September 14, 2020

Via Email: cpc@calgary.ca

Calgary Planning Commission
The City of Calgary
P.O. Box 2100, Station "M"
Calgary, AB T2P 2M5

Attention: Matthias Tita, Chair
Kimberly Holberton

Dear Mr. Chair and Commissioners:

RE: CPC Meeting September 13, 2020 – Agenda Item 7.2.3
Land Use Amendment application LOC2020-0065/CPC2020-0990
Property: 3625 12 Street NE; Funeral Home and Crematorium

Square One Properties Ltd. is the registered owner of the property 1231 36 Avenue NE, located to the immediate west of the proposed Funeral Home and Crematorium location.

Kindly accept the attached correspondence from our company to Ms. Sarah Hbeichi, File Manager, regarding the subject application. We respectfully request that you consider our submission during the review of the Administration Report.

Despite the information mentioned in the Administration Report, the applicant's public engagement about the application was less than transparent. Neither the applicant nor the property owners of the site contacted us or our tenants.

For the reasons outlined in the attached letter, we are opposed to the proposed land use amendment. From a planning and transportation perspective, the subject parcel is an inappropriate location for the use of a funeral home.

Yours truly,

SQUARE ONE PROPERTIES LTD.

Dan Brink, President

Encl.: Letter Square One Properties Ltd. to File Manager
Report JCB Engineering Ltd.

Cc: CPC Members
PAC@calgary.ca & Kimberly.Holberton@calgary.ca
Ray Jones - Ward Councillor (ray.jones@calgary.ca)
Sarah Hbeichi

JCB Engineering

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June 17, 2020

P.O. Box 27103
Calgary, AB
T3L 2Y1

Attn: Vyetta Sunderland, Property Manager

Re: Transportation Impact Assessment – Northeast Funeral Home Land Use Amendment
Calgary, Alberta
LOC 2020 – 0065

JCB Engineering Ltd. (JCB) is pleased to present this preliminary transportation impact assessment (TIA) in opposition of a land use amendment for a proposed funeral home in the northeast of the City of Calgary, located at 3625 12 Street NE.

1. Development Information

The proposed development is on a site on the west side of 12 Street NE, between the intersections of 34 Avenue NE and 36 Avenue NE. The existing building on the site has a footprint of 681 m^2; it is not known from the application submitted to the City for the land use amendment if this existing building will be repurposed or demolished for a new building. The intended use of the site is for a funeral home with a crematorium; no further details have been provided in the application.

2. Land Use Bylaw Parking Requirements

Based on the City of Calgary Land Use Bylaw (LUB) a 'funeral home' (Part 4, Division 1, Section 200) has the same calculations for the capacity of the assembly area as a 'place of worship' (Part 4, Division 1, Sections 260 to 262). No information has been provided on the size of the assembly area for the proposed funeral home, the only area is the overall footprint of the building of 681 m^2. As there will be the assembly area, crematorium, offices, and other minor uses within the building, it is assumed that the assembly area in the building will be 300 m^2, the maximum size for an assembly area for a 'place of worship – small' in the Calgary LUB. This is just below 50% of the total building footprint area, and so is a reasonable assumption to make.

The parking requirements, for both staff and visitors, of a 'funeral home' in the LUB is a combination of:

- 2.0 motor vehicle parking stalls per 100.0 m^2 of gross useable floor area for non-assembly areas
- 1.0 motor vehicle parking stalls per 4 person capacity of the assembly area

As the assembly areas of funeral homes typically have non-fixed seating (i.e. individual chairs), the calculation of the capacity of the assembly area from the LUB is 1 person per 0.75 m^2. For the assumed area of 300 m^2, this results in a capacity of 400 people.

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The total number of vehicle parking stalls required from the LUB are as follows:

- 2.0 motor vehicle parking stalls per 100.0 m^2 for 381 m^2 – 8 stalls
- 1.0 motor vehicle parking stalls per 4 person capacity for 400 people – 100 stalls

This is a total of 108 parking stalls required on the site as per the City of Calgary LUB to support the proposed land use of a 'funeral home'.

3. Trip and Parking Generation

To determine what impact this proposed land use may have on the transportation network the expected trip and parking generation had to be calculated.

The Institute of Transportation Engineers (ITE) Trip Generation Manual does not have a land use specific to the subject development; there is no 'funeral home' or 'crematorium', but it is mentioned in the ITE land use for a 'cemetery' that there are possibly buildings used for memorial services, a mausoleum, and a crematorium included. However, it is not clear from the data which of the sites surveyed for 'cemeteries' which ones had memorial services and if the trip surveys were conducted during a funeral. As a result, another approach was needed to determine the expected trip and parking generation for the proposed funeral home.

As discussed previously, the calculations for the capacity of an assembly area for a 'funeral home' is the same as a 'place of worship' in the City of Calgary LUB. It would also be reasonable to assume that the trip generation for a church would be similar to that of a funeral home of the same size during a memorial service; often memorial services are held in a church or similar religious institution. Using the land use for a 'church' in the ITE trip and parking generation databases, the following information was calculated for a 400 person capacity assembly area:

- 175 to 216 trips generated in the peak hour
- 88 stalls average parking demand

This is based on Sunday data for the 'church' as this is when the primary services were surveyed for the ITE studies; output from the ITE trip and parking generation applications are attached to this letter. Only one peak hour was provided for the Sunday, but values were provided using both an average rate and a best fit distribution equation. Because AM traffic volumes are typically lower in Calgary than PM traffic volumes, it was decided to use the lower peak hour value for the AM peak hour analysis (see ***Section 5***) and the higher value for the PM peak hour.

4. Available Parking Supply

There is on-street parking available on 36 Avenue NE north of the subject site and on 34 Avenue NE to the south, but no parking is allowed on 12 Street NE or any public parking areas within the vicinity. All of the parking areas are attached to various businesses.

On both 34 Avenue and 36 Avenue NE there is parking allowed on only one side of each roadway; based on this information there is space for approximately 30 vehicles to park on 34 Avenue NE and 45 vehicles on 36 Avenue NE (east and west of 12 Street NE). This is based on a calculation of the available curb length on both roadways; a survey was not be conducted due to the current situation with the COVID-19 pandemic. With many businesses still closed the typical parking demand in the area could not be accurately collected; anecdotally it was mentioned that on a typical day the majority of on-street parking is in use, but this could not be confirmed.

There is no parking layout plan provided for the subject site in the land use submission, and the site is not currently laid out optimally for parking, the east section of the site is currently used for storage. Based on the area of the site and the standard size of a parking stall and drive aisles for the City of Calgary, it is estimated that 72 parking stalls could be provided on the site. It should be noted that for funeral processions there is usually a staging area required in the parking area, but without a more detailed site plan available there is no information on how much of the potential parking area may have to be used. As a result, the estimate of 72 parking stalls is likely a number that is higher than will actually be able to be accommodated on the site.

When compared to the LUB and ITE calculations, there will be a deficiency in parking on the site, thus requiring visitors to park on 34 Avenue and 36 Avenue NE.

- 16 stall (22%) deficiency based on ITE average parking generation demand
- 36 stall (50%) deficiency based on City of Calgary LUB parking requirements

For a typical service held at the proposed funeral home it can be expected that 16 to 36 vehicles will need to park on the adjacent roadways.

5. Development Generated Traffic Impacts on Adjacent Roadways

The most likely distribution of the trips generated by the proposed funeral home will be to have the majority of trips to and from 32 Avenue NE as this is the nearest arterial roadway and access to Deerfoot Trail to the subject site. There is also the likelihood of trips to and from the north using McKnight Boulevard NE instead of 32 Avenue NE, but this McKnight Boulevard NE is further away from the site, fewer trips would use that route.

2017 intersection traffic counts were available from the City of Calgary on 12 Street NE at both 32 Avenue NE and at McKnight Boulevard NE; and there is a permanent station on McKnight Boulevard NE just west of the interchange with Deerfoot Trail that has counts from 2017 to 2020. The numbers from the month of February were used as comparisons because the volumes decline significantly in March 2020 due to the shutdown measures that were started in that month to contain the COVID-19 pandemic. Using this information 2020 intersection traffic volumes were extrapolated for use in the analysis conducted for this TIA. The signal timing summary for the intersection of 12 Street and McKnight Boulevard NE was provided by the City of Calgary, but the summary for the intersection of 12 Street and 32 Avenue NE was not available in time to use for this study. Signal timings were assumed for this intersection using the parameters from the City of Calgary guidelines and observation of the operation of the traffic signal.

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Attached to this letter are spreadsheets illustrating the subject intersections for analysis as schematics, with the pre-development traffic volumes for the intersections of 12 Street and 32 Avenue NE, and 12 Street and McKnight Boulevard NE shown. The distribution of the trips calculated in ***Section 3*** of this TIA were then assigned to the two intersections to create post-development traffic volumes.

The intersection operational analysis for this TIA was conducted using Synchro (version 8) software, by Trafficware; this software utilizes the Highway Capacity Manual 2010 methodology for determining the level of service of traffic operations. The parameters for Synchro used for this analysis are based on the City of Calgary TIA guidelines, and on site observations; if there is no guideline or observation for a specific parameter, then the default value in the software is utilized. A summary of the results of the traffic operations for the subject intersections is provided in the following tables; the level of service (LOS), highest control delay, maximum volume to capacity ratio (v/c), and longest queue length are provided for each intersection approach. If an intersection approach has unacceptable operations, it is highlighted in the summary table; unacceptable operations are defined as:

- LOS of 'D' or worse; Control delay greater than 35 seconds for traffic signal control
- V/C ratio of greater than 0.90 (volumes are 90% of capacity)
- A queue length for any movement that significantly blocks another movement, or exceeds storage requirements for the movement

Table 5-1: 2020 Pre-Development Intersection Traffic Operations

Traffic Signal	12 Street and 32 Avenue NE							
	AM Peak Hour				PM Peak Hour			
Direction	LOS	Delay (sec)	V/C Ratio	Queue (m)	LOS	Delay (sec)	V/C Ratio	Queue (m)
Eastbound Left	B	10.1	0.80	39	C	32.3	0.75	40
Eastbound Thru	A	8.8	0.80	126	A	6.3	0.39	58
Westbound	A	7.7	0.37	58	B	20.0	0.90	216
Southbound	C	28.8	0.56	24	C	31.5	0.73	77

Table 5-2: 2020 Post-Development Intersection Traffic Operations

Traffic Signal	12 Street and 32 Avenue NE							
	AM Peak Hour				PM Peak Hour			
Direction	LOS	Delay (sec)	V/C Ratio	Queue (m)	LOS	Delay (sec)	V/C Ratio	Queue (m)
Eastbound Left	B	18.7	0.80	77	C	34.5	0.83	52
Eastbound Thru	A	8.8	0.80	177	A	6.2	0.37	59
Westbound	A	7.7	0.37	58	C	26.5	0.93	280
Southbound	C	28.8	0.56	28	D	38.2	0.76	43

Note that only the intersection of 12 Street and 32 Avenue NE is summarised in these tables. When the intersection of 12 Street and McKnight Boulevard NE was analysed it was found that the intersection is

failing, all approaches and in both peak hours, this can be seen in the Synchro reports attached to this letter. The volume of traffic that the proposed funeral home is adding to this intersection is an increase of approximately 1%, which is insignificant with regards to impacting the operation of an already failing intersection. Because the majority of trips generated by the development will impact the nearer intersection of 12 Street and 32 Avenue NE, it was decided to focus the analysis on this intersection.

In the AM peak hour, the eastbound left turn movement has a queue that extends beyond the capacity of the auxiliary lane and is expected to spillover into the eastbound through lane on 32 Avenue NE. This is due to the additional development generated traffic turning onto 12 Street NE after coming from the west, most likely Deerfoot Trail. But it is in the PM peak hour that the development generated traffic has a much larger impact to the operations of the 12 Street and 32 Avenue NE intersection. In the pre-development scenario, the westbound approach is at capacity, being at the 90% threshold, so when the post-development scenario was analysed that approach exceeded capacity. Adjustments were made to the signal timing to resolve this issue but providing more green time for the westbound traffic only resulted in unacceptable operations for other movements competing for time within the signal cycle. The results shown in ***Table 5-2*** was the best compromise that could be achieved for the intersection overall; even then there are unacceptable operations for some movements.

This analysis does not take into account that often funeral processions proceed together along the roadways between the funeral home and final resting place for the deceased. This would create a larger impact to the operation of the subject intersections as temporary traffic control could be used to stop other traffic movements to allow the procession to proceed along their route without being separated by changing traffic signals.

6. Summary of Conclusions

6.1. Parking

It is expected that there will be a shortfall in parking provided on the site for the proposed funeral home, 16 to 36 vehicles will need to park on the adjacent roadways. Information provided anecdotally is that there may not be sufficient parking on the nearby roadways of 34 Avenue NE and 36 Avenue NE to accommodate this shortfall. A complete parking assessment should be provided to demonstrate if there will be a parking shortfall for the development and if so, how this shortfall will be mitigated.

6.2. Traffic

The additional traffic expected to be generated by the funeral home will have an impact on the operation of the intersection of 12 Street and 32 Avenue NE. Primarily during the typical PM peak hour scenario, the intersection will have unacceptable operations due to the westbound approach being over capacity and competing for green time with other movements that have had their volumes increased by development generated traffic. A more detailed and full transportation impact assessment is required to confirm what impacts, and the size of these impacts, the development generated traffic will have on the roadways and intersections in the area.

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There will also be an impact of the development generated traffic on the intersection of 12 Street and McKnight Boulevard NE, but this impact is less than at 32 Avenue NE. The intersection at McKnight Boulevard NE is failing under existing conditions and the increase in traffic due to the development does not change this. This does demonstrate that traffic generated by the development is more likely to use the 12 Street and 32 Avenue NE intersection and create the unacceptable operational issues that have been noted in the analysis completed for this study.

It is my professional opinion, the limited information provided with the land use amendment application has resulted in raising issues that need to be addressed before the funeral home land use should be approved.

* * * * *

If you wish to discuss any items within this letter, please feel free to contact the undersigned at jcbarrett@jcbengineering.ca or at (403) 714-5798.

Sincerely,

PERMIT TO PRACTICE
JCB ENGINEERING LTD.
RM SIGNATURE: Justin Barrett
RM APEGA ID #: 77644
DATE: June 17, 2020
PERMIT NUMBER: P012310
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Justin Barrett, P. Eng., PTOE
President and Transportation Engineer
JCB Engineering Ltd.

