LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

January 15, 2019

Mr. Daniel Muldoon
Muldoon Architects
4484 S. Routt Street
Littleton, CO 80127

Re: TA Truck Stop
Commerce City, CO
LSC #181380

Dear Mr. Muldoon:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the existing TA Truck Stop development. As shown on Figure 1, the site is located west of Quebec Street and south of E. 53rd Place in Commerce City, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term and long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts or the impacts from growth in background traffic.

LAND USE AND ACCESS

The existing truck stop proposes to add 30 tractor-trailer parking spaces and six tractor-only (bobtail) parking spaces to the 205 existing tractor-trailer parking spaces and 20 existing tractor-only (bobtail) parking spaces. The site has three-quarter movement access directly to Quebec Street and full movement access directly to E. 53rd Place. The site has indirect signalized access to Quebec Street via E. 53rd Place. The conceptual site plan is shown in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **Quebec Street** is a north-south arterial roadway east of the site. It has two northbound lanes and three southbound lanes adjacent to the site. The City's *C3 Vision Transportation*

Plan assumes a full six-lane roadway in the future. A full six-lane roadway is assumed by 2040. The intersection with E. 53rd Place is signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 40 mph.

- **E. 53rd Place** is an east-west, two-lane local roadway north of the site. The intersection with Quebec Street is signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 25 mph.

Existing Traffic Conditions

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits, and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes are from the attached traffic counts conducted by Counter Measures in November, 2018. The existing traffic signal timings were provided by the City/County of Denver.

2020 and 2040 Background Traffic

Figure 4 shows the estimated 2020 background traffic and Figure 5 shows the estimated 2040 background traffic based on a three percent annual growth rate which is based on the projected volumes in Commerce City's *C3 Vision Transportation Plan*.

Existing, 2020, and 2040 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for signalized and unsignalized intersections.

The intersections in Figures 3, 4, and 5 were analyzed as appropriate to determine the existing, 2020 background, and 2040 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Quebec Street/E. 53rd Place:** This signalized intersection currently operates at an overall LOS "B" during the morning peak-hour and LOS "C" during the afternoon peak-hour and is expected to do so through 2020. In 2040, the morning peak-hour is expected to operate at LOS "C" and the afternoon peak-hour is expected to operate at LOS "D".

- **E. 53rd Place/Site Access:** All movements at this unsignalized intersection currently operate at LOS "A" during both morning and afternoon peak-hours and are expected to do so through 2040.

- **Quebec Street/Three-Quarter Movement Site Access:** All movements at this unsignalized intersection currently operate at LOS "C" or better during both morning and afternoon peak-hours and are expected to do so through 2020. By 2040, the eastbound right-turn movement is expected to operate at LOS "E" during the morning peak-hour and the northbound left-turn movement is expected to operate at LOS "F" in both peak-hours. The traffic signal at E. 53rd Place is expected to create gaps that will benefit these movements.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based estimates by LSC. It is assumed the additional parking spaces will increase the existing traffic volumes to/from the site by 15 to 20 percent. Additional information is shown in Figure 7.

The additional parking spaces are projected to generate about 200 additional vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 10 additional vehicles would enter and about 10 additional vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 10 additional vehicles would enter the site and about 10 additional vehicles would exit.

TRIP DISTRIBUTION

Figure 6 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Figure 7 shows the estimated site-generated traffic volumes based on the trip generation estimate (from Table 2) and the directional distribution estimates from Figure 6.

2020 and 2040 TOTAL TRAFFIC

Figure 8 shows the 2020 total traffic which is the sum of 2020 background traffic volumes (from Figure 4) and the site-generated traffic volumes (from Figure 7). Figure 8 also shows the 2020 recommended lane geometry and traffic control.

Figure 9 shows the 2040 total traffic which is the sum of 2040 background traffic volumes (from Figure 5) and the site-generated traffic volumes (from Figure 7). Figure 9 also shows the 2040 recommended lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in Figures 8 and 9 were analyzed to determine the 2020 and 2040 total traffic levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Quebec Street/E. 53rd Place:** This signalized intersection is expected to operate at an overall LOS "B" during the morning peak-hour and LOS "C" during the afternoon peak-hours through 2020. By 2040, the morning peak-hour is expected to operate at LOS "C" and the afternoon peak-hour is expected to operate at LOS "D".

- **E. 53rd Place/Site Access:** All movements at this unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2040.

- **Quebec Street/Three-Quarter Movement Access:** All movements at this unsignalized intersection are expected to operate at LOS "D" or better during both peak-hours through 2020. By 2040, the eastbound right-turn movement is expected to operate at LOS "E" during the morning peak-hour and the northbound left-turn movement is expected to operate at LOS "F" in both peak-hours. The traffic signal at E. 53rd Place is expected to create gaps that will benefit these movements.

DEVELOPMENT AGREEMENT CONDITION

The Developer Agreement (DA) dated August 31, 1998 states the following:

"*The City requires the Property Owners to enter into a written agreement with the City to close, at the City's discretion, the E. 53rd Place exit at the time signalization is installed on the Quebec Street frontage utilized by Travel Centers of America.*

The Property Owners agree that if traffic signalization on Quebec Street is installed, the Property Owners shall submit to the City of Commerce City a plan to mitigate traffic impacts generated by the subject property. Said plan shall be approved by the City of Commerce City. Upon installation of the traffic signal, if any of the following conditions occur:

(1) There are three or more accidents involving right- or left-turning vehicles from the site's access point on E. 53rd Place during twelve calendar months;
(2) If delays exceed 120 seconds for vehicles turning left from E. 53rd Place onto Quebec Street; or
(3) If the Level of Service of E. 53rd Place drops from the current "B" service level to "D";

then, at the discretion of the City, the applicant may be required to close the East 53rd Place exit."

Traffic signal control has not been provided on the site's Quebec Street frontage, so this condition has not been met. The existing access on Quebec Street is a three-quarter movement stop-sign controlled intersection.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The site is projected to generate about 200 additional vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 10 additional vehicles would enter and about 10 additional vehicles would exit the site. During the afternoon peak-hour, about 10 additional vehicles would enter and about 10 additional vehicles would exit.

Projected Levels of Service

2. The signalized Quebec Street/E. 53rd Place intersection is expected to operate at an overall LOS "B" or better during the morning peak-hour and LOS "C" during the afternoon peak-

hours through 2020. By 2040, the morning peak-hour is expected to operate at LOS "C" and the afternoon peak-hour is expected to operate at LOS "D".

3. All movements at all of the unsignalized intersections are expected to operate at LOS "D" or better through 2040 with the following exception: By 2040, the eastbound right-turn movement is expected to operate at LOS "E" during the morning peak-hour and the northbound left-turn movement is expected to operate at LOS "F" in both peak-hours. The traffic signal at E. 53rd Place is expected to create gaps that will benefit these movements.

Development Agreement

4. A traffic signal has not been installed on the site's Quebec Street frontage so the site's access to E. 53rd Place should not be closed at this time.

* * * * *

We trust our findings will assist you in gaining approval of the proposed TA Truck Stop development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By_____
Christopher S. McGranahan, PE, PTOE
Principal

COLORADO LICENSED CHRISTOPHER S. MCGRANAHAN 39018 PROFESSIONAL ENGINEER

1-15-19

CSM/wc

Enclosures: Tables 1 and 2
Figures 1 - 9
Traffic Count Reports
Level of Service Definitions
Level of Service Reports

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Table 1
Intersection Levels of Service Analysis
TA Truck Stop
Commerce City, CO
LSC #181380; January, 2019

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2020 Background Traffic Level of Service AM	2020 Background Traffic Level of Service PM	2020 Total Traffic Level of Service AM	2020 Total Traffic Level of Service PM	2040 Background Traffic Level of Service AM	2040 Background Traffic Level of Service PM	2040 Total Traffic Level of Service AM	2040 Total Traffic Level of Service PM
Quebec Street/E. 53rd Place	Signalized										
EB Left		D	C	D	D	D	D	C	D	C	D
EB Through/Right		C	C	C	C	C	C	C	C	C	C
WB Left		D	D	D	D	D	D	D	D	D	D
WB Through		D	D	D	D	D	D	D	D	D	D
WB Right		A	B	A	B	A	B	B	E	A	E
NB Left		A	A	A	A	A	A	B	D	B	D
NB Through		B	C	B	C	B	C	C	E	C	E
NB Right		A	A	A	A	A	A	A	A	A	A
SB Left		A	C	A	C	A	C	B	E	B	E
SB Through/Right		B	B	B	B	B	B	C	C	C	C
Entire Intersection Delay (sec./veh.)		14.2	24.0	15.2	24.3	15.3	24.3	26.9	52.4	27.2	52.4
Entire Intersection LOS		B	C	B	C	B	C	C	D	C	D
E. 53rd Place/Site Access	TWSC										
NB Approach		A	A	A	A	A	A	A	A	A	A
WB Approach		A	A	A	A	A	A	A	A	A	A
Critical Movement Delay		8.6	9.1	8.6	9.2	8.6	9.2	8.7	9.8	8.7	9.7
Quebec Street/Three-Quarter Movement Site Access	TWSC										
NB Left		C	C	C	C	D	C	F	F	F	F
EB Right		C	C	C	C	C	C	E	D	E	D
Critical Movement Delay		22.3	18.5	24.3	19.8	25.0	20.3	136.1	72.9	159.7	80.7

Table 2
ESTIMATED TRAFFIC GENERATION
TA Truck Stop
Commerce City, CO
LSC #181380; January, 2019

	Vehicle-Trips Generated [1]				
	Average	AM Peak-Hour		PM Peak-Hour	
Trip Generating Category	Weekday	In	Out	In	Out
Increase in Trip Generation Potential =	**200**	**10**	**10**	**10**	**10**

Notes:
(1) Estimates by LSC.

Figure 1

Vicinity Map

TA Truck Stop (LSC #181380)

TRANSPORTATION CONSULTANTS, INC.

