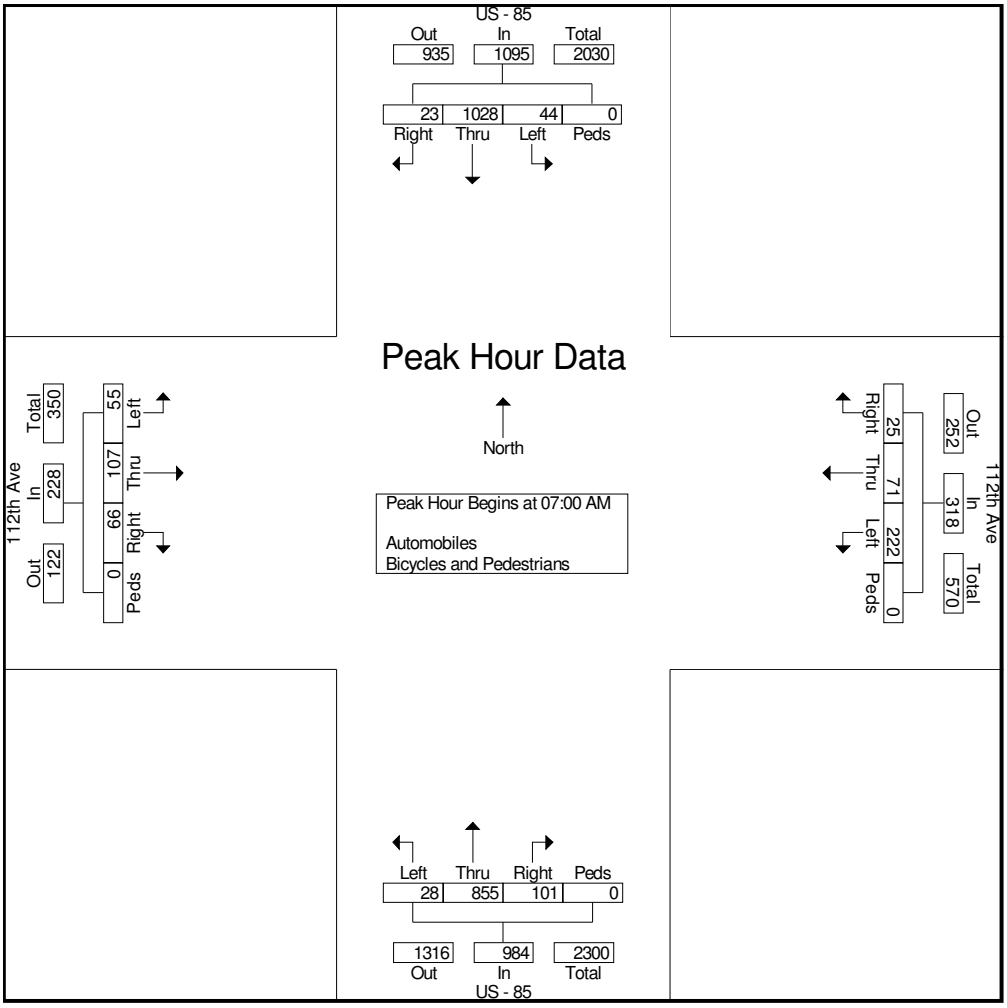


Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 AM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	5	19	**19**	0	43	50	9	**10**	0	69	5	213	23	0	241	**16**	**304**	5	0	**325**	**678**
07:15 AM	16	25	18	0	59	**71**	11	8	0	**90**	7	**227**	27	0	261	5	225	6	0	236	646
07:30 AM	**19**	30	11	0	60	53	21	5	0	79	**12**	223	**28**	0	**263**	14	250	2	0	266	668
07:45 AM	15	**33**	18	0	**66**	48	**30**	2	0	80	4	192	23	0	219	9	249	**10**	0	268	633
Total Volume	55	107	66	0	228	222	71	25	0	318	28	855	101	0	984	44	1028	23	0	1095	2625
% App. Total	24.1	46.9	28.9	0		69.8	22.3	7.9	0		2.8	86.9	10.3	0		4	93.9	2.1	0		
PHF	.724	.811	.868	.000	.864	.782	.592	.625	.000	.883	.583	.942	.902	.000	.935	.688	.845	.575	.000	.842	.968



Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 1

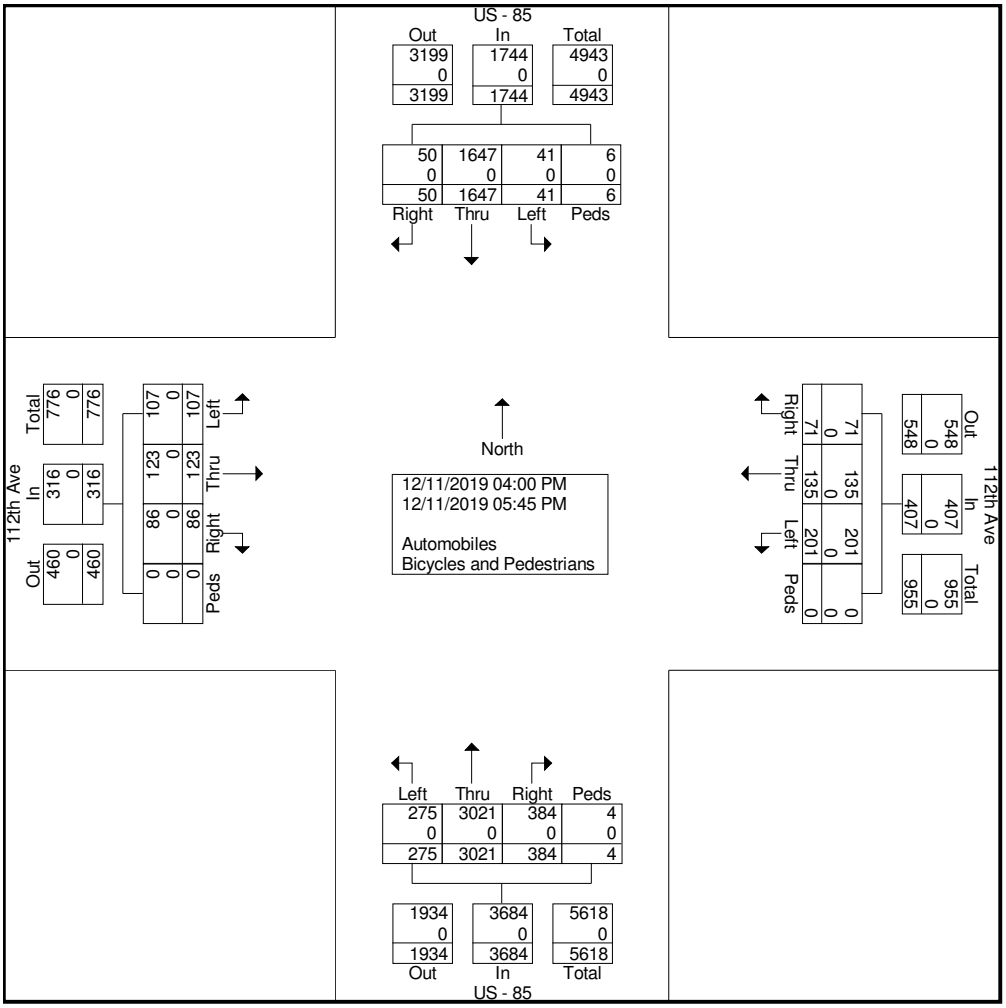
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	13	20	11	0	44	36	17	9	0	62	19	417	38	0	474	5	215	4	0	224	804
04:15 PM	28	6	9	0	43	15	9	5	0	29	42	375	32	0	449	2	191	4	3	200	721
04:30 PM	25	0	11	0	36	0	0	2	0	2	42	519	15	0	576	0	240	7	3	250	864
04:45 PM	10	22	14	0	46	14	23	16	0	53	42	309	61	0	412	12	213	12	0	237	748
Total	76	48	45	0	169	65	49	32	0	146	145	1620	146	0	1911	19	859	27	6	911	3137
05:00 PM	4	29	11	0	44	43	27	8	0	78	35	331	59	3	428	7	188	7	0	202	752
05:15 PM	8	9	11	0	28	32	25	10	0	67	37	372	60	1	470	3	213	5	0	221	786
05:30 PM	9	20	10	0	39	33	23	9	0	65	33	341	60	0	434	9	195	6	0	210	748
05:45 PM	10	17	9	0	36	28	11	12	0	51	25	357	59	0	441	3	192	5	0	200	728
Total	31	75	41	0	147	136	86	39	0	261	130	1401	238	4	1773	22	788	23	0	833	3014
Grand Total	107	123	86	0	316	201	135	71	0	407	275	3021	384	4	3684	41	1647	50	6	1744	6151
Apprch %	33.9	38.9	27.2	0		49.4	33.2	17.4	0		7.5	82	10.4	0.1		2.4	94.4	2.9	0.3		
Total %	1.7	2	1.4	0	5.1	3.3	2.2	1.2	0	6.6	4.5	49.1	6.2	0.1	59.9	0.7	26.8	0.8	0.1	28.4	
Automobiles	107	123	86	0	316	201	135	71	0	407	275	3021	384	4	3684	41	1647	50	6	1744	6151
% Automobiles	100	100	100	0	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 2

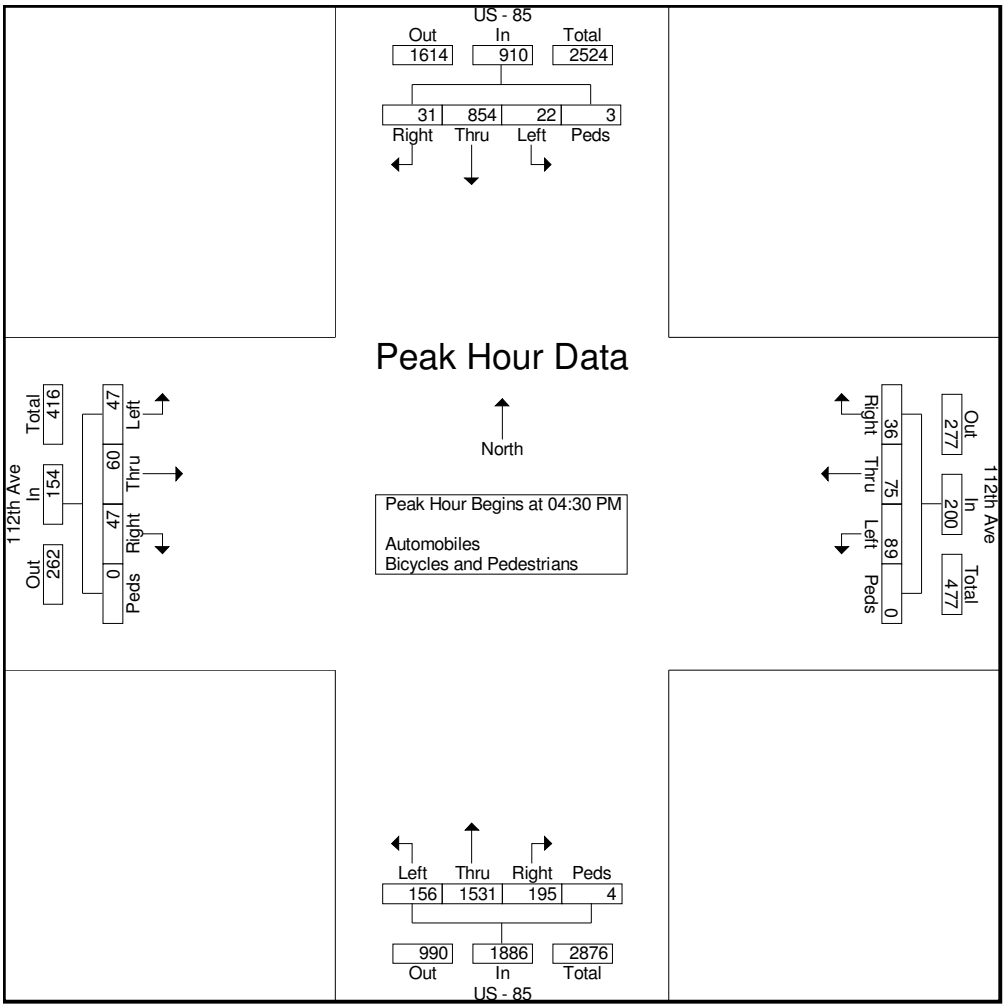


Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th Ave and US 85 PM
Site Code : IPO 476
Start Date : 12/11/2019
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	**25**	0	11	0	36	0	0	2	0	2	**42**	**519**	15	0	**576**	0	**240**	7	**3**	**250**	**864**
04:45 PM	10	22	**14**	0	**46**	14	23	**16**	0	53	42	309	**61**	0	412	**12**	213	**12**	0	237	748
05:00 PM	4	**29**	11	0	44	**43**	**27**	8	0	**78**	35	331	59	**3**	428	7	188	7	0	202	752
05:15 PM	8	9	11	0	28	32	25	10	0	67	37	372	60	1	470	3	213	5	0	221	786
Total Volume	47	60	47	0	154	89	75	36	0	200	156	1531	195	4	1886	22	854	31	3	910	3150
% App. Total	30.5	39	30.5	0		44.5	37.5	18	0		8.3	81.2	10.3	0.2		2.4	93.8	3.4	0.3		
PHF	.470	.517	.839	.000	.837	.517	.694	.563	.000	.641	.929	.737	.799	.333	.819	.458	.890	.646	.250	.910	.911



Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th and US-85 AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

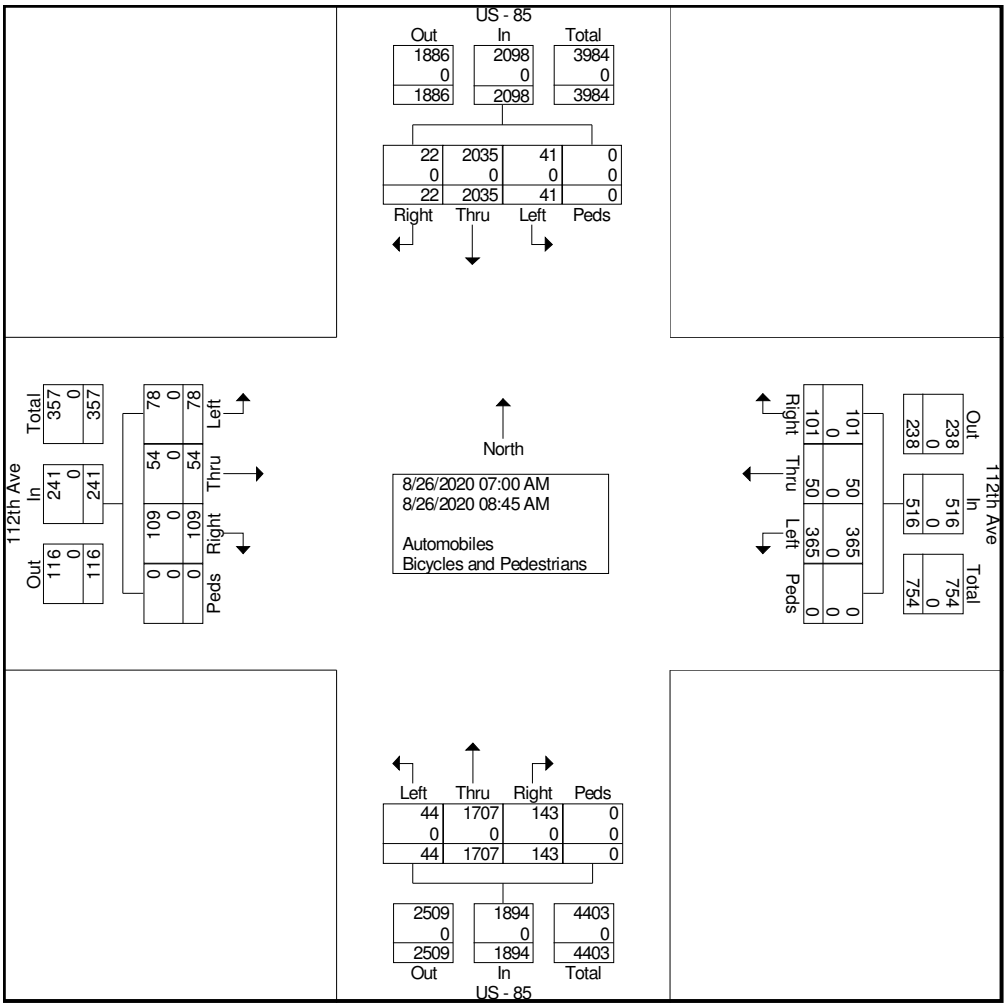
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	10	6	14	0	30	40	6	12	0	58	7	211	20	0	238	3	269	1	0	273	599
07:15 AM	11	7	12	0	30	62	5	18	0	85	4	225	19	0	248	6	273	2	0	281	644
07:30 AM	5	2	22	0	29	56	2	15	0	73	3	247	17	0	267	9	273	5	0	287	656
07:45 AM	11	0	13	0	24	45	8	8	0	61	6	211	15	0	232	4	275	2	0	281	598
Total	37	15	61	0	113	203	21	53	0	277	20	894	71	0	985	22	1090	10	0	1122	2497
08:00 AM	12	6	10	0	28	41	7	12	0	60	9	212	18	0	239	4	201	4	0	209	536
08:15 AM	9	10	12	0	31	36	4	6	0	46	4	209	26	0	239	5	242	3	0	250	566
08:30 AM	14	12	16	0	42	48	9	17	0	74	2	174	13	0	189	5	240	3	0	248	553
08:45 AM	6	11	10	0	27	37	9	13	0	59	9	218	15	0	242	5	262	2	0	269	597
Total	41	39	48	0	128	162	29	48	0	239	24	813	72	0	909	19	945	12	0	976	2252
Grand Total	78	54	109	0	241	365	50	101	0	516	44	1707	143	0	1894	41	2035	22	0	2098	4749
Apprch %	32.4	22.4	45.2	0		70.7	9.7	19.6	0		2.3	90.1	7.6	0		2	97	1	0		
Total %	1.6	1.1	2.3	0	5.1	7.7	1.1	2.1	0	10.9	0.9	35.9	3	0	39.9	0.9	42.9	0.5	0	44.2	
Automobiles	78	54	109	0	241	365	50	101	0	516	44	1707	143	0	1894	41	2035	22	0	2098	4749
% Automobiles	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th and US-85 AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