Attachments

- ITE Trip Generation Graph
- ITE Parking Generation Graph
- City of Calgary Traffic Counts
- City of Calgary Traffic Signal Timing Summary
- Transportation Network Schematics
- Synchro Output Reports

Church
(560)

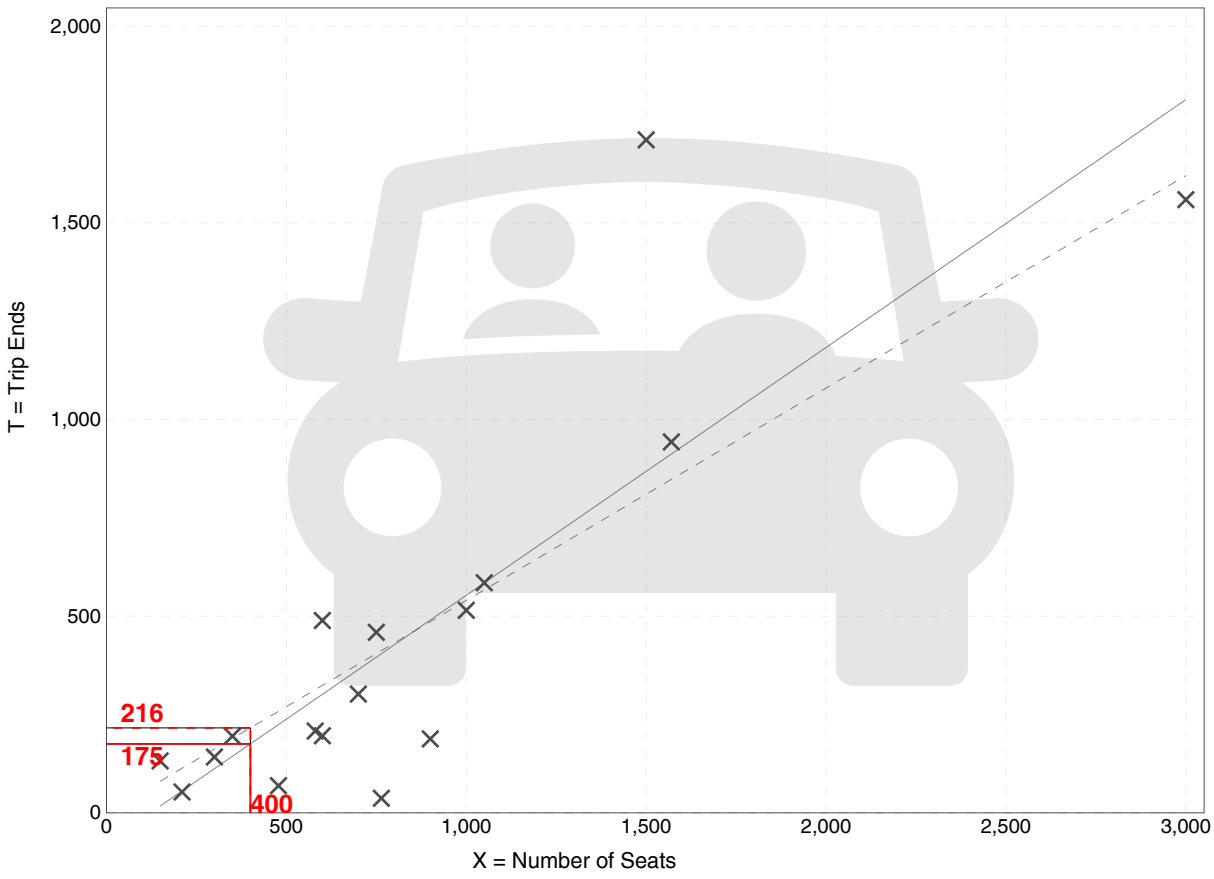
Vehicle Trip Ends vs: **Seats**
On a: **Sunday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 17
Avg. Num. of Seats: 853
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.54	0.05 - 1.14	0.28

Data Plot and Equation



Fitted Curve Equation: T = 0.63(X) - 76.74

R^2= 0.73

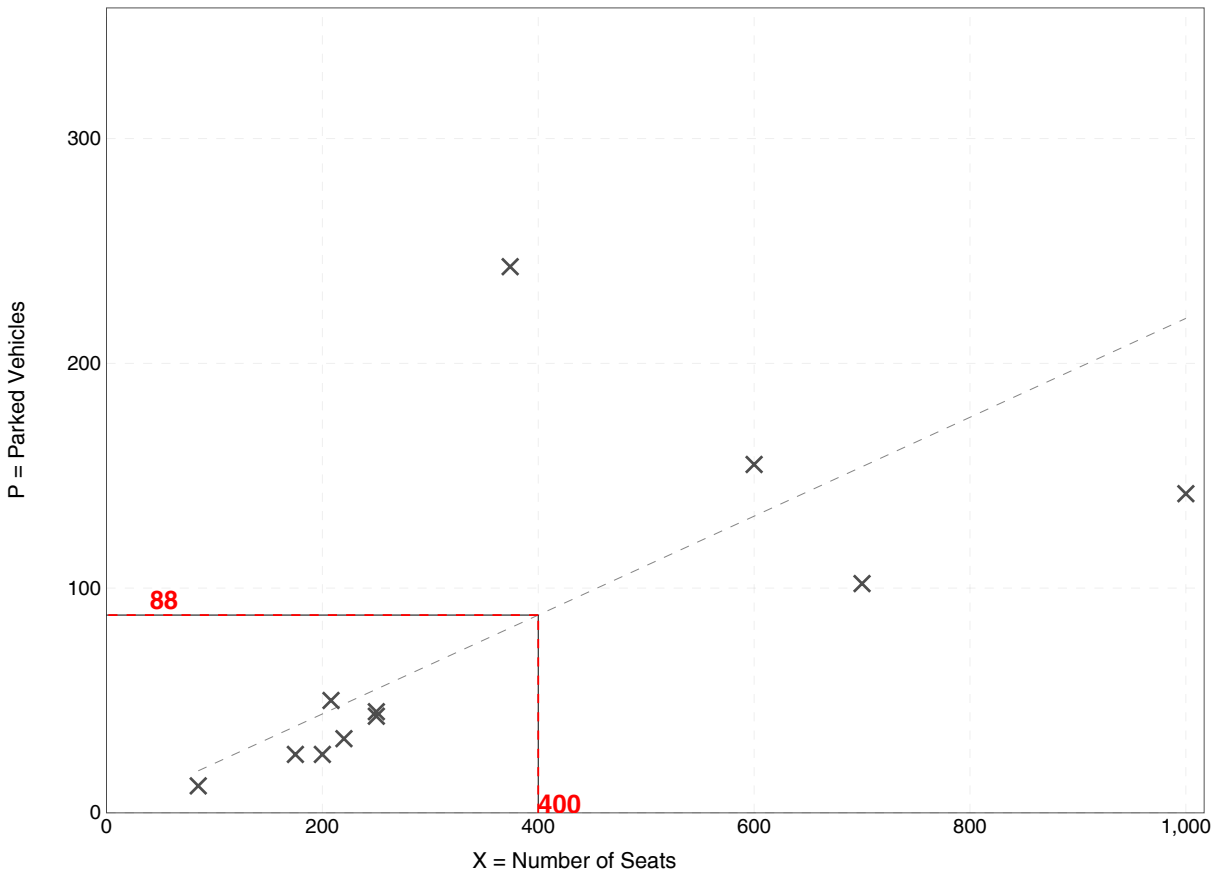
Church
(560)

Peak Period Parking Demand vs: **Seats**
On a: **Sunday**
Setting/Location: **General Urban/Suburban**
Peak Period of Parking Demand: **9:00 a.m. - 1:00 p.m.**
Number of Studies: 11
Avg. Num. of Seats: 369

Peak Period Parking Demand per Seat

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.22	0.13 - 0.65	0.15 / 0.34	***	0.15 (68%)

Data Plot and Equation



Fitted Curve Equation: ***

R^2= ***

Traffic Count Reports

Intersection Id: 8723

Status: Valid

Study Name: 6 Hour Intersection Count

Study Date: Wednesday, 28 June 2017

Location: 12 ST NE & 32 AV NE (WEST INT)

Weather:

	North Approach						South Approach						East Approach						West Approach						Vehicle Total
Period Begining	North Left	North Straight	North Right	North Truck	North Ped	North Bike	South Left	South Straight	South Right	South Truck	South Ped	South Bike	East Left	East Straight	East Right	East Truck	East Ped	East Bike	West Left	West Straight	West Right	West Truck	West Ped	West Bike	
07:00	30	0	18	7	1	0	0	0	0	0	0	0	0	134	59	15	1	0	60	530	0	23	0	0	831
07:15	30	0	21	8	0	1	0	0	0	0	1	3	0	180	38	25	0	2	57	586	0	22	3	0	912
07:30	24	0	23	7	1	0	0	0	0	0	0	2	0	187	76	21	1	0	78	606	0	21	1	0	994
07:45	53	0	31	15	0	0	0	0	0	0	0	0	0	218	90	23	1	0	82	644	0	30	0	0	1118
08:00	45	0	38	9	0	0	0	0	0	0	0	1	0	200	67	21	2	0	82	645	0	19	0	0	1077
08:15	52	0	56	16	0	0	0	0	0	0	1	1	0	222	58	26	2	1	68	610	0	24	0	0	1066
08:30	47	0	61	12	1	0	0	0	0	0	0	0	0	250	41	35	1	0	73	620	0	32	0	0	1092
08:45	65	0	56	12	0	0	0	0	0	0	1	0	0	239	61	29	2	1	74	582	0	32	1	0	1077
TOTAL	346	0	304	86	3	1	0	0	0	0	3	7	0	1630	490	195	10	4	574	4823	0	203	5	0	**8167**
PEAK	197	0	186	52	1	0	0	0	0	0	1	2	0	890	256	105	6	1	305	2519	0	105	0	0	**4353**
	PHF 0.89		Peak Total 383				PHF 0		Peak Total 0				PHF 0.93		Peak Total 1146				PHF 0.97		Peak Total 2824				
	Total Flow 2.7%						Total Flow 0%						Total Flow 8.8%						Total Flow 22.3%						
	Truck Flow 13.23%						Truck Flow 0%						Truck Flow 9.2%						Truck Flow 3.76%						
	Total Volume 650						Total Volume 0						Total Volume 2120						Total Volume 5397						
11:00	71	0	72	14	2	0	0	0	0	0	0	0	0	331	51	19	0	0	58	363	0	24	0	0	946
11:15	53	0	56	9	0	0	0	0	0	0	0	0	0	351	57	25	0	0	54	435	0	26	0	0	1006
11:30	59	0	74	11	0	0	0	0	0	0	0	0	0	336	57	18	0	0	62	424	0	30	2	0	1012
11:45	85	0	63	7	1	0	0	0	0	0	1	0	0	326	81	18	0	0	52	417	0	35	0	0	1024
12:00	110	0	75	10	1	0	0	0	0	0	0	0	0	305	91	13	0	0	46	387	0	26	2	0	1014
12:15	61	0	47	6	1	0	0	0	0	0	0	0	0	323	78	21	0	0	54	389	0	26	0	0	952
12:30	67	0	61	5	0	0	0	0	0	0	0	0	0	351	77	15	0	0	41	360	0	14	0	0	957
12:45	78	0	61	7	0	0	0	0	0	0	1	0	0	356	71	12	0	0	68	430	0	21	1	0	1064
TOTAL	584	0	509	69	5	0	0	0	0	0	2	0	0	2679	563	141	0	0	435	3205	0	202	5	0	**7975**
PEAK	307	0	268	37	2	0	0	0	0	0	1	0	0	1318	286	74	0	0	214	1663	0	117	4	0	**4056**
	PHF 0.78		Peak Total 575				PHF 0		Peak Total 0				PHF 0.98		Peak Total 1604				PHF 0.96		Peak Total 1877				
	Total Flow 4.5%						Total Flow 0%						Total Flow 13.4%						Total Flow 15.1%						
	Truck Flow 6.31%						Truck Flow 0%						Truck Flow 4.35%						Truck Flow 5.55%						
	Total Volume 1093						Total Volume 0						Total Volume 3242						Total Volume 3640						
16:00	78	0	88	10	1	1	0	0	0	0	2	0	0	601	54	18	1	0	15	284	0	20	2	0	1120
16:15	93	0	92	8	1	3	0	0	0	0	3	0	0	494	61	8	2	0	35	248	0	17	4	0	1023
16:30	100	0	145	6	0	3	0	0	0	0	2	0	0	513	48	19	2	1	35	296	0	16	2	0	1137
16:45	72	0	76	5	0	0	0	0	0	0	0	0	0	530	42	15	4	0	47	243	0	12	0	0	1010
17:00	70	0	82	7	0	1	0	0	0	0	2	0	0	574	51	8	2	1	27	296	0	23	2	0	1100
17:15	49	0	58	4	0	2	0	0	0	0	0	0	0	477	55	11	1	0	39	255	0	23	0	0	933
17:30	45	0	42	1	0	0	0	0	0	0	0	0	0	446	39	6	0	0	44	305	0	15	0	0	921
17:45	24	0	33	5	0	0	0	0	0	0	0	0	0	356	35	13	0	0	52	291	0	20	0	0	791
TOTAL	531	0	616	46	2	10	0	0	0	0	9	0	0	3991	385	98	12	2	294	2218	0	146	10	0	**8035**
PEAK	343	0	401	29	2	7	0	0	0	0	7	0	0	2138	205	60	9	1	132	1071	0	65	8	0	**4290**
	PHF 0.76		Peak Total 744				PHF 0		Peak Total 0				PHF 0.89		Peak Total 2343				PHF 0.91		Peak Total 1203				
	Total Flow 4.7%						Total Flow 0%						Total Flow 18.1%						Total Flow 10.4%						
	Truck Flow 4.01%						Truck Flow 0%						Truck Flow 2.24%						Truck Flow 5.81%						
	Total Volume 1147						Total Volume 0						Total Volume 4376						Total Volume 2512						
6 Hour Total	**1461**	**0**	**1429**	**201**	**10**	**11**	**0**	**0**	**0**	**0**	**14**	**7**	**0**	**8300**	**1438**	**434**	**22**	**6**	**1303**	**10246**	**0**	**551**	**20**	**0**	**24177**
4 Hour Total	877	0	920	Total: 1797			0	0	0	Total: 0			0	5621	875	Total: 6496			868	7041	0	Total: 7909			16202

North Bound: 2741 - 49%	South Bound: 0 - 0%	East Bound: 11707 - 55%	West Bound: 9729 - 46%
South Bound: 2890 - 51%	North Bound: 0 - 0%	West Bound: 9738 - 45%	East Bound: 11549 - 54%
Total: 5631	Total: 0	Total: 21445	Total: 21278

Frequent backups in lanes accessing southbound Deerfoot.