N

Approximate Scale
Scale: NTS

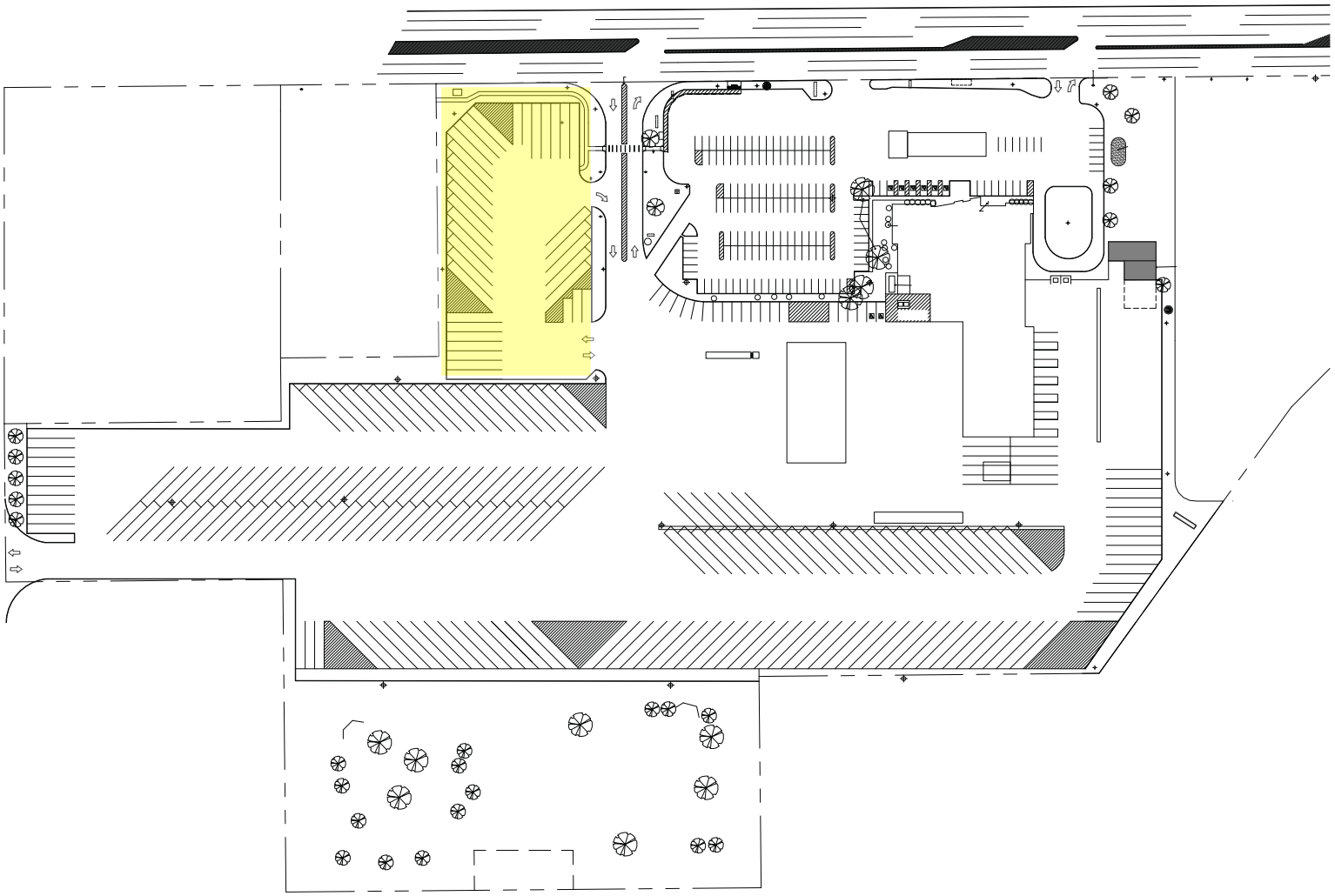
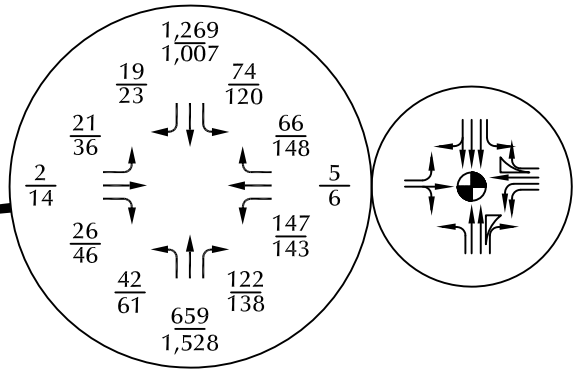
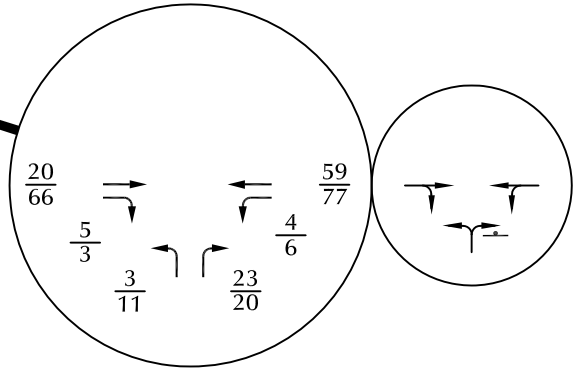


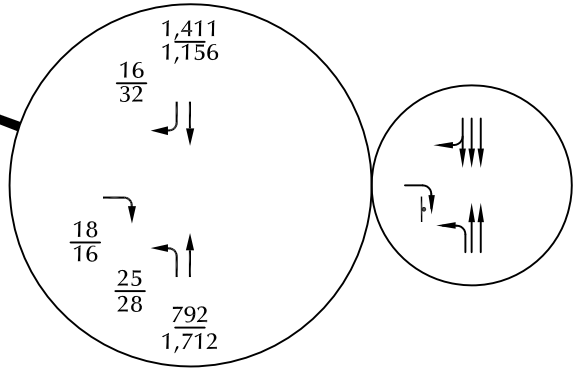
Figure 2

Site Plan

TA Truck Stop (LSC #181380)







Approximate Scale
Scale: 1"= 300'

LEGEND:

= Stop Sign

= Traffic Signal

(40) = Speed Limit

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

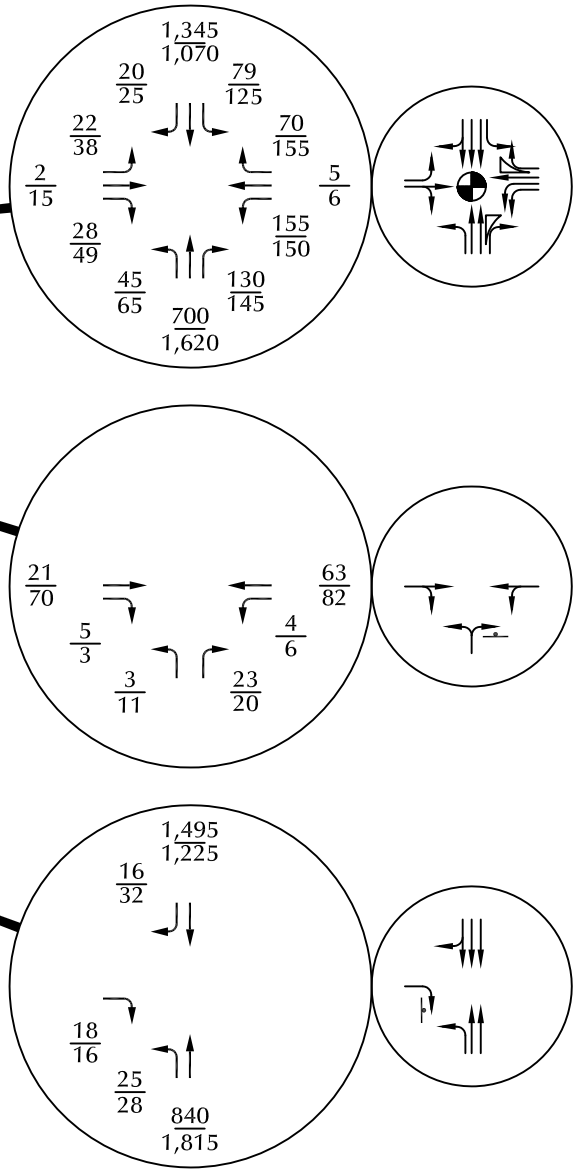
1,000 = Average Daily Traffic

Figure 3

Existing Traffic, Lane Geometry and Traffic Control

TA Truck Stop (LSC #181380)

Note: Assumes an annual growth rate of about 3% based on the projected volumes in Commerce City's C3 Vision Transportation Plan.



Approximate Scale
Scale: 1"= 300'

LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

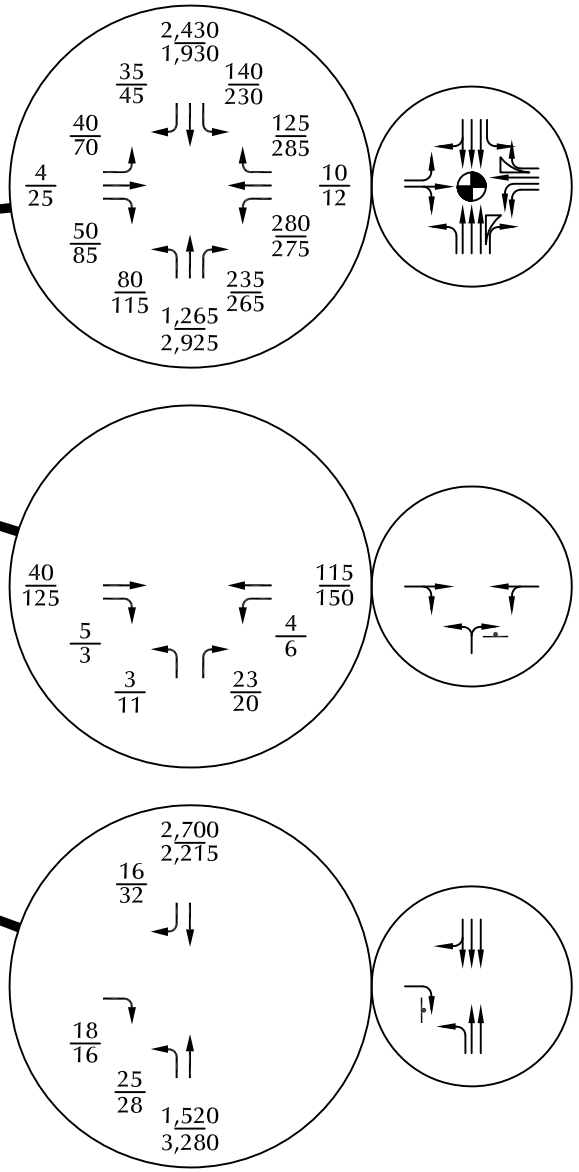
1,000 = Average Daily Traffic

Figure 4

Year 2020 Background Traffic, Lane Geometry and Traffic Control

TA Truck Stop (LSC #181380)

Note: Assumes an annual growth rate of about 3% based on the projected volumes in Commerce City's C3 Vision Transportation Plan.