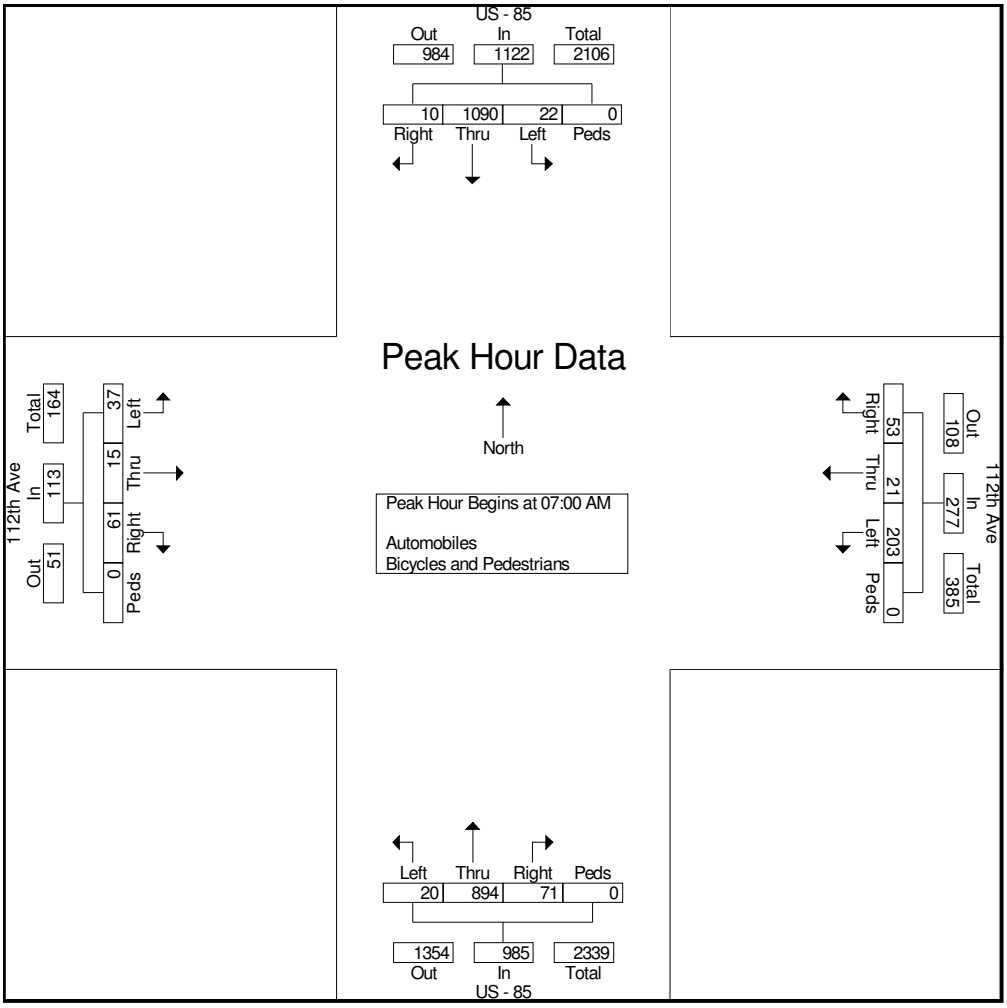


Ridgeview Data Collection

Commerce City, CO
QT 4205
AM Peak
112th Ave and US-85

File Name : 112th and US-85 AM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	10	6	14	0	**30**	40	6	12	0	58	**7**	211	**20**	0	238	3	269	1	0	273	599
07:15 AM	**11**	**7**	12	0	30	**62**	5	**18**	0	**85**	4	225	19	0	248	6	273	2	0	281	644
07:30 AM	5	2	**22**	0	29	56	2	15	0	73	3	**247**	17	0	**267**	**9**	273	**5**	0	**287**	**656**
07:45 AM	11	0	13	0	24	45	**8**	8	0	61	6	211	15	0	232	4	**275**	2	0	281	598
Total Volume	37	15	61	0	113	203	21	53	0	277	20	894	71	0	985	22	1090	10	0	1122	2497
% App. Total	32.7	13.3	54	0		73.3	7.6	19.1	0		2	90.8	7.2	0		2	97.1	0.9	0		
PHF	.841	.536	.693	.000	.942	.819	.656	.736	.000	.815	.714	.905	.888	.000	.922	.611	.991	.500	.000	.977	.952



Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th and US-85 PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 1

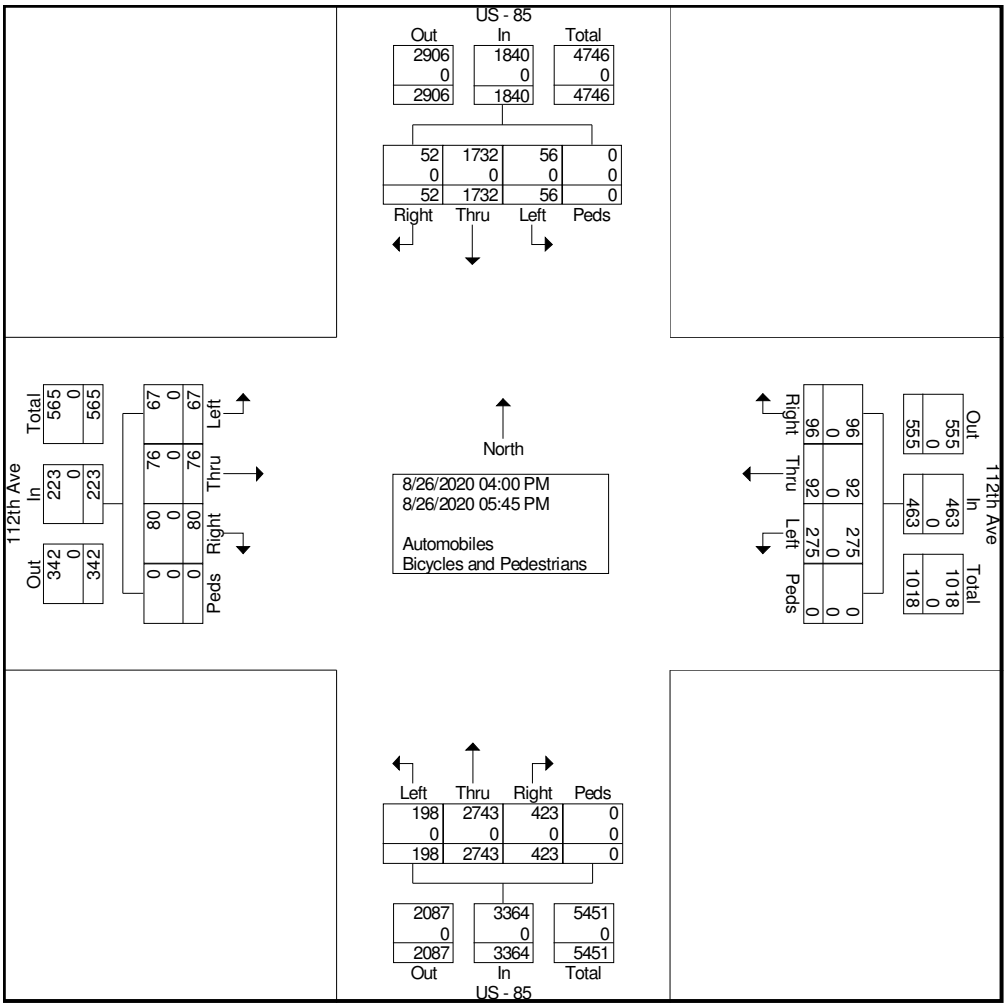
Groups Printed- Automobiles - Bicycles and Pedestrians

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	4	3	9	0	16	31	12	10	0	53	20	364	45	0	429	4	214	0	0	218	716
04:15 PM	16	10	13	0	39	26	6	16	0	48	30	405	52	0	487	7	224	10	0	241	815
04:30 PM	8	8	12	0	28	31	19	8	0	58	31	363	44	0	438	3	223	6	0	232	756
04:45 PM	6	10	8	0	24	33	4	6	0	43	25	348	60	0	433	9	221	2	0	232	732
Total	34	31	42	0	107	121	41	40	0	202	106	1480	201	0	1787	23	882	18	0	923	3019
05:00 PM	8	12	10	0	30	57	14	12	0	83	18	322	54	0	394	8	217	4	0	229	736
05:15 PM	11	11	12	0	34	28	13	12	0	53	29	353	71	0	453	4	240	11	0	255	795
05:30 PM	6	14	6	0	26	44	13	20	0	77	21	313	48	0	382	13	193	11	0	217	702
05:45 PM	8	8	10	0	26	25	11	12	0	48	24	275	49	0	348	8	200	8	0	216	638
Total	33	45	38	0	116	154	51	56	0	261	92	1263	222	0	1577	33	850	34	0	917	2871
Grand Total	67	76	80	0	223	275	92	96	0	463	198	2743	423	0	3364	56	1732	52	0	1840	5890
Apprch %	30	34.1	35.9	0		59.4	19.9	20.7	0		5.9	81.5	12.6	0		3	94.1	2.8	0		
Total %	1.1	1.3	1.4	0	3.8	4.7	1.6	1.6	0	7.9	3.4	46.6	7.2	0	57.1	1	29.4	0.9	0	31.2	
Automobiles	67	76	80	0	223	275	92	96	0	463	198	2743	423	0	3364	56	1732	52	0	1840	5890
% Automobiles	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles and Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th and US-85 PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 2

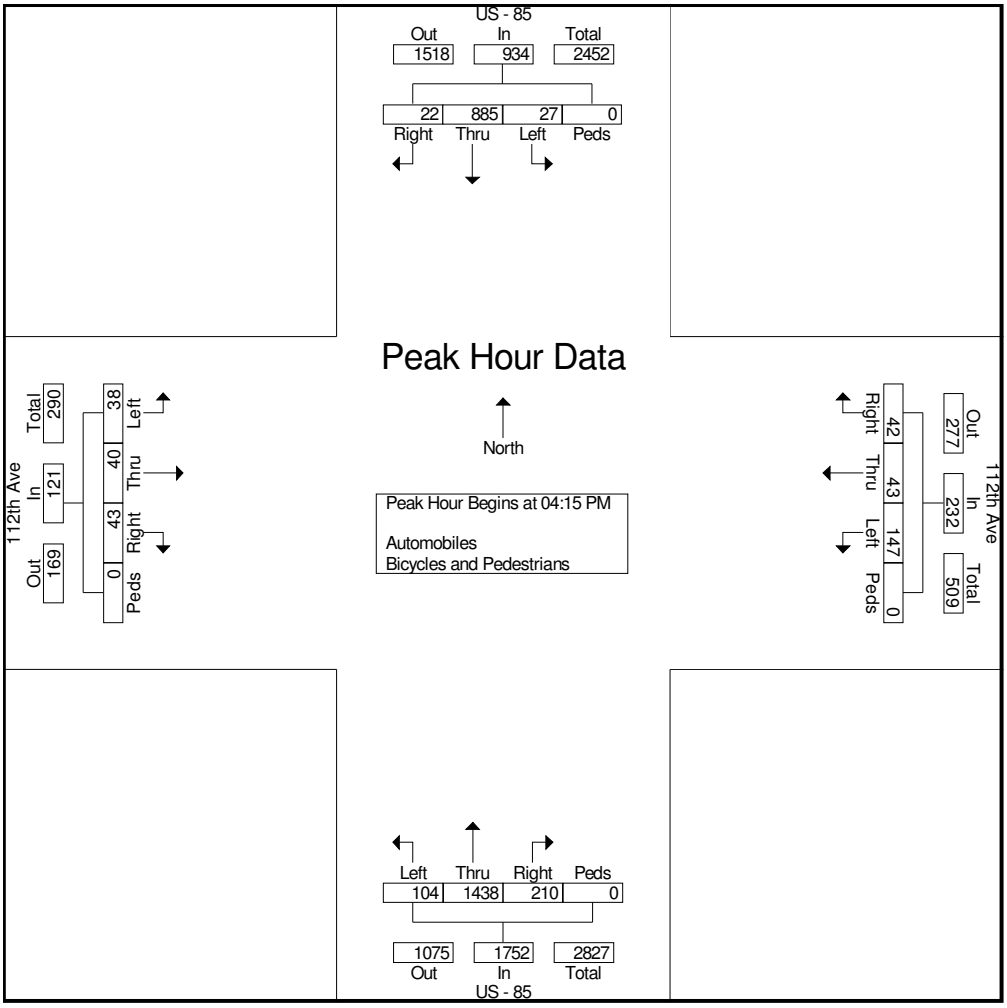


Ridgeview Data Collection

Commerce City, CO
QT 4205
PM Peak
112th Ave and US-85

File Name : 112th and US-85 PM
Site Code : IPO 509
Start Date : 8/26/2020
Page No : 3

	112th Ave Eastbound					112th Ave Westbound					US - 85 Northbound					US - 85 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**16**	10	**13**	0	**39**	26	6	**16**	0	48	30	**405**	52	0	**487**	7	**224**	**10**	0	**241**	**815**
04:30 PM	8	8	12	0	28	31	**19**	8	0	58	**31**	363	44	0	438	3	223	6	0	232	756
04:45 PM	6	10	8	0	24	33	4	6	0	43	25	348	**60**	0	433	**9**	221	2	0	232	732
05:00 PM	8	**12**	10	0	30	**57**	14	12	0	**83**	18	322	54	0	394	8	217	4	0	229	736
Total Volume	38	40	43	0	121	147	43	42	0	232	104	1438	210	0	1752	27	885	22	0	934	3039
% App. Total	31.4	33.1	35.5	0		63.4	18.5	18.1	0		5.9	82.1	12	0		2.9	94.8	2.4	0		
PHF	.594	.833	.827	.000	.776	.645	.566	.656	.000	.699	.839	.888	.875	.000	.899	.750	.988	.550	.000	.969	.932



APPENDIX B

CDOT Traffic Information

COVID Adjustment Calculations

CDOT Traffic Projections - QuikTrip 4205 Commerce City

ROUTE	REFPT	ENDREFPT	LENGTH	AADT	COUNTYEAR	YR20FACTOR	DHV	LOCATION
085C	227.385	229.757	2.397	42000	2018	1.37	8	ON SH 85 NE/O SH 44 (104TH AVE)

Annual Growth: 1.59%

CanAm COVID Adjustment Calculations

112th Avenue/US-85 West Leg Traffic Volumes		
Scenario	AM Peak	PM Peak
2019 Existing (Pre-COVID - 2019-10-15)	350	416
2020 Counts (During COVID - 2020-10-08)	164	290
Percent Change	-53.14%	-30.29%
Growth Adjustment	113.41%	43.45%
Adjustment Factor	2.13	1.43
	350	416

Overall 112th Avenue/US-85 Traffic Volumes		
Scenario	AM Peak	PM Peak
2019 Existing (Pre-COVID - 2019-10-15)	2,625	3,150
2020 Counts (During COVID - 2020-10-08)	2,497	3,039
Percent Change	-4.88%	-3.52%
Growth Adjustment	5.13%	3.65%
Adjustment Factor	1.05	1.04

Movement	2020 Existing Counts		COVID Growth Factor		2020 Adjusted Existing Counts		Notes
	AM	PM	AM	PM	AM	PM	
112th Ave and Brighton Rd							
EBL	0	0	2.13	1.43	0	0	
EBT	0	0	2.13	1.43	0	0	
EBR	0	0	2.13	1.43	0	0	
WBL	12	14	0	0	31	24	Balanced from 112th Avenue and Florence Street (PM accounts for vehicles entering onto 112th Court)
WBT	0	0	2.13	1.43	0	0	
WBR	86	71	0	0	219	126	Balanced from 112th Avenue and Florence Street (PM accounts for vehicles entering onto 112th Court)
NBL	0	0	2.13	1.43	0	0	
NBT	25	42	2.13	1.43	78	102	
NBR	14	16	2.13	1.43	44	39	
SBL	50	45	2.13	1.43	157	109	
SBT	51	60	2.13	1.43	160	146	
SBR	0	0	2.13	1.43	0	0	
112th Ave and Belle Creek Blvd							
EBL	0	0	2.13	1.43	0	0	
EBT	33	65	2.13	1.43	103	158	
EBR	34	53	2.13	1.43	106	129	
WBL	17	20	2.13	1.43	53	49	
WBT	45	105	0	0	156	178	Balanced from 112th Avenue and Florence Street
WBR	0	0	2.13	1.43	0	0	
NBL	44	50	2.13	1.43	138	122	
NBT	0	0	2.13	1.43	0	0	
NBR	56	38	2.13	1.43	175	92	
SBL	0	0	2.13	1.43	0	0	
SBT	0	0	2.13	1.43	0	0	
SBR	0	0	2.13	1.43	0	0	

APPENDIX C

Trip Generation Worksheets

CanAm Development Trip Generation Summary

Land Use	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210) - 160 DU	1,602	30	88	118	101	59	160
Multi Family Housing (Mid-Rise) (ITE 221) - 300 DU	1,634	26	74	100	77	50	127
Gas Station w/ Convenience Market (ITE 945) - 26 FP	5,340	165	159	324	186	178	364
Total Site Generated Trips	**8,576**	**221**	**321**	**542**	**364**	**287**	**651**
Total Pass-By Trips	**2,990**	**102**	**99**	**201**	**104**	**100**	**204**
Total Non Pass-By Trips	**5,586**	**119**	**222**	**341**	**260**	**187**	**447**

Kimley»Horn

Project	QuikTrip 4205				
Subject	Trip Generation for Single-Family Detached Housing				
Designed by	TES	*Date*	March 15, 2021	*Job No.*	096888004
Checked by		*Date*		*Sheet No.*	of

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Fitted Curve Equations

Land Use Code - Single-Family Detached Housing (210)

Independant Variable - Dwelling Units (X)

X = 160
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (200 Series Page 3)

Average Weekday
(T) = 0.71 (X) + 4.80
(T) = 0.71 * (160) + 4.80

Directional Distribution: 25% ent. 75% exit.
T = 118 Average Vehicle Trip Ends
30 entering 89 exiting

30 + 88 = 118

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (200 Series Page 4)