Intersection Id: 8723

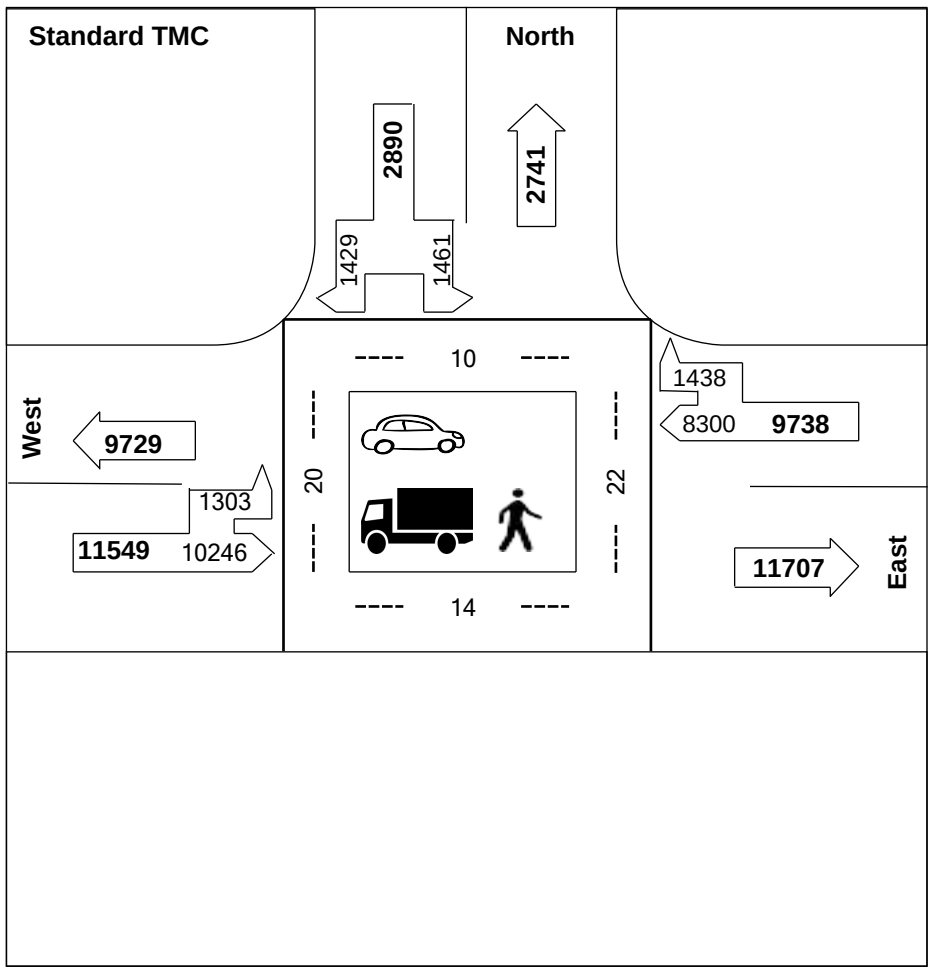
Status: Valid

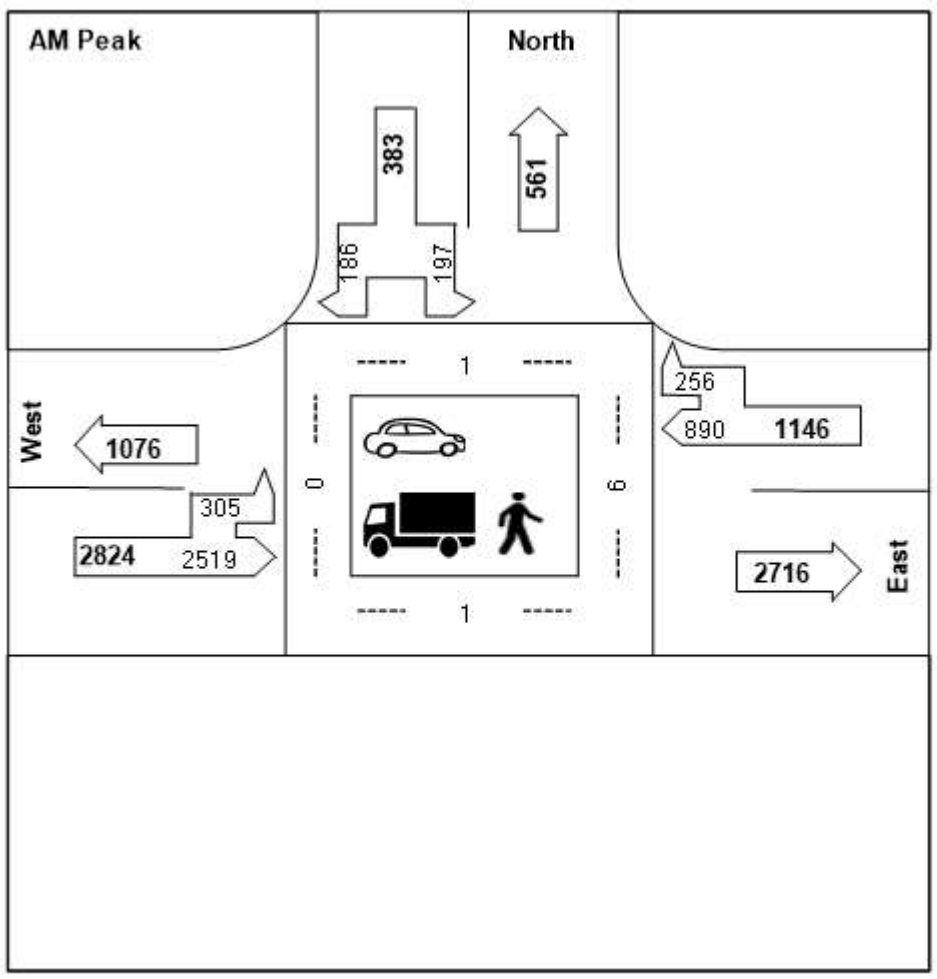
Study Name: Standard TMC Diagrams

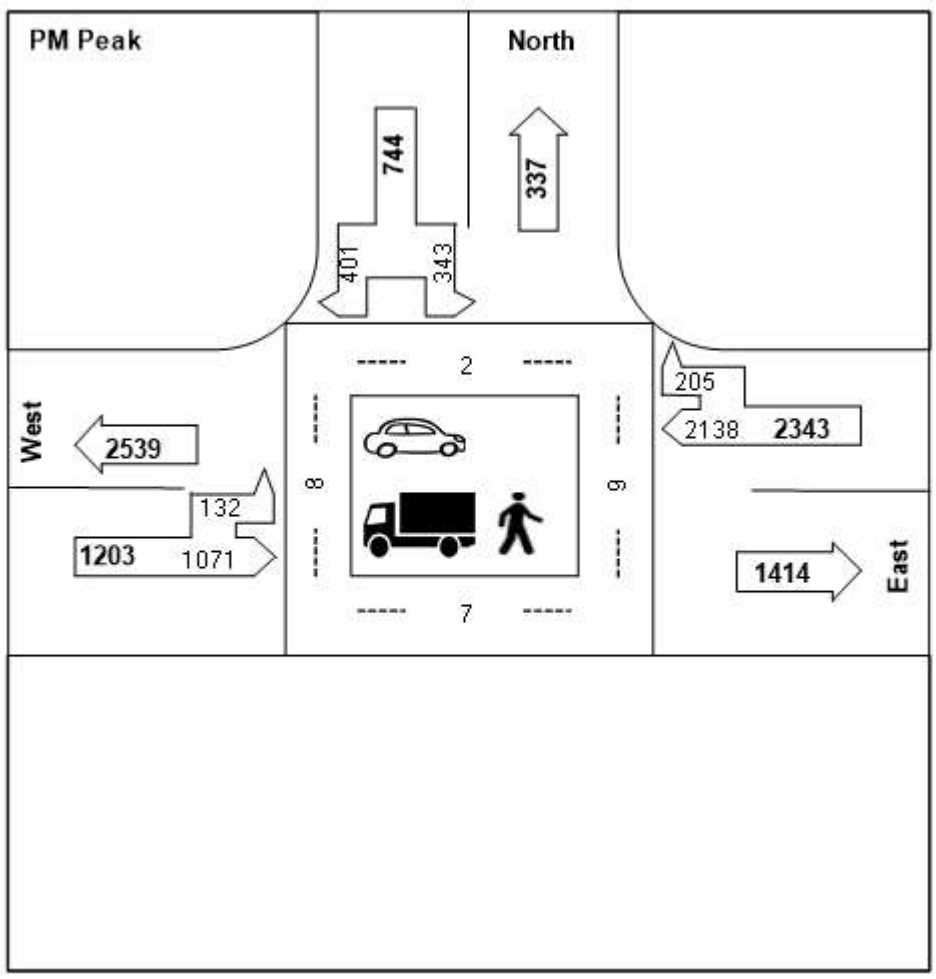
Study Date: Wednesday, 28 June 2017

Location: 12 ST NE & 32 AV NE (WEST INT)

Weather:







Information contained herein is intended, designed, and collected for specific municipal purposes and may not be suitable for other applications. The City of Calgary accepts no responsibility or liability which may arise from any incorrect or incomplete data or results, or for any improper or inappropriate use or interpretation made by any person

Traffic Count Reports

Intersection Id: 8709

Status: Valid

Study Name: 6 Hour Intersection Count

Study Date: Thursday, 29 June 2017

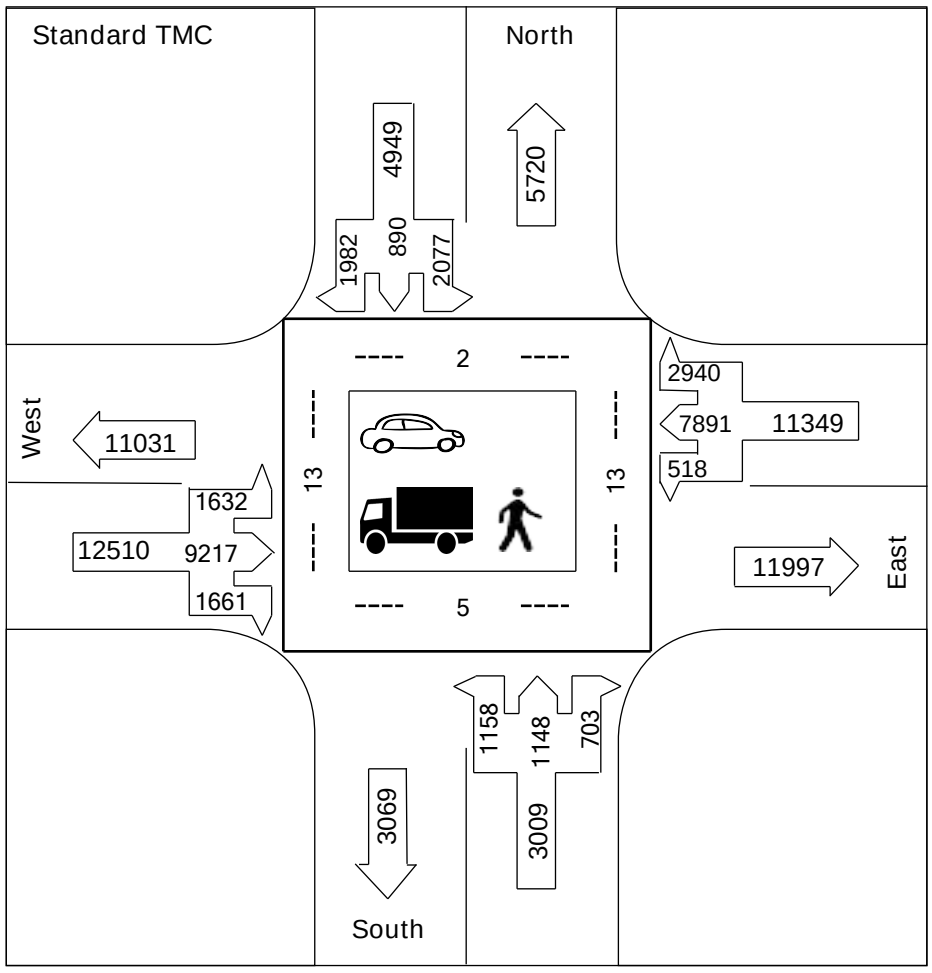
Location: MCKNIGHT BV NE & AVIATION BV NE

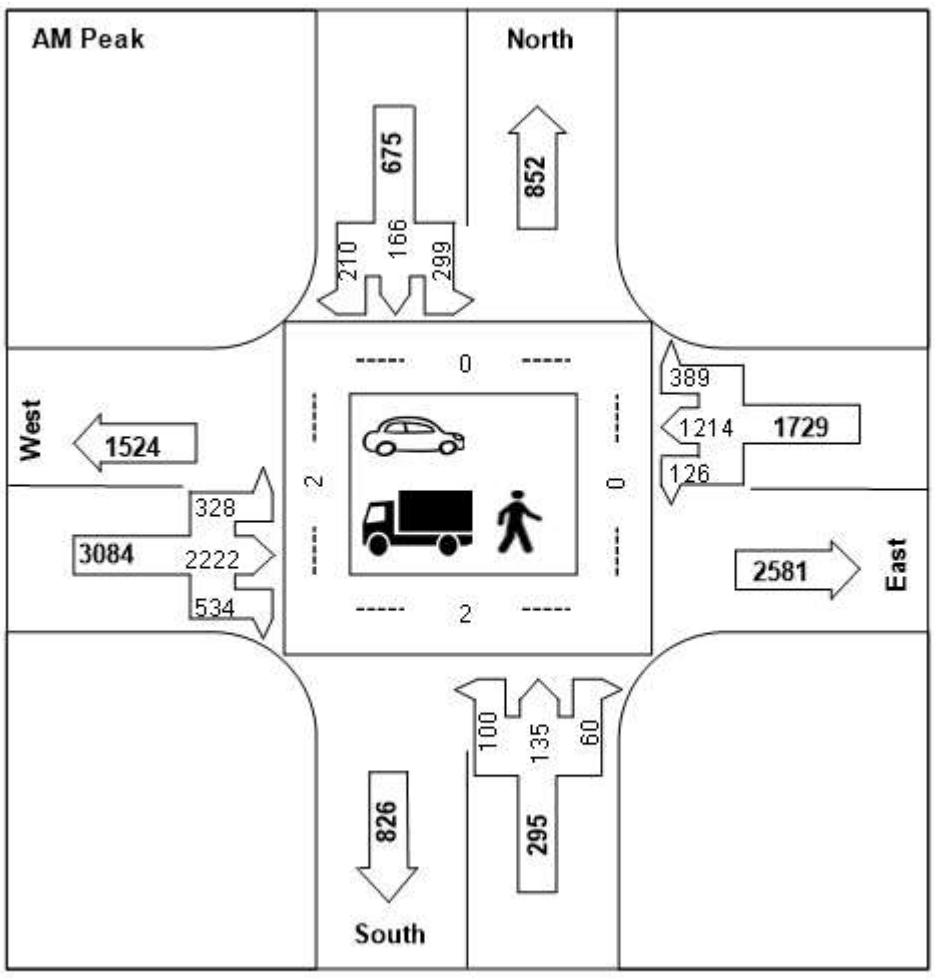
Weather:

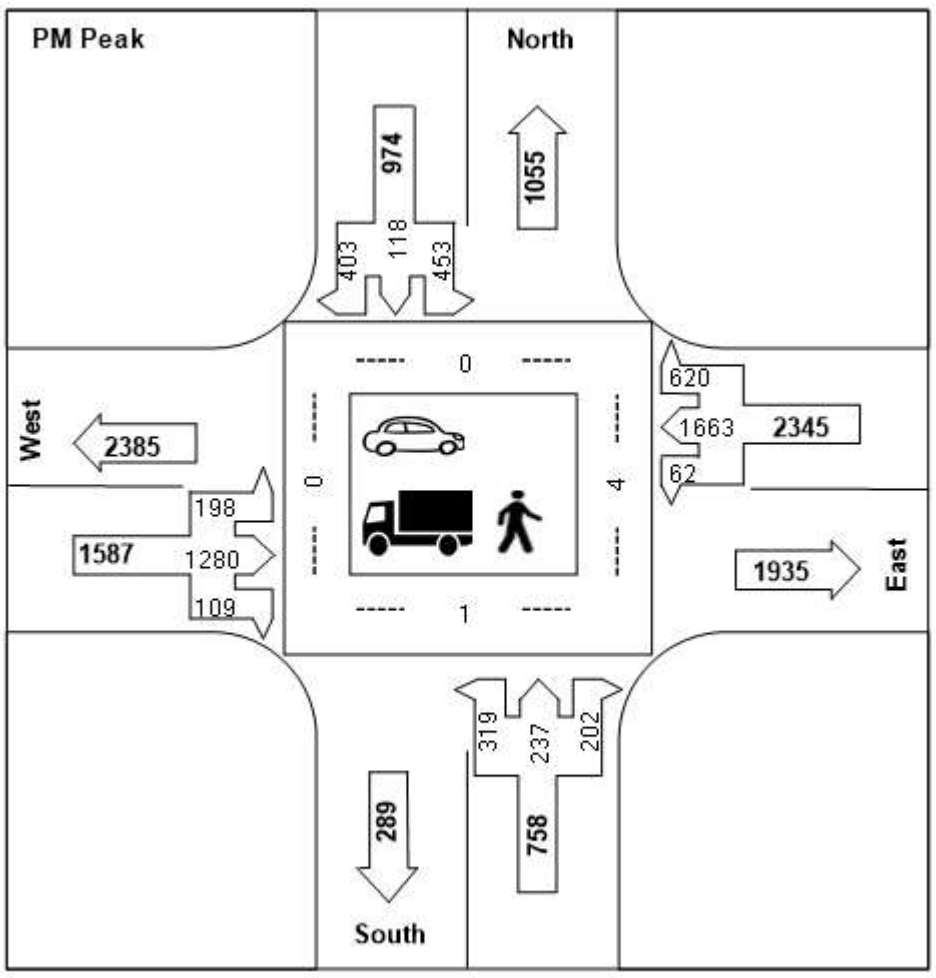
	North Approach						South Approach						East Approach						West Approach						Vehicle Total
Period Begining	North Left	North Straight	North Right	North Truck	North Ped	North Bike	South Left	South Straight	South Right	South Truck	South Ped	South Bike	East Left	East Straight	East Right	East Truck	East Ped	East Bike	West Left	West Straight	West Right	West Truck	West Ped	West Bike	
07:00	57	29	43	10	0	1	17	23	7	10	0	1	13	209	76	21	0	0	64	454	115	15	0	1	1107
07:15	43	38	36	8	0	1	20	33	10	7	0	2	15	250	91	22	0	0	72	526	98	11	0	0	1232
07:30	75	36	57	23	0	0	21	30	19	9	1	0	24	284	117	30	0	0	103	569	117	28	0	0	1452
07:45	85	56	54	17	0	2	31	46	10	5	1	1	35	306	108	29	0	0	85	578	178	20	1	0	1572
08:00	76	39	47	21	0	0	18	30	15	6	0	1	33	310	80	34	0	0	64	530	128	26	0	1	1370
08:15	63	35	52	23	0	1	30	29	16	9	0	0	34	314	84	39	0	0	76	545	111	27	1	0	1389
08:30	56	42	98	30	0	2	36	29	24	11	0	0	23	328	84	27	0	0	80	492	85	20	0	0	1377
08:45	78	42	79	21	0	0	30	21	16	6	1	0	24	270	73	23	0	0	75	485	116	16	0	0	1309
TOTAL	533	317	466	153	0	7	203	241	117	63	3	5	201	2271	713	225	0	0	619	4179	948	163	2	2	10808
PEAK	299	166	210	84	0	3	100	135	60	29	2	2	126	1214	389	132	0	0	328	2222	534	101	2	1	5783
	PHF 0.87		Peak Total 675				PHF 0.85		Peak Total 295				PHF 0.96		Peak Total 1729				PHF 0.92		Peak Total 3084				
	Total Flow 4.1%						Total Flow 1.8%						Total Flow 10%						Total Flow 18.1%						
	Truck Flow 11.63%						Truck Flow 11.23%						Truck Flow 7.06%						Truck Flow 2.84%						
	Total Volume 1316						Total Volume 561						Total Volume 3185						Total Volume 5746						
11:00	81	29	80	20	0	0	41	32	33	13	0	0	21	301	78	36	0	0	71	290	64	22	0	0	1121
11:15	75	41	111	19	1	0	61	40	36	10	0	0	25	262	88	31	1	0	77	297	64	30	0	1	1177
11:30	103	37	112	18	1	0	47	43	31	6	0	0	19	321	127	34	0	0	80	321	65	27	0	0	1306
11:45	90	45	86	24	0	0	62	41	27	4	0	0	21	292	122	26	2	0	75	320	67	20	0	0	1248
12:00	108	55	101	17	0	0	48	62	28	7	0	0	26	326	122	22	1	0	70	315	49	25	0	0	1310
12:15	103	56	111	13	0	0	45	62	32	9	1	0	28	302	113	27	1	0	102	307	62	35	1	0	1323
12:30	94	60	117	28	0	0	56	41	28	11	0	0	29	349	168	23	1	0	63	371	60	29	0	0	1436
12:45	76	50	113	14	0	1	58	49	35	13	0	0	22	282	147	29	1	1	100	329	69	34	9	1	1330
TOTAL	730	373	831	153	2	1	418	370	250	73	1	0	191	2435	965	228	7	1	638	2550	500	222	10	2	10251
PEAK	381	221	442	72	0	1	207	214	123	40	1	0	105	1259	550	101	4	1	335	1322	240	123	10	1	5399
	PHF 0.96		Peak Total 1044				PHF 0.96		Peak Total 544				PHF 0.88		Peak Total 1914				PHF 0.95		Peak Total 1897				
	Total Flow 6.1%						Total Flow 3.3%						Total Flow 11.3%						Total Flow 11.6%						
	Truck Flow 7.91%						Truck Flow 7.03%						Truck Flow 6.35%						Truck Flow 6.02%						
	Total Volume 1934						Total Volume 1038						Total Volume 3591						Total Volume 3688						
16:00	96	37	119	10	0	0	90	55	63	7	0	0	22	407	173	15	1	0	59	328	26	26	0	0	1475
16:15	130	32	89	10	0	0	63	56	38	7	0	0	15	440	149	14	2	0	51	309	25	17	0	0	1397
16:30	114	26	114	4	0	0	113	56	66	7	1	0	12	366	148	13	1	0	48	342	33	17	0	0	1438
16:45	113	23	81	9	0	3	53	70	35	10	0	1	13	450	150	14	0	0	40	301	25	15	0	1	1354
17:00	109	22	93	10	0	0	82	101	49	9	0	1	17	370	178	9	1	1	40	243	28	22	0	1	1332
17:15	80	24	66	7	0	0	50	65	34	17	0	0	15	434	172	12	1	0	40	311	21	14	1	0	1312
17:30	100	19	56	7	0	0	52	81	27	18	0	1	13	364	142	8	0	1	47	335	29	10	0	1	1265
17:45	72	17	67	4	0	0	34	53	24	15	0	0	19	354	150	16	0	0	50	319	26	11	0	0	1185
TOTAL	814	200	685	61	0	3	537	537	336	90	1	3	126	3185	1262	101	6	2	375	2488	213	132	1	3	10758
PEAK	453	118	403	33	0	3	319	237	202	31	1	1	62	1663	620	56	4	0	198	1280	109	75	0	1	5664
	PHF 0.96		Peak Total 974				PHF 0.81		Peak Total 758				PHF 0.96		Peak Total 2345				PHF 0.94		Peak Total 1587				
	Total Flow 5.3%						Total Flow 4.4%						Total Flow 14.4%						Total Flow 9.7%						
	Truck Flow 3.59%						Truck Flow 6.38%						Truck Flow 2.21%						Truck Flow 4.29%						
	Total Volume 1699						Total Volume 1410						Total Volume 4573						Total Volume 3076						
6 Hour Total	2077	890	1982	367	2	11	1158	1148	703	226	5	8	518	7891	2940	554	13	3	1632	9217	1661	517	13	7	31817
4 Hour Total	1347	517	1151	Total: 3015			740	778	453	Total: 1971			327	5456	1975	Total: 7758			994	6667	1161	Total: 8822			21566
	North Bound: 5720 - 54%						South Bound: 3069 - 50%						East Bound: 11997 - 51%						West Bound: 11031 - 47%						
	South Bound: 4949 - 46%						North Bound: 3009 - 50%						West Bound: 11349 - 49%						East Bound: 12510 - 53%						
	Total: 10669						Total: 6078						Total: 23346						Total: 23541						