N

Approximate Scale
Scale: 1"= 300'

LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

Figure 5

Year 2040 Background Traffic, Lane Geometry and Traffic Control

TA Truck Stop (LSC #181380)

Approximate Scale
Scale: 1"= 300'

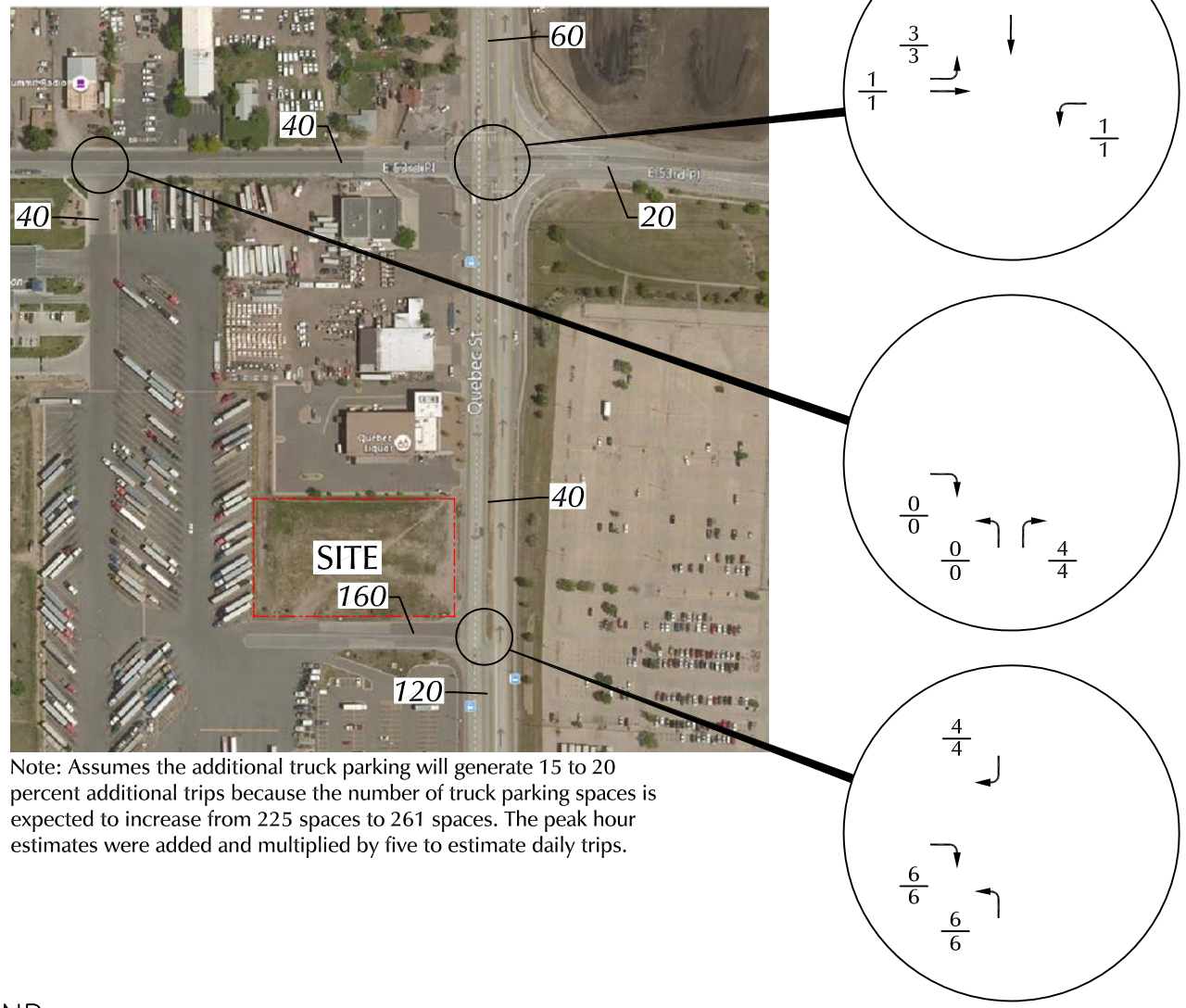
LEGEND:

5% = Percent Directional Distribution

Figure 6

Directional Distribution of Site-Generated Traffic

TA Truck Stop (LSC #181380)



Approximate Scale
Scale: 1"= 300'

Note: Assumes the additional truck parking will generate 15 to 20 percent additional trips because the number of truck parking spaces is expected to increase from 225 spaces to 261 spaces. The peak hour estimates were added and multiplied by five to estimate daily trips.

LEGEND:

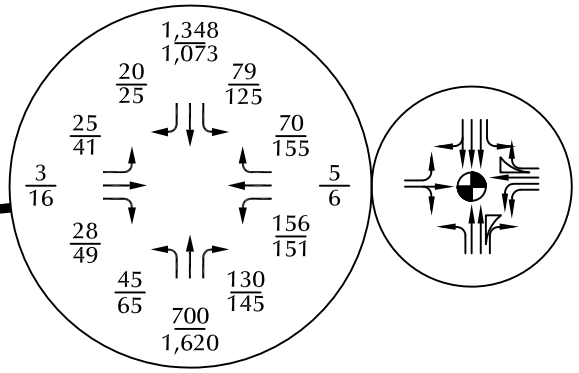
$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

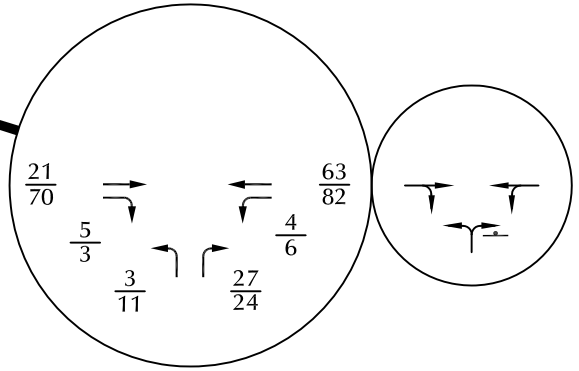
1,000 = Average Daily Traffic

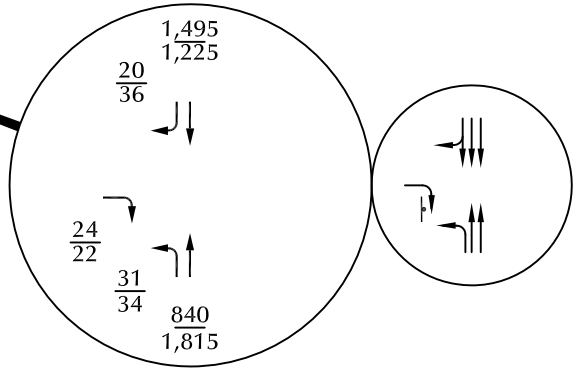
Figure 7

Assignment of Site-Generated Traffic

TA Truck Stop (LSC #181380)







Approximate Scale
Scale: 1"= 300'

LEGEND:

= Stop Sign

= Traffic Signal

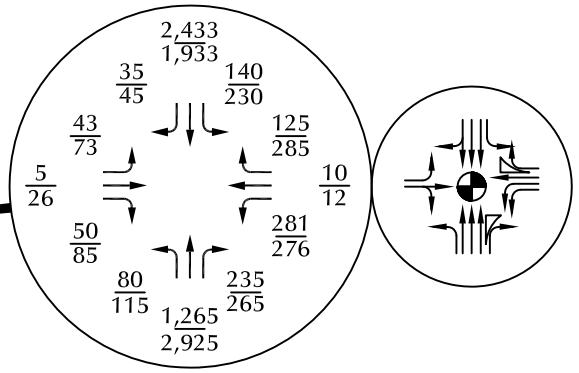
$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

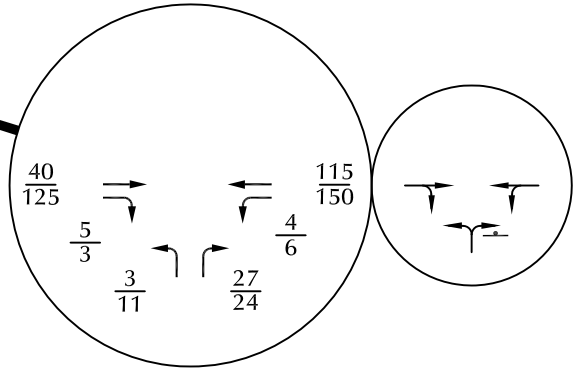
1,000 = Average Daily Traffic

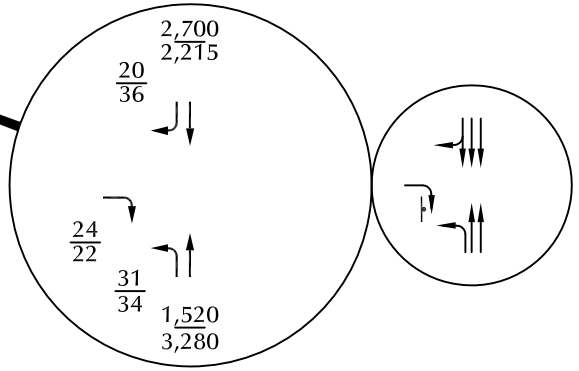
Figure 8

Year 2020 Total Traffic, Lane Geometry and Traffic Control

TA Truck Stop (LSC #181380)







Approximate Scale
Scale: 1"= 300'

LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

Figure 9

Year 2040 Total Traffic, Lane Geometry and Traffic Control

TA Truck Stop (LSC #181380)

COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: 53RD PL
E/W STREET: BLUE BEACON ACCESS DR
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : BLUE53RD
Site Code : 00000022
Start Date : 11/29/2018
Page No : 1

Groups Printed- VEHICLES

	Southbound				53RD PL Westbound				BLUE BEACON ACCESS DRIVE Northbound				53RD PL Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	6	12	0	1	1	0	4	0	0	6	1	0	31
06:45 AM	0	0	0	0	0	19	0	0	0	0	5	0	0	1	2	0	27
Total	0	0	0	0	6	31	0	1	1	0	9	0	0	7	3	0	58
07:00 AM	0	0	0	0	2	15	0	1	2	0	6	0	0	5	2	0	33
07:15 AM	0	0	0	0	1	11	0	0	1	0	5	0	0	8	1	1	28
07:30 AM	0	0	0	1	1	14	0	0	0	0	7	0	0	6	0	0	29
07:45 AM	0	0	0	1	1	18	0	0	0	0	10	0	0	9	1	0	40
Total	0	0	0	2	5	58	0	1	3	0	28	0	0	28	4	1	130
08:00 AM	0	0	0	0	0	21	0	0	2	0	6	0	0	7	0	0	36
08:15 AM	0	0	0	0	3	25	0	0	1	0	4	0	0	11	2	0	46
Total	0	0	0	0	3	46	0	0	3	0	10	0	0	18	2	0	82
04:00 PM	0	0	0	0	2	20	0	0	3	0	9	0	0	11	1	0	46
04:15 PM	0	0	0	0	2	15	0	0	3	0	3	0	0	12	0	0	35
04:30 PM	0	0	0	1	0	24	0	0	2	0	5	0	0	21	2	0	55
04:45 PM	0	0	0	0	2	22	0	0	3	0	9	0	0	12	1	0	49
Total	0	0	0	1	6	81	0	0	11	0	26	0	0	56	4	0	185
05:00 PM	0	0	0	0	2	16	0	0	3	0	3	0	0	21	0	0	45
05:15 PM	0	0	0	0	0	16	0	0	2	0	5	5	0	9	0	0	37
05:30 PM	0	0	0	0	1	10	0	0	4	0	6	0	0	11	0	0	32
05:45 PM	0	0	0	0	3	11	0	0	3	0	5	0	0	13	1	0	36
Total	0	0	0	0	6	53	0	0	12	0	19	5	0	54	1	0	150
Grand Total	0	0	0	3	26	269	0	2	30	0	92	5	0	163	14	1	605
Apprch %	0.0	0.0	0.0	100.0	8.8	90.6	0.0	0.7	23.6	0.0	72.4	3.9	0.0	91.6	7.9	0.6	
Total %	0.0	0.0	0.0	0.5	4.3	44.5	0.0	0.3	5.0	0.0	15.2	0.8	0.0	26.9	2.3	0.2	

COUNTER MEASURES INC.
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303-333-7409