Average Weekday
Ln(T) = 0.96 Ln(X) + 0.20
Ln(T) = 0.96 * Ln(160) + 0.20

Directional Distribution: 63% ent. 37% exit.
T = 160 Average Vehicle Trip Ends
101 entering 59 exiting

101 + 59 = 160

Peak Hour of Generator, Saturday (200 Series Page 8)

Average Saturday
(T) = 0.84 (X) + 17.99
(T) = 0.84 * (160) + 17.99

Directional Distribution: 54% ent. 46% exit.
T = 152 Average Vehicle Trip Ends
82 entering 70 exiting

82 + 70 = 152

Weekday (200 Series Page 2)

Average Weekday
Ln(T) = 0.92 Ln(X) + 2.71
Ln(T) = 0.92 * Ln(160) + 2.71

Directional Distribution: 50% entering, 50% exiting
T = 1602 Average Vehicle Trip Ends
801 entering 801 exiting

801 + 801 = 1602

Kimley»Horn

Project	QuikTrip 4205				
Subject	Trip Generation for Multifamily Housing (Mid-Rise)				
Designed by	TES	*Date*	March 15, 2021	*Job No.*	096888004
Checked by		*Date*		*Sheet No.*	1 *of* 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Fitted Curve Equations

Land Use Code - Multifamily Housing (Mid-Rise) (221)

Independant Variable - Dwelling Units (X)

X = 300
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Series 200 Page 74)

Ln(T) = 0.98 Ln(X) - 0.98
Ln(T) = 0.98 * Ln(300.0) - 0.98

Directional Distribution: 26% ent. 74% exit.
T = 100 Average Vehicle Trip Ends
26 entering 74 exiting

26 + 74 = 100

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Series 200 Page 75)

Ln(T) = 0.96 Ln(X) - 0.63
Ln(T) = 0.96 * Ln(300.0) - 0.63

Directional Distribution: 61% ent. 39% exit.
T = 127 Average Vehicle Trip Ends
77 entering 50 exiting

77 + 50 = 127

Weekday (Series 200 Page 73)

(T) = 5.45*(X) - 1.75
(T) = 5.45 * 300 - 1.75

Directional Distribution: 50% ent. 50% exit.
T = 1634 Average Vehicle Trip Ends
817 entering 817 exiting

817 + 817 = 1634

Peak Hour of Generator, Saturday (Series 200 Page 79)

(T) = 0.42*(X) + 6.73
(T) = 0.42 * 300 + 6.73

Directional Distribution: 49% ent. 51% exit.
T = 133 Average Vehicle Trip Ends
65 entering 68 exiting

65 + 68 = 133

Kimley»Horn

Project	QuikTrip 4205				
Subject	Trip Generation for Gasoline/Service Station with Convenience Market				
Designed by	TES	*Date*	September 10, 2020	*Job No.*	96888004
Checked by		*Date*		*Sheet No.*	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Gasoline/Service Station with Convenience Market (945)

Independant Variable - Vehicle Fueling Positions (X)

Vehicle Fueling Positions= 26 Positions
X = 26
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (900 Series page 369)

Average Weekday
T = 12.47 (X)
T = 12.47 * 26

Directional Distribution: 51% ent. 49% exit.
T = 324 Average Vehicle Trip Ends
165 entering 159 exiting

165 + 159 = 324

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (900 Series page 370)

Average Weekday
T = 13.99 (X)
T = 13.99 * 26.000

Directional Distribution: 51% ent. 49% exit.
T = 364 Average Vehicle Trip Ends
186 entering 178 exiting

186 + 178 = 364

Weekday (900 Series page 368)

Average Weekday
T = 205.36 (X)
T = 205.36 * 26.000

Directional Distribution: 50% entering, 50% exiting
T = 5340 Average Vehicle Trip Ends
2670 entering 2670 exiting

2670 + 2670 = 5340

Non Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017)

PM Peak Hour = 44% Non-Pass By AM Peak Hour = 38% Non-Pass By

	IN	Out	Total	
AM Peak	63	60	123	
PM Peak	82	78	160	
Daily	1175	1175	2350	PM Peak Hour Rate Applied to Daily

Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017)

PM Peak Hour = 56% Pass By AM Peak Hour = 62% Pass By

	IN	Out	Total	
AM Peak	102	99	201	
PM Peak	104	100	204	
Daily	1495	1495	2990	PM Peak Hour Rate Applied to Daily

APPENDIX D

Intersection Analysis Worksheets

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	219	53	30	107	109
Future Vol, veh/h	31	219	53	30	107	109
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	43	83	69	44	63	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	264	77	68	170	179

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	630	111	0	0	145	0
Stage 1	111	-	-	-	-	-
Stage 2	519	-	-	-	-	-
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	446	942	-	-	1437	-
Stage 1	914	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	388	942	-	-	1437	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	3.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	388	942	1437	-
HCM Lane V/C Ratio	-	-	0.186	0.28	0.118	-
HCM Control Delay (s)	-	-	16.4	10.3	7.8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	1.2	0.4	-

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	126	60	23	64	86
Future Vol, veh/h	24	126	60	23	64	86
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	77	66	80	66	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	164	91	29	97	109

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	409	106	0	0	120	0
Stage 1	106	-	-	-	-	-
Stage 2	303	-	-	-	-	-
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	599	948	-	-	1468	-
Stage 1	918	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	557	948	-	-	1468	-
Mov Cap-2 Maneuver	557	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	3.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	557	948	1468	-
HCM Lane V/C Ratio	-	-	0.086	0.173	0.066	-
HCM Control Delay (s)	-	-	12.1	9.6	7.6	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.6	0.2	-

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	230	55	35	115	115
Future Vol, veh/h	35	230	55	35	115	115
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	43	83	69	44	63	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	277	80	80	183	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	675	120	0	0	160	0
Stage 1	120	-	-	-	-	-
Stage 2	555	-	-	-	-	-
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	419	931	-	-	1419	-
Stage 1	905	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	359	931	-	-	1419	-
Mov Cap-2 Maneuver	359	-	-	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	492	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	359	931	1419	-
HCM Lane V/C Ratio	-	-	0.227	0.298	0.129	-
HCM Control Delay (s)	-	-	17.9	10.5	7.9	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	1.3	0.4	-

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	135	65	25	70	90
Future Vol, veh/h	25	135	65	25	70	90
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	77	66	80	66	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	175	98	31	106	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	440	114	0	0	129	0
Stage 1	114	-	-	-	-	-
Stage 2	326	-	-	-	-	-
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	574	939	-	-	1457	-
Stage 1	911	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	529	939	-	-	1457	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	529	939	1457	-
HCM Lane V/C Ratio	-	-	0.095	0.187	0.073	-
HCM Control Delay (s)	-	-	12.5	9.7	7.7	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.7	0.2	-

Intersection	
Int Delay, s/veh	7.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	245	55	45	125	115
Future Vol, veh/h	50	245	55	45	125	115
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	43	83	69	44	63	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	295	80	102	198	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	716	131	0	0	182	0
Stage 1	131	-	-	-	-	-
Stage 2	585	-	-	-	-	-
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	397	919	-	-	1393	-
Stage 1	895	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	334	919	-	-	1393	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	468	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	334	919	1393	-
HCM Lane V/C Ratio	-	-	0.348	0.321	0.142	-
HCM Control Delay (s)	-	-	21.4	10.8	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	1.4	0.5	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	145	65	40	85	90
Future Vol, veh/h	35	145	65	40	85	90
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	175	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	77	66	80	66	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	188	98	50	129	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	495	123	0	0	148	0
Stage 1	123	-	-	-	-	-
Stage 2	372	-	-	-	-	-
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	534	928	-	-	1434	-
Stage 1	902	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	483	928	-	-	1434	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	483	928	1434	-
HCM Lane V/C Ratio	-	-	0.145	0.203	0.09	-
HCM Control Delay (s)	-	-	13.7	9.9	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.8	0.3	-

Intersection	
Int Delay, s/veh	7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	245	55	45	125	115
Future Vol, veh/h	50	245	55	45	125	115
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	43	83	69	44	63	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	295	80	102	198	189

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	665	80	0	0	182	0
Stage 1	80	-	-	-	-	-
Stage 2	585	-	-	-	-	-
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	425	980	-	-	1393	-
Stage 1	943	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	365	980	-	-	1393	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	365	980	1393	-
HCM Lane V/C Ratio	-	-	0.319	0.301	0.142	-
HCM Control Delay (s)	-	-	19.4	10.2	8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.3	1.3	0.5	-

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	145	65	40	85	90
Future Vol, veh/h	35	145	65	40	85	90
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	77	66	80	66	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	188	98	50	129	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	470	98	0	0	148	0
Stage 1	98	-	-	-	-	-
Stage 2	372	-	-	-	-	-
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	552	958	-	-	1434	-
Stage 1	926	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	502	958	-	-	1434	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	502	958	1434	-
HCM Lane V/C Ratio	-	-	0.139	0.197	0.09	-
HCM Control Delay (s)	-	-	13.3	9.7	7.8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.7	0.3	-

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	305	75	45	150	150
Future Vol, veh/h	45	305	75	45	150	150
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	83	81	68	71	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	367	93	66	211	195

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	710	93	0	0	159	0
Stage 1	93	-	-	-	-	-
Stage 2	617	-	-	-	-	-
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	400	964	-	-	1420	-
Stage 1	931	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	964	-	-	1420	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	4.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	340	964	1420	-
HCM Lane V/C Ratio	-	-	0.221	0.381	0.149	-
HCM Control Delay (s)	-	-	18.6	11	8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	1.8	0.5	-

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	175	85	35	90	120
Future Vol, veh/h	35	175	85	35	90	120
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	85	92	92	79	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	206	92	38	114	140

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	460	92	0	0	130	0
Stage 1	92	-	-	-	-	-
Stage 2	368	-	-	-	-	-
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	559	965	-	-	1455	-
Stage 1	932	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	515	965	-	-	1455	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	3.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	515	965	1455	-
HCM Lane V/C Ratio	-	-	0.096	0.213	0.078	-
HCM Control Delay (s)	-	-	12.7	9.7	7.7	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.8	0.3	-

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	320	75	55	160	150
Future Vol, veh/h	60	320	75	55	160	150
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	83	81	68	71	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	386	93	81	225	195

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	738	93	0	0	174	0
Stage 1	93	-	-	-	-	-
Stage 2	645	-	-	-	-	-
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	385	964	-	-	1403	-
Stage 1	931	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	323	964	-	-	1403	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	323	964	1403	-
HCM Lane V/C Ratio	-	-	0.31	0.4	0.161	-
HCM Control Delay (s)	-	-	21.1	11.2	8.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.3	1.9	0.6	-

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	185	85	50	105	120
Future Vol, veh/h	45	185	85	50	105	120
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	175	-	150	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	85	92	92	79	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	218	92	54	133	140

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	498	92	0	0	146	0
Stage 1	92	-	-	-	-	-
Stage 2	406	-	-	-	-	-
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	532	965	-	-	1436	-
Stage 1	932	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	483	965	-	-	1436	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	3.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	483	965	1436	-
HCM Lane V/C Ratio	-	-	0.131	0.226	0.093	-
HCM Control Delay (s)	-	-	13.6	9.8	7.8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.9	0.3	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	72	36	156	94	119
Future Vol, veh/h	70	72	36	156	94	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	55	65	51	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	111	71	223	119	153

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	238	0	548	183
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1329	-	519	859
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	724	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1329	-	487	859
Mov Cap-2 Maneuver	-	-	-	-	487	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	644	-	-	1329	-
HCM Lane V/C Ratio	0.422	-	-	0.053	-
HCM Control Delay (s)	14.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	93	76	29	178	72	54
Future Vol, veh/h	93	76	29	178	72	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	63	71	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	90	46	251	75	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	201	0	499	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	343	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1371	-	561	890
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1371	-	539	890
Mov Cap-2 Maneuver	-	-	-	-	539	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	716	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	657	-	-	1371	-
HCM Lane V/C Ratio	0.21	-	-	0.034	-
HCM Control Delay (s)	11.9	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	75	40	165	100	125
Future Vol, veh/h	75	75	40	165	100	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	55	65	51	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	115	78	236	127	160

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	251	0	586	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	392	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1314	-	490	847
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1314	-	456	847
Mov Cap-2 Maneuver	-	-	-	-	456	-
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	614	-	-	1314	-
HCM Lane V/C Ratio	0.467	-	-	0.06	-
HCM Control Delay (s)	15.9	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	80	30	185	75	60
Future Vol, veh/h	100	80	30	185	75	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	63	71	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	119	95	48	261	78	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	524	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1356	-	546	877
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1356	-	524	877
Mov Cap-2 Maneuver	-	-	-	-	524	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	708	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	647	-	-	1356	-
HCM Lane V/C Ratio	0.229	-	-	0.035	-
HCM Control Delay (s)	12.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	80	55	175	115	160
Future Vol, veh/h	85	80	55	175	115	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	55	65	51	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	123	108	250	146	205

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	278	0	683	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1285	-	423	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1285	-	382	823
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	580	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	21.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	556	-	-	1285	-
HCM Lane V/C Ratio	0.631	-	-	0.084	-
HCM Control Delay (s)	21.9	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	4.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	95	65	195	85	85
Future Vol, veh/h	115	95	65	195	85	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	63	71	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	113	103	275	89	99

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	250	0	675	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	481	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1316	-	432	847
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1316	-	392	847
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	578	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	547	-	-	1316	-
HCM Lane V/C Ratio	0.343	-	-	0.078	-
HCM Control Delay (s)	15	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.3	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	80	55	175	115	160
Future Vol, veh/h	85	80	55	175	115	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	55	65	51	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	123	108	250	146	205

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	278	0	621	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1285	-	465	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1285	-	426	891
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	589	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	426	891	-	-	1285	-
HCM Lane V/C Ratio	0.342	0.23	-	-	0.084	-
HCM Control Delay (s)	17.8	10.2	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.5	0.9	-	-	0.3	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	95	65	195	85	85
Future Vol, veh/h	115	95	65	195	85	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	63	71	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	113	103	275	89	99

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	250	0	618	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	481	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1316	-	472	911
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1316	-	435	911
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	435	911	-	-	1316	-
HCM Lane V/C Ratio	0.204	0.108	-	-	0.078	-
HCM Control Delay (s)	15.4	9.4	-	-	8	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	100	50	215	130	165
Future Vol, veh/h	100	100	50	215	130	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	79	63	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	127	79	307	165	212

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	262	0	600	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1302	-	489	914
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	652	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1302	-	459	914
Mov Cap-2 Maneuver	-	-	-	-	459	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	459	914	-	-	1302	-
HCM Lane V/C Ratio	0.359	0.231	-	-	0.061	-
HCM Control Delay (s)	17.2	10.1	-	-	7.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.6	0.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	105	40	245	100	75
Future Vol, veh/h	130	105	40	245	100	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	92	92	92	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	114	43	266	104	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	269	0	507	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	352	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1295	-	575	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	757	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1295	-	556	891
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	556	891	-	-	1295	-
HCM Lane V/C Ratio	0.187	0.098	-	-	0.034	-
HCM Control Delay (s)	13	9.5	-	-	7.9	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	110	105	65	225	145	200
Future Vol, veh/h	110	105	65	225	145	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	79	63	70	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	133	103	321	184	256

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	282	0	676	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	527	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1280	-	434	898
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	604	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1280	-	399	898
Mov Cap-2 Maneuver	-	-	-	-	399	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	555	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	399	898	-	-	1280	-
HCM Lane V/C Ratio	0.46	0.286	-	-	0.081	-
HCM Control Delay (s)	21.5	10.6	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.4	1.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	145	120	75	255	110	100
Future Vol, veh/h	145	120	75	255	110	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	92	92	92	96	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	173	130	82	277	115	116

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	303	0	614	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	441	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1258	-	489	871
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	1258	-	457	871
Mov Cap-2 Maneuver	-	-	-	-	457	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	457	871	-	-	1258	-
HCM Lane V/C Ratio	0.251	0.134	-	-	0.065	-
HCM Control Delay (s)	15.5	9.8	-	-	8.1	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	1	0.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	166	132	35	95	60
Future Vol, veh/h	20	166	132	35	95	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	74	77	80	70	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	224	171	44	136	100

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	215	0	-	0	497	193
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	304	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1372	-	-	-	553	912
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1372	-	-	-	535	912
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1372	-	-	-	535	912
HCM Lane V/C Ratio	0.029	-	-	-	0.254	0.11
HCM Control Delay (s)	7.7	0	-	-	14	9.4
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.4

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	111	183	96	40	24
Future Vol, veh/h	33	111	183	96	40	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	59	79	85	86	91	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	141	215	112	44	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	327	0	-	0	524	271
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	253	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	546	853
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1246	-	-	-	519	853
Mov Cap-2 Maneuver	-	-	-	-	519	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1246	-	-	-	519	853
HCM Lane V/C Ratio	0.045	-	-	-	0.085	0.038
HCM Control Delay (s)	8	0	-	-	12.6	9.4
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	175	140	35	95	60
Future Vol, veh/h	20	175	140	35	95	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	74	77	80	70	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	236	182	44	136	100

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	226	0	-	0	520	204
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	316	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1359	-	-	-	535	898
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1359	-	-	-	517	898
Mov Cap-2 Maneuver	-	-	-	-	517	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1359	-	-	-	517	898
HCM Lane V/C Ratio	0.029	-	-	-	0.263	0.111
HCM Control Delay (s)	7.7	0	-	-	14.4	9.5
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	115	190	96	40	24
Future Vol, veh/h	33	115	190	96	40	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	59	79	85	86	91	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	146	224	112	44	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	336	0	-	0	538	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1235	-	-	-	534	842
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1235	-	-	-	508	842
Mov Cap-2 Maneuver	-	-	-	-	508	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1235	-	-	-	508	842
HCM Lane V/C Ratio	0.045	-	-	-	0.087	0.038
HCM Control Delay (s)	8.1	0	-	-	12.8	9.4
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	215	5	190	155	35	10	15	135	95	10	60
Future Vol, veh/h	20	215	5	190	155	35	10	15	135	95	10	60
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	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	79	92	92	85	86	92	92	92	91	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	272	5	207	182	41	11	16	147	104	11	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	223	0	0	277	0	0	1005	980	275	1041	962	203
Stage 1	-	-	-	-	-	-	343	343	-	617	617	-
Stage 2	-	-	-	-	-	-	662	637	-	424	345	-
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	1346	-	-	1286	-	-	220	250	764	208	256	838
Stage 1	-	-	-	-	-	-	672	637	-	477	481	-
Stage 2	-	-	-	-	-	-	451	471	-	608	636	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1346	-	-	1286	-	-	166	205	764	139	209	838
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	291	-	207	282	-
Stage 1	-	-	-	-	-	-	655	621	-	465	404	-
Stage 2	-	-	-	-	-	-	333	395	-	466	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	4	12.8	26
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	247	657	1346	-	-	1286	-	-	207	678
HCM Lane V/C Ratio	0.044	0.248	0.025	-	-	0.161	-	-	0.504	0.134
HCM Control Delay (s)	20.2	12.3	7.7	-	-	8.3	-	-	38.9	11.1
HCM Lane LOS	C	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.1	1	0.1	-	-	0.6	-	-	2.5	0.5