Northbound right turn often treated as double turn lane. Traffic backups on northbound left turn (12St).

Intersection Id:	8709	Study Date:	Thursday, 29 June 2017
Status:	Valid	Location:	MCKNIGHT BV NE & AVIATION BV NE
Study Name:	Standard TMC Diagrams	Weather:	







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Traffic Count Reports

Average Annual Weekday Traffic Conversion Factors for 2017

Location: W of the Intersection DEERFOOT TR NE & MCKNIGHT BV NE (Both Directions)

Month/Days Average/Days Factor	Monday	Tuesday	Wednesday	Thursday	Friday	Monthly
January	41496 5 1.20	45309 5 1.10	46356 4 1.07	46879 4 1.06	47267 4 1.05	45274 22 1.10
February	42263 3 1.17	45845 4 1.08	46564 4 1.07	47666 4 1.04	47343 4 1.05	46129 19 1.08
March	46151 4 1.08	48103 4 1.03	48583 5 1.02	49125 5 1.01	49570 5 1.00	48409 23 1.03
April	46944 3 1.06	49529 4 1.00	50692 4 0.98	51029 4 0.97	51394 3 0.97	50001 18 0.99
May	50270 4 0.99	51720 5 0.96	51793 5 0.96	52815 4 0.94	53252 4 0.93	51951 22 0.96
June	50672 4 0.98	52537 4 0.95	53280 4 0.93	53554 5 0.93	53473 5 0.93	52777 22 0.94
July	45514 5 1.09	49662 4 1.00	50761 4 0.98	51038 4 0.97	50903 4 0.98	49382 21 1.01
August	48088 3 1.03	50418 5 0.98	51186 5 0.97	51049 5 0.97	50851 4 0.98	50497 22 0.98
September	50221 3 0.99	51763 4 0.96	52474 4 0.95	52861 4 0.94	53244 5 0.93	52264 20 0.95
October	48385 4 1.03	51282 5 0.97	52051 4 0.95	53288 4 0.93	54291 4 0.91	51832 21 0.96
November	46599 4 1.07	49903 4 1.00	50735 5 0.98	49410 5 1.00	49425 4 1.00	49292 22 1.01
December	48478 3 1.02	48788 3 1.02	45777 4 1.08	47512 4 1.05	48475 5 1.02	47754 19 1.04
Yearly	46919 45 1.06	49596 51 1.00	50063 52 0.99	50539 52 0.98	50810 51 0.98	49655 251 1.00

Total Traffic 12463362
Total Days 251
AAWT 49655

AAWT factor calculations do not include statutory holidays or missing data.

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Traffic Count Reports

Average Annual Weekday Traffic Conversion Factors for 2020

Location: W of the Intersection DEERFOOT TR NE & MCKNIGHT BV NE (Both Directions)

Month/Days Average/Days Factor	Monday	Tuesday	Wednesday	Thursday	Friday	Monthly
January	43279 4 0.92	43577 4 0.91	44875 4 0.88	40153 5 0.99	38630 5 1.03	41856 22 0.95
February	42789 3 0.93	49076 4 0.81	50638 4 0.78	49985 4 0.79	49371 4 0.80	48666 19 0.82
March	38454 5 1.03	38572 5 1.03	41380 4 0.96	41199 4 0.96	39581 4 1.00	39717 22 1.00
April	29628 3 1.34	30328 4 1.31	29989 5 1.32	31181 5 1.27	30623 3 1.30	30396 20 1.31
May	35477 3 1.12	37399 4 1.06	38234 4 1.04	37857 4 1.05	39258 5 1.01	37834 20 1.05
June	40787 1 0.97	41723 1 0.95	0 0 0.00	0 0 0.00	0 0 0.00	41255 2 0.96
July	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
August	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
September	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
October	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
November	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
December	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
Yearly	38414 19 1.03	39823 22 1.00	40498 21 0.98	39674 22 1.00	39863 21 1.00	39680 105 1.00

Total Traffic	4166362
Total Days	105
AAWT	39680

AAWT factor calculations do not include statutory holidays or missing data.

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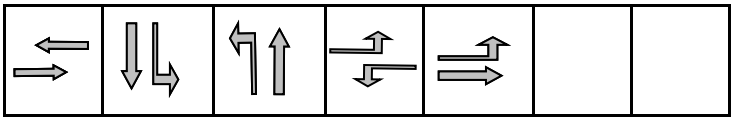
SIGNAL TIMING SUMMARY

LOCATION: MCKNIGHT BV - AVIATION BV / 12 ST NE **INT #:** 56

Date Coded: February 6, 2017 **Date Installed:** February 8, 2017

TIMING PLAN NO: P1

CYCLE LENGTH:	150
OFFSET:	0
START TIME:	6:00
END TIME:	9:00



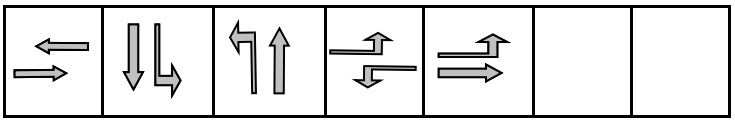
	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	35	15+13*	12+16*	10	25.5		
MIN if Actuated	-	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

TIMING PLAN NO: P2

CYCLE LENGTH:	120
OFFSET:	111
START TIME:	9:00
END TIME:	15:00



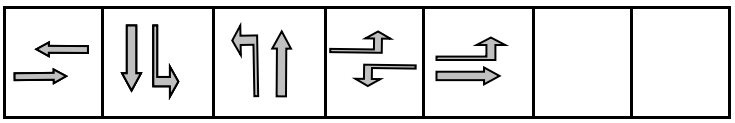
	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	30	20+8*	15+13*	10	21.5-21*		
MIN if Actuated	-	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

TIMING PLAN NO: P3

CYCLE LENGTH:	140
OFFSET:	4
START TIME:	15:00
END TIME:	19:00



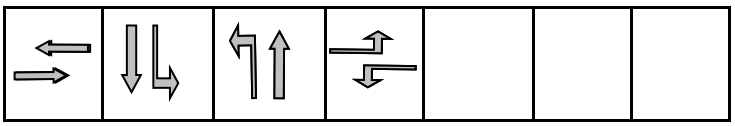
	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	48	22.5+5.5*	26.5+1.5*	9.5	10-7*		
MIN if Actuated	-	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

TIMING PLAN NO: P4

CYCLE LENGTH:	Max 157.5
OFFSET:	-
START TIME:	19:00
END TIME:	21:00



	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	52	29	33	20			
MIN if Actuated	21	10+18*	10+18*	7			
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

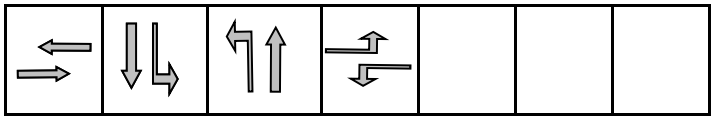
Notes: The offset point is referenced to the beginning of the first column of traffic movements.
If the max time is less than the pedestrian time, the extra unused pedestrian time is passed to the main street unless otherwise noted.
If any of the summary is unclear, please contact the Signals Division with the City of Calgary, by phoning 311.

SIGNAL TIMING SUMMARY

LOCATION: MCKNIGHT BV - AVIATION BV / 12 ST NE **INT #:** 56

Date Coded: February 6, 2017 **Date Installed:** February 8, 2017

TIMING PLAN NO: P5
CYCLE LENGTH: Max 137.5
OFFSET: -
START TIME: 21:00
END TIME: 06:00
0:00-9:00 Sat & Sun

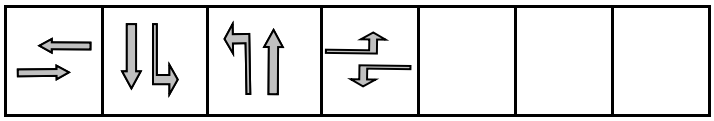


	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	37	29	33	15			
MIN if Actuated	21	10+18*	10+18*	7			
Pedestrian	8+13	8+20	8+20	-			

*With Ped

	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

TIMING PLAN NO: P6
CYCLE LENGTH: Max 160.5
OFFSET: -
START TIME: 9:00
END TIME: 0:00
SAT & SUN

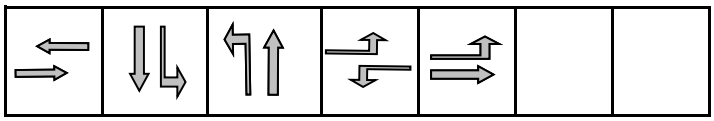


	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	52	32	33	20			
MIN if Actuated	21	10+18*	10+18*	7			
Pedestrian	8+13	8+20	8+20	-			

*With Ped

	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

TIMING PLAN NO: P10
CYCLE LENGTH: 200
OFFSET: 0
START TIME: -
END TIME: -
SB DEERFOOT CLOSURE

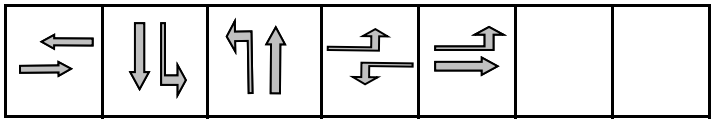


	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	112	26.5+1.5*	25.5+2.5*	11.5-4*	1		
MIN if Actuated	21	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

TIMING PLAN NO: P11
CYCLE LENGTH: 200
OFFSET: 0
START TIME: -
END TIME: -
NB & SB DEERFOOT CLOSURE

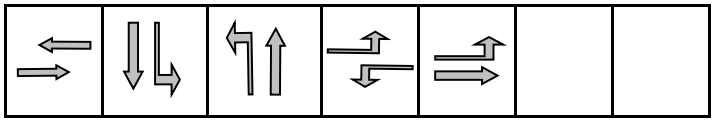


	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	106	26.5+1.5*	24.5+3.5*	12.5	7-5*		
MIN if Actuated	21	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

	Pro Only	Pro/ Per	Per Only
NBLT	x		
SBLT	x		
EBLT	x		
WBLT	x		

TIMING PLAN NO: P12
CYCLE LENGTH: 200
OFFSET: 0
START TIME: -
END TIME: -
NB DEERFOOT CLOSURE



	4.5+1.5	3.5+3	3.5+3	3.5+1			
MAX	103	25.5+2.5*	24.5+3.5*	12.5	11-6*		
MIN if Actuated	21	10+18*	10+18*	7	-		
Pedestrian	8+13	8+20	8+20	-	-		