N/S STREET: 53RD PL
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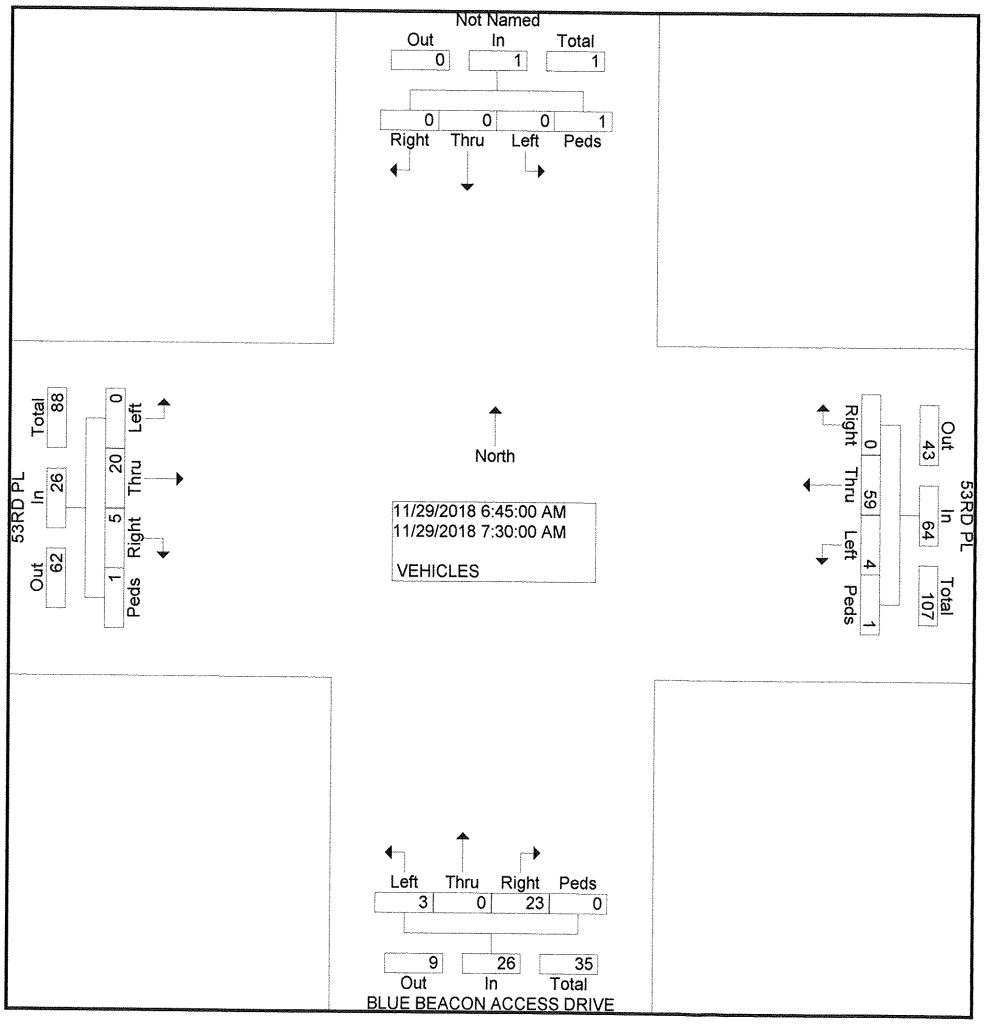
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : BLUE53RD
Site Code : 00000022
Start Date : 11/29/2018
Page No : 2

	Southbound					53RD PL Westbound					BLUE BEACON ACCESS DRIVE Northbound					53RD PL Eastbound					
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 From 06:45 AM to 07:30 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	0	0	0	1	1	4	59	0	1	64	3	0	23	0	26	0	20	5	1	26	117
Percent	0.0	0.0	0.0	100.0		6.3	92.2	0.0	1.6		11.5	0.0	88.5	0.0		0.0	76.9	19.2	3.8		
07:00 Volume	0	0	0	0	0	2	15	0	1	18	2	0	6	0	8	0	5	2	0	7	33
Peak Factor																					0.886
High Int.	07:30 AM					06:45 AM					07:00 AM					07:15 AM					
Volume	0	0	0	1	1	0	19	0	0	19	2	0	6	0	8	0	8	1	1	10	
Peak Factor					0.250					0.842					0.813					0.650	



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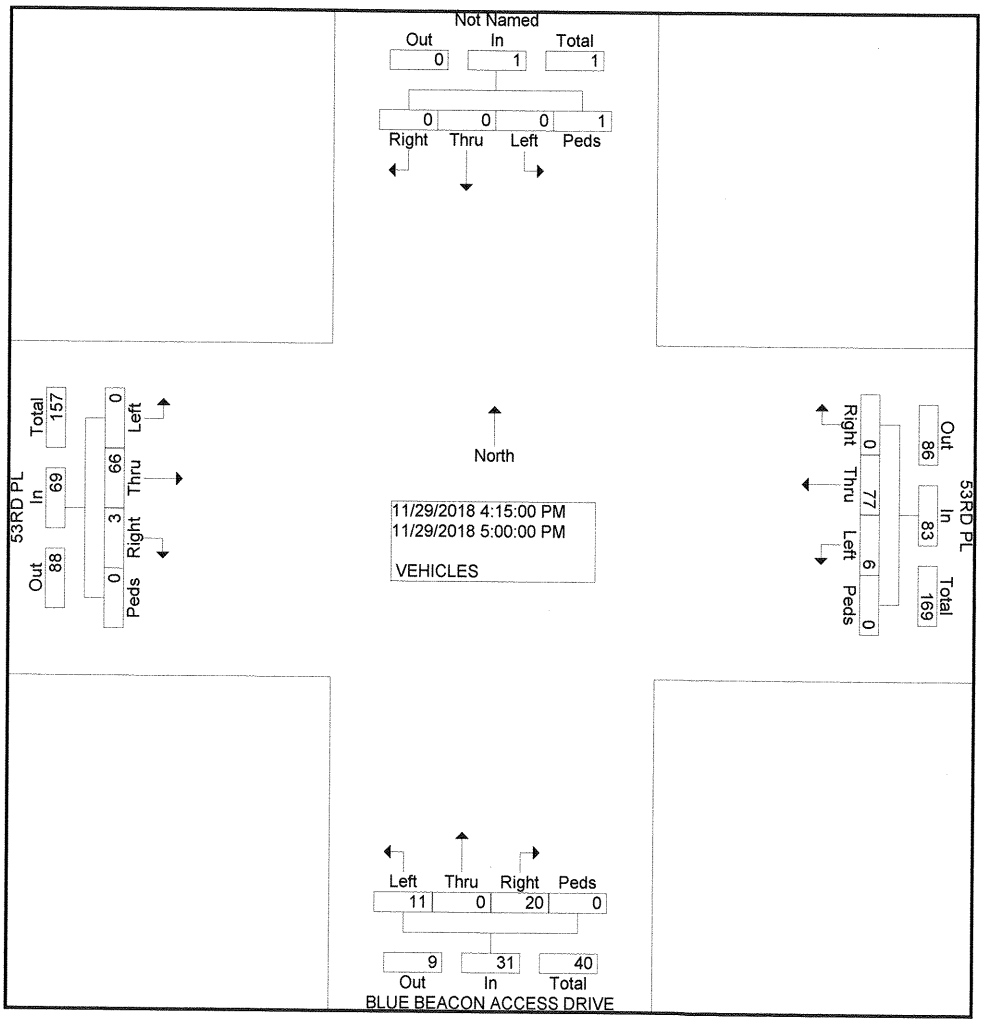
	Southbound					53RD PL Westbound					BLUE BEACON ACCESS DRIVE Northbound					53RD PL Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	0	0	0	1	1	6	77	0	0	83	11	0	20	0	31	0	66	3	0	69	184
Percent	0.0	0.0	0.0	100.0		7.2	92.8	0.0	0.0		35.5	0.0	64.5	0.0		0.0	95.7	4.3	0.0		
04:30 Volume	0	0	0	1	1	0	24	0	0	24	2	0	5	0	7	0	21	2	0	23	55
Peak Factor																					0.836
High Int.	04:30 PM					04:30 PM					04:45 PM					04:30 PM					
Volume	0	0	0	1	1	0	24	0	0	24	3	0	9	0	12	0	21	2	0	23	
Peak Factor					0.250					0.865					0.646					0.750	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: 53RD PL
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : QUEB53RD
Site Code : 00000025
Start Date : 11/29/2018
Page No : 1