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	145	10	280	225	100	10	10	105	40	15	25
Future Vol, veh/h	35	145	10	280	225	100	10	10	105	40	15	25
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	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	79	92	92	85	86	92	92	92	91	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	184	11	304	265	116	11	11	114	44	16	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	195	0	0	1264	1297	190	1301	1244	323
Stage 1	-	-	-	-	-	-	308	308	-	931	931	-
Stage 2	-	-	-	-	-	-	956	989	-	370	313	-
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	1177	-	-	1378	-	-	146	162	852	138	174	718
Stage 1	-	-	-	-	-	-	702	660	-	320	346	-
Stage 2	-	-	-	-	-	-	310	325	-	650	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1177	-	-	1378	-	-	104	120	852	91	129	718
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	168	-	157	192	-
Stage 1	-	-	-	-	-	-	667	627	-	304	270	-
Stage 2	-	-	-	-	-	-	216	253	-	525	624	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	3.7	13.8	25.7
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	139	629	1177	-	-	1378	-	-	157	378
HCM Lane V/C Ratio	0.078	0.199	0.05	-	-	0.221	-	-	0.28	0.131
HCM Control Delay (s)	33.1	12.1	8.2	-	-	8.4	-	-	36.6	16
HCM Lane LOS	D	B	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	0.3	0.7	0.2	-	-	0.8	-	-	1.1	0.4

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	230	185	35	95	60
Future Vol, veh/h	20	230	185	35	95	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	74	77	80	70	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	311	240	44	136	100

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	284	0	-	0	653	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	391	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1297	-	-	-	446	859
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1297	-	-	-	429	859
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1297	-	-	-	528	859
HCM Lane V/C Ratio	0.031	-	-	-	0.257	0.116
HCM Control Delay (s)	7.9	0	-	-	14.2	9.7
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.4

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	155	255	96	40	24
Future Vol, veh/h	33	155	255	96	40	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	59	79	85	86	91	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	196	300	112	44	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	412	0	-	0	664	356
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1154	-	-	-	450	792
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1154	-	-	-	426	792
Mov Cap-2 Maneuver	-	-	-	-	529	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	745	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1154	-	-	-	529	792
HCM Lane V/C Ratio	0.048	-	-	-	0.083	0.04
HCM Control Delay (s)	8.3	0	-	-	12.4	9.7
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	270	5	190	200	35	10	15	135	95	10	60
Future Vol, veh/h	20	270	5	190	200	35	10	15	135	95	10	60
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	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	86	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	314	5	207	217	38	11	16	147	103	11	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	319	0	0	1057	1038	317	1100	1021	236
Stage 1	-	-	-	-	-	-	369	369	-	650	650	-
Stage 2	-	-	-	-	-	-	688	669	-	450	371	-
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	1310	-	-	1241	-	-	203	231	724	190	236	803
Stage 1	-	-	-	-	-	-	651	621	-	458	465	-
Stage 2	-	-	-	-	-	-	436	456	-	589	620	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	1241	-	-	155	188	724	124	193	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	280	-	192	268	-
Stage 1	-	-	-	-	-	-	638	609	-	449	387	-
Stage 2	-	-	-	-	-	-	324	380	-	448	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	3.8	13.3	30.1
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	242	625	1310	-	-	1241	-	-	192	625
HCM Lane V/C Ratio	0.045	0.261	0.02	-	-	0.166	-	-	0.538	0.122
HCM Control Delay (s)	20.6	12.8	7.8	-	-	8.5	-	-	43.7	11.6
HCM Lane LOS	C	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.1	1	0.1	-	-	0.6	-	-	2.8	0.4

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	185	10	280	290	100	10	10	105	40	15	25
Future Vol, veh/h	35	185	10	280	290	100	10	10	105	40	15	25
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	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	79	92	92	85	86	92	92	92	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	234	11	304	341	116	11	11	114	44	16	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	457	0	0	245	0	0	1345	1381	240	1385	1328	399
Stage 1	-	-	-	-	-	-	316	316	-	1007	1007	-
Stage 2	-	-	-	-	-	-	1029	1065	-	378	321	-
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	1104	-	-	1321	-	-	129	144	799	121	155	651
Stage 1	-	-	-	-	-	-	695	655	-	290	319	-
Stage 2	-	-	-	-	-	-	282	299	-	644	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1104	-	-	1321	-	-	92	107	799	79	115	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	164	-	148	179	-
Stage 1	-	-	-	-	-	-	671	633	-	280	246	-
Stage 2	-	-	-	-	-	-	194	230	-	524	630	-

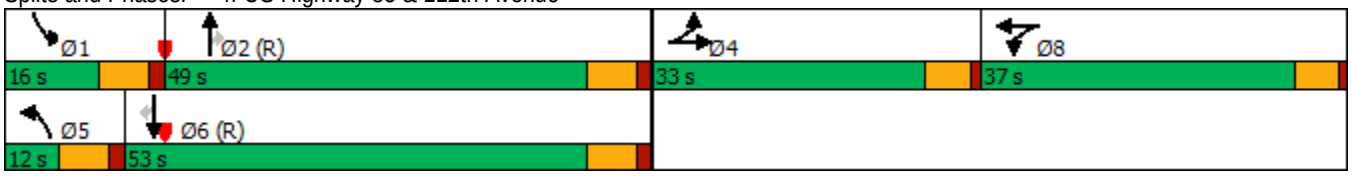
Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	3.4	14.3	28.6
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	137	598	1104	-	-	1321	-	-	148	327
HCM Lane V/C Ratio	0.079	0.209	0.034	-	-	0.23	-	-	0.297	0.133
HCM Control Delay (s)	33.5	12.6	8.4	-	-	8.5	-	-	39.3	17.7
HCM Lane LOS	D	B	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	0.3	0.8	0.1	-	-	0.9	-	-	1.2	0.5

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	107	66	71	25	28	855	101	44	1028	23
Future Volume (vph)	107	66	71	25	28	855	101	44	1028	23
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	33.0		37.0		12.0	49.0	49.0	16.0	53.0	53.0
Total Split (%)	24.4%		27.4%		8.9%	36.3%	36.3%	11.9%	39.3%	39.3%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	19.1	135.0	29.4	135.0	6.8	56.3	56.3	8.6	60.7	60.7
Actuated g/C Ratio	0.14	1.00	0.22	1.00	0.05	0.42	0.42	0.06	0.45	0.45
v/c Ratio	0.73	0.05	0.85	0.02	0.34	0.62	0.15	0.46	0.77	0.03
Control Delay	71.1	0.1	70.6	0.0	72.4	36.2	5.0	73.9	38.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	0.1	70.6	0.0	72.4	36.2	5.0	73.9	38.1	0.1
LOS	E	A	E	A	E	D	A	E	D	A
Approach Delay	50.5		65.2			34.1			38.7	
Approach LOS	D		E			C			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 41.3	Intersection LOS: D
Intersection Capacity Utilization 69.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	107	66	222	71	25	28	855	101	44	1028	23
Future Volume (veh/h)	55	107	66	222	71	25	28	855	101	44	1028	23
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	64	124	0	252	81	0	30	910	107	52	1224	27
Peak Hour Factor	0.86	0.86	0.86	0.88	0.88	0.88	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	146		276	89		45	1642	732	67	1687	752
Arrive On Green	0.12	0.12	0.00	0.20	0.20	0.00	0.03	0.46	0.46	0.04	0.47	0.47
Sat Flow, veh/h	626	1213	1585	1364	438	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	188	0	0	333	0	0	30	910	107	52	1224	27
Grp Sat Flow(s),veh/h/ln	1839	0	1585	1802	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.5	0.0	0.0	24.4	0.0	0.0	2.3	25.0	5.3	3.9	37.3	1.2
Cycle Q Clear(g_c), s	13.5	0.0	0.0	24.4	0.0	0.0	2.3	25.0	5.3	3.9	37.3	1.2
Prop In Lane	0.34		1.00	0.76		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	0		364	0		45	1642	732	67	1687	752
V/C Ratio(X)	0.85	0.00		0.91	0.00		0.67	0.55	0.15	0.77	0.73	0.04
Avail Cap(c_a), veh/h	375	0		421	0		73	1642	732	125	1687	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	0.0	0.0	52.7	0.0	0.0	65.3	26.3	20.9	64.4	28.4	18.9
Incr Delay (d2), s/veh	8.9	0.0	0.0	22.4	0.0	0.0	16.2	1.4	0.4	17.1	2.8	0.1
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	6.8	0.0	0.0	13.3	0.0	0.0	1.2	10.9	2.1	2.1	16.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.1	0.0	0.0	75.1	0.0	0.0	81.5	27.6	21.4	81.5	31.2	19.0
LnGrp LOS	E	A		E	A		F	C	C	F	C	B
Approach Vol, veh/h		188	A		333	A		1047			1303	
Approach Delay, s/veh		67.1			75.1			28.5			32.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	68.9		21.7	9.9	70.6		32.8				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		27.5	5.5	46.5		31.5				
Max Q Clear Time (g_c+I1), s	5.9	27.0		15.5	4.3	39.3		26.4				
Green Ext Time (p_c), s	0.0	6.1		0.7	0.0	4.6		0.9				

Intersection Summary	
HCM 6th Ctrl Delay	38.4
HCM 6th LOS	D

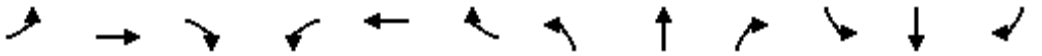
Notes

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

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	60	47	75	36	156	1531	195	22	854	31
Future Volume (vph)	60	47	75	36	156	1531	195	22	854	31
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	25.5		26.5		39.0	86.0	86.0	12.0	59.0	59.0
Total Split (%)	17.0%		17.7%		26.0%	57.3%	57.3%	8.0%	39.3%	39.3%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.4	150.0	24.8	150.0	21.4	85.0	85.0	5.5	64.4	64.4
Actuated g/C Ratio	0.10	1.00	0.17	1.00	0.14	0.57	0.57	0.04	0.43	0.43
v/c Ratio	0.68	0.04	0.86	0.04	0.75	0.93	0.24	0.38	0.62	0.04
Control Delay	82.4	0.0	86.0	0.1	79.8	40.2	2.6	87.1	36.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.4	0.0	86.0	0.1	79.8	40.2	2.6	87.1	36.5	0.1
LOS	F	A	F	A	E	D	A	F	D	A
Approach Delay	57.2		70.6			39.6			36.5	
Approach LOS	E		E			D			D	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 37 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 42.2	Intersection LOS: D
Intersection Capacity Utilization 77.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	60	47	89	75	36	156	1531	195	22	854	31
Future Volume (veh/h)	47	60	47	89	75	36	156	1531	195	22	854	31
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	56	71	0	139	117	0	190	1867	238	24	938	34
Peak Hour Factor	0.84	0.84	0.84	0.64	0.64	0.64	0.82	0.82	0.82	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	85		138	117		216	2116	944	38	1761	785
Arrive On Green	0.08	0.08	0.00	0.14	0.14	0.00	0.12	0.60	0.60	0.02	0.50	0.50
Sat Flow, veh/h	807	1023	1585	989	832	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	127	0	0	256	0	0	190	1867	238	24	938	34
Grp Sat Flow(s),veh/h/ln	1830	0	1585	1821	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.3	0.0	0.0	21.0	0.0	0.0	15.7	67.2	10.7	2.0	27.1	1.7
Cycle Q Clear(g_c), s	10.3	0.0	0.0	21.0	0.0	0.0	15.7	67.2	10.7	2.0	27.1	1.7
Prop In Lane	0.44		1.00	0.54		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	153	0		255	0		216	2116	944	38	1761	785
V/C Ratio(X)	0.83	0.00		1.00	0.00		0.88	0.88	0.25	0.64	0.53	0.04
Avail Cap(c_a), veh/h	244	0		255	0		386	2116	944	65	1761	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.7	0.0	0.0	64.5	0.0	0.0	64.8	25.9	14.4	72.9	25.9	19.5
Incr Delay (d2), s/veh	12.4	0.0	0.0	57.4	0.0	0.0	11.0	5.7	0.6	16.7	1.2	0.1
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	5.3	0.0	0.0	13.8	0.0	0.0	7.8	29.1	4.1	1.1	11.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.2	0.0	0.0	121.9	0.0	0.0	75.9	31.6	15.1	89.5	27.1	19.6
LnGrp LOS	F	A		F	A		E	C	B	F	C	B
Approach Vol, veh/h		127	A		256	A		2295			996	
Approach Delay, s/veh		80.2			121.9			33.6			28.3	
Approach LOS		F			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	95.8		18.0	24.7	80.8		26.5				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	5.5	79.5		20.0	32.5	52.5		21.0				
Max Q Clear Time (g_c+I1), s	4.0	69.2		12.3	17.7	29.1		23.0				
Green Ext Time (p_c), s	0.0	8.7		0.3	0.4	7.3		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		39.9
HCM 6th LOS		D

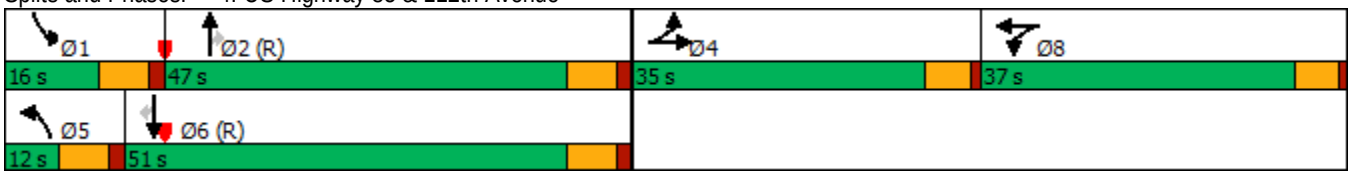
Notes

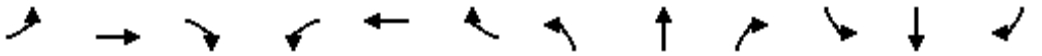
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	115	70	75	30	30	885	105	50	1065	25
Future Volume (vph)	115	70	75	30	30	885	105	50	1065	25
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	35.0		37.0		12.0	47.0	47.0	16.0	51.0	51.0
Total Split (%)	25.9%		27.4%		8.9%	34.8%	34.8%	11.9%	37.8%	37.8%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.3	135.0	30.4	135.0	6.7	53.7	53.7	9.1	58.6	58.6
Actuated g/C Ratio	0.15	1.00	0.23	1.00	0.05	0.40	0.40	0.07	0.43	0.43
v/c Ratio	0.74	0.05	0.86	0.02	0.36	0.67	0.16	0.51	0.83	0.04
Control Delay	70.7	0.1	70.0	0.0	73.9	39.3	5.9	75.4	41.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	0.1	70.0	0.0	73.9	39.3	5.9	75.4	41.6	0.1
LOS	E	A	E	A	E	D	A	E	D	A
Approach Delay	50.6		63.7			36.8			42.2	
Approach LOS	D		E			D			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 43.7	Intersection LOS: D
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	115	70	230	75	30	30	885	105	50	1065	25
Future Volume (veh/h)	60	115	70	230	75	30	30	885	105	50	1065	25
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	70	134	0	261	85	0	32	941	112	60	1268	30
Peak Hour Factor	0.86	0.86	0.86	0.88	0.88	0.88	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	157		284	92		46	1566	699	77	1628	726
Arrive On Green	0.13	0.13	0.00	0.21	0.21	0.00	0.03	0.44	0.44	0.04	0.46	0.46
Sat Flow, veh/h	631	1208	1585	1360	443	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	204	0	0	346	0	0	32	941	112	60	1268	30
Grp Sat Flow(s),veh/h/ln	1839	0	1585	1802	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	14.7	0.0	0.0	25.4	0.0	0.0	2.4	27.2	5.7	4.5	40.6	1.4
Cycle Q Clear(g_c), s	14.7	0.0	0.0	25.4	0.0	0.0	2.4	27.2	5.7	4.5	40.6	1.4
Prop In Lane	0.34		1.00	0.75		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	238	0		376	0		46	1566	699	77	1628	726
V/C Ratio(X)	0.86	0.00		0.92	0.00		0.69	0.60	0.16	0.78	0.78	0.04
Avail Cap(c_a), veh/h	402	0		421	0		73	1566	699	125	1628	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	0.0	0.0	52.3	0.0	0.0	65.2	28.7	22.7	63.9	30.8	20.2
Incr Delay (d2), s/veh	9.0	0.0	0.0	24.0	0.0	0.0	17.0	1.7	0.5	15.4	3.8	0.1
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	7.4	0.0	0.0	14.0	0.0	0.0	1.3	12.0	2.3	2.4	18.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	0.0	0.0	76.3	0.0	0.0	82.3	30.4	23.2	79.3	34.6	20.3
LnGrp LOS	E	A		E	A		F	C	C	E	C	C
Approach Vol, veh/h		204	A		346	A		1085			1358	
Approach Delay, s/veh		66.5			76.3			31.2			36.2	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.3	66.0		23.0	10.0	68.3		33.7				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	9.5	40.5		29.5	5.5	44.5		31.5				
Max Q Clear Time (g_c+I1), s	6.5	29.2		16.7	4.4	42.6		27.4				
Green Ext Time (p_c), s	0.0	5.3		0.9	0.0	1.5		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		41.1
HCM 6th LOS		D