*With Ped

Notes: The offset point is referenced to the beginning of the first column of traffic movements.
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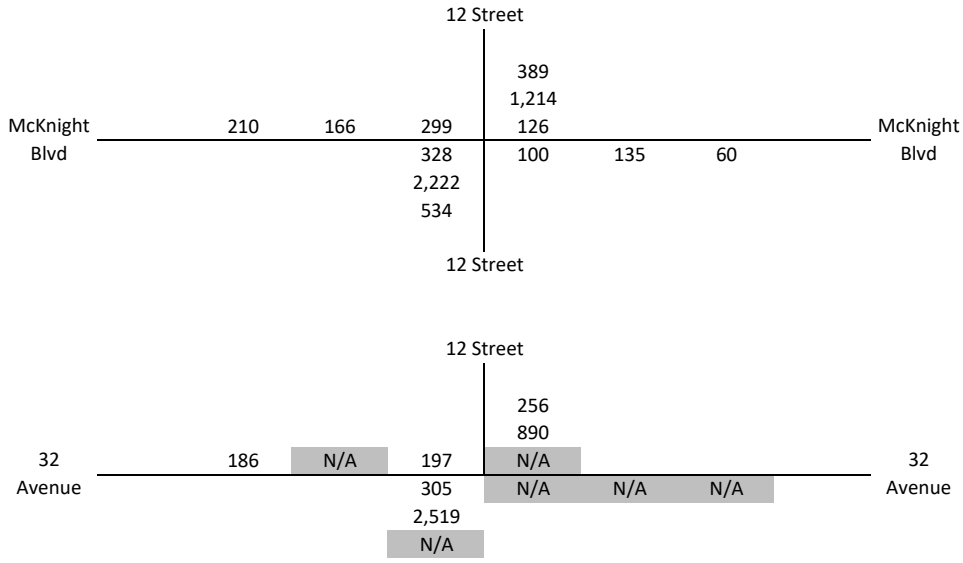
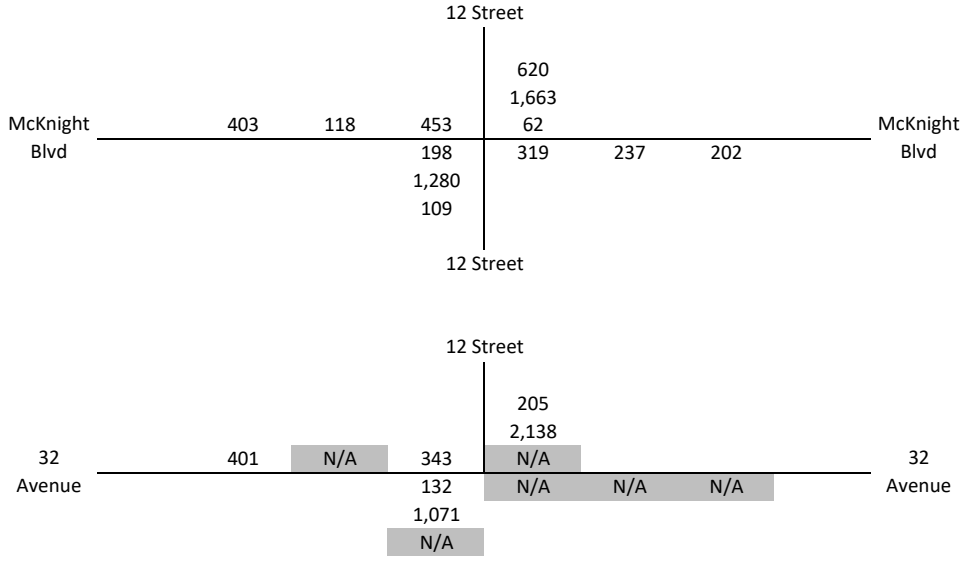
Peak Hour Traffic Volumes

Scenario: Collected Traffic Counts
Year: 2017

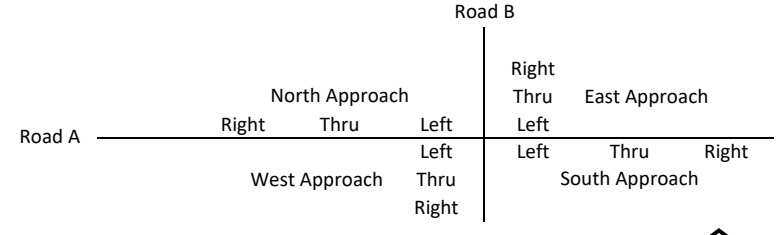
AM Peak Hour



PM Peak Hour



Legend

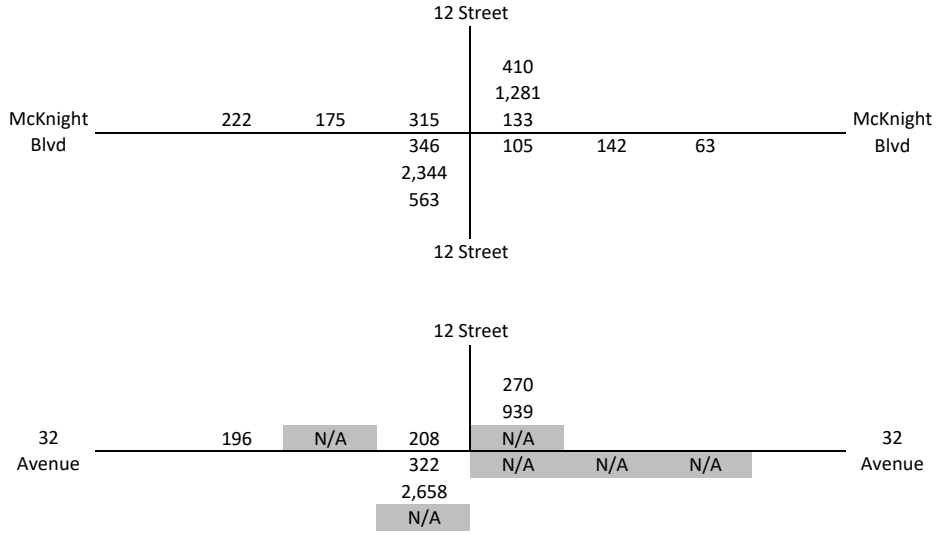


100	Total traffic volume for movement
N/A	Movement does not exist

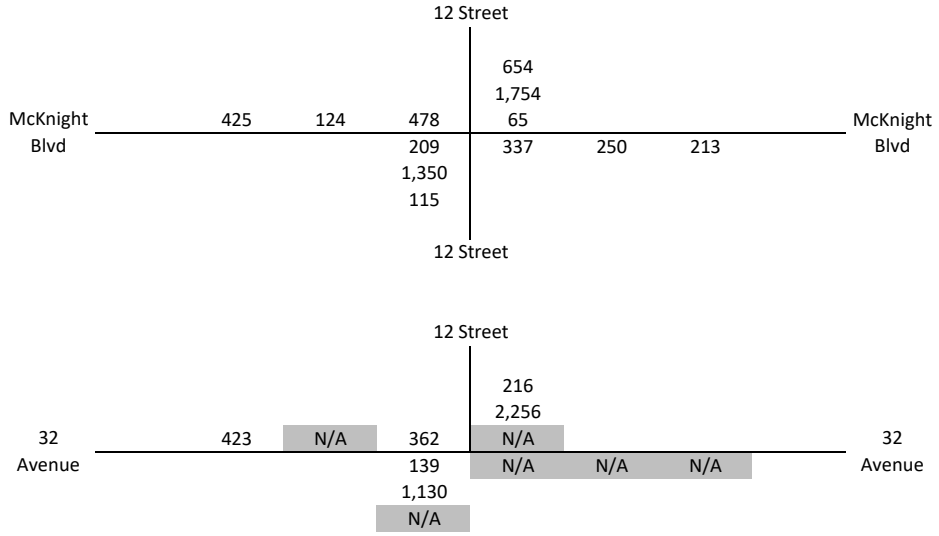
Peak Hour Traffic Volumes

Scenario:	Pre-Development	2017 Permanent Station Count:	46,129
Year:	2020	2020 Permanent Station Count:	48,666
		Annual Growth Rate:	1.8%
		Total Growth:	1.055

AM Peak Hour



PM Peak Hour



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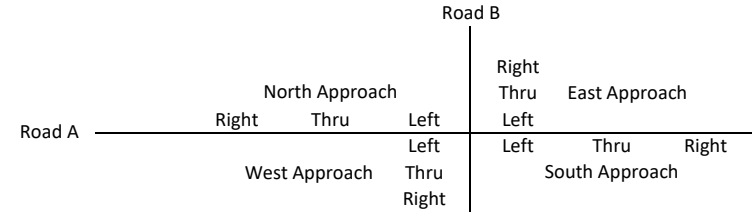
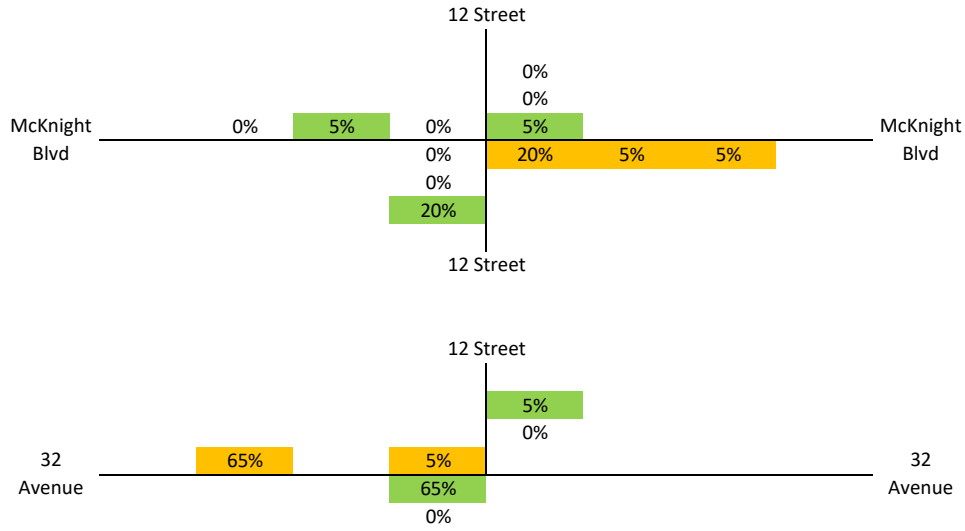


100	Total traffic volume for movement
N/A	Movement does not exist

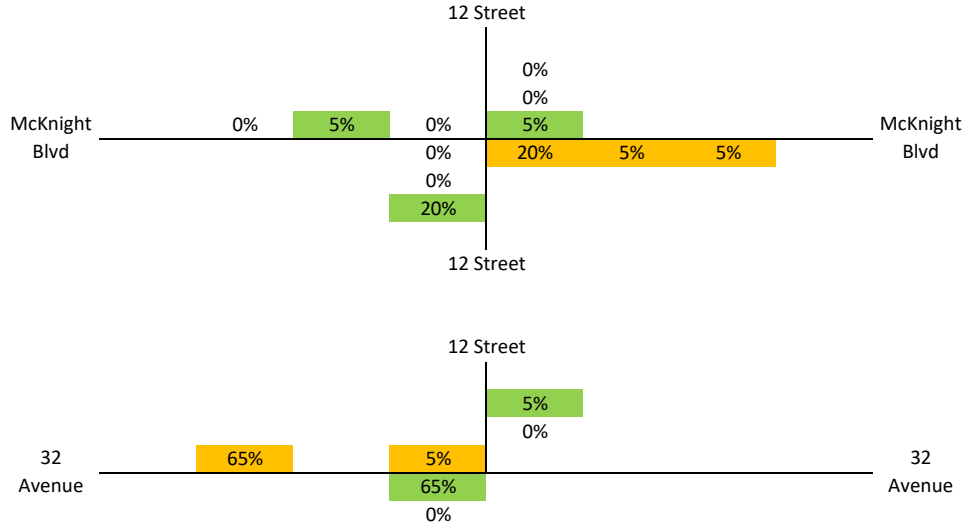
Peak Hour Trip Distribution

Scenario: All Trips
Year: All Horizons

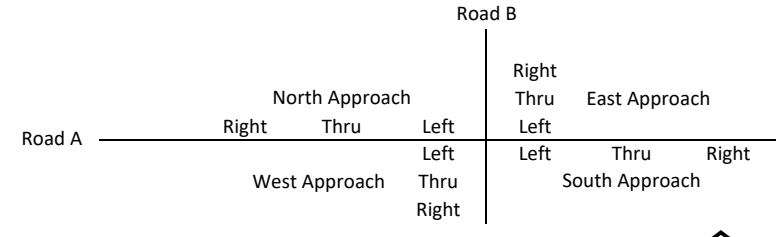
AM Peak Hour



PM Peak Hour



Legend

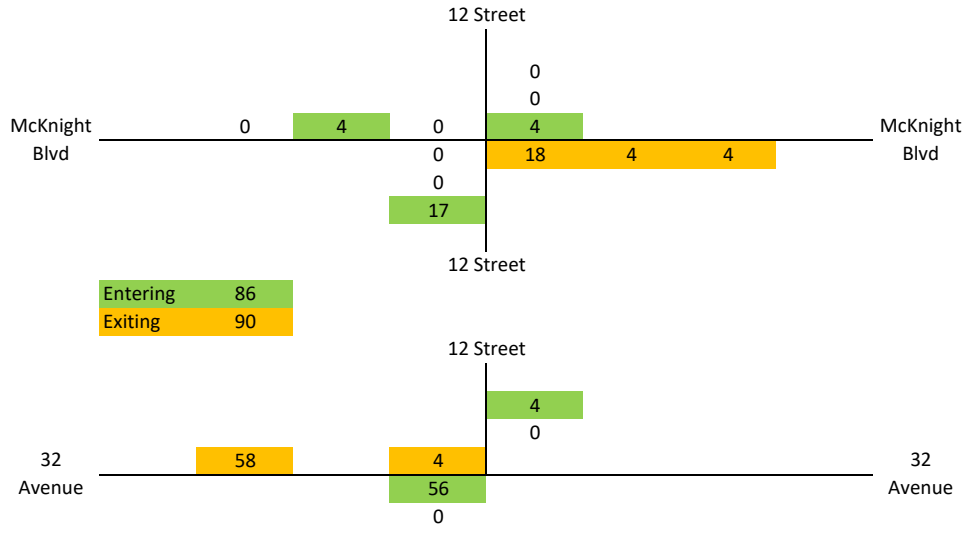


100% Percent of distribution based on total trips
100% Entering trips
100% Exiting trips