Groups Printed- VEHICLES

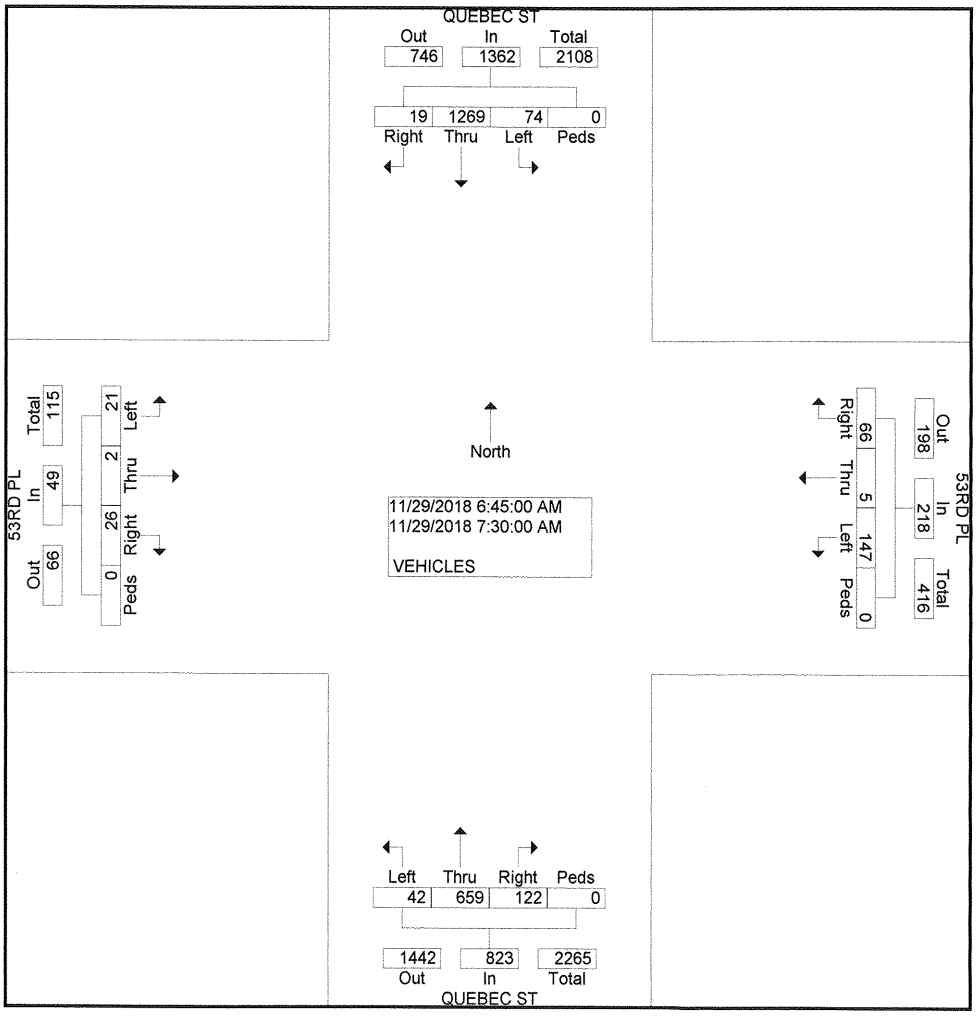
	QUEBEC ST Southbound				53RD PL Westbound				QUEBEC ST Northbound				53RD PL Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	14	305	2	0	33	1	22	0	16	153	46	0	5	0	6	0	603
06:45 AM	12	321	6	0	28	1	16	0	12	178	41	0	5	0	3	0	623
Total	26	626	8	0	61	2	38	0	28	331	87	0	10	0	9	0	1226
07:00 AM	19	314	7	0	35	0	24	0	12	164	27	0	2	0	11	0	615
07:15 AM	18	317	2	0	41	1	14	0	11	147	32	0	7	0	6	0	596
07:30 AM	25	317	4	0	43	3	12	0	7	170	22	0	7	2	6	0	618
07:45 AM	27	213	6	0	47	5	28	0	13	173	40	0	8	3	8	0	571
Total	89	1161	19	0	166	9	78	0	43	654	121	0	24	5	31	0	2400
08:00 AM	20	257	6	1	46	2	17	0	13	165	16	0	7	1	9	0	560
08:15 AM	15	281	11	1	42	3	20	0	15	172	26	3	1	0	17	0	607
Total	35	538	17	2	88	5	37	0	28	337	42	3	8	1	26	0	1167
04:00 PM	15	201	5	1	41	3	34	0	15	406	19	0	6	5	11	0	762
04:15 PM	26	211	4	0	55	3	49	0	19	418	43	0	12	0	11	0	851
04:30 PM	24	250	9	4	30	2	37	0	17	361	27	0	8	6	11	0	786
04:45 PM	35	268	5	1	31	0	32	0	11	357	41	0	13	4	10	0	808
Total	100	930	23	6	157	8	152	0	62	1542	130	0	39	15	43	0	3207
05:00 PM	35	278	5	1	27	1	30	0	14	392	27	0	3	4	14	0	831
05:15 PM	32	283	2	1	21	3	35	0	10	341	21	1	7	1	9	0	767
05:30 PM	24	208	5	0	21	2	26	0	8	278	19	0	9	0	13	0	613
05:45 PM	14	219	9	0	27	2	12	0	5	209	34	0	5	4	11	0	551
Total	105	988	21	2	96	8	103	0	37	1220	101	1	24	9	47	0	2762
Grand Total	355	4243	88	10	568	32	408	0	198	4084	481	4	105	30	156	0	10762
Apprch %	7.6	90.4	1.9	0.2	56.3	3.2	40.5	0.0	4.2	85.7	10.1	0.1	36.1	10.3	53.6	0.0	
Total %	3.3	39.4	0.8	0.1	5.3	0.3	3.8	0.0	1.8	37.9	4.5	0.0	1.0	0.3	1.4	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: 53RD PL
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : QUEB53RD
Site Code : 00000025
Start Date : 11/29/2018
Page No : 2

	QUEBEC ST Southbound					53RD PL Westbound					QUEBEC ST Northbound					53RD PL Eastbound					
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 From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	74	1269	19	0	1362	147	5	66	0	218	42	659	122	0	823	21	2	26	0	49	2452
Percent	5.4	93.2	1.4	0.0		67.4	2.3	30.3	0.0		5.1	80.1	14.8	0.0		42.9	4.1	53.1	0.0		
06:45 Volume	12	321	6	0	339	28	1	16	0	45	12	178	41	0	231	5	0	3	0	8	623
Peak Factor																					0.984
High Int.	07:30 AM					07:00 AM					06:45 AM					07:30 AM					
Volume	25	317	4	0	346	35	0	24	0	59	12	178	41	0	231	7	2	6	0	15	
Peak Factor					0.984					0.924					0.891					0.817	



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1889 YORK STREET
DENVER.COLORADO
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N/S STREET: QUEBEC ST
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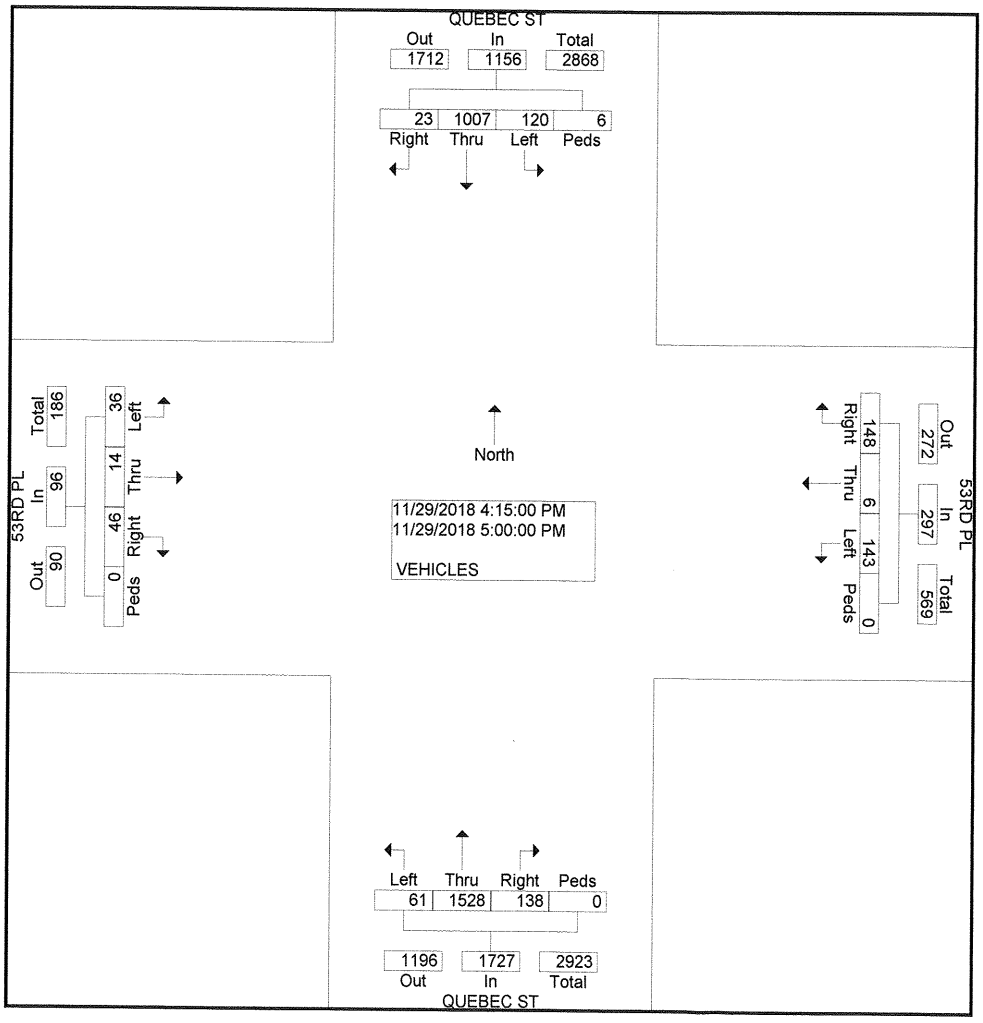
Start Date : 11/29/2018
Page No : 2

	QUEBEC ST Southbound					53RD PL Westbound					QUEBEC ST Northbound					53RD PL Eastbound					
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 From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	120	1007	23	6	1156	143	6	148	0	297	61	1528	138	0	1727	36	14	46	0	96	3276
Percent	10.4	87.1	2.0	0.5		48.1	2.0	49.8	0.0		3.5	88.5	8.0	0.0		37.5	14.6	47.9	0.0		
04:15 Volume	26	211	4	0	241	55	3	49	0	107	19	418	43	0	480	12	0	11	0	23	851
Peak Factor																					0.962
High Int.	05:00 PM					04:15 PM					04:15 PM					04:45 PM					
Volume	35	278	5	1	319	55	3	49	0	107	19	418	43	0	480	13	4	10	0	27	
Peak Factor					0.906					0.694					0.899					0.889	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: TA ACCESS
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : QUEBTAA
Site Code : 00000026
Start Date : 11/29/2018
Page No : 1

Groups Printed- VEHICLES

	QUEBEC ST Southbound				Westbound				QUEBEC ST Northbound				TA ACCESS Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	331	3	0	0	0	0	0	1	217	0	0	1	0	4	0	557
06:45 AM	0	334	1	0	0	0	0	0	10	209	0	0	0	0	2	0	556
Total	0	665	4	0	0	0	0	0	11	426	0	0	1	0	6	0	1113
07:00 AM	0	356	6	0	0	0	0	0	5	196	0	0	1	0	7	0	571
07:15 AM	0	360	4	0	0	0	0	0	4	185	0	0	1	0	3	0	557
07:30 AM	0	361	5	0	0	0	0	0	6	202	0	0	0	0	6	0	580
07:45 AM	0	263	3	0	0	0	0	0	10	223	0	0	2	0	4	0	505
Total	0	1340	18	0	0	0	0	0	25	806	0	0	4	0	20	0	2213
08:00 AM	0	309	11	0	0	0	0	0	8	199	0	0	0	0	7	0	534
08:15 AM	0	308	1	0	0	0	0	0	5	198	0	0	1	0	7	0	520
Total	0	617	12	0	0	0	0	0	13	397	0	0	1	0	14	0	1054
04:00 PM	0	256	2	1	0	0	0	0	5	433	2	0	0	0	1	0	700
04:15 PM	0	249	4	0	0	0	0	0	7	476	0	0	0	0	3	0	739
04:30 PM	0	301	7	0	0	0	0	0	7	406	0	0	1	0	3	0	725
04:45 PM	0	263	14	0	0	0	0	0	7	416	0	0	0	0	5	0	705
Total	0	1069	27	1	0	0	0	0	26	1731	2	0	1	0	12	0	2869
05:00 PM	0	343	7	0	0	0	0	0	7	414	0	0	0	0	5	0	776
05:15 PM	0	275	7	0	0	0	0	0	9	364	0	0	1	0	4	0	660
05:30 PM	0	253	4	3	0	0	0	0	4	302	0	0	2	0	6	0	574
05:45 PM	0	228	9	1	0	0	0	0	4	254	0	0	0	0	0	0	496
Total	0	1099	27	4	0	0	0	0	24	1334	0	0	3	0	15	0	2506
Grand Total	0	4790	88	5	0	0	0	0	99	4694	2	0	10	0	67	0	9755
Apprch %	0.0	98.1	1.8	0.1	0.0	0.0	0.0	0.0	2.1	97.9	0.0	0.0	13.0	0.0	87.0	0.0	
Total %	0.0	49.1	0.9	0.1	0.0	0.0	0.0	0.0	1.0	48.1	0.0	0.0	0.1	0.0	0.7	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
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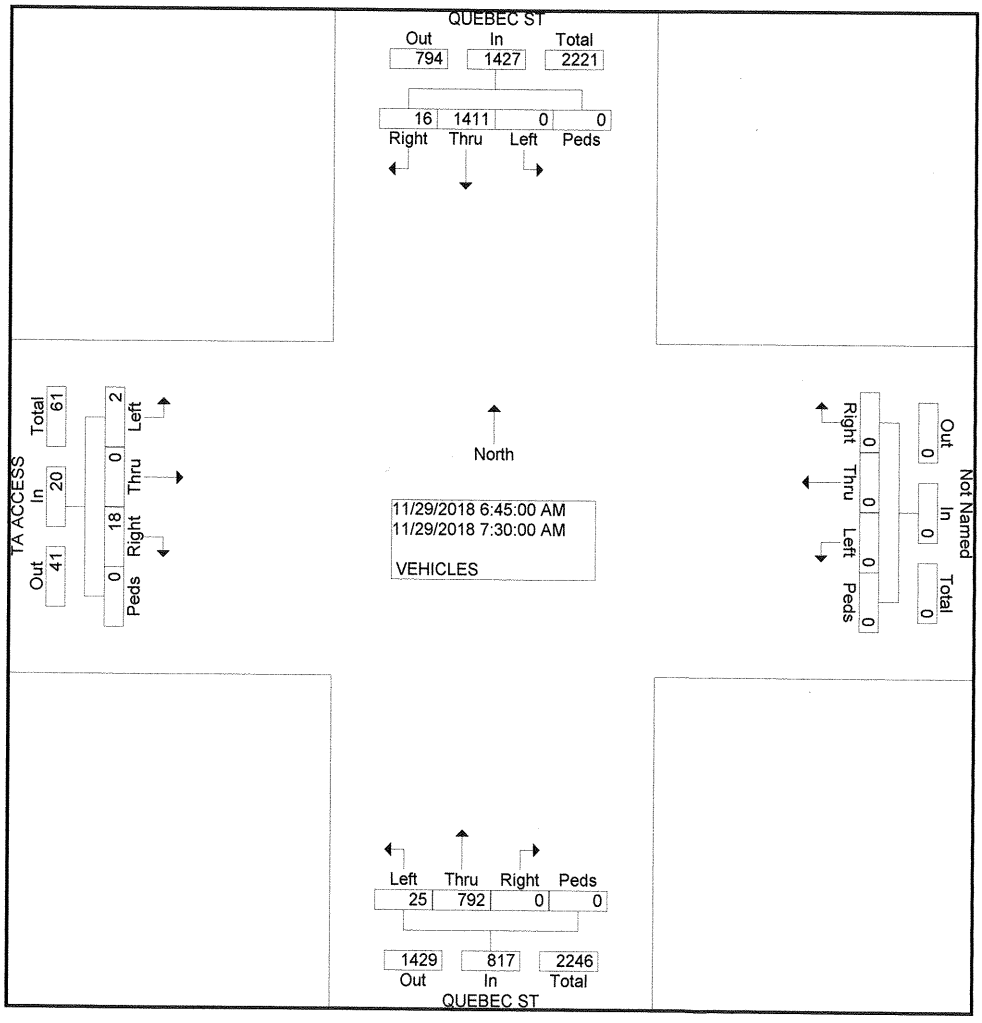
CITY: COMMERCE CITY
COUNTY: ADAMS