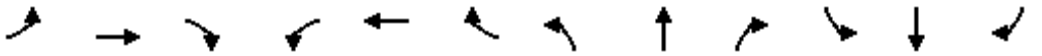
Notes

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

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	65	50	80	40	165	1585	205	25	885	35
Future Volume (vph)	65	50	80	40	165	1585	205	25	885	35
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	27.5		26.5		33.0	84.0	84.0	12.0	63.0	63.0
Total Split (%)	18.3%		17.7%		22.0%	56.0%	56.0%	8.0%	42.0%	42.0%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	16.4	150.0	26.6	150.0	21.6	82.3	82.3	5.5	61.4	61.4
Actuated g/C Ratio	0.11	1.00	0.18	1.00	0.14	0.55	0.55	0.04	0.41	0.41
v/c Ratio	0.69	0.04	0.85	0.04	0.79	1.00	0.25	0.42	0.67	0.05
Control Delay	81.4	0.0	83.1	0.1	83.3	53.0	2.7	90.4	39.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.4	0.0	83.1	0.1	83.3	53.0	2.7	90.4	39.6	0.1
LOS	F	A	F	A	F	D	A	F	D	A
Approach Delay	56.6		67.5			50.3			39.5	
Approach LOS	E		E			D			D	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 49.3	Intersection LOS: D
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	65	50	95	80	40	165	1585	205	25	885	35
Future Volume (veh/h)	50	65	50	95	80	40	165	1585	205	25	885	35
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	60	77	0	148	125	0	201	1933	250	27	973	38
Peak Hour Factor	0.84	0.84	0.84	0.64	0.64	0.64	0.82	0.82	0.82	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	92		138	117		225	2090	932	40	1720	767
Arrive On Green	0.09	0.09	0.00	0.14	0.14	0.00	0.13	0.59	0.59	0.02	0.48	0.48
Sat Flow, veh/h	802	1029	1585	987	834	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	137	0	0	273	0	0	201	1933	250	27	973	38
Grp Sat Flow(s),veh/h/ln	1830	0	1585	1821	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.1	0.0	0.0	21.0	0.0	0.0	16.7	73.7	11.6	2.3	29.2	1.9
Cycle Q Clear(g_c), s	11.1	0.0	0.0	21.0	0.0	0.0	16.7	73.7	11.6	2.3	29.2	1.9
Prop In Lane	0.44		1.00	0.54		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	0		255	0		225	2090	932	40	1720	767
V/C Ratio(X)	0.84	0.00		1.07	0.00		0.89	0.92	0.27	0.67	0.57	0.05
Avail Cap(c_a), veh/h	268	0		255	0		315	2090	932	65	1720	767
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.2	0.0	0.0	64.5	0.0	0.0	64.5	27.9	15.1	72.8	27.5	20.5
Incr Delay (d2), s/veh	11.4	0.0	0.0	76.4	0.0	0.0	20.1	8.5	0.7	17.8	1.4	0.1
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	5.7	0.0	0.0	15.2	0.0	0.0	8.9	32.7	4.4	1.2	12.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.6	0.0	0.0	140.9	0.0	0.0	84.6	36.4	15.8	90.6	28.8	20.6
LnGrp LOS	E	A		F	A		F	D	B	F	C	C
Approach Vol, veh/h		137	A		273	A		2384			1038	
Approach Delay, s/veh		78.6			140.9			38.3			30.2	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	94.7		18.9	25.5	79.1		26.5				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	5.5	77.5		22.0	26.5	56.5		21.0				
Max Q Clear Time (g_c+I1), s	4.3	75.7		13.1	18.7	31.2		23.0				
Green Ext Time (p_c), s	0.0	1.7		0.4	0.3	7.9		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

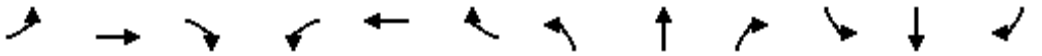
Notes

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

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	150	215	95	30	120	840	105	50	1010	115
Future Volume (vph)	150	215	95	30	120	840	105	50	1010	115
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	32.0		31.0		19.0	56.0	56.0	16.0	53.0	53.0
Total Split (%)	23.7%		23.0%		14.1%	41.5%	41.5%	11.9%	39.3%	39.3%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	26.5	135.0	25.5	135.0	12.1	52.9	52.9	8.6	46.9	46.9
Actuated g/C Ratio	0.20	1.00	0.19	1.00	0.09	0.39	0.39	0.06	0.35	0.35
v/c Ratio	1.03	0.16	1.09	0.02	0.82	0.64	0.16	0.54	0.98	0.21
Control Delay	107.7	0.2	125.1	0.0	95.4	37.0	5.0	78.4	64.4	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.7	0.2	125.1	0.0	95.4	37.0	5.0	78.4	64.4	5.6
LOS	F	A	F	A	F	D	A	E	E	A
Approach Delay	64.1		114.5			40.4			59.2	
Approach LOS	E		F			D			E	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 60.3	Intersection LOS: E
Intersection Capacity Utilization 89.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	150	215	230	95	30	120	840	105	50	1010	115
Future Volume (veh/h)	165	150	215	230	95	30	120	840	105	50	1010	115
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	192	174	0	261	108	0	128	894	112	60	1202	137
Peak Hour Factor	0.86	0.86	0.86	0.88	0.88	0.88	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	170		241	100		152	1399	624	77	1251	558
Arrive On Green	0.20	0.20	0.00	0.19	0.19	0.00	0.09	0.39	0.39	0.04	0.35	0.35
Sat Flow, veh/h	956	866	1585	1278	529	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	366	0	0	369	0	0	128	894	112	60	1202	137
Grp Sat Flow(s),veh/h/ln	1823	0	1585	1806	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	26.5	0.0	0.0	25.5	0.0	0.0	9.6	27.5	6.2	4.5	44.7	8.3
Cycle Q Clear(g_c), s	26.5	0.0	0.0	25.5	0.0	0.0	9.6	27.5	6.2	4.5	44.7	8.3
Prop In Lane	0.52		1.00	0.71		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	358	0		341	0		152	1399	624	77	1251	558
V/C Ratio(X)	1.02	0.00		1.08	0.00		0.84	0.64	0.18	0.78	0.96	0.25
Avail Cap(c_a), veh/h	358	0		341	0		165	1399	624	125	1251	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	0.0	54.8	0.0	0.0	60.9	33.1	26.7	63.9	42.8	31.0
Incr Delay (d2), s/veh	53.6	0.0	0.0	72.2	0.0	0.0	29.4	2.2	0.6	15.4	17.7	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	17.4	0.0	0.0	18.4	0.0	0.0	5.6	12.3	2.5	2.4	22.5	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	107.8	0.0	0.0	126.9	0.0	0.0	90.2	35.4	27.3	79.3	60.5	32.1
LnGrp LOS	F	A		F	A		F	D	C	E	E	C
Approach Vol, veh/h		366	A		369	A		1134			1399	
Approach Delay, s/veh		107.8			126.9			40.8			58.6	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.3	59.7		32.0	18.0	54.0		31.0				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	9.5	49.5		26.5	12.5	46.5		25.5				
Max Q Clear Time (g_c+I1), s	6.5	29.5		28.5	11.6	46.7		27.5				
Green Ext Time (p_c), s	0.0	6.8		0.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		65.6	
HCM 6th LOS		E	

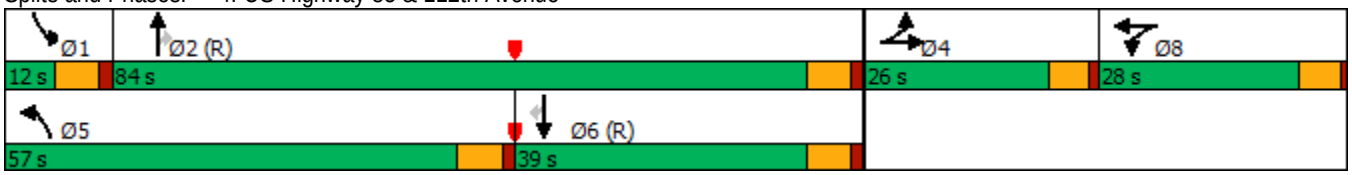
Notes

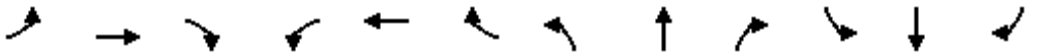
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	95	165	120	40	335	1525	205	25	845	145
Future Volume (vph)	95	165	120	40	335	1525	205	25	845	145
Turn Type	NA	Free	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		Free		Free			2			6
Detector Phase	4		8		5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	26.0		28.0		57.0	84.0	84.0	12.0	39.0	39.0
Total Split (%)	17.3%		18.7%		38.0%	56.0%	56.0%	8.0%	26.0%	26.0%
Yellow Time (s)	4.5		4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0		1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None		None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.5	150.0	22.5	150.0	40.2	82.3	82.3	5.5	42.8	42.8
Actuated g/C Ratio	0.14	1.00	0.15	1.00	0.27	0.55	0.55	0.04	0.29	0.29
v/c Ratio	1.23	0.12	1.23	0.04	0.86	0.96	0.25	0.42	0.92	0.28
Control Delay	185.9	0.2	182.5	0.1	70.0	45.4	2.7	90.4	66.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	185.9	0.2	182.5	0.1	70.0	45.4	2.7	90.4	66.2	7.8
LOS	F	A	F	A	E	D	A	F	E	A
Approach Delay	112.9		153.7			45.2			58.5	
Approach LOS	F		F			D			E	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.23	
Intersection Signal Delay: 65.5	Intersection LOS: E
Intersection Capacity Utilization 82.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	95	165	95	120	40	335	1525	205	25	845	145
Future Volume (veh/h)	160	95	165	95	120	40	335	1525	205	25	845	145
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	190	113	0	148	188	0	409	1860	250	27	929	159
Peak Hour Factor	0.84	0.84	0.84	0.64	0.64	0.64	0.82	0.82	0.82	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	92		121	154		438	1886	841	40	1093	488
Arrive On Green	0.14	0.14	0.00	0.15	0.15	0.00	0.25	0.53	0.53	0.02	0.31	0.31
Sat Flow, veh/h	1137	676	1585	806	1024	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	303	0	0	336	0	0	409	1860	250	27	929	159
Grp Sat Flow(s),veh/h/ln	1814	0	1585	1830	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	20.5	0.0	0.0	22.5	0.0	0.0	33.7	77.3	13.2	2.3	36.8	11.6
Cycle Q Clear(g_c), s	20.5	0.0	0.0	22.5	0.0	0.0	33.7	77.3	13.2	2.3	36.8	11.6
Prop In Lane	0.63		1.00	0.44		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	0		275	0		438	1886	841	40	1093	488
V/C Ratio(X)	1.22	0.00		1.22	0.00		0.93	0.99	0.30	0.67	0.85	0.33
Avail Cap(c_a), veh/h	248	0		275	0		600	1886	841	65	1093	488
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.8	0.0	0.0	63.8	0.0	0.0	55.4	34.6	19.6	72.8	48.7	40.0
Incr Delay (d2), s/veh	130.7	0.0	0.0	128.8	0.0	0.0	18.2	17.7	0.9	17.8	8.3	1.8
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	18.5	0.0	0.0	20.3	0.0	0.0	17.4	37.1	5.2	1.2	17.6	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	195.5	0.0	0.0	192.6	0.0	0.0	73.6	52.3	20.5	90.6	57.0	41.7
LnGrp LOS	F	A		F	A		E	D	C	F	E	D
Approach Vol, veh/h		303	A		336	A		2519			1115	
Approach Delay, s/veh		195.5			192.6			52.6			55.6	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	86.1		26.0	43.4	52.6		28.0				
Change Period (Y+Rc), s	6.5	6.5		5.5	6.5	6.5		5.5				
Max Green Setting (Gmax), s	5.5	77.5		20.5	50.5	32.5		22.5				
Max Q Clear Time (g_c+I1), s	4.3	79.3		22.5	35.7	38.8		24.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	1.1	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	74.5
HCM 6th LOS	E

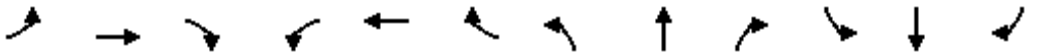
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	150	215	230	95	30	120	840	105	50	1010	115
Future Volume (vph)	165	150	215	230	95	30	120	840	105	50	1010	115
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	24.0	25.1		23.0	24.1		34.0	70.9	70.9	16.0	52.9	52.9
Total Split (%)	17.8%	18.6%		17.0%	17.9%		25.2%	52.5%	52.5%	11.9%	39.2%	39.2%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	32.8	16.8	135.0	35.1	17.9	135.0	15.1	70.9	70.9	8.7	62.0	62.0
Actuated g/C Ratio	0.24	0.12	1.00	0.26	0.13	1.00	0.11	0.53	0.53	0.06	0.46	0.46
v/c Ratio	0.53	0.75	0.16	0.84	0.44	0.02	0.65	0.48	0.13	0.53	0.74	0.17
Control Delay	39.2	73.0	0.2	63.9	59.8	0.0	72.1	22.9	3.3	77.9	34.7	2.1
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	39.2	73.0	0.2	63.9	59.8	0.0	72.1	22.9	3.3	77.9	34.7	2.1
LOS	D	E	A	E	E	A	E	C	A	E	C	A
Approach Delay		32.9			57.4			26.5			33.4	
Approach LOS		C			E			C			C	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 33.8	Intersection LOS: C
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	150	215	230	95	30	120	840	105	50	1010	115
Future Volume (veh/h)	165	150	215	230	95	30	120	840	105	50	1010	115
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	192	174	0	261	108	0	128	894	112	60	1202	137
Peak Hour Factor	0.86	0.86	0.86	0.88	0.88	0.88	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	206		305	241		155	1917	855	77	1762	786
Arrive On Green	0.04	0.04	0.00	0.13	0.13	0.00	0.09	0.54	0.54	0.04	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	192	174	0	261	108	0	128	894	112	60	1202	137
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.7	12.5	0.0	17.5	7.2	0.0	9.5	20.9	4.7	4.5	34.8	6.4
Cycle Q Clear(g_c), s	12.7	12.5	0.0	17.5	7.2	0.0	9.5	20.9	4.7	4.5	34.8	6.4
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	347	206		305	241		155	1917	855	77	1762	786
V/C Ratio(X)	0.55	0.85		0.85	0.45		0.83	0.47	0.13	0.78	0.68	0.17
Avail Cap(c_a), veh/h	395	272		305	258		363	1917	855	125	1762	786
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	63.9	0.0	46.5	54.3	0.0	60.6	19.1	15.4	63.9	25.9	18.8
Incr Delay (d2), s/veh	1.4	16.9	0.0	20.4	1.3	0.0	10.6	0.8	0.3	15.4	2.2	0.5
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	6.2	7.3	0.0	9.6	3.5	0.0	4.8	8.8	1.8	2.4	15.1	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	80.8	0.0	66.9	55.6	0.0	71.3	20.0	15.7	79.3	28.1	19.3
LnGrp LOS	D	F		E	E		E	B	B	E	C	B
Approach Vol, veh/h		366	A		369	A		1134			1399	
Approach Delay, s/veh		65.3			63.6			25.3			29.4	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	79.3	23.0	20.3	18.2	73.4	20.4	22.9
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	64.4	17.5	19.6	27.5	46.4	18.5	18.6
Max Q Clear Time (g_c+I1), s	6.5	22.9	19.5	14.5	11.5	36.8	14.7	9.2
Green Ext Time (p_c), s	0.0	8.3	0.0	0.4	0.3	5.9	0.2	0.3