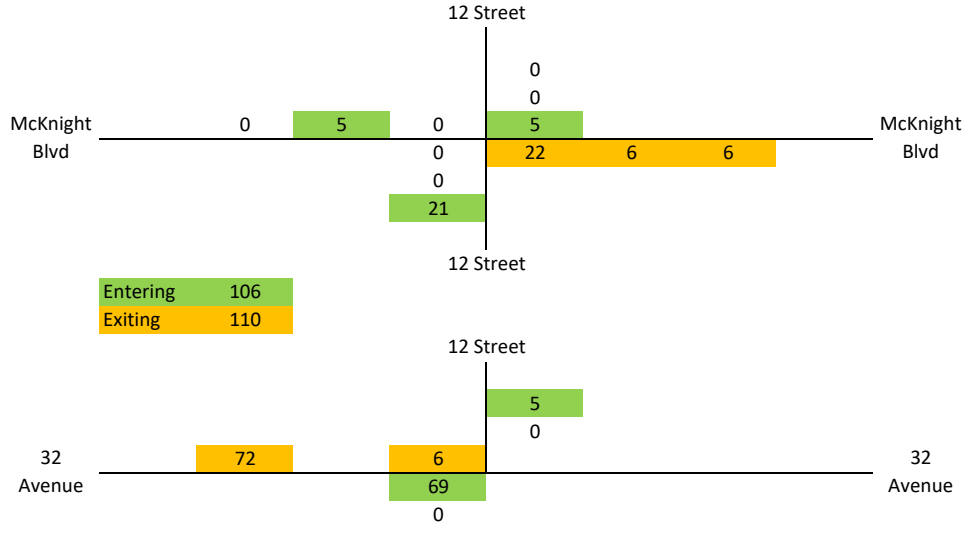
Peak Hour Trip Assignment

Scenario: All Trips
Year: All Horizons

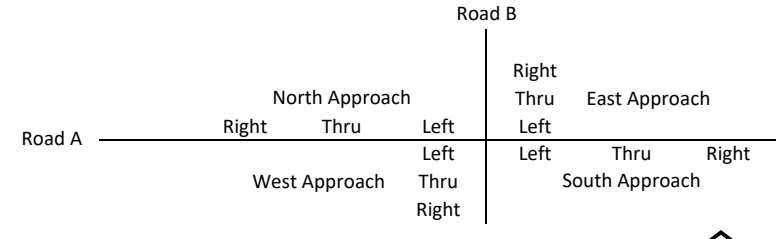
AM Peak Hour



PM Peak Hour



Legend

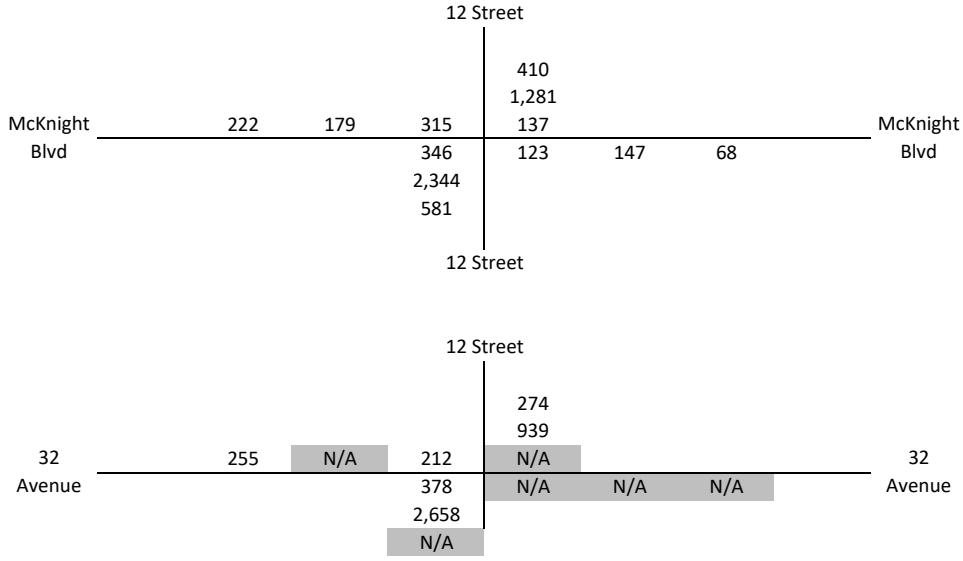


100 Trips assigned to intersection movement
100 Entering trips 100 Exiting trips

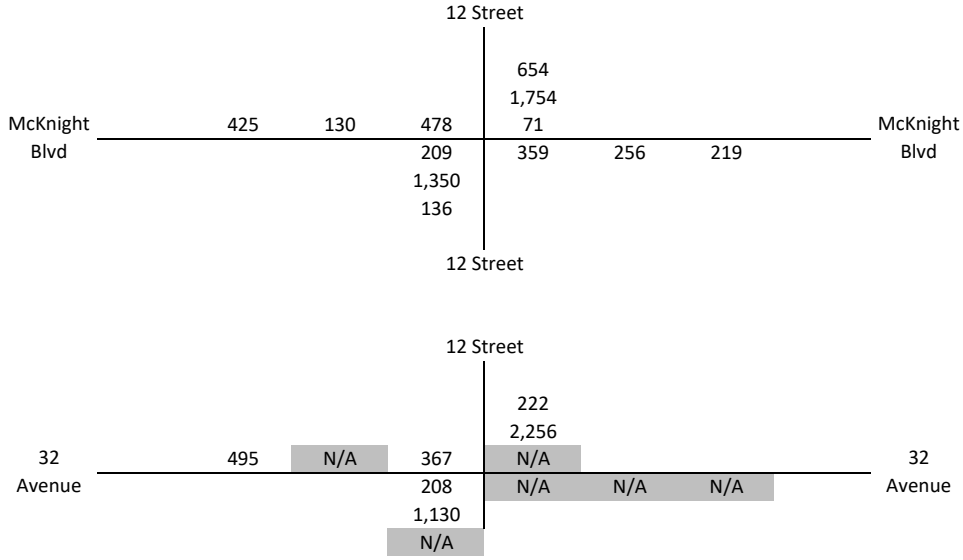
Peak Hour Traffic Volumes

Scenario: Post-Development
Year: 2020

AM Peak Hour



PM Peak Hour



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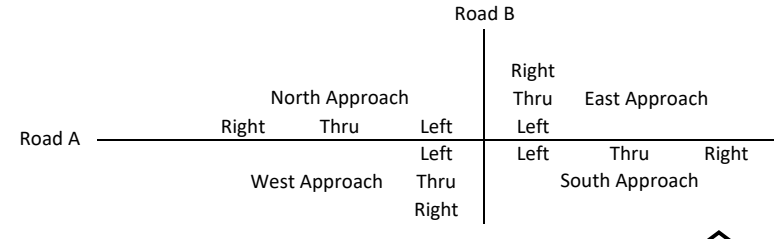
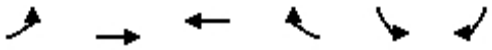
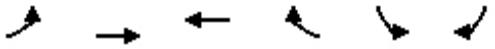


100	Total traffic volume for movement
N/A	Movement does not exist



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	332	2740	1010	290	234	220
v/c Ratio	0.53	0.82	0.60	0.44	0.47	0.55
Control Delay	9.5	11.3	20.0	7.8	29.6	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	11.3	20.0	7.8	29.6	10.3
Queue Length 50th (m)	11.1	77.0	37.2	6.8	15.5	1.2
Queue Length 95th (m)	38.9	125.8	57.6	27.2	23.6	17.3
Internal Link Dist (m)		180.4	169.9		282.4	
Turn Bay Length (m)	60.0			20.0		20.0
Base Capacity (vph)	625	3333	1683	656	1249	699
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.82	0.60	0.44	0.19	0.31

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	322	2658	939	270	208	196
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1779	1779	1697	1697	1637	1637
Adj Flow Rate, veh/h	332	2740	1010	0	234	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.97	0.97	0.93	0.93	0.89	0.89
Percent Heavy Veh, %	4	4	9	9	13	13
Cap, veh/h	486	3441	2754	857	428	197
Arrive On Green	0.07	0.71	0.59	0.00	0.14	0.00
Sat Flow, veh/h	1694	5016	4786	1443	3025	1392
Grp Volume(v), veh/h	332	2740	1010	0	234	0
Grp Sat Flow(s),veh/h/ln	1694	1619	1544	1443	1512	1392
Q Serve(g_s), s	5.0	26.4	7.9	0.0	5.0	0.0
Cycle Q Clear(g_c), s	5.0	26.4	7.9	0.0	5.0	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	486	3441	2754	857	428	197
V/C Ratio(X)	0.68	0.80	0.37	0.00	0.55	0.00
Avail Cap(c_a), veh/h	486	3441	2754	857	1253	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.73	0.00
Uniform Delay (d), s/veh	6.2	6.8	7.4	0.0	28.0	0.0
Incr Delay (d2), s/veh	3.9	2.0	0.4	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	12.1	3.5	0.0	2.2	0.0
LnGrp Delay(d),s/veh	10.1	8.8	7.7	0.0	28.8	0.0
LnGrp LOS	B	A	A		C	
Approach Vol, veh/h		3072	1010		234	
Approach Delay, s/veh		9.0	7.7		28.8	
Approach LOS		A	A		C	

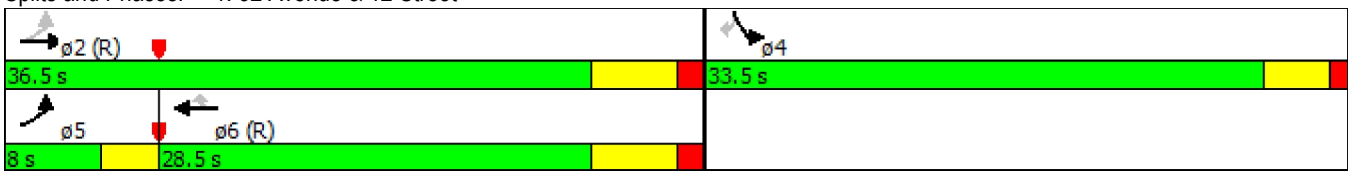
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		55.6		14.4	8.0	47.6		
Change Period (Y+Rc), s		6.0		4.5	3.0	6.0		
Max Green Setting (Gmax), s		30.5		29.0	5.0	22.5		
Max Q Clear Time (g_c+I1), s		28.4		7.0	7.0	9.9		
Green Ext Time (p_c), s		2.1		1.5	0.0	12.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Min	None	None	C-Min
Maximum Split (s)	36.5	33.5	8	28.5
Maximum Split (%)	52.1%	47.9%	11.4%	40.7%
Minimum Split (s)	26	33.5	8	27
Yellow Time (s)	4.5	3.5	3	4.5
All-Red Time (s)	1.5	1	0	1.5
Minimum Initial (s)	20	10	5	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		8		8
Flash Dont Walk (s)		21		13
Dual Entry	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	62	28.5	62	0
End Time (s)	28.5	62	0	28.5
Yield/Force Off (s)	22.5	57.5	67	22.5
Yield/Force Off 170(s)	22.5	36.5	67	9.5
Local Start Time (s)	62	28.5	62	0
Local Yield (s)	22.5	57.5	67	22.5
Local Yield 170(s)	22.5	36.5	67	9.5

Intersection Summary	
Cycle Length	70
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 1: 32 Avenue & 12 Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	2548	612	139	1334	427	112	253	362	201	255
v/c Ratio	0.85	1.29	0.74	0.61	0.99	0.59	0.68	0.70	1.24	0.34	0.54
Control Delay	71.4	171.3	21.1	73.4	75.7	7.7	83.5	65.3	182.3	54.9	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.4	171.3	21.1	73.4	75.7	7.7	83.5	65.3	182.3	54.9	10.4
Queue Length 50th (m)	110.6	~370.7	71.4	41.5	~164.1	0.0	37.6	36.9	~139.9	29.1	0.0
Queue Length 95th (m)	#163.3	#397.3	124.0	#85.4	#217.3	32.2	55.6	47.8	#195.8	40.7	22.3
Internal Link Dist (m)		184.1			186.5			282.4		181.3	
Turn Bay Length (m)	100.0		100.0	80.0		125.0	80.0		60.0		30.0
Base Capacity (vph)	449	1977	828	228	1341	723	268	567	292	585	469
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	1.29	0.74	0.61	0.99	0.59	0.42	0.45	1.24	0.34	0.54

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	346	2344	563	133	1281	410	105	142	63	315	175	222
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1796	1796	1796	1729	1729	1729	1667	1667	1850	1652	1652	1652
Adj Flow Rate, veh/h	376	2548	0	139	1334	0	97	205	0	362	201	0
Adj No. of Lanes	1	3	1	1	3	1	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.85	0.85	0.85	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	7	7	7	11	11	11	12	12	12
Cap, veh/h	396	2484	774	110	1613	502	132	278	0	294	586	262
Arrive On Green	0.23	0.51	0.00	0.07	0.34	0.00	0.08	0.08	0.00	0.19	0.19	0.00
Sat Flow, veh/h	1711	4903	1527	1647	4720	1470	1587	3333	0	1573	3138	1404
Grp Volume(v), veh/h	376	2548	0	139	1334	0	97	205	0	362	201	0
Grp Sat Flow(s),veh/h/ln	1711	1634	1527	1647	1573	1470	1587	1667	0	1573	1569	1404
Q Serve(g_s), s	32.5	76.0	0.0	10.0	38.9	0.0	8.9	9.0	0.0	28.0	8.3	0.0
Cycle Q Clear(g_c), s	32.5	76.0	0.0	10.0	38.9	0.0	8.9	9.0	0.0	28.0	8.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	396	2484	774	110	1613	502	132	278	0	294	586	262
V/C Ratio(X)	0.95	1.03	0.00	1.27	0.83	0.00	0.73	0.74	0.00	1.23	0.34	0.00
Avail Cap(c_a), veh/h	405	2484	774	110	1613	502	296	622	0	294	586	262
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	0.87	0.87	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.8	37.0	0.0	70.0	45.3	0.0	67.1	67.2	0.0	61.0	53.0	0.0
Incr Delay (d2), s/veh	31.7	24.9	0.0	173.6	5.0	0.0	6.6	3.3	0.0	130.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.8	40.0	0.0	9.8	17.7	0.0	4.2	4.3	0.0	22.8	3.7	0.0
LnGrp Delay(d),s/veh	88.5	61.9	0.0	243.6	50.3	0.0	73.8	70.5	0.0	191.7	53.4	0.0
LnGrp LOS	F	F		F	D		E	E		F	D	
Approach Vol, veh/h		2924			1473			302			563	
Approach Delay, s/veh		65.3			68.5			71.5			142.3	
Approach LOS		E			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	82.0		34.5	39.2	57.3		19.0
Change Period (Y+Rc), s	4.5	6.0		6.5	4.5	6.0		6.5
Max Green Setting (Gmax), s	10.0	60.5		28.0	35.5	35.0		28.0
Max Q Clear Time (g_c+I1), s	12.0	78.0		30.0	34.5	40.9		11.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.3	0.0		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		74.8
HCM 2010 LOS		E

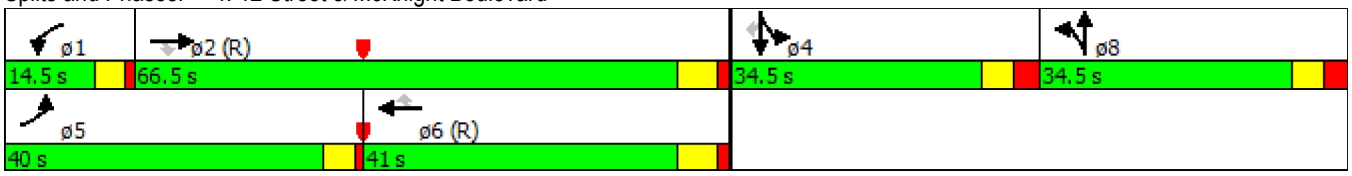
Notes

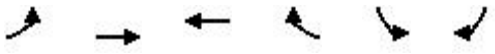
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	WBL	EBT	SBTL	EBL	WBT	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None
Maximum Split (s)	14.5	66.5	34.5	40	41	34.5
Maximum Split (%)	9.7%	44.3%	23.0%	26.7%	27.3%	23.0%
Minimum Split (s)	9.5	27	34.5	9.5	27	34.5
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5	3.5
All-Red Time (s)	1	1.5	3	1	1.5	3
Minimum Initial (s)	5	20	10	5	20	10
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		8	8		8	8
Flash Dont Walk (s)		13	20		13	20
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	110	124.5	41	110	0	75.5
End Time (s)	124.5	41	75.5	0	41	110
Yield/Force Off (s)	120	35	69	145.5	35	103.5
Yield/Force Off 170(s)	120	22	49	145.5	22	83.5
Local Start Time (s)	110	124.5	41	110	0	75.5
Local Yield (s)	120	35	69	145.5	35	103.5
Local Yield 170(s)	120	22	49	145.5	22	83.5

Intersection Summary		
Cycle Length	150	
Control Type	Actuated-Coordinated	
Natural Cycle	150	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green		

Splits and Phases: 4: 12 Street & McKnight Boulevard





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	153	1242	2535	243	476	557
v/c Ratio	0.72	0.49	1.21	0.35	0.43	0.93
Control Delay	32.5	13.0	122.1	13.2	21.6	42.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	13.0	122.1	13.2	21.6	42.0
Queue Length 50th (m)	11.4	45.8	~189.3	18.1	28.7	62.0
Queue Length 95th (m)	#39.6	57.9	#216.0	35.3	33.7	77.4
Internal Link Dist (m)		180.4	169.9		282.4	
Turn Bay Length (m)	60.0			20.0		20.0
Base Capacity (vph)	213	2547	2103	694	1188	641
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.49	1.21	0.35	0.40	0.87

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.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	139	1130	2256	216	362	423
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1745	1745	1814	1814	1779	1779
Adj Flow Rate, veh/h	153	1242	2535	0	476	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.91	0.91	0.89	0.89	0.76	0.76
Percent Heavy Veh, %	6	6	2	2	4	4
Cap, veh/h	205	3189	2830	881	655	301
Arrive On Green	0.06	0.67	0.57	0.00	0.20	0.00
Sat Flow, veh/h	1662	4922	5115	1542	3287	1512
Grp Volume(v), veh/h	153	1242	2535	0	476	0
Grp Sat Flow(s),veh/h/ln	1662	1588	1650	1542	1643	1512
Q Serve(g_s), s	2.8	9.3	36.0	0.0	10.8	0.0
Cycle Q Clear(g_c), s	2.8	9.3	36.0	0.0	10.8	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	205	3189	2830	881	655	301
V/C Ratio(X)	0.75	0.39	0.90	0.00	0.73	0.00
Avail Cap(c_a), veh/h	209	3189	2830	881	1191	548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	18.9	5.9	15.0	0.0	30.0	0.0
Incr Delay (d2), s/veh	13.4	0.4	4.9	0.0	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	4.1	17.5	0.0	5.0	0.0
LnGrp Delay(d),s/veh	32.3	6.3	20.0	0.0	31.5	0.0
LnGrp LOS	C	A	B		C	
Approach Vol, veh/h		1395	2535		476	
Approach Delay, s/veh		9.1	20.0		31.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		59.6		20.4	7.8	51.7		
Change Period (Y+Rc), s		6.0		4.5	3.0	6.0		
Max Green Setting (Gmax), s		40.5		29.0	5.0	32.5		
Max Q Clear Time (g_c+I1), s		11.3		12.8	4.8	38.0		
Green Ext Time (p_c), s		27.3		3.1	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Min	None	None	C-Min
Maximum Split (s)	46.5	33.5	8	38.5
Maximum Split (%)	58.1%	41.9%	10.0%	48.1%
Minimum Split (s)	26	33.5	8	27
Yellow Time (s)	4.5	3.5	3	4.5
All-Red Time (s)	1.5	1	0	1.5
Minimum Initial (s)	20	10	5	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		8		8
Flash Dont Walk (s)		21		13
Dual Entry	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	72	38.5	72	0
End Time (s)	38.5	72	0	38.5
Yield/Force Off (s)	32.5	67.5	77	32.5
Yield/Force Off 170(s)	32.5	46.5	77	19.5
Local Start Time (s)	72	38.5	72	0
Local Yield (s)	32.5	67.5	77	32.5
Local Yield 170(s)	32.5	46.5	77	19.5