File Name : QUEBTAA
Site Code : 00000026
Start Date : 11/29/2018
Page No : 2

	QUEBEC ST Southbound					Westbound					QUEBEC ST Northbound					TA ACCESS Eastbound					
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 From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	0	1411	16	0	1427	0	0	0	0	0	25	792	0	0	817	2	0	18	0	20	2264
Percent	0.0	98.9	1.1	0.0		0.0	0.0	0.0	0.0		3.1	96.9	0.0	0.0		10.0	0.0	90.0	0.0		
07:30 Volume	0	361	5	0	366	0	0	0	0	0	6	202	0	0	208	0	0	6	0	6	580
Peak Factor																					0.976
High Int.	07:30 AM					6:15:00 AM					06:45 AM					07:00 AM					
Volume	0	361	5	0	366	0	0	0	0	0	10	209	0	0	219	1	0	7	0	8	
Peak Factor					0.975										0.933					0.625	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
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File Name : QUEBTAA
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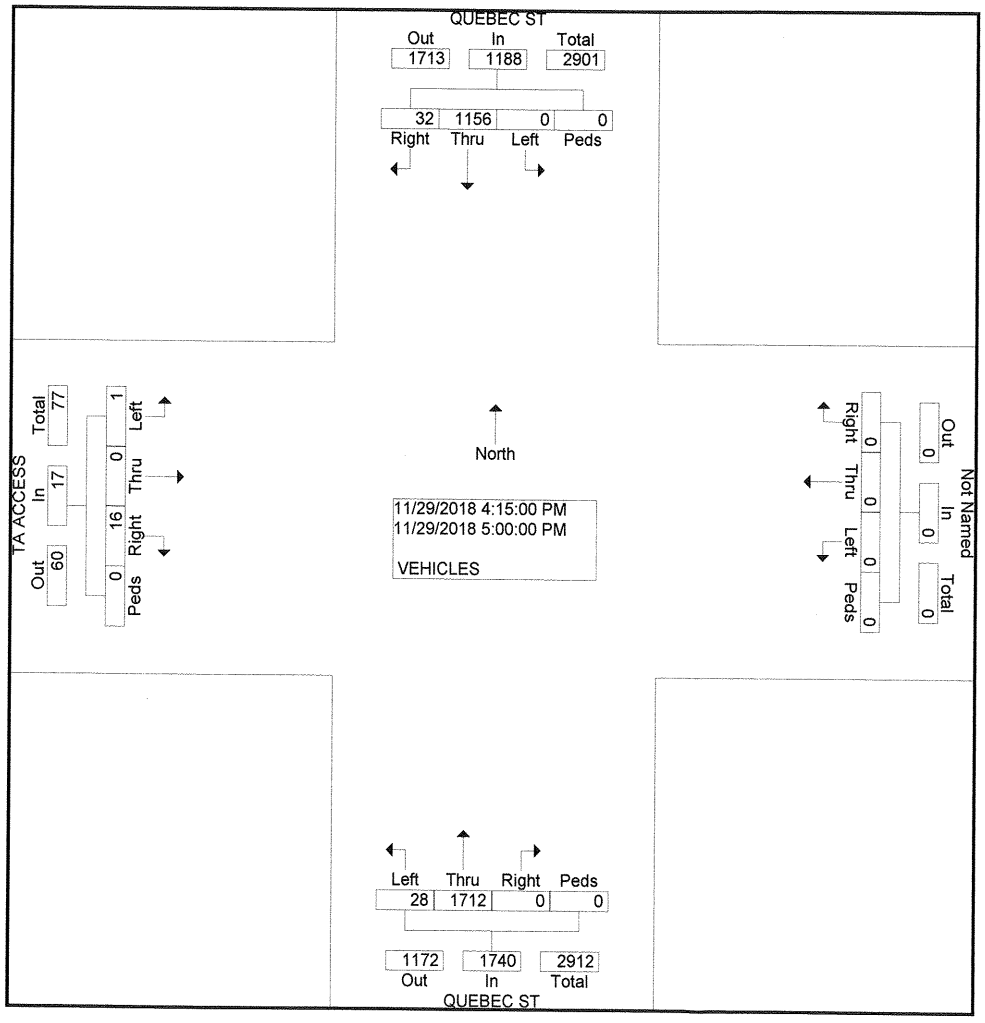
Start Date : 11/29/2018
Page No : 2

	QUEBEC ST Southbound					Westbound					QUEBEC ST Northbound					TA ACCESS Eastbound					
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 From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	0	1156	32	0	1188	0	0	0	0	0	28	1712	0	0	1740	1	0	16	0	17	2945
Percent	0.0	97.3	2.7	0.0		0.0	0.0	0.0	0.0		1.6	98.4	0.0	0.0		5.9	0.0	94.1	0.0		
05:00 Volume	0	343	7	0	350	0	0	0	0	0	7	414	0	0	421	0	0	5	0	5	776
Peak Factor																					0.949
High Int. Volume	05:00 PM 0	343	7	0	350	0	0	0	0	0	04:15 PM 7	476	0	0	483	04:45 PM 0	0	5	0	5	
Peak Factor					0.849										0.901					0.850	



LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

LOS	Average Vehicle Delay sec/vehicle	Operational Characteristics
A	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

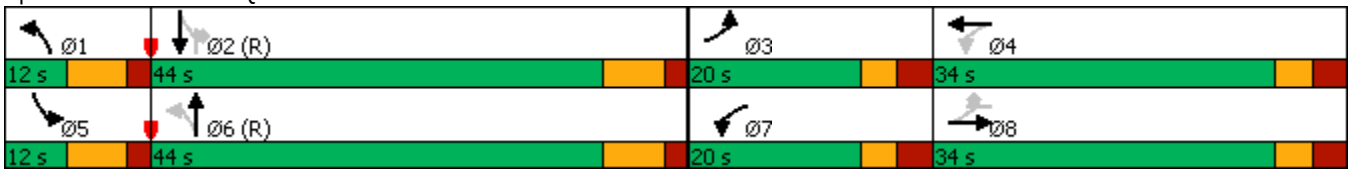
Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. The delay could be up to 15 seconds. Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.
D	25 to 35 seconds	This is the point at which a traffic signal may be warranted for this intersection. The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. There is a high probability that this intersection will meet traffic signal warrants. The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. The only remedy for these long delays is installing a traffic signal or restricting the accesses. The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	21	2	147	5	66	42	659	122	74	1269
Future Volume (vph)	21	2	147	5	66	42	659	122	74	1269
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	12.0	44.0	44.0	12.0	44.0
Total Split (%)	18.2%	30.9%	18.2%	30.9%	30.9%	10.9%	40.0%	40.0%	10.9%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	13.9	6.3	17.1	13.6	6.3	70.7	65.4	68.6	73.3	68.6
Actuated g/C Ratio	0.13	0.06	0.16	0.12	0.06	0.64	0.59	0.62	0.67	0.62
v/c Ratio	0.10	0.25	0.34	0.02	0.27	0.15	0.32	0.12	0.15	0.42
Control Delay	35.2	24.1	41.7	44.6	2.6	8.1	13.7	1.3	7.3	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	24.1	41.7	44.6	2.6	8.1	13.7	1.3	7.3	13.0
LOS	D	C	D	D	A	A	B	A	A	B
Approach Delay		28.8		29.9			11.6			12.7
Approach LOS		C		C			B			B

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 14.2	Intersection LOS: B
Intersection Capacity Utilization 56.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	5	4	59	3	23
Future Vol, veh/h	20	5	4	59	3	23
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	6	4	66	3	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	99	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	74	-
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	-	-	1585	-	900	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	897	1051
Mov Cap-2 Maneuver	-	-	-	-	897	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	949	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1031	-	-	1585	-
HCM Lane V/C Ratio	0.028	-	-	0.003	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	18	25	792	1411	16
Future Vol, veh/h	0	18	25	792	1411	16
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	26	808	1440	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	728	1456	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	314	234	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	314	234	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	234	-	314	-	-
HCM Lane V/C Ratio	0.109	-	0.058	-	-
HCM Control Delay (s)	22.3	-	17.2	-	-
HCM Lane LOS	C	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.2	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	36	14	143	6	148	61	1528	138	120	1007
Future Volume (vph)	36	14	143	6	148	61	1528	138	120	1007
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	19.0	20.0	19.0	19.0	15.0	51.0	51.0	15.0	51.0
Total Split (%)	19.0%	18.1%	19.0%	18.1%	18.1%	14.3%	48.6%	48.6%	14.3%	48.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	18.0	7.2	16.9	12.8	7.2	60.2	53.3	57.7	65.2	57.7
Actuated g/C Ratio	0.17	0.07	0.16	0.12	0.07	0.57	0.51	0.55	0.62	0.55
v/c Ratio	0.14	0.40	0.30	0.03	0.57	0.19	0.89	0.15	0.55	0.39
Control Delay	32.4	26.1	39.5	43.8	13.2	9.2	31.8	2.1	23.3	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	26.1	39.5	43.8	13.2	9.2	31.8	2.1	23.3	15.3
LOS	C	C	D	D	B	A	C	A	C	B
Approach Delay		28.5		26.5			28.7			16.1
Approach LOS		C		C			C			B