Intersection Summary	
HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

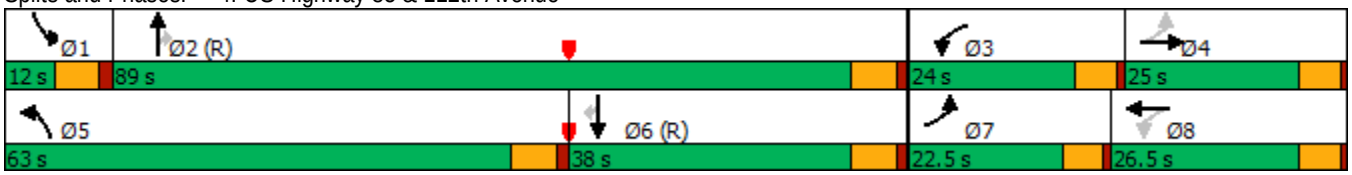
Notes

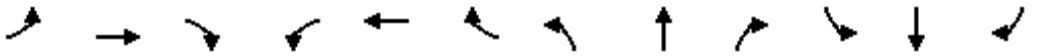
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	95	165	95	120	40	335	1525	205	25	845	145
Future Volume (vph)	160	95	165	95	120	40	335	1525	205	25	845	145
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	22.5	25.0		24.0	26.5		63.0	89.0	89.0	12.0	38.0	38.0
Total Split (%)	15.0%	16.7%		16.0%	17.7%		42.0%	59.3%	59.3%	8.0%	25.3%	25.3%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	36.3	20.1	150.0	33.8	18.8	150.0	40.8	90.2	90.2	5.8	50.2	50.2
Actuated g/C Ratio	0.24	0.13	1.00	0.23	0.13	1.00	0.27	0.60	0.60	0.04	0.33	0.33
v/c Ratio	0.72	0.45	0.12	0.46	0.81	0.04	0.85	0.87	0.24	0.40	0.79	0.25
Control Delay	57.5	61.4	0.2	48.0	88.4	0.1	68.0	32.7	2.3	87.8	51.9	7.0
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	57.5	61.4	0.2	48.0	88.4	0.1	68.0	32.7	2.3	87.8	51.9	7.0
LOS	E	E	A	D	F	A	E	C	A	F	D	A
Approach Delay		35.9			59.4			35.4			46.4	
Approach LOS		D			E			D			D	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 40.3	Intersection LOS: D
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	95	165	95	120	40	335	1525	205	25	845	145
Future Volume (veh/h)	160	95	165	95	120	40	335	1525	205	25	845	145
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	190	113	0	148	188	0	409	1860	250	27	929	159
Peak Hour Factor	0.84	0.84	0.84	0.64	0.64	0.64	0.82	0.82	0.82	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	251		303	214		439	2119	945	40	1324	590
Arrive On Green	0.11	0.13	0.00	0.09	0.11	0.00	0.25	0.60	0.60	0.02	0.37	0.37
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	190	113	0	148	188	0	409	1860	250	27	929	159
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.9	8.3	0.0	10.9	14.8	0.0	33.7	66.5	11.3	2.3	33.3	10.5
Cycle Q Clear(g_c), s	13.9	8.3	0.0	10.9	14.8	0.0	33.7	66.5	11.3	2.3	33.3	10.5
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	257	251		303	214		439	2119	945	40	1324	590
V/C Ratio(X)	0.74	0.45		0.49	0.88		0.93	0.88	0.26	0.67	0.70	0.27
Avail Cap(c_a), veh/h	268	251		368	262		671	2119	945	65	1324	590
HCM Platoon Ratio	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	59.8	0.0	52.3	65.4	0.0	55.3	25.6	14.5	72.8	40.0	32.8
Incr Delay (d2), s/veh	10.0	1.3	0.0	1.2	23.6	0.0	14.8	5.5	0.7	17.8	3.1	1.1
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	7.0	4.1	0.0	5.0	8.5	0.0	16.9	28.8	4.3	1.2	15.2	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.8	61.1	0.0	53.5	88.9	0.0	70.1	31.2	15.2	90.6	43.1	33.9
LnGrp LOS	E	E		D	F		E	C	B	F	D	C
Approach Vol, veh/h		303	A		336	A		2519			1115	
Approach Delay, s/veh		61.5			73.3			35.9			43.0	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	95.9	18.5	25.7	43.4	62.4	21.5	22.7
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	5.5	82.5	18.5	19.5	56.5	31.5	17.0	21.0
Max Q Clear Time (g_c+I1), s	4.3	68.5	12.9	10.3	35.7	35.3	15.9	16.8
Green Ext Time (p_c), s	0.0	11.3	0.2	0.3	1.2	0.0	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	42.5
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	150	95	305	100	35	40	1175	140	65	1415	35
Future Volume (vph)	80	150	95	305	100	35	40	1175	140	65	1415	35
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	22.5	22.6		28.7	28.8		12.0	68.7	68.7	15.0	71.7	71.7
Total Split (%)	16.7%	16.7%		21.3%	21.3%		8.9%	50.9%	50.9%	11.1%	53.1%	53.1%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	25.6	15.5	135.0	43.5	27.9	135.0	6.0	67.3	67.3	8.3	69.4	69.4
Actuated g/C Ratio	0.19	0.11	1.00	0.32	0.21	1.00	0.04	0.50	0.50	0.06	0.51	0.51
v/c Ratio	0.31	0.77	0.07	0.88	0.28	0.02	0.55	0.71	0.17	0.65	0.85	0.04
Control Delay	32.5	78.9	0.1	62.8	47.3	0.0	89.0	30.5	2.8	88.6	35.0	0.1
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	32.5	78.9	0.1	62.8	47.3	0.0	89.0	30.5	2.8	88.6	35.0	0.1
LOS	C	E	A	E	D	A	F	C	A	F	C	A
Approach Delay		44.5			54.3			29.4			36.5	
Approach LOS		D			D			C			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 36.8	Intersection LOS: D
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	150	95	305	100	35	40	1175	140	65	1415	35
Future Volume (veh/h)	80	150	95	305	100	35	40	1175	140	65	1415	35
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	87	163	0	332	109	0	43	1250	149	71	1538	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	193		380	404		55	1765	787	90	1834	818
Arrive On Green	0.02	0.03	0.00	0.17	0.22	0.00	0.03	0.50	0.50	0.05	0.52	0.52
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	87	163	0	332	109	0	43	1250	149	71	1538	38
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	5.9	11.7	0.0	22.0	6.5	0.0	3.2	36.9	7.1	5.3	49.8	1.6
Cycle Q Clear(g_c), s	5.9	11.7	0.0	22.0	6.5	0.0	3.2	36.9	7.1	5.3	49.8	1.6
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	291	193		380	404		55	1765	787	90	1834	818
V/C Ratio(X)	0.30	0.84		0.87	0.27		0.78	0.71	0.19	0.79	0.84	0.05
Avail Cap(c_a), veh/h	410	237		380	404		73	1765	787	112	1834	818
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)	0.98	0.98	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	64.1	0.0	42.7	44.0	0.0	64.9	26.4	18.9	63.4	27.9	16.2
Incr Delay (d2), s/veh	0.6	19.8	0.0	19.7	0.4	0.0	31.3	2.4	0.5	25.1	4.8	0.1
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	2.8	7.0	0.0	11.7	3.1	0.0	2.0	16.0	2.7	3.0	21.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	83.9	0.0	62.4	44.4	0.0	96.2	28.8	19.4	88.5	32.6	16.3
LnGrp LOS	D	F		E	D		F	C	B	F	C	B
Approach Vol, veh/h		250	A		441	A		1442			1647	
Approach Delay, s/veh		73.0			57.9			29.9			34.7	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	73.5	28.7	19.4	10.7	76.2	13.5	34.7
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	8.5	62.2	23.2	17.1	5.5	65.2	17.0	23.3
Max Q Clear Time (g_c+I1), s	7.3	38.9	24.0	13.7	5.2	51.8	7.9	8.5
Green Ext Time (p_c), s	0.0	10.9	0.0	0.2	0.0	9.1	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	38.1
HCM 6th LOS	D

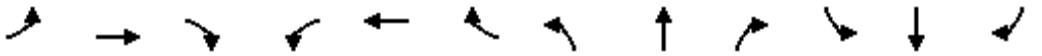
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	85	65	125	105	50	215	2105	270	35	1175	45
Future Volume (vph)	65	85	65	125	105	50	215	2105	270	35	1175	45
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		31.0	93.0	93.0	12.0	74.0	74.0
Total Split (%)	15.0%	15.0%		15.0%	15.0%		20.7%	62.0%	62.0%	8.0%	49.3%	49.3%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	22.9	12.6	150.0	31.3	16.8	150.0	23.3	94.2	94.2	7.1	75.6	75.6
Actuated g/C Ratio	0.15	0.08	1.00	0.21	0.11	1.00	0.16	0.63	0.63	0.05	0.50	0.50
v/c Ratio	0.31	0.59	0.04	0.52	0.55	0.03	0.84	1.03	0.27	0.46	0.72	0.06
Control Delay	44.8	76.3	0.0	55.6	72.3	0.0	86.7	55.6	2.1	86.2	33.3	0.1
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	44.8	76.3	0.0	55.6	72.3	0.0	86.7	55.6	2.1	86.2	33.3	0.1
LOS	D	E	A	E	E	A	F	E	A	F	C	A
Approach Delay		43.6			52.0			52.6			33.6	
Approach LOS		D			D			D			C	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 46.6	Intersection LOS: D
Intersection Capacity Utilization 91.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	85	65	125	105	50	215	2105	270	35	1175	45
Future Volume (veh/h)	65	85	65	125	105	50	215	2105	270	35	1175	45
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	71	92	0	136	114	0	231	2288	293	38	1277	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	119		216	180		254	2364	1054	49	1955	872
Arrive On Green	0.02	0.02	0.00	0.08	0.10	0.00	0.14	0.67	0.67	0.03	0.55	0.55
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	71	92	0	136	114	0	231	2288	293	38	1277	49
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	5.6	7.3	0.0	10.5	8.8	0.0	19.2	90.8	11.4	3.2	37.9	2.2
Cycle Q Clear(g_c), s	5.6	7.3	0.0	10.5	8.8	0.0	19.2	90.8	11.4	3.2	37.9	2.2
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	187	119		216	180		254	2364	1054	49	1955	872
V/C Ratio(X)	0.38	0.77		0.63	0.63		0.91	0.97	0.28	0.78	0.65	0.06
Avail Cap(c_a), veh/h	298	212		269	212		291	2364	1054	65	1955	872
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)	0.99	0.99	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	72.4	0.0	58.0	65.2	0.0	63.4	23.6	10.3	72.5	23.7	15.7
Incr Delay (d2), s/veh	1.3	10.1	0.0	3.1	4.6	0.0	28.5	12.4	0.7	33.2	1.7	0.1
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	4.0	0.0	4.9	4.5	0.0	10.7	39.7	4.2	1.9	16.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.8	82.4	0.0	61.1	69.8	0.0	91.9	36.0	11.0	105.7	25.4	15.8
LnGrp LOS	E	F		E	E		F	D	B	F	C	B
Approach Vol, veh/h		163	A		250	A		2812			1364	
Approach Delay, s/veh		74.7			65.1			38.0			27.3	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	106.3	18.1	15.0	27.9	89.0	13.1	20.0
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	5.5	86.5	17.0	17.0	24.5	67.5	17.0	17.0
Max Q Clear Time (g_c+I1), s	5.2	92.8	12.5	9.3	21.2	39.9	7.6	10.8
Green Ext Time (p_c), s	0.0	0.0	0.1	0.2	0.2	11.7	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

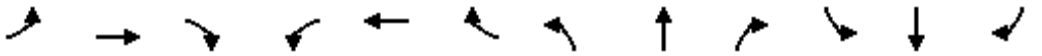
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	185	240	305	120	35	130	1130	140	65	1360	125
Future Volume (vph)	185	185	240	305	120	35	130	1130	140	65	1360	125
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	23.0	26.0		23.0	26.0		21.0	68.0	68.0	18.0	65.0	65.0
Total Split (%)	17.0%	19.3%		17.0%	19.3%		15.6%	50.4%	50.4%	13.3%	48.1%	48.1%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	34.1	18.3	135.0	37.4	20.0	135.0	13.7	68.0	68.0	9.9	61.5	61.5
Actuated g/C Ratio	0.25	0.14	1.00	0.28	0.15	1.00	0.10	0.50	0.50	0.07	0.46	0.46
v/c Ratio	0.56	0.80	0.16	1.08	0.47	0.02	0.77	0.67	0.17	0.55	0.92	0.17
Control Delay	42.9	79.0	0.2	113.0	58.8	0.0	85.9	29.2	3.6	76.2	45.0	4.1
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	42.9	79.0	0.2	113.0	58.8	0.0	85.9	29.2	3.6	76.2	45.0	4.1
LOS	D	E	A	F	E	A	F	C	A	E	D	A
Approach Delay		37.1			90.3			31.9			43.0	
Approach LOS		D			F			C			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 43.7	Intersection LOS: D
Intersection Capacity Utilization 91.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	185	240	305	120	35	130	1130	140	65	1360	125
Future Volume (veh/h)	185	185	240	305	120	35	130	1130	140	65	1360	125
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	201	201	0	332	130	0	138	1202	149	71	1478	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	230		305	262		162	1843	822	90	1700	758
Arrive On Green	0.11	0.12	0.00	0.13	0.14	0.00	0.09	0.52	0.52	0.05	0.48	0.48
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	201	201	0	332	130	0	138	1202	149	71	1478	136
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.1	14.3	0.0	17.5	8.7	0.0	10.3	33.2	6.7	5.3	50.1	6.6
Cycle Q Clear(g_c), s	13.1	14.3	0.0	17.5	8.7	0.0	10.3	33.2	6.7	5.3	50.1	6.6
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	350	230		305	262		162	1843	822	90	1700	758
V/C Ratio(X)	0.57	0.87		1.09	0.50		0.85	0.65	0.18	0.79	0.87	0.18
Avail Cap(c_a), veh/h	380	284		305	284		191	1843	822	152	1700	758
HCM Platoon Ratio	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	58.1	0.0	48.2	53.7	0.0	60.4	23.6	17.3	63.4	31.5	20.1
Incr Delay (d2), s/veh	1.8	21.2	0.0	77.2	1.5	0.0	25.7	1.8	0.5	13.8	6.4	0.5
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	6.0	8.1	0.0	8.4	4.2	0.0	5.8	14.2	2.6	2.8	22.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	79.3	0.0	125.4	55.1	0.0	86.1	25.4	17.7	77.2	37.8	20.6
LnGrp LOS	D	E		F	E		F	C	B	E	D	C
Approach Vol, veh/h		402	A		462	A		1489			1685	
Approach Delay, s/veh		62.9			105.7			30.3			38.1	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	76.5	23.0	22.1	18.8	71.1	20.7	24.4
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	11.5	61.5	17.5	20.5	14.5	58.5	17.5	20.5
Max Q Clear Time (g_c+I1), s	7.3	35.2	19.5	16.3	12.3	52.1	15.1	10.7
Green Ext Time (p_c), s	0.0	11.0	0.0	0.4	0.1	4.9	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	45.4
HCM 6th LOS	D

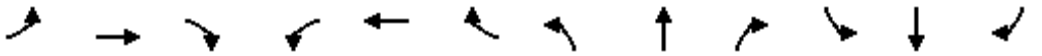
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	115	180	125	145	50	385	2045	270	35	1135	155
Future Volume (vph)	175	115	180	125	145	50	385	2045	270	35	1135	155
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		44.0	93.0	93.0	12.0	61.0	61.0
Total Split (%)	15.0%	15.0%		15.0%	15.0%		29.3%	62.0%	62.0%	8.0%	40.7%	40.7%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	34.1	17.8	150.0	30.0	15.8	150.0	37.1	90.6	90.6	5.8	56.9	56.9
Actuated g/C Ratio	0.23	0.12	1.00	0.20	0.11	1.00	0.25	0.60	0.60	0.04	0.38	0.38
v/c Ratio	0.73	0.57	0.12	0.49	0.81	0.03	0.96	1.04	0.27	0.56	0.92	0.24
Control Delay	64.3	73.2	0.2	51.5	93.9	0.0	88.5	60.8	2.1	100.4	56.6	5.1
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	64.3	73.2	0.2	51.5	93.9	0.0	88.5	60.8	2.1	100.4	56.6	5.1
LOS	E	E	A	D	F	A	F	E	A	F	E	A
Approach Delay		41.9			62.8			58.9			51.8	
Approach LOS		D			E			E			D	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 55.5	Intersection LOS: E
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	115	180	125	145	50	385	2045	270	35	1135	155
Future Volume (veh/h)	175	115	180	125	145	50	385	2045	270	35	1135	155
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	190	125	0	136	158	0	418	2223	293	38	1234	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	232		271	183		437	2156	962	49	1381	616
Arrive On Green	0.11	0.12	0.00	0.08	0.10	0.00	0.25	0.61	0.61	0.03	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	190	125	0	136	158	0	418	2223	293	38	1234	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	14.2	9.4	0.0	10.2	12.5	0.0	34.7	91.0	13.4	3.2	48.8	10.9
Cycle Q Clear(g_c), s	14.2	9.4	0.0	10.2	12.5	0.0	34.7	91.0	13.4	3.2	48.8	10.9
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	258	232		271	183		437	2156	962	49	1381	616
V/C Ratio(X)	0.74	0.54		0.50	0.86		0.96	1.03	0.30	0.78	0.89	0.27
Avail Cap(c_a), veh/h	268	232		327	212		445	2156	962	65	1381	616
HCM Platoon Ratio	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	61.7	0.0	54.7	66.7	0.0	55.8	29.5	14.2	72.5	42.9	31.4
Incr Delay (d2), s/veh	9.8	2.5	0.0	1.4	26.4	0.0	31.2	27.9	0.8	33.2	9.2	1.1
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	7.1	4.7	0.0	4.7	7.3	0.0	19.4	45.3	5.1	1.9	23.1	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	64.2	0.0	56.2	93.1	0.0	87.0	57.4	15.0	105.7	52.1	32.4
LnGrp LOS	E	E		E	F		F	F	B	F	D	C
Approach Vol, veh/h		315	A		294	A		2934			1440	
Approach Delay, s/veh		63.5			76.0			57.4			51.2	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	97.5	17.8	24.1	43.3	64.8	21.7	20.2
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	5.5	86.5	17.0	17.0	37.5	54.5	17.0	17.0
Max Q Clear Time (g_c+I1), s	5.2	93.0	12.2	11.4	36.7	50.8	16.2	14.5
Green Ext Time (p_c), s	0.0	0.0	0.1	0.2	0.1	2.7	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	57.1
HCM 6th LOS	E

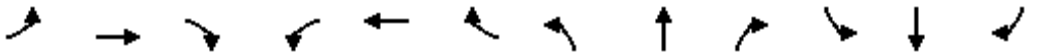
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	185	240	305	120	35	130	1130	140	65	1360	125
Future Volume (vph)	185	185	240	305	120	35	130	1130	140	65	1360	125
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	24.3	24.0		28.0	27.7		15.0	68.0	68.0	15.0	68.0	68.0
Total Split (%)	18.0%	17.8%		20.7%	20.5%		11.1%	50.4%	50.4%	11.1%	50.4%	50.4%
Yellow Time (s)	4.5	4.5		4.5	4.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	33.5	17.4	135.0	44.3	23.5	135.0	8.5	65.8	65.8	8.3	62.9	62.9
Actuated g/C Ratio	0.25	0.13	1.00	0.33	0.17	1.00	0.06	0.49	0.49	0.06	0.47	0.47
v/c Ratio	0.54	0.84	0.16	0.92	0.40	0.02	0.64	0.70	0.18	0.65	0.90	0.17
Control Delay	38.2	84.4	0.2	69.9	54.1	0.0	75.6	30.8	3.7	88.6	41.9	3.8
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	38.2	84.4	0.2	69.9	54.1	0.0	75.6	30.8	3.7	88.6	41.9	3.8
LOS	D	F	A	E	D	A	E	C	A	F	D	A
Approach Delay		37.3			60.5			32.3			40.8	
Approach LOS		D			E			C			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 39.6	Intersection LOS: D
Intersection Capacity Utilization 88.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	185	240	305	120	35	130	1130	140	65	1360	125
Future Volume (veh/h)	185	185	240	305	120	35	130	1130	140	65	1360	125
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	201	201	0	332	130	0	138	1202	149	71	1478	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	230		369	330		187	1712	764	90	1699	758
Arrive On Green	0.04	0.04	0.00	0.17	0.18	0.00	0.05	0.48	0.48	0.05	0.48	0.48
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	201	201	0	332	130	0	138	1202	149	71	1478	136
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.1	14.4	0.0	21.5	8.3	0.0	5.3	35.8	7.3	5.3	50.2	6.6
Cycle Q Clear(g_c), s	13.1	14.4	0.0	21.5	8.3	0.0	5.3	35.8	7.3	5.3	50.2	6.6
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	400	230		369	330		187	1712	764	90	1699	758
V/C Ratio(X)	0.50	0.87		0.90	0.39		0.74	0.70	0.20	0.79	0.87	0.18
Avail Cap(c_a), veh/h	446	256		369	330		218	1712	764	112	1699	758
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	63.7	0.0	41.3	49.2	0.0	62.9	27.4	20.0	63.4	31.5	20.1
Incr Delay (d2), s/veh	1.0	24.7	0.0	23.9	0.8	0.0	10.6	2.4	0.6	25.1	6.4	0.5
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	6.4	8.9	0.0	11.9	4.0	0.0	2.6	15.6	2.8	3.0	22.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	88.4	0.0	65.2	50.0	0.0	73.5	29.8	20.6	88.5	37.8	20.6
LnGrp LOS	D	F		E	D		E	C	C	F	D	C
Approach Vol, veh/h		402	A		462	A		1489			1685	
Approach Delay, s/veh		68.8			60.9			32.9			38.6	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	71.5	28.0	22.1	13.8	71.1	20.8	29.3
Change Period (Y+Rc), s	6.5	6.5	5.5	5.5	6.5	6.5	5.5	5.5
Max Green Setting (Gmax), s	8.5	61.5	22.5	18.5	8.5	61.5	18.8	22.2
Max Q Clear Time (g_c+I1), s	7.3	37.8	23.5	16.4	7.3	52.2	15.1	10.3
Green Ext Time (p_c), s	0.0	10.5	0.0	0.2	0.0	6.8	0.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