Intersection Summary	
Cycle Length	80
Control Type	Actuated-Coordinated
Natural Cycle	110
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 1: 32 Avenue & 12 Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	222	1436	122	68	1827	681	337	651	498	129	443
v/c Ratio	1.48	0.77	0.19	0.63	1.08	0.78	1.12	0.98	1.47	0.19	1.06
Control Delay	290.3	41.7	5.5	88.8	89.2	15.5	138.1	78.2	267.4	47.5	97.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	290.3	41.7	5.5	88.8	89.2	15.5	138.1	78.2	267.4	47.5	97.1
Queue Length 50th (m)	~88.6	137.7	0.0	19.6	~216.6	38.1	~123.6	92.4	~199.0	16.6	~106.0
Queue Length 95th (m)	#142.4	157.9	13.7	#39.0	#247.4	96.3	#163.5	#110.2	#270.3	26.6	#175.9
Internal Link Dist (m)		184.1			186.5			282.4		181.3	
Turn Bay Length (m)	100.0		100.0	80.0		125.0	80.0		60.0		30.0
Base Capacity (vph)	150	1868	657	116	1697	878	301	664	338	676	417
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.77	0.19	0.59	1.08	0.78	1.12	0.98	1.47	0.19	1.06

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	209	1350	115	65	1754	654	337	250	213	478	124	425
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1779	1779	1779	1814	1814	1814	1745	1745	1850	1779	1779	1779
Adj Flow Rate, veh/h	222	1436	0	68	1827	0	242	553	0	498	129	0
Adj No. of Lanes	1	3	1	1	3	1	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.96	0.96	0.96	0.81	0.81	0.81	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	2	2	2	6	6	6	4	4	4
Cap, veh/h	151	1945	606	86	1787	556	302	635	0	339	676	302
Arrive On Green	0.09	0.40	0.00	0.05	0.36	0.00	0.18	0.18	0.00	0.20	0.20	0.00
Sat Flow, veh/h	1694	4856	1512	1727	4951	1542	1662	3491	0	1694	3380	1512
Grp Volume(v), veh/h	222	1436	0	68	1827	0	242	553	0	498	129	0
Grp Sat Flow(s),veh/h/ln	1694	1619	1512	1727	1650	1542	1662	1745	0	1694	1690	1512
Q Serve(g_s), s	12.5	35.2	0.0	5.5	50.5	0.0	19.5	21.6	0.0	28.0	4.4	0.0
Cycle Q Clear(g_c), s	12.5	35.2	0.0	5.5	50.5	0.0	19.5	21.6	0.0	28.0	4.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	1945	606	86	1787	556	302	635	0	339	676	302
V/C Ratio(X)	1.47	0.74	0.00	0.79	1.02	0.00	0.80	0.87	0.00	1.47	0.19	0.00
Avail Cap(c_a), veh/h	151	1945	606	117	1787	556	332	698	0	339	676	302
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	0.86	0.86	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	63.8	35.7	0.0	65.8	44.7	0.0	54.8	55.7	0.0	56.0	46.6	0.0
Incr Delay (d2), s/veh	242.8	2.6	0.0	22.1	27.2	0.0	10.6	9.5	0.0	226.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	16.1	0.0	3.1	27.5	0.0	9.8	11.2	0.0	34.4	2.1	0.0
LnGrp Delay(d),s/veh	306.6	38.3	0.0	87.9	71.9	0.0	65.4	65.2	0.0	282.9	46.7	0.0
LnGrp LOS	F	D		F	F		E	E		F	D	
Approach Vol, veh/h		1658			1895			795			627	
Approach Delay, s/veh		74.2			72.5			65.3			234.3	
Approach LOS		E			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.5	62.1		34.5	17.0	56.5		32.0
Change Period (Y+Rc), s	4.5	6.0		6.5	4.5	6.0		6.5
Max Green Setting (Gmax), s	9.5	51.0		28.0	12.5	48.0		28.0
Max Q Clear Time (g_c+I1), s	7.5	37.2		30.0	14.5	52.5		23.6
Green Ext Time (p_c), s	0.0	12.6		0.0	0.0	0.0		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	92.3
HCM 2010 LOS	F

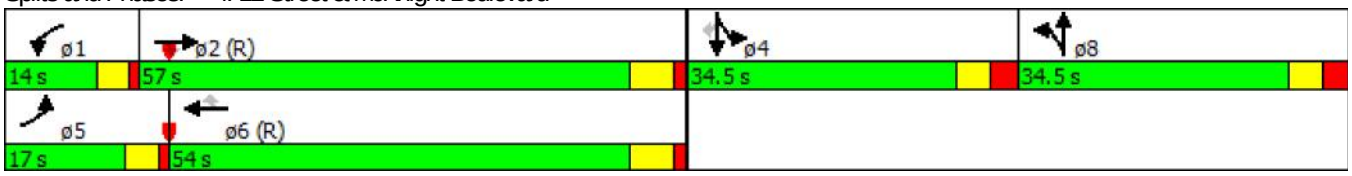
Notes

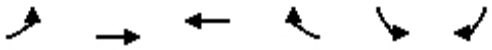
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	WBL	EBT	SBTL	EBL	WBT	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None
Maximum Split (s)	14	57	34.5	17	54	34.5
Maximum Split (%)	10.0%	40.7%	24.6%	12.1%	38.6%	24.6%
Minimum Split (s)	9.5	27	34.5	9.5	27	34.5
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5	3.5
All-Red Time (s)	1	1.5	3	1	1.5	3
Minimum Initial (s)	5	20	10	5	20	10
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		8	8		8	8
Flash Dont Walk (s)		13	20		13	20
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	123	137	54	123	0	88.5
End Time (s)	137	54	88.5	0	54	123
Yield/Force Off (s)	132.5	48	82	135.5	48	116.5
Yield/Force Off 170(s)	132.5	35	62	135.5	35	96.5
Local Start Time (s)	123	137	54	123	0	88.5
Local Yield (s)	132.5	48	82	135.5	48	116.5
Local Yield 170(s)	132.5	35	62	135.5	35	96.5

Intersection Summary	
Cycle Length	140
Control Type	Actuated-Coordinated
Natural Cycle	150
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	

Splits and Phases: 4: 12 Street & McKnight Boulevard

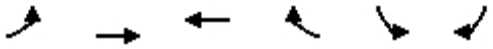




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	390	2740	1010	295	238	287
v/c Ratio	0.62	0.85	0.67	0.48	0.43	0.67
Control Delay	15.8	13.9	23.1	9.0	27.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	13.9	23.1	9.0	27.0	16.1
Queue Length 50th (m)	20.5	77.5	42.6	8.0	15.8	9.7
Queue Length 95th (m)	#77.4	#177.2	57.6	27.7	21.5	27.7
Internal Link Dist (m)		180.4	169.9		282.4	
Turn Bay Length (m)	60.0			20.0		20.0
Base Capacity (vph)	633	3238	1502	610	1249	699
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.85	0.67	0.48	0.19	0.41

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	378	2658	939	274	212	255
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1779	1779	1697	1697	1637	1637
Adj Flow Rate, veh/h	390	2740	1010	0	238	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.97	0.97	0.93	0.93	0.89	0.89
Percent Heavy Veh, %	4	4	9	9	13	13
Cap, veh/h	486	3441	2753	857	428	197
Arrive On Green	0.07	0.71	0.59	0.00	0.14	0.00
Sat Flow, veh/h	1694	5016	4786	1443	3025	1392
Grp Volume(v), veh/h	390	2740	1010	0	238	0
Grp Sat Flow(s),veh/h/ln	1694	1619	1544	1443	1512	1392
Q Serve(g_s), s	5.0	26.4	7.9	0.0	5.1	0.0
Cycle Q Clear(g_c), s	5.0	26.4	7.9	0.0	5.1	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	486	3441	2753	857	428	197
V/C Ratio(X)	0.80	0.80	0.37	0.00	0.56	0.00
Avail Cap(c_a), veh/h	486	3441	2753	857	1253	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.70	0.00
Uniform Delay (d), s/veh	9.4	6.8	7.4	0.0	28.0	0.0
Incr Delay (d2), s/veh	9.4	2.0	0.4	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	12.1	3.5	0.0	2.2	0.0
LnGrp Delay(d),s/veh	18.7	8.8	7.7	0.0	28.8	0.0
LnGrp LOS	B	A	A		C	
Approach Vol, veh/h		3130	1010		238	
Approach Delay, s/veh		10.1	7.7		28.8	
Approach LOS		B	A		C	

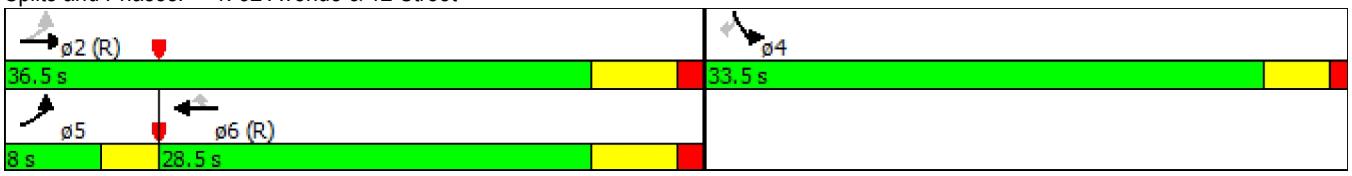
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		55.6		14.4	8.0	47.6		
Change Period (Y+Rc), s		6.0		4.5	3.0	6.0		
Max Green Setting (Gmax), s		30.5		29.0	5.0	22.5		
Max Q Clear Time (g_c+I1), s		28.4		7.1	7.0	9.9		
Green Ext Time (p_c), s		2.1		1.6	0.0	12.2		

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Min	None	None	C-Min
Maximum Split (s)	36.5	33.5	8	28.5
Maximum Split (%)	52.1%	47.9%	11.4%	40.7%
Minimum Split (s)	26	33.5	8	27
Yellow Time (s)	4.5	3.5	3	4.5
All-Red Time (s)	1.5	1	0	1.5
Minimum Initial (s)	20	10	5	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		8		8
Flash Dont Walk (s)		21		13
Dual Entry	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	62	28.5	62	0
End Time (s)	28.5	62	0	28.5
Yield/Force Off (s)	22.5	57.5	67	22.5
Yield/Force Off 170(s)	22.5	36.5	67	9.5
Local Start Time (s)	62	28.5	62	0
Local Yield (s)	22.5	57.5	67	22.5
Local Yield 170(s)	22.5	36.5	67	9.5

Intersection Summary	
Cycle Length	70
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 1: 32 Avenue & 12 Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	2548	632	143	1334	427	130	268	362	206	255
v/c Ratio	0.87	1.29	0.76	0.68	1.01	0.59	0.72	0.69	1.24	0.35	0.54
Control Delay	74.8	171.3	21.7	79.1	79.9	7.8	84.5	63.0	182.3	55.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.8	171.3	21.7	79.1	79.9	7.8	84.5	63.0	182.3	55.1	10.4
Queue Length 50th (m)	110.6	~370.7	75.3	43.4	~170.9	0.0	43.7	39.0	~139.9	29.9	0.0
Queue Length 95th (m)	#172.5	#397.3	130.8	#96.9	#217.3	32.2	62.7	49.5	#195.8	41.6	22.3
Internal Link Dist (m)		184.1			186.5			282.4		181.3	
Turn Bay Length (m)	100.0		100.0	80.0		125.0	80.0		60.0		30.0
Base Capacity (vph)	439	1977	835	210	1319	718	268	567	292	585	469
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	1.29	0.76	0.68	1.01	0.59	0.49	0.47	1.24	0.35	0.54

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	346	2344	581	137	1281	410	123	147	68	315	179	222
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1796	1796	1796	1729	1729	1729	1667	1667	1850	1652	1652	1652
Adj Flow Rate, veh/h	376	2548	0	143	1334	0	106	228	0	362	206	0
Adj No. of Lanes	1	3	1	1	3	1	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.85	0.85	0.85	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	7	7	7	11	11	11	12	12	12
Cap, veh/h	396	2447	762	110	1577	491	144	303	0	294	586	262
Arrive On Green	0.23	0.50	0.00	0.07	0.33	0.00	0.09	0.09	0.00	0.19	0.19	0.00
Sat Flow, veh/h	1711	4903	1527	1647	4720	1470	1587	3333	0	1573	3138	1404
Grp Volume(v), veh/h	376	2548	0	143	1334	0	106	228	0	362	206	0
Grp Sat Flow(s),veh/h/ln	1711	1634	1527	1647	1573	1470	1587	1667	0	1573	1569	1404
Q Serve(g_s), s	32.5	74.9	0.0	10.0	39.3	0.0	9.8	10.0	0.0	28.0	8.6	0.0
Cycle Q Clear(g_c), s	32.5	74.9	0.0	10.0	39.3	0.0	9.8	10.0	0.0	28.0	8.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	396	2447	762	110	1577	491	144	303	0	294	586	262
V/C Ratio(X)	0.95	1.04	0.00	1.30	0.85	0.00	0.73	0.75	0.00	1.23	0.35	0.00
Avail Cap(c_a), veh/h	405	2447	762	110	1577	491	296	622	0	294	586	262
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	0.81	0.81	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.8	37.6	0.0	70.0	46.3	0.0	66.4	66.5	0.0	61.0	53.1	0.0
Incr Delay (d2), s/veh	31.7	30.0	0.0	187.5	5.8	0.0	5.7	3.1	0.0	130.7	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.8	40.6	0.0	10.3	17.9	0.0	4.5	4.8	0.0	22.8	3.7	0.0
LnGrp Delay(d),s/veh	88.5	67.6	0.0	257.5	52.1	0.0	72.2	69.6	0.0	191.7	53.5	0.0
LnGrp LOS	F	F		F	D		E	E		F	D	
Approach Vol, veh/h		2924			1477			334			568	
Approach Delay, s/veh		70.3			72.0			70.4			141.6	
Approach LOS		E			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	80.9		34.5	39.2	56.1		20.1
Change Period (Y+Rc), s	4.5	6.0		6.5	4.5	6.0		6.5
Max Green Setting (Gmax), s	10.0	60.5		28.0	35.5	35.0		28.0
Max Q Clear Time (g_c+I1), s	12.0	76.9		30.0	34.5	41.3		12.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.3	0.0		1.6

Intersection Summary		
HCM 2010 Ctrl Delay		78.4
HCM 2010 LOS		E

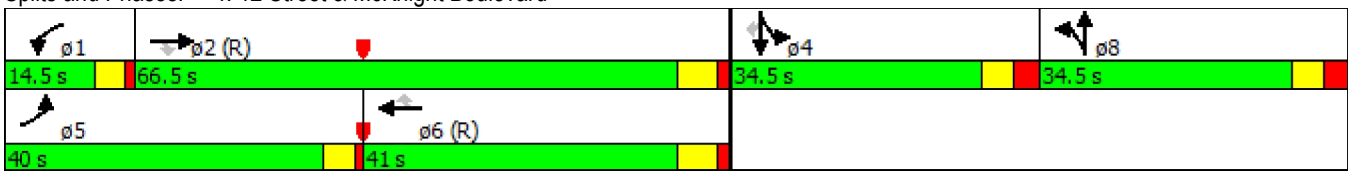
Notes

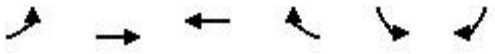
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	WBL	EBT	SBTL	EBL	WBT	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None
Maximum Split (s)	14.5	66.5	34.5	40	41	34.5
Maximum Split (%)	9.7%	44.3%	23.0%	26.7%	27.3%	23.0%
Minimum Split (s)	9.5	27	34.5	9.5	27	34.5
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5	3.5
All-Red Time (s)	1	1.5	3	1	1.5	3
Minimum Initial (s)	5	20	10	5	20	10
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		8	8		8	8
Flash Dont Walk (s)		13	20		13	20
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	110	124.5	41	110	0	75.5
End Time (s)	124.5	41	75.5	0	41	110
Yield/Force Off (s)	120	35	69	145.5	35	103.5
Yield/Force Off 170(s)	120	22	49	145.5	22	83.5
Local Start Time (s)	110	124.5	41	110	0	75.5
Local Yield (s)	120	35	69	145.5	35	103.5
Local Yield 170(s)	120	22	49	145.5	22	83.5