Intersection Summary	
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.0	Intersection LOS: C
Intersection Capacity Utilization 76.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	3	6	77	11	20
Future Vol, veh/h	66	3	6	77	11	20
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	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	4	7	92	13	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	187	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	106	-
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	-	-	1514	-	802	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1514	-	798	979
Mov Cap-2 Maneuver	-	-	-	-	798	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	906	-	-	1514	-
HCM Lane V/C Ratio	0.041	-	-	0.005	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	28	1712	1156	32
Future Vol, veh/h	0	16	28	1712	1156	32
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	29	1802	1217	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	626	1251	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	366	296	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	366	296	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

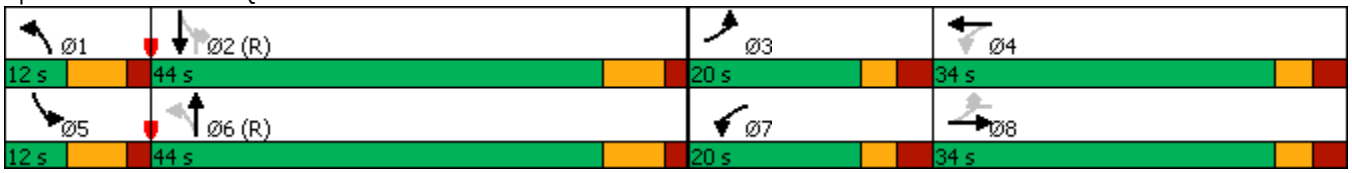
Approach	EB	NB	SB
HCM Control Delay, s	15.3	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	296	-	366	-	-
HCM Lane V/C Ratio	0.1	-	0.046	-	-
HCM Control Delay (s)	18.5	-	15.3	-	-
HCM Lane LOS	C	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	22	2	155	5	70	45	700	130	79	1345
Future Volume (vph)	22	2	155	5	70	45	700	130	79	1345
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	12.0	44.0	44.0	12.0	44.0
Total Split (%)	18.2%	30.9%	18.2%	30.9%	30.9%	10.9%	40.0%	40.0%	10.9%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	14.0	6.3	17.4	13.8	6.3	70.4	65.0	65.7	71.8	65.7
Actuated g/C Ratio	0.13	0.06	0.16	0.13	0.06	0.64	0.59	0.60	0.65	0.60
v/c Ratio	0.10	0.26	0.36	0.02	0.28	0.18	0.34	0.13	0.17	0.46
Control Delay	35.0	24.0	41.7	44.6	2.8	8.6	14.2	1.7	7.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	24.0	41.7	44.6	2.8	8.6	14.2	1.7	7.5	14.7
LOS	D	C	D	D	A	A	B	A	A	B
Approach Delay		28.6		30.0			12.0			14.3
Approach LOS		C		C			B			B

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	5	4	63	3	23
Future Vol, veh/h	21	5	4	63	3	23
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	6	4	71	3	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	106	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	79	-
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	-	-	1583	-	892	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	889	1048
Mov Cap-2 Maneuver	-	-	-	-	889	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1027	-	-	1583	-
HCM Lane V/C Ratio	0.028	-	-	0.003	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	18	25	840	1495	16
Future Vol, veh/h	0	18	25	840	1495	16
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	26	857	1526	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	771	1542	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	294	212	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	294	212	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

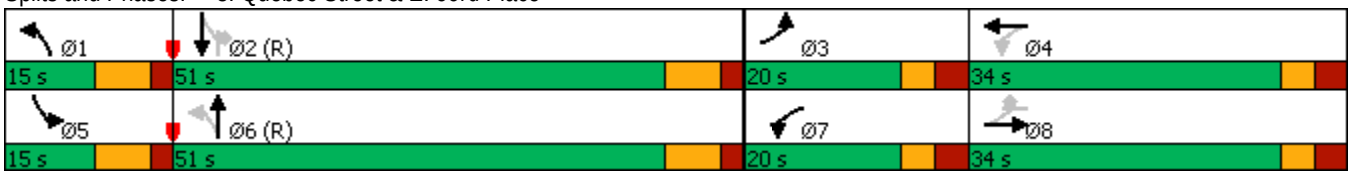
Approach	EB	NB	SB
HCM Control Delay, s	18.1	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	212	-	294	-	-
HCM Lane V/C Ratio	0.12	-	0.062	-	-
HCM Control Delay (s)	24.3	-	18.1	-	-
HCM Lane LOS	C	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.2	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	38	15	150	6	155	65	1620	145	125	1070
Future Volume (vph)	38	15	150	6	155	65	1620	145	125	1070
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	19.0	11.0	19.0	19.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	15.0	51.0	51.0	15.0	51.0
Total Split (%)	16.7%	28.3%	16.7%	28.3%	28.3%	12.5%	42.5%	42.5%	12.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	21.0	7.8	16.1	10.5	7.8	73.2	66.1	71.0	79.1	71.0
Actuated g/C Ratio	0.18	0.06	0.13	0.09	0.06	0.61	0.55	0.59	0.66	0.59
v/c Ratio	0.14	0.44	0.37	0.04	0.64	0.21	0.87	0.15	0.63	0.38
Control Delay	38.2	28.6	48.3	50.2	19.7	9.1	30.2	3.1	34.0	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	28.6	48.3	50.2	19.7	9.1	30.2	3.1	34.0	14.6
LOS	D	C	D	D	B	A	C	A	C	B
Approach Delay		32.2		34.1			27.3			16.6
Approach LOS		C		C			C			B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 79.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	3	6	82	11	20
Future Vol, veh/h	70	3	6	82	11	20
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	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	4	7	98	13	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	197	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	112	-
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	-	-	1509	-	792	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1509	-	788	974
Mov Cap-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	899	-	-	1509	-
HCM Lane V/C Ratio	0.041	-	-	0.005	-
HCM Control Delay (s)	9.2	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	28	1815	1225	32
Future Vol, veh/h	0	16	28	1815	1225	32
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	29	1911	1289	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	662	1323	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	347	272	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	347	272	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

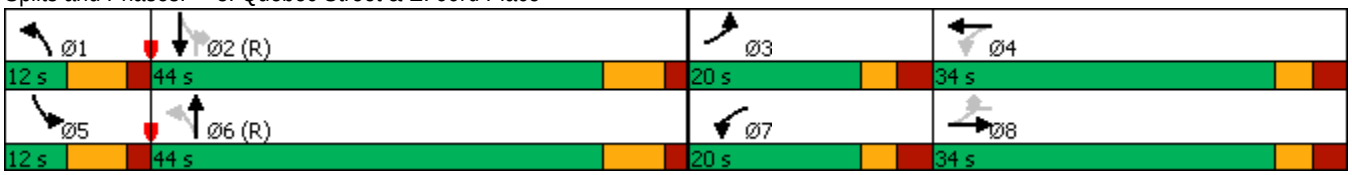
Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	272	-	347	-	-
HCM Lane V/C Ratio	0.108	-	0.049	-	-
HCM Control Delay (s)	19.8	-	15.9	-	-
HCM Lane LOS	C	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.2	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	25	3	156	5	70	45	700	130	79	1348
Future Volume (vph)	25	3	156	5	70	45	700	130	79	1348
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	12.0	44.0	44.0	12.0	44.0
Total Split (%)	18.2%	30.9%	18.2%	30.9%	30.9%	10.9%	40.0%	40.0%	10.9%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	14.2	6.4	17.4	13.8	6.4	70.3	64.9	65.6	71.7	65.6
Actuated g/C Ratio	0.13	0.06	0.16	0.13	0.06	0.64	0.59	0.60	0.65	0.60
v/c Ratio	0.12	0.27	0.36	0.02	0.28	0.18	0.34	0.13	0.17	0.46
Control Delay	35.3	24.6	41.6	44.6	2.8	8.6	14.2	1.7	7.6	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	24.6	41.6	44.6	2.8	8.6	14.2	1.7	7.6	14.8
LOS	D	C	D	D	A	A	B	A	A	B
Approach Delay		29.4		30.0			12.1			14.4
Approach LOS		C		C			B			B

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	5	4	63	3	27
Future Vol, veh/h	21	5	4	63	3	27
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	6	4	71	3	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	106	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	79	-
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	-	-	1583	-	892	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	889	1048
Mov Cap-2 Maneuver	-	-	-	-	889	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1030	-	-	1583	-
HCM Lane V/C Ratio	0.033	-	-	0.003	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	24	31	840	1495	20
Future Vol, veh/h	0	24	31	840	1495	20
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	24	32	857	1526	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	773	1546	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	293	211	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	293	211	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

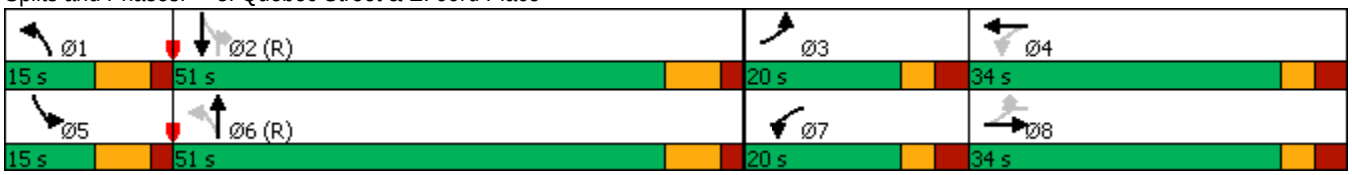
Approach	EB	NB	SB
HCM Control Delay, s	18.4	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	211	-	293	-	-
HCM Lane V/C Ratio	0.15	-	0.084	-	-
HCM Control Delay (s)	25	-	18.4	-	-
HCM Lane LOS	D	-	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.3	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	41	16	151	6	155	65	1620	145	125	1073
Future Volume (vph)	41	16	151	6	155	65	1620	145	125	1073
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	19.0	11.0	19.0	19.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	15.0	51.0	51.0	15.0	51.0
Total Split (%)	16.7%	28.3%	16.7%	28.3%	28.3%	12.5%	42.5%	42.5%	12.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	19.3	7.8	18.4	13.6	7.8	73.1	66.1	71.0	79.1	71.0
Actuated g/C Ratio	0.16	0.06	0.15	0.11	0.06	0.61	0.55	0.59	0.66	0.59
v/c Ratio	0.16	0.44	0.33	0.03	0.64	0.21	0.87	0.15	0.63	0.38
Control Delay	38.5	29.0	46.1	50.2	19.6	9.2	30.3	3.1	34.0	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	29.0	46.1	50.2	19.6	9.2	30.3	3.1	34.0	14.7
LOS	D	C	D	D	B	A	C	A	C	B
Approach Delay		32.7		33.0			27.4			16.6
Approach LOS		C		C			C			B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 79.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	3	6	82	11	24
Future Vol, veh/h	70	3	6	82	11	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	4	7	98	13	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	197	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	112	-
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	-	-	1509	-	792	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1509	-	788	974
Mov Cap-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1509	-
HCM Lane V/C Ratio	0.046	-	-	0.005	-
HCM Control Delay (s)	9.2	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	22	34	1815	1225	36
Future Vol, veh/h	0	22	34	1815	1225	36
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	36	1911	1289	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	664	1327	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	346	271	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	346	271	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