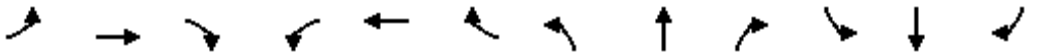
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	115	180	125	145	50	385	2045	270	35	1135	155
Future Volume (vph)	175	115	180	125	145	50	385	2045	270	35	1135	155
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		12.0	22.5	22.5	12.0	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		52.0	89.0	89.0	16.0	53.0	53.0
Total Split (%)	15.0%	15.0%		15.0%	15.0%		34.7%	59.3%	59.3%	10.7%	35.3%	35.3%
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	34.8	18.3	150.0	30.4	16.1	150.0	23.8	88.7	88.7	8.1	70.6	70.6
Actuated g/C Ratio	0.23	0.12	1.00	0.20	0.11	1.00	0.16	0.59	0.59	0.05	0.47	0.47
v/c Ratio	0.73	0.55	0.12	0.48	0.79	0.03	0.77	1.06	0.28	0.40	0.74	0.20
Control Delay	63.9	68.3	0.2	51.2	91.8	0.0	70.1	69.4	2.3	80.5	36.9	4.1
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	63.9	68.3	0.2	51.2	91.8	0.0	70.1	69.4	2.3	80.5	36.9	4.1
LOS	E	E	A	D	F	A	E	E	A	F	D	A
Approach Delay		40.5			61.7			62.8			34.3	
Approach LOS		D			E			E			C	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 52.7	Intersection LOS: D
Intersection Capacity Utilization 97.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: US Highway 85 & 112th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	115	180	125	145	50	385	2045	270	35	1135	155
Future Volume (veh/h)	175	115	180	125	145	50	385	2045	270	35	1135	155
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	190	125	0	136	158	0	418	2223	293	38	1234	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	231		275	183		489	2180	972	49	1775	792
Arrive On Green	0.18	0.21	0.00	0.08	0.10	0.00	0.14	0.61	0.61	0.03	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	190	125	0	136	158	0	418	2223	293	38	1234	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	14.1	9.0	0.0	10.2	12.5	0.0	17.7	92.0	13.2	3.2	39.9	8.9
Cycle Q Clear(g_c), s	14.1	9.0	0.0	10.2	12.5	0.0	17.7	92.0	13.2	3.2	39.9	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	258	231		275	183		489	2180	972	49	1775	792
V/C Ratio(X)	0.74	0.54		0.49	0.86		0.85	1.02	0.30	0.78	0.70	0.21
Avail Cap(c_a), veh/h	274	231		337	218		1048	2180	972	113	1775	792
HCM Platoon Ratio	1.67	1.67	1.67	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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	55.7	0.0	54.7	66.7	0.0	62.9	29.0	13.8	72.5	28.8	21.0
Incr Delay (d2), s/veh	9.4	2.5	0.0	1.4	25.0	0.0	4.4	24.4	0.8	22.4	2.3	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	6.5	4.2	0.0	4.7	7.3	0.0	8.1	44.7	5.0	1.8	17.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.0	58.2	0.0	56.1	91.7	0.0	67.3	53.4	14.5	94.9	31.1	21.6
LnGrp LOS	E	E		E	F		E	F	B	F	C	C
Approach Vol, veh/h		315	A		294	A		2934			1440	
Approach Delay, s/veh		58.1			75.2			51.5			31.7	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	98.5	17.3	23.6	27.7	81.4	21.2	19.7
Change Period (Y+Rc), s	6.5	6.5	5.0	5.0	6.5	6.5	5.0	5.0
Max Green Setting (Gmax), s	9.5	82.5	17.5	17.5	45.5	46.5	17.5	17.5
Max Q Clear Time (g_c+I1), s	5.2	94.0	12.2	11.0	19.7	41.9	16.1	14.5
Green Ext Time (p_c), s	0.0	0.0	0.1	0.3	1.5	3.3	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	405	5	0	330	0	115
Future Vol, veh/h	405	5	0	330	0	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	440	5	0	359	0	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	443
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	615
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	615
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	615	-	-	-
HCM Lane V/C Ratio	0.203	-	-	-
HCM Control Delay (s)	12.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.8	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	290	5	0	590	0	125
Future Vol, veh/h	290	5	0	590	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	315	5	0	641	0	136

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	318
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	723
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	723
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	723	-	-	-
HCM Lane V/C Ratio	0.188	-	-	-
HCM Control Delay (s)	11.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	480	5	0	370	0	115
Future Vol, veh/h	480	5	0	370	0	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	522	5	0	402	0	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	525
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	552
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	552
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	552	-	-	-
HCM Lane V/C Ratio	0.226	-	-	-
HCM Control Delay (s)	13.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	345	5	0	675	0	125
Future Vol, veh/h	345	5	0	675	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	375	5	0	734	0	136

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	378
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	669
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	669
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	669	-	-	-
HCM Lane V/C Ratio	0.203	-	-	-
HCM Control Delay (s)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.8	-	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	45	110	5	160	40
Future Vol, veh/h	5	45	110	5	160	40
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	49	120	5	174	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	514	123	0	0	125	0
Stage 1	123	-	-	-	-	-
Stage 2	391	-	-	-	-	-
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	521	928	-	-	1462	-
Stage 1	902	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	457	928	-	-	1462	-
Mov Cap-2 Maneuver	457	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	6.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	841	1462	-
HCM Lane V/C Ratio	-	-	0.065	0.119	-
HCM Control Delay (s)	-	-	9.6	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	55	75	5	180	120
Future Vol, veh/h	5	55	75	5	180	120
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	60	82	5	196	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	607	85	0	0	87	0
Stage 1	85	-	-	-	-	-
Stage 2	522	-	-	-	-	-
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	460	974	-	-	1509	-
Stage 1	938	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	396	974	-	-	1509	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	4.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	868	1509	-
HCM Lane V/C Ratio	-	-	0.075	0.13	-
HCM Control Delay (s)	-	-	9.5	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	45	110	5	160	40
Future Vol, veh/h	5	45	110	5	160	40
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	49	120	5	174	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	514	123	0	0	125	0
Stage 1	123	-	-	-	-	-
Stage 2	391	-	-	-	-	-
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	521	928	-	-	1462	-
Stage 1	902	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	457	928	-	-	1462	-
Mov Cap-2 Maneuver	457	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	6.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	841	1462	-
HCM Lane V/C Ratio	-	-	0.065	0.119	-
HCM Control Delay (s)	-	-	9.6	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	55	75	5	180	120
Future Vol, veh/h	5	55	75	5	180	120
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	60	82	5	196	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	607	85	0	0	87	0
Stage 1	85	-	-	-	-	-
Stage 2	522	-	-	-	-	-
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	460	974	-	-	1509	-
Stage 1	938	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	396	974	-	-	1509	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	4.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	868	1509	-
HCM Lane V/C Ratio	-	-	0.075	0.13	-
HCM Control Delay (s)	-	-	9.5	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	0	5	0	0	5	5	80	0	0	30	15
Future Vol, veh/h	35	0	5	0	0	5	5	80	0	0	30	15
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	0	5	0	0	5	5	87	0	0	33	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	141	138	41	141	146	87	49	0	-	-	-	0
Stage 1	41	41	-	97	97	-	-	-	-	-	-	-
Stage 2	100	97	-	44	49	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-	-	-	-
Pot Cap-1 Maneuver	829	753	1030	829	745	971	1558	-	0	0	-	-
Stage 1	974	861	-	910	815	-	-	-	0	0	-	-
Stage 2	906	815	-	970	854	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	822	751	1030	822	743	971	1558	-	-	-	-	-
Mov Cap-2 Maneuver	822	751	-	822	743	-	-	-	-	-	-	-
Stage 1	971	861	-	907	813	-	-	-	-	-	-	-
Stage 2	898	813	-	965	854	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	8.7	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1558	-	843	971	-	-
HCM Lane V/C Ratio	0.003	-	0.052	0.006	-	-
HCM Control Delay (s)	7.3	0	9.5	8.7	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-	-

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	25	0	5	0	0	5	5	55	0	0	90	35
Future Vol, veh/h	25	0	5	0	0	5	5	55	0	0	90	35
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	5	0	0	5	5	60	0	0	98	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	187	117	190	206	60	136	0	-	-	-	0
Stage 1	117	117	-	70	70	-	-	-	-	-	-	-
Stage 2	73	70	-	120	136	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-	-	-	-
Pot Cap-1 Maneuver	770	708	935	770	691	1005	1448	-	0	0	-	-
Stage 1	888	799	-	940	837	-	-	-	0	0	-	-
Stage 2	937	837	-	884	784	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	764	705	935	763	688	1005	1448	-	-	-	-	-
Mov Cap-2 Maneuver	764	705	-	763	688	-	-	-	-	-	-	-
Stage 1	884	799	-	936	834	-	-	-	-	-	-	-
Stage 2	928	834	-	879	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	8.6	0.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1448	-	788	1005	-	-
HCM Lane V/C Ratio	0.004	-	0.041	0.005	-	-
HCM Control Delay (s)	7.5	0	9.8	8.6	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰			↱	
Traffic Vol, veh/h	35	0	5	0	0	5	5	80	0	0	30	15
Future Vol, veh/h	35	0	5	0	0	5	5	80	0	0	30	15
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	0	5	0	0	5	5	87	0	0	33	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	141	138	41	141	146	87	49	0	-	-	-	0
Stage 1	41	41	-	97	97	-	-	-	-	-	-	-
Stage 2	100	97	-	44	49	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-	-	-	-
Pot Cap-1 Maneuver	829	753	1030	829	745	971	1558	-	0	0	-	-
Stage 1	974	861	-	910	815	-	-	-	0	0	-	-
Stage 2	906	815	-	970	854	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	822	751	1030	822	743	971	1558	-	-	-	-	-
Mov Cap-2 Maneuver	822	751	-	822	743	-	-	-	-	-	-	-
Stage 1	971	861	-	907	813	-	-	-	-	-	-	-
Stage 2	898	813	-	965	854	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	8.7	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1558	-	843	971	-	-
HCM Lane V/C Ratio	0.003	-	0.052	0.006	-	-
HCM Control Delay (s)	7.3	0	9.5	8.7	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-	-

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	25	0	5	0	0	5	5	55	0	0	90	35
Future Vol, veh/h	25	0	5	0	0	5	5	55	0	0	90	35
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	5	0	0	5	5	60	0	0	98	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	187	117	190	206	60	136	0	-	-	-	0
Stage 1	117	117	-	70	70	-	-	-	-	-	-	-
Stage 2	73	70	-	120	136	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-	-	-	-
Pot Cap-1 Maneuver	770	708	935	770	691	1005	1448	-	0	0	-	-
Stage 1	888	799	-	940	837	-	-	-	0	0	-	-
Stage 2	937	837	-	884	784	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	764	705	935	763	688	1005	1448	-	-	-	-	-
Mov Cap-2 Maneuver	764	705	-	763	688	-	-	-	-	-	-	-
Stage 1	884	799	-	936	834	-	-	-	-	-	-	-
Stage 2	928	834	-	879	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	8.6	0.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1448	-	788	1005	-	-
HCM Lane V/C Ratio	0.004	-	0.041	0.005	-	-
HCM Control Delay (s)	7.5	0	9.8	8.6	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	80	0	5	30
Future Vol, veh/h	0	0	80	0	5	30
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	87	0	5	33

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	130	87	0	0	87	0
Stage 1	87	-	-	-	-	-
Stage 2	43	-	-	-	-	-
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	864	971	-	-	1509	-
Stage 1	936	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	861	971	-	-	1509	-
Mov Cap-2 Maneuver	861	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1509	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	-	-	0	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	60	0	5	90
Future Vol, veh/h	0	0	60	0	5	90
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	65	0	5	98

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	173	65	0	0	65	0
Stage 1	65	-	-	-	-	-
Stage 2	108	-	-	-	-	-
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	817	999	-	-	1537	-
Stage 1	958	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	815	999	-	-	1537	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1537	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	-	-	0	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	80	0	5	30
Future Vol, veh/h	0	0	80	0	5	30
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	87	0	5	33

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	130	87	0	0	87	0
Stage 1	87	-	-	-	-	-
Stage 2	43	-	-	-	-	-
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	864	971	-	-	1509	-
Stage 1	936	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	861	971	-	-	1509	-
Mov Cap-2 Maneuver	861	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1509	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	-	-	0	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	60	0	5	90
Future Vol, veh/h	0	0	60	0	5	90
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	65	0	5	98

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	173	65	0	0	65	0
Stage 1	65	-	-	-	-	-
Stage 2	108	-	-	-	-	-
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	817	999	-	-	1537	-
Stage 1	958	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	815	999	-	-	1537	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1537	-
HCM Lane V/C Ratio	-	-	-	0.004	-
HCM Control Delay (s)	-	-	0	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	10	5	20	10	10	5	0	55	20	0	5
Future Vol, veh/h	5	10	5	20	10	10	5	0	55	20	0	5
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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	11	5	22	11	11	5	0	60	22	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	22	0	0	16	0	0	87	90	14	115	87	17
Stage 1	-	-	-	-	-	-	24	24	-	61	61	-
Stage 2	-	-	-	-	-	-	63	66	-	54	26	-
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	1593	-	-	1602	-	-	899	800	1066	862	803	1062
Stage 1	-	-	-	-	-	-	994	875	-	950	844	-
Stage 2	-	-	-	-	-	-	948	840	-	958	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1593	-	-	1602	-	-	883	786	1066	803	789	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	741	-	779	743	-
Stage 1	-	-	-	-	-	-	991	872	-	947	832	-
Stage 2	-	-	-	-	-	-	930	828	-	902	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	3.6	8.7	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1042	1593	-	-	1602	-	-	823
HCM Lane V/C Ratio	0.063	0.003	-	-	0.014	-	-	0.033
HCM Control Delay (s)	8.7	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	10	5	65	10	20	5	0	35	15	0	5
Future Vol, veh/h	5	10	5	65	10	20	5	0	35	15	0	5
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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	11	5	71	11	22	5	0	38	16	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	16	0	0	191	199	14	207	190	22
Stage 1	-	-	-	-	-	-	24	24	-	164	164	-
Stage 2	-	-	-	-	-	-	167	175	-	43	26	-
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	1579	-	-	1602	-	-	769	697	1066	751	705	1055
Stage 1	-	-	-	-	-	-	994	875	-	838	762	-
Stage 2	-	-	-	-	-	-	835	754	-	971	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1602	-	-	737	664	1066	698	671	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	643	-	705	649	-
Stage 1	-	-	-	-	-	-	991	872	-	835	728	-
Stage 2	-	-	-	-	-	-	793	720	-	934	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	5	8.8	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1003	1579	-	-	1602	-	-	769
HCM Lane V/C Ratio	0.043	0.003	-	-	0.044	-	-	0.028
HCM Control Delay (s)	8.8	7.3	0	-	7.4	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	20	10	10	5	0	55	20	0	5
Future Vol, veh/h	5	10	5	20	10	10	5	0	55	20	0	5
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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	11	5	22	11	11	5	0	60	22	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	22	0	0	16	0	0	87	90	14	115	87	17
Stage 1	-	-	-	-	-	-	24	24	-	61	61	-
Stage 2	-	-	-	-	-	-	63	66	-	54	26	-
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	1593	-	-	1602	-	-	899	800	1066	862	803	1062
Stage 1	-	-	-	-	-	-	994	875	-	950	844	-
Stage 2	-	-	-	-	-	-	948	840	-	958	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1593	-	-	1602	-	-	883	786	1066	803	789	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	741	-	779	743	-
Stage 1	-	-	-	-	-	-	991	872	-	947	832	-
Stage 2	-	-	-	-	-	-	930	828	-	902	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	3.6	8.7	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1042	1593	-	-	1602	-	-	823
HCM Lane V/C Ratio	0.063	0.003	-	-	0.014	-	-	0.033
HCM Control Delay (s)	8.7	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	65	10	20	5	0	35	15	0	5
Future Vol, veh/h	5	10	5	65	10	20	5	0	35	15	0	5
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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	11	5	71	11	22	5	0	38	16	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	16	0	0	191	199	14	207	190	22
Stage 1	-	-	-	-	-	-	24	24	-	164	164	-
Stage 2	-	-	-	-	-	-	167	175	-	43	26	-
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	1579	-	-	1602	-	-	769	697	1066	751	705	1055
Stage 1	-	-	-	-	-	-	994	875	-	838	762	-
Stage 2	-	-	-	-	-	-	835	754	-	971	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1602	-	-	737	664	1066	698	671	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	643	-	705	649	-
Stage 1	-	-	-	-	-	-	991	872	-	835	728	-
Stage 2	-	-	-	-	-	-	793	720	-	934	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	5	8.8	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1003	1579	-	-	1602	-	-	769
HCM Lane V/C Ratio	0.043	0.003	-	-	0.044	-	-	0.028
HCM Control Delay (s)	8.8	7.3	0	-	7.4	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	250	5	10	125
Future Vol, veh/h	5	20	250	5	10	125
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	22	272	5	11	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	433	275	0	0	277	0
Stage 1	275	-	-	-	-	-
Stage 2	158	-	-	-	-	-
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	580	764	-	-	1286	-
Stage 1	771	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	575	764	-	-	1286	-
Mov Cap-2 Maneuver	575	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	717	1286	-
HCM Lane V/C Ratio	-	-	0.038	0.008	-
HCM Control Delay (s)	-	-	10.2	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	155	5	20	145
Future Vol, veh/h	5	15	155	5	20	145
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	16	168	5	22	158

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	373	171	0	0	173	0
Stage 1	171	-	-	-	-	-
Stage 2	202	-	-	-	-	-
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	628	873	-	-	1404	-
Stage 1	859	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	617	873	-	-	1404	-
Mov Cap-2 Maneuver	617	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	818	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	791	1404	-
HCM Lane V/C Ratio	-	-	0.027	0.015	-
HCM Control Delay (s)	-	-	9.7	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	30	335	15	20	175
Future Vol, veh/h	15	30	335	15	20	175
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	33	364	16	22	190

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	606	372	0	0	380	0
Stage 1	372	-	-	-	-	-
Stage 2	234	-	-	-	-	-
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	460	674	-	-	1178	-
Stage 1	697	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	450	674	-	-	1178	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	578	1178	-
HCM Lane V/C Ratio	-	-	0.085	0.018	-
HCM Control Delay (s)	-	-	11.8	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	210	20	35	190
Future Vol, veh/h	20	30	210	20	35	190
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	33	228	22	38	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	522	239	0	0	250	0
Stage 1	239	-	-	-	-	-
Stage 2	283	-	-	-	-	-
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	515	800	-	-	1316	-
Stage 1	801	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	498	800	-	-	1316	-
Mov Cap-2 Maneuver	498	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	644	1316	-
HCM Lane V/C Ratio	-	-	0.084	0.029	-
HCM Control Delay (s)	-	-	11.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	5	245	10	5	125
Future Vol, veh/h	10	5	245	10	5	125
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	5	266	11	5	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	418	272	0	0	277	0
Stage 1	272	-	-	-	-	-
Stage 2	146	-	-	-	-	-
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	591	767	-	-	1286	-
Stage 1	774	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	589	767	-	-	1286	-
Mov Cap-2 Maneuver	589	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	877	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	638	1286	-
HCM Lane V/C Ratio	-	-	0.026	0.004	-
HCM Control Delay (s)	-	-	10.8	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	5	155	10	10	140
Future Vol, veh/h	15	5	155	10	10	140
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	5	168	11	11	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	348	174	0	0	179	0
Stage 1	174	-	-	-	-	-
Stage 2	174	-	-	-	-	-
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	649	869	-	-	1397	-
Stage 1	856	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	643	869	-	-	1397	-
Mov Cap-2 Maneuver	643	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	848	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	688	1397	-
HCM Lane V/C Ratio	-	-	0.032	0.008	-
HCM Control Delay (s)	-	-	10.4	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	5	320	10	5	160
Future Vol, veh/h	10	5	320	10	5	160
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	5	348	11	5	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	538	354	0	0	359	0
Stage 1	354	-	-	-	-	-
Stage 2	184	-	-	-	-	-
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	504	690	-	-	1200	-
Stage 1	710	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	501	690	-	-	1200	-
Mov Cap-2 Maneuver	501	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1200	-
HCM Lane V/C Ratio	-	-	0.03	0.005	-
HCM Control Delay (s)	-	-	11.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	5	195	10	10	175
Future Vol, veh/h	15	5	195	10	10	175
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	5	212	11	11	190

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	430	218	0	0	223	0
Stage 1	218	-	-	-	-	-
Stage 2	212	-	-	-	-	-
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	582	822	-	-	1346	-
Stage 1	818	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	577	822	-	-	1346	-
Mov Cap-2 Maneuver	577	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1346	-
HCM Lane V/C Ratio	-	-	0.035	0.008	-
HCM Control Delay (s)	-	-	11	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	30	225	5	10	125
Future Vol, veh/h	5	30	225	5	10	125
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	33	245	5	11	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	406	248	0	0	250	0
Stage 1	248	-	-	-	-	-
Stage 2	158	-	-	-	-	-
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	601	791	-	-	1316	-
Stage 1	793	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	596	791	-	-	1316	-
Mov Cap-2 Maneuver	596	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	756	1316	-
HCM Lane V/C Ratio	-	-	0.05	0.008	-
HCM Control Delay (s)	-	-	10	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	145	5	30	120
Future Vol, veh/h	5	20	145	5	30	120
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	22	158	5	33	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	357	161	0	0	163	0
Stage 1	161	-	-	-	-	-
Stage 2	196	-	-	-	-	-
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	641	884	-	-	1416	-
Stage 1	868	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	625	884	-	-	1416	-
Mov Cap-2 Maneuver	625	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	816	1416	-
HCM Lane V/C Ratio	-	-	0.033	0.023	-
HCM Control Delay (s)	-	-	9.6	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	30	300	5	10	160
Future Vol, veh/h	5	30	300	5	10	160
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	33	326	5	11	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	525	329	0	0	331	0
Stage 1	329	-	-	-	-	-
Stage 2	196	-	-	-	-	-
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	513	712	-	-	1228	-
Stage 1	729	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	508	712	-	-	1228	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	673	1228	-
HCM Lane V/C Ratio	-	-	0.057	0.009	-
HCM Control Delay (s)	-	-	10.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	185	5	30	155
Future Vol, veh/h	5	20	185	5	30	155
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	22	201	5	33	168

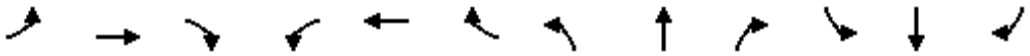
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	438	204	0	0	206	0
Stage 1	204	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	576	837	-	-	1365	-
Stage 1	830	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	560	837	-	-	1365	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	762	1365	-
HCM Lane V/C Ratio	-	-	0.036	0.024	-
HCM Control Delay (s)	-	-	9.9	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

APPENDIX E

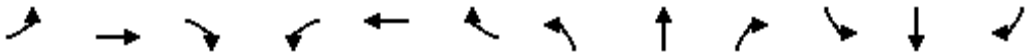
Queueing Analysis Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	192	174	250	261	108	34	128	894	112	60	1202	137
v/c Ratio	0.53	0.75	0.16	0.84	0.44	0.02	0.65	0.48	0.13	0.53	0.74	0.17
Control Delay	39.2	73.0	0.2	63.9	59.8	0.0	72.1	22.9	3.3	77.9	34.7	2.1
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	39.2	73.0	0.2	63.9	59.8	0.0	72.1	22.9	3.3	77.9	34.7	2.1
Queue Length 50th (ft)	115	152	0	188	88	0	109	276	0	51	455	0
Queue Length 95th (ft)	163	218	0	#264	145	0	172	344	30	94	540	15
Internal Link Dist (ft)		305			842			907			791	
Turn Bay Length (ft)	175			400			625		575	625		600
Base Capacity (vph)	394	270	1583	314	256	1583	360	1858	886	125	1625	818
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	0.49	0.64	0.16	0.83	0.42	0.02	0.36	0.48	0.13	0.48	0.74	0.17

Intersection Summary

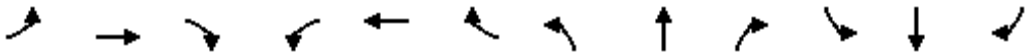
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	190	113	196	148	188	63	409	1860	250	27	929	159
v/c Ratio	0.72	0.45	0.12	0.46	0.81	0.04	0.85	0.87	0.24	0.40	0.79	0.25
Control Delay	57.5	61.4	0.2	48.0	88.4	0.1	68.0	32.7	2.3	87.8	51.9	7.0
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	57.5	61.4	0.2	48.0	88.4	0.1	68.0	32.7	2.3	87.8	51.9	7.0
Queue Length 50th (ft)	131	102	0	113	179	0	381	881	0	26	445	0
Queue Length 95th (ft)	182	163	0	120	182	0	412	834	26	62	#666	59
Internal Link Dist (ft)		305			842			907			791	
Turn Bay Length (ft)	175			400			625		575	625		600
Base Capacity (vph)	272	256	1583	361	260	1583	666	2127	1051	68	1183	635
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	0.70	0.44	0.12	0.41	0.72	0.04	0.61	0.87	0.24	0.40	0.79	0.25

Intersection Summary

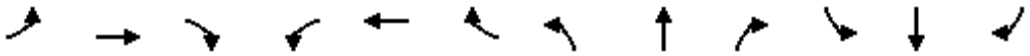
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	201	201	261	332	130	38	138	1202	149	71	1478	136
v/c Ratio	0.54	0.84	0.16	0.92	0.40	0.02	0.64	0.70	0.18	0.65	0.90	0.17
Control Delay	38.2	84.4	0.2	69.9	54.1	0.0	75.6	30.8	3.7	88.6	41.9	3.8
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	38.2	84.4	0.2	69.9	54.1	0.0	75.6	30.8	3.7	88.6	41.9	3.8
Queue Length 50th (ft)	141	176	0	234	102	0	61	449	0	62	626	0
Queue Length 95th (ft)	218	#297	0	#404	170	0	98	536	39	#133	#752	37
Internal Link Dist (ft)		305			842			907			791	
Turn Bay Length (ft)	175			400			625		575	625		600
Base Capacity (vph)	408	255	1583	362	323	1583	220	1724	847	113	1649	810
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	0.49	0.79	0.16	0.92	0.40	0.02	0.63	0.70	0.18	0.63	0.90	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	190	125	196	136	158	54	418	2223	293	38	1234	168
v/c Ratio	0.73	0.55	0.12	0.48	0.79	0.03	0.77	1.06	0.28	0.40	0.74	0.20
Control Delay	63.9	68.3	0.2	51.2	91.8	0.0	70.1	69.4	2.3	80.5	36.9	4.1
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	63.9	68.3	0.2	51.2	91.8	0.0	70.1	69.4	2.3	80.5	36.9	4.1
Queue Length 50th (ft)	155	107	0	106	152	0	204	~1323	0	37	524	0
Queue Length 95th (ft)	#242	180	0	169	#252	0	254	#1462	43	77	661	46
Internal Link Dist (ft)		305			842			907			791	
Turn Bay Length (ft)	175			400			625		575	625		600
Base Capacity (vph)	271	232	1583	319	217	1583	1041	2093	1056	112	1666	834
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	0.70	0.54	0.12	0.43	0.73	0.03	0.40	1.06	0.28	0.34	0.74	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX F

City of Commerce City Engineering Construction Standards and Specifications for Auxiliary Turn Lanes

3.04.1 AUXILIARY LANES

Auxiliary lanes provide for the acceleration or deceleration of turning traffic onto or off of a major roadway. Auxiliary lanes improve the safety at intersections by reducing the accident potential between turning traffic and through traffic.

3.04.1.1 DECELERATION LANES

Deceleration lanes provide vehicles a safe area in which to slow prior to turning into an intersection. Deceleration lengths are based off of calculations that provide for 20 mph speed differential between turning and through traffic and a deceleration rate of 6 ft/s^2.

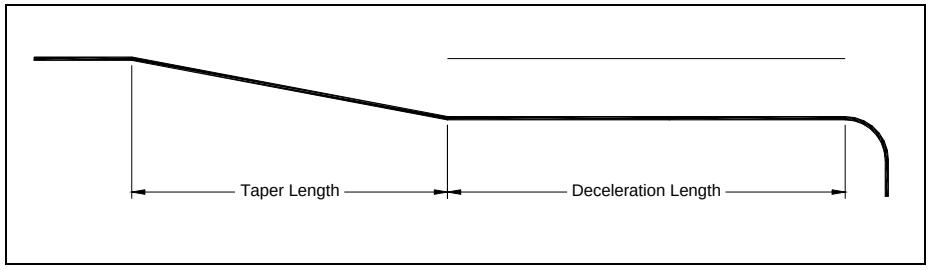
Right-Turn Deceleration Lanes

Right-turn deceleration lanes consist of two components: the deceleration length and the taper length. The criteria and the geometric requirements for right-turn deceleration lanes are shown in Table 3-6. For clarification, Figure 3-1 shows the geometric components of right-turn deceleration lanes.

TABLE 3-6 RIGHT-TURN DECELERATION LANES

	Minimum # of Major Street Right Turns to Require Right-Turn Deceleration Lane on Major Street (vph)	Deceleration Lane Length (ft)	Taper Rate	Taper Length (ft) for 12' Lane
Principal Arterial	15	185	18.5:1	222
Minor/Multimodal Arterial	20	135	15:1	180
Major Collector	25	90	13.5:1	162
Minor Collector	30	50	12:1	144

FIGURE 3-1: GEOMETRIC COMPONENTS OF RIGHT-TURN DECELERATION LANES



Left-Turn Deceleration Lanes

Left-turn deceleration lanes consist of three components:

- deceleration length
- taper length
- storage length

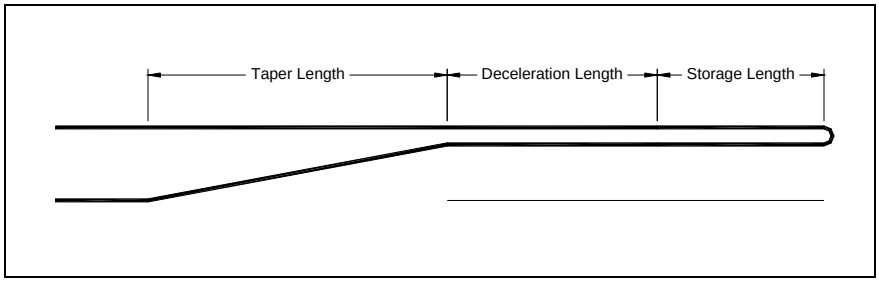
The criteria and the geometric requirements for left-turn deceleration lanes are shown in Table 3-7. Storage length criteria is discussed in Section 3.04.2. For clarification, Figure 3-2 shows the geometric components of left-turn deceleration lanes.

TABLE 3-7 LEFT-TURN DECELERATION LANES

Description	Minimum # of Major Street Left Turns to Require Left-Turn Decel Lane on Major Street (vph)	Deceleration Lane Length (ft)	Taper Rate	Taper Length (ft) for 12' Lane
Principal Arterial	Always	185	18.5:1	222
Minor/Multimodal Arterial	Always	135	15:1	180
Major Collector	Always	90	13.5:1	162
Minor Collector	**	50	12:1	144

** The need for a left-turn deceleration lane on a minor collector shall be determined by the City Engineer on an individual basis.

FIGURE 3-2: GEOMETRIC COMPONENTS OF LEFT-TURN DECELERATION LANES



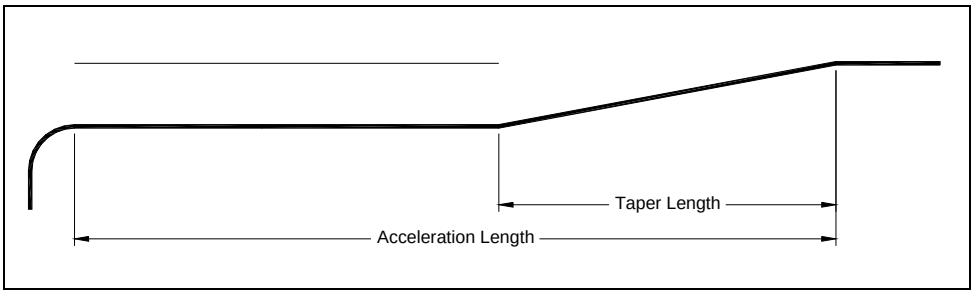
3.04.1.2 Acceleration Lanes

Acceleration lanes are required to provide distance for vehicles to accelerate up to reasonable speeds before merging into the flow of traffic on a major street when turning from minor roadways or private properties. Acceleration lengths are calculated based on speed differentials of 10 mph between turning and through traffic. Table 3-8 shows acceleration lane requirements. Figure 3-3 shows the geometric components of acceleration lanes.

TABLE 3-8 ACCELERATION LANE REQUIREMENTS

Description	Minimum # of Minor Street Right Turns to Require Accel Lane on Major Street	Acceleration Lane Length (Including taper) (ft)	Taper Rate	Taper Length (ft) for 12' Lane
Principal Arterial	85	730	18.5:1	222
Minor/Multimodal Arterial	24	575	15:1	180
Major Collector	10	440	13.5:1	162
Minor Collector	35	325	12:1	144

FIGURE 3-3: GEOMETRIC COMPONENTS OF ACCELERATION LANES



3.04.2 STORAGE LENGTH

The auxiliary lane should be sufficiently long in order to store the number of vehicles that accumulate during a critical period. Sufficient storage length should be provided such that the queue length does not compromise the deceleration length provided. Additionally, the storage length shall be sufficiently long so that the entrance to the auxiliary lane is not blocked by vehicles queued in the through lanes at a signal.

Storage lengths for signalized intersections may be determined from capacity nomographs in the Highway Capacity Manual (HCM) or the traffic impact study. The minimum storage length for left-turn lanes at signalized intersections shall be 100 feet.

At unsignalized intersections, the storage length, exclusive of taper and deceleration length, may be based on the number of turning vehicles likely to arrive in an average 2-minute period within the peak hour. The 2-minute waiting time may need to be adjusted based on the volume of opposing traffic. The required storage length for an unsignalized intersection is presented in Table 3-9.

TABLE 3-9 STORAGE LENGTHS FOR AUXILIARY LANES AT UNSIGNALIZED INTERSECTIONS

Left-Turning Vehicles per Hour (peak hour)	0-30	31-60	61-100	101-200	201+
Required Storage Length (feet)	40*	50	100	175	250
*50 feet when trucks equal or exceed 10% of turning traffic					

3.04.3 TRANSITION TAPERS

Transition tapers are necessary to redirect traffic when the roadway is widened to accommodate auxiliary lanes (left- and right-turn lanes, lane drops, median transitions, etc.). Table 3-10 shows the required taper ratios by design speed.