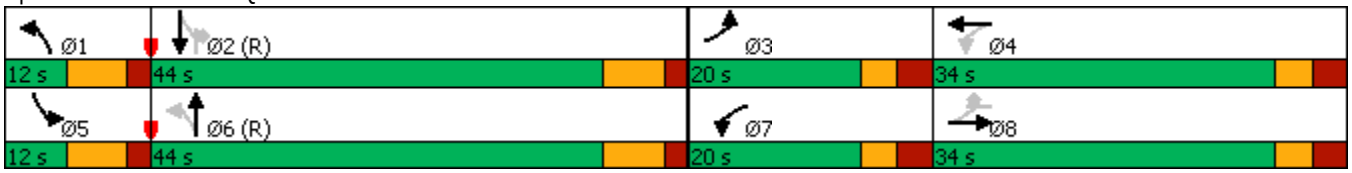
Approach	EB	NB	SB
HCM Control Delay, s	16.2	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	271	-	346	-	-
HCM Lane V/C Ratio	0.132	-	0.067	-	-
HCM Control Delay (s)	20.3	-	16.2	-	-
HCM Lane LOS	C	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.2	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	40	4	280	10	125	80	1255	235	140	2430
Future Volume (vph)	40	4	280	10	125	80	1255	235	140	2430
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	12.0	44.0	44.0	12.0	44.0
Total Split (%)	18.2%	30.9%	18.2%	30.9%	30.9%	10.9%	40.0%	40.0%	10.9%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	19.0	6.7	20.5	14.6	6.7	60.1	52.5	59.1	68.6	59.1
Actuated g/C Ratio	0.17	0.06	0.19	0.13	0.06	0.55	0.48	0.54	0.62	0.54
v/c Ratio	0.14	0.38	0.50	0.04	0.50	0.42	0.53	0.25	0.46	0.92
Control Delay	33.3	22.8	42.8	45.9	10.1	17.7	21.6	2.9	14.0	31.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	22.8	42.8	45.9	10.1	17.7	21.6	2.9	14.0	31.9
LOS	C	C	D	D	B	B	C	A	B	C
Approach Delay		27.3		33.0			18.6			30.9
Approach LOS		C		C			B			C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 83.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	5	4	115	3	23
Future Vol, veh/h	40	5	4	115	3	23
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	6	4	129	3	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	51	0	185	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	137	-
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	-	-	1555	-	804	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	802	1021
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	990	-	-	1555	-
HCM Lane V/C Ratio	0.03	-	-	0.003	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	18	25	1520	2700	16
Future Vol, veh/h	0	18	25	1520	2700	16
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	26	1551	2755	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1386	2771	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	114	50	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	114	50	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.6	2.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	50	-	114	-	-
HCM Lane V/C Ratio	0.51	-	0.161	-	-
HCM Control Delay (s)	136.1	-	42.6	-	-
HCM Lane LOS	F	-	E	-	-
HCM 95th %tile Q(veh)	1.9	-	0.6	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	70	25	275	12	285	115	2925	265	230	1930
Future Volume (vph)	70	25	275	12	285	115	2925	265	230	1930
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		4	6		6	2	
Detector Phase	3	8	7	4	4	1	6	6	5	2
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)	12.0	12.0	12.0	12.0	12.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	12.0	32.0	12.0	32.0	32.0	12.0	87.0	87.0	19.0	94.0
Total Split (%)	8.0%	21.3%	8.0%	21.3%	21.3%	8.0%	58.0%	58.0%	12.7%	62.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0	-2.0	-2.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	31.2	23.2	31.2	23.2	23.2	91.3	83.0	82.0	105.8	92.4
Actuated g/C Ratio	0.21	0.15	0.21	0.15	0.15	0.61	0.55	0.55	0.71	0.62
v/c Ratio	0.24	0.36	0.59	0.05	0.85	0.71	1.08	0.29	0.89	0.66
Control Delay	46.2	23.7	53.6	51.3	56.9	49.1	77.2	8.0	75.5	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	23.7	53.6	51.3	56.9	49.1	77.2	8.0	75.5	20.2
LOS	D	C	D	D	E	D	E	A	E	C
Approach Delay		32.4		55.2			70.6			26.0
Approach LOS		C		E			E			C

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 52.4	Intersection LOS: D
Intersection Capacity Utilization 94.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	3	6	150	11	20
Future Vol, veh/h	125	3	6	150	11	20
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	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	4	7	179	13	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	153	0	344	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	193	-
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	-	-	1428	-	652	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	649	895
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	789	-	-	1428	-
HCM Lane V/C Ratio	0.047	-	-	0.005	-
HCM Control Delay (s)	9.8	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	28	3280	2215	32
Future Vol, veh/h	0	16	28	3280	2215	32
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	29	3453	2332	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1183	2366	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	156	81	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	156	81	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

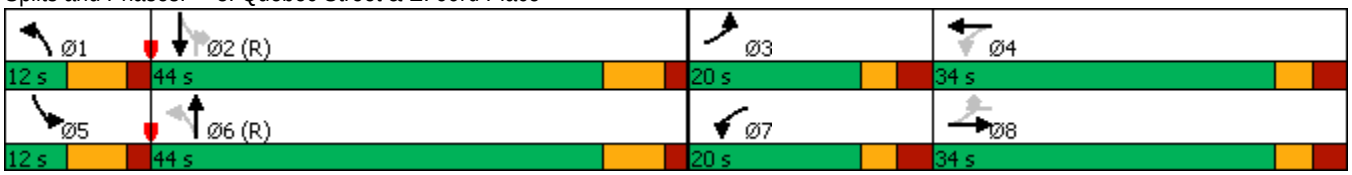
Approach	EB	NB	SB
HCM Control Delay, s	30.9	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	81	-	156	-	-
HCM Lane V/C Ratio	0.364	-	0.108	-	-
HCM Control Delay (s)	72.9	-	30.9	-	-
HCM Lane LOS	F	-	D	-	-
HCM 95th %tile Q(veh)	1.4	-	0.4	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	43	5	281	10	125	80	1265	235	140	2433
Future Volume (vph)	43	5	281	10	125	80	1265	235	140	2433
Turn Type	pm+pt	NA	pm+pt	NA	custom	pm+pt	NA	custom	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		8	6		2	2	
Detector Phase	3	8	7	4	8	1	6	2	5	2
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)	11.0	24.0	11.0	24.0	24.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	20.0	34.0	20.0	34.0	34.0	12.0	44.0	44.0	12.0	44.0
Total Split (%)	18.2%	30.9%	18.2%	30.9%	30.9%	10.9%	40.0%	40.0%	10.9%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	21.6	6.7	18.1	10.7	6.7	60.1	52.4	59.1	68.6	59.1
Actuated g/C Ratio	0.20	0.06	0.16	0.10	0.06	0.55	0.48	0.54	0.62	0.54
v/c Ratio	0.14	0.38	0.54	0.05	0.50	0.42	0.53	0.25	0.47	0.92
Control Delay	33.1	23.3	45.4	46.6	10.0	17.8	21.7	2.9	14.3	32.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	23.3	45.4	46.6	10.0	17.8	21.7	2.9	14.3	32.1
LOS	C	C	D	D	A	B	C	A	B	C
Approach Delay		27.6		34.7			18.7			31.1
Approach LOS		C		C			B			C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.2	Intersection LOS: C
Intersection Capacity Utilization 83.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place



Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	5	4	115	3	27
Future Vol, veh/h	40	5	4	115	3	27
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	6	4	129	3	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	51	0	185	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	137	-
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	-	-	1555	-	804	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	802	1021
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	1555	-
HCM Lane V/C Ratio	0.034	-	-	0.003	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	24	31	1520	2700	20
Future Vol, veh/h	0	24	31	1520	2700	20
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	24	32	1551	2755	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1388	2775	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	114	50	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	114	50	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45	3.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	50	-	114	-	-
HCM Lane V/C Ratio	0.633	-	0.215	-	-
HCM Control Delay (s)	159.7	-	45	-	-
HCM Lane LOS	F	-	E	-	-
HCM 95th %tile Q(veh)	2.5	-	0.8	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	73	26	276	12	285	115	2925	265	230	1933
Future Volume (vph)	73	26	276	12	285	115	2925	265	230	1933
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	3	8	7	4		1	6		5	2
Permitted Phases	8		4		4	6		6	2	
Detector Phase	3	8	7	4	4	1	6	6	5	2
Switch Phase										
Minimum Initial (s)	5.0	3.0	5.0	3.0	3.0	4.0	5.0	5.0	4.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	25.0	25.0	12.0	25.0
Total Split (s)	12.0	32.0	12.0	32.0	32.0	12.0	87.0	87.0	19.0	94.0
Total Split (%)	8.0%	21.3%	8.0%	21.3%	21.3%	8.0%	58.0%	58.0%	12.7%	62.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0	-2.0	-2.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	31.2	23.2	31.2	23.2	23.2	91.3	83.0	82.0	105.8	92.4
Actuated g/C Ratio	0.21	0.15	0.21	0.15	0.15	0.61	0.55	0.55	0.71	0.62
v/c Ratio	0.25	0.36	0.59	0.05	0.85	0.71	1.08	0.29	0.89	0.66
Control Delay	46.5	24.0	53.8	51.3	56.9	50.2	77.2	8.0	75.5	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	24.0	53.8	51.3	56.9	50.2	77.2	8.0	75.5	20.2
LOS	D	C	D	D	E	D	E	A	E	C
Approach Delay		32.9		55.3			70.7			26.0
Approach LOS		C		E			E			C

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 52.4	Intersection LOS: D
Intersection Capacity Utilization 94.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Quebec Street & E. 53rd Place

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	3	6	150	11	24
Future Vol, veh/h	125	3	6	150	11	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	4	7	179	13	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	153	0	344	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	193	-
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	-	-	1428	-	652	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	649	895
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	800	-	-	1428	-
HCM Lane V/C Ratio	0.052	-	-	0.005	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	22	34	3280	2215	36
Future Vol, veh/h	0	22	34	3280	2215	36
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	360	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	36	3453	2332	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1185	2370	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	156	81	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	156	81	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.1	0.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	81	-	156	-	-
HCM Lane V/C Ratio	0.442	-	0.148	-	-
HCM Control Delay (s)	80.7	-	32.1	-	-
HCM Lane LOS	F	-	D	-	-
HCM 95th %tile Q(veh)	1.8	-	0.5	-	-