Intersection Summary	
Cycle Length	150
Control Type	Actuated-Coordinated
Natural Cycle	150
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	

Splits and Phases: 4: 12 Street & McKnight Boulevard





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	229	1242	2535	249	483	651
v/c Ratio	0.80	0.41	1.06	0.32	0.59	0.89
Control Delay	39.5	9.7	64.8	16.3	33.6	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	9.7	64.8	16.3	33.6	24.8
Queue Length 50th (m)	26.9	39.2	~196.1	21.5	42.0	34.6
Queue Length 95th (m)	52.1	58.7	#279.6	51.4	43.0	41.3
Internal Link Dist (m)		180.4	169.9		282.4	
Turn Bay Length (m)	60.0			20.0		20.0
Base Capacity (vph)	446	3051	2384	768	1052	805
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.41	1.06	0.32	0.46	0.81

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.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	208	1130	2256	222	367	495
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1745	1745	1814	1814	1779	1779
Adj Flow Rate, veh/h	229	1242	2535	0	483	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.91	0.91	0.89	0.89	0.76	0.76
Percent Heavy Veh, %	6	6	2	2	4	4
Cap, veh/h	275	3321	2732	851	633	291
Arrive On Green	0.11	0.70	0.55	0.00	0.19	0.00
Sat Flow, veh/h	1662	4922	5115	1542	3287	1512
Grp Volume(v), veh/h	229	1242	2535	0	483	0
Grp Sat Flow(s),veh/h/ln	1662	1588	1650	1542	1643	1512
Q Serve(g_s), s	7.8	10.2	44.7	0.0	13.2	0.0
Cycle Q Clear(g_c), s	7.8	10.2	44.7	0.0	13.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	275	3321	2732	851	633	291
V/C Ratio(X)	0.83	0.37	0.93	0.00	0.76	0.00
Avail Cap(c_a), veh/h	471	3321	2732	851	1055	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.0	5.9	19.6	0.0	36.3	0.0
Incr Delay (d2), s/veh	6.5	0.3	7.0	0.0	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	4.5	22.0	0.0	6.1	0.0
LnGrp Delay(d),s/veh	34.5	6.2	26.5	0.0	38.2	0.0
LnGrp LOS	C	A	C		D	
Approach Vol, veh/h		1471	2535		483	
Approach Delay, s/veh		10.6	26.5		38.2	
Approach LOS		B	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		72.2		22.8	13.8	58.4		
Change Period (Y+Rc), s		6.0		4.5	3.0	6.0		
Max Green Setting (Gmax), s		54.0		30.5	22.0	29.0		
Max Q Clear Time (g_c+I1), s		12.2		15.2	9.8	46.7		
Green Ext Time (p_c), s		38.1		3.1	1.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Min	None	None	C-Min
Maximum Split (s)	60	35	25	35
Maximum Split (%)	63.2%	36.8%	26.3%	36.8%
Minimum Split (s)	26	33.5	8	27
Yellow Time (s)	4.5	3.5	3	4.5
All-Red Time (s)	1.5	1	0	1.5
Minimum Initial (s)	20	10	5	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		8		8
Flash Dont Walk (s)		21		13
Dual Entry	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	70	35	70	0
End Time (s)	35	70	0	35
Yield/Force Off (s)	29	65.5	92	29
Yield/Force Off 170(s)	29	44.5	92	16
Local Start Time (s)	70	35	70	0
Local Yield (s)	29	65.5	92	29
Local Yield 170(s)	29	44.5	92	16

Intersection Summary	
Cycle Length	95
Control Type	Actuated-Coordinated
Natural Cycle	130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 1: 32 Avenue & 12 Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	222	1436	145	74	1827	681	350	679	498	135	443
v/c Ratio	1.48	0.80	0.22	0.67	1.08	0.78	1.16	1.03	1.47	0.20	1.07
Control Delay	290.3	44.1	5.3	92.1	89.2	15.8	151.9	90.0	267.4	47.6	99.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	290.3	44.1	5.3	92.1	89.2	15.8	151.9	90.0	267.4	47.6	99.9
Queue Length 50th (m)	~88.6	137.7	0.0	21.4	~216.6	39.1	~132.3	~104.5	~199.0	17.4	~108.0
Queue Length 95th (m)	#142.4	157.9	14.8	#43.9	#247.4	97.6	#172.1	#120.3	#270.3	27.6	#177.9
Internal Link Dist (m)		184.1			186.5			282.4		181.3	
Turn Bay Length (m)	100.0		100.0	80.0		125.0	80.0		60.0		30.0
Base Capacity (vph)	150	1785	647	116	1697	876	301	660	338	676	414
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.80	0.22	0.64	1.08	0.78	1.16	1.03	1.47	0.20	1.07

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	209	1350	136	71	1754	654	359	256	219	478	130	425
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1779	1779	1779	1814	1814	1814	1745	1745	1850	1779	1779	1779
Adj Flow Rate, veh/h	222	1436	0	74	1827	0	253	582	0	498	135	0
Adj No. of Lanes	1	3	1	1	3	1	1	2	0	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.96	0.96	0.96	0.81	0.81	0.81	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	2	2	2	6	6	6	4	4	4
Cap, veh/h	151	1897	591	93	1758	547	312	656	0	339	676	302
Arrive On Green	0.09	0.39	0.00	0.05	0.36	0.00	0.19	0.19	0.00	0.20	0.20	0.00
Sat Flow, veh/h	1694	4856	1512	1727	4951	1542	1662	3491	0	1694	3380	1512
Grp Volume(v), veh/h	222	1436	0	74	1827	0	253	582	0	498	135	0
Grp Sat Flow(s),veh/h/ln	1694	1619	1512	1727	1650	1542	1662	1745	0	1694	1690	1512
Q Serve(g_s), s	12.5	35.8	0.0	5.9	49.7	0.0	20.4	22.8	0.0	28.0	4.7	0.0
Cycle Q Clear(g_c), s	12.5	35.8	0.0	5.9	49.7	0.0	20.4	22.8	0.0	28.0	4.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	1897	591	93	1758	547	312	656	0	339	676	302
V/C Ratio(X)	1.47	0.76	0.00	0.80	1.04	0.00	0.81	0.89	0.00	1.47	0.20	0.00
Avail Cap(c_a), veh/h	151	1897	591	117	1758	547	332	698	0	339	676	302
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	0.82	0.82	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	63.8	36.9	0.0	65.5	45.1	0.0	54.5	55.4	0.0	56.0	46.7	0.0
Incr Delay (d2), s/veh	242.8	2.9	0.0	25.3	32.5	0.0	11.1	10.8	0.0	226.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	16.5	0.0	3.5	27.9	0.0	10.4	12.0	0.0	34.4	2.2	0.0
LnGrp Delay(d),s/veh	306.6	39.8	0.0	90.8	77.6	0.0	65.6	66.2	0.0	282.9	46.8	0.0
LnGrp LOS	F	D		F	F		E	E		F	D	
Approach Vol, veh/h		1658			1901			835			633	
Approach Delay, s/veh		75.5			78.1			66.0			232.5	
Approach LOS		E			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	60.7		34.5	17.0	55.7		32.8
Change Period (Y+Rc), s	4.5	6.0		6.5	4.5	6.0		6.5
Max Green Setting (Gmax), s	9.5	51.0		28.0	12.5	48.0		28.0
Max Q Clear Time (g_c+I1), s	7.9	37.8		30.0	14.5	51.7		24.8
Green Ext Time (p_c), s	0.0	12.1		0.0	0.0	0.0		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		94.7
HCM 2010 LOS		F

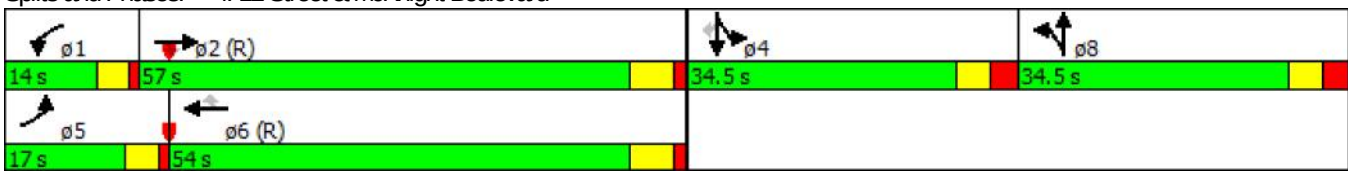
Notes

User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	WBL	EBT	SBTL	EBL	WBT	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	None	None	C-Min	None
Maximum Split (s)	14	57	34.5	17	54	34.5
Maximum Split (%)	10.0%	40.7%	24.6%	12.1%	38.6%	24.6%
Minimum Split (s)	9.5	27	34.5	9.5	27	34.5
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5	3.5
All-Red Time (s)	1	1.5	3	1	1.5	3
Minimum Initial (s)	5	20	10	5	20	10
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		8	8		8	8
Flash Dont Walk (s)		13	20		13	20
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	123	137	54	123	0	88.5
End Time (s)	137	54	88.5	0	54	123
Yield/Force Off (s)	132.5	48	82	135.5	48	116.5
Yield/Force Off 170(s)	132.5	35	62	135.5	35	96.5
Local Start Time (s)	123	137	54	123	0	88.5
Local Yield (s)	132.5	48	82	135.5	48	116.5
Local Yield 170(s)	132.5	35	62	135.5	35	96.5

Intersection Summary	
Cycle Length	140
Control Type	Actuated-Coordinated
Natural Cycle	150
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	

Splits and Phases: 4: 12 Street & McKnight Boulevard



June 22, 2020

Via Email: sarah.hbeichi@calgary.ca

The City of Calgary
Planning & Development
P.O. Box 2100, Station "M"
Calgary, AB T2P 2M5

Attention: Sarah Hbeichi

Dear Ms. Hbeichi:

RE: Land Use Amendment application LOC2020-0065;
Property: 3625 12 Street NE; Funeral Home and Crematorium

Square One Properties Ltd. is the registered owner of the property 1231 36 Avenue NE, located to the immediate west of the proposed Funeral Home and Crematorium. Our property contains a building with 14 bays that are leased to 9 industrial businesses. These businesses are all long term tenants who have operated from our property for many years. Our property and the surrounding properties are all zoned "Industrial-General (I-G)" District. All our tenants' businesses were open and operated from the premises during the Covid-19 pandemic emergency rules in effect.

Lack of Information

There is a complete lack of information about the application; no details other than the intent to redesignate the site to allow for the use of "Funeral Home" and "Crematorium", have been made available. For example, no information has been provided regarding the size of the assembly area for the proposed funeral home. The only information regarding the size of the potential development is the overall footprint of the existing building of 681 square metres. No information has been provided about the number of staff or business vehicles, the number of expected memorial services and visitors, the number of parking stalls, etc. In our view this information is necessary to properly assess the impact of the proposed use on the adjacent properties and businesses.

No Engagement with Stakeholders

Our property manager attempted to inquire with the applicant and property owner about the application, but to no avail; No responses were received. Furthermore, the applicant has made no attempt to engage the adjacent property owners and surrounding businesses. This is contrary to the City's engagement policies and to best practices in land use planning.

Concerns

We have several concerns with respect to the subject application. The subject parcel and surrounding parcels are all zoned I-G District. This is an industrial area with considerable traffic volumes on 12 Street NW, and the area serves as an important employment district in the city. In our opinion a funeral home is an inappropriate use for the subject location due to the expected traffic generated by the use and resulting parking issues expected from the proposed funeral home. The operation of industrial businesses in inner Calgary is important to the city's economy and we are concerned that allowing a use like a funeral home will create conflicts between the workers who rely on this area for their employment and the potential large groups of people who will visit the funeral home. We fear there will be an overflow of parking on our site and on neighboring properties. There are also no public sidewalks in the area, suggesting this area is not appropriate for large gatherings of people.

Negative Impacts on Adjacent Properties & Businesses

We are concerned that the proposed funeral home will negatively impact the use, enjoyment and value of our property and unduly affect our tenants' businesses. These tenants and businesses need unrestricted access for their clients and employees and for the delivery and pick-up of goods and products to their shops/units. Our building contains several metal fabrication shops that have deliveries by large tractor trailer vehicles. These vehicles need a large turning ratio for access and egress to the loading bays located at the rear of our building and the tenants' shops. The businesses cannot afford to have visitors of the proposed funeral home block access to and from our site. Parking on our property is at capacity and our tenants' staff typically need to park on the street. In addition, it should be noted that there is limited parking available on 36 Avenue as on-street parking on the north side of the avenue is prohibited. No parking is allowed on 12 Street. Moreover, we are concerned about the impact of funeral processions.

Municipal Development Plan

In addition, we feel that the use of a Funeral Home is incompatible within an area identified within the Municipal Development Plan (MDP) as a "Standard Industrial Area." Policies within the MDP clearly state that within Standard Industrial Areas, industrial uses should continue to be the primary use and that the retention of a broad range of industrial uses is important (Section 3.7.1). Given that a funeral home in the Bylaw is considered to be a commercial use

(or akin to a commercial use), allowing for such a use within a Standard Industrial Area would be to allow the encroachment of non-industrial uses in the general area, which could set a precedent for the erosion of our inner city industrial land supply by uses that would be better located elsewhere. The subject parcel is just too small and an inappropriate location to accommodate the propose use of a funeral home.

Transportation Impact Assessment

Our company commissioned a preliminary transportation impact assessment by JCB Engineering Ltd. (Justin Barrett, a Transportation Engineer) to evaluate the potential effects of the approval of this application. See the attached report. JCB concludes that it is expected that there will be a shortfall in parking provided on the site for the proposed funeral home and that there may not be sufficient parking on the nearby roadways of 34 Avenue NE and 36 Avenue NE to accommodate this shortfall. According to JCB a complete parking assessment should be provided to demonstrate if there will be a parking shortfall for the development.

JCB further concludes that the additional traffic expected to be generated by the funeral home will have an impact on the operation of the intersection of 12 Street and 32 Avenue NE. Primarily during the typical PM peak hour scenario, the intersection will have unacceptable operations due to the westbound approach being over capacity and competing for green time with other movements that have had their volumes increased by traffic generated by the proposed development. JCB determined that a more detailed and full transportation impact assessment is required to confirm what impacts, and the magnitude of these impacts, the traffic generated by the proposed development will have on the roadways and intersections in the area. There will also be an impact of the development generated traffic on the intersection of 12 Street and McKnight Boulevard NE. This intersection is failing under existing conditions. This demonstrates that traffic generated by the proposed use and development is more likely to use the 12 Street and 32 Avenue NE intersection and create the unacceptable operational issues noted in the JCB report.

Land Use Bylaw

It is the clear intent of the Land Use Bylaw to ensure compatibility between land uses. Based on sound planning principles, funeral homes are incompatible with general industrial areas. The Land Use Bylaw expressly and purposely limits funeral homes as a listed use to only five commercial districts: C-C2, C-COR 2, C-COR3, C-R2 and C-R3 Districts, generally to avoid an influx of vehicles and customers on industrial roads that are intended for trucks and the movement of goods that are critical to our city's economy. Funeral homes are located in the larger commercial land use districts that can accommodate parking or shared parking and good access to major roads. Due to associated traffic and parking demand, under the Land Use Bylaw the use of "Funeral Home" is more akin to commercial uses. Hence why the Bylaw treats it as such.

For your information, there is a funeral home located at 4715 13 Street NE, south of McKnight Boulevard. However, according to a review of the City records, that funeral home does not have development permit approval, in contravention of the Land Use Bylaw and the I-G zoning of the site does not allow the use. Therefore, it cannot be used as a reference for approval of the subject land use application.

In case the City Administration would recommend approval of the land use amendment application, we respectfully request that the City Administration requires the applicant to submit a concurrent development permit application to enable a proper assessment of the proposed land use application so that impacts can be evaluated holistically.

Conclusion

In conclusion, for the aforementioned reasons we are opposed to the proposed land use amendment. From a planning and transportation perspective, the subject parcel is an inappropriate location for the use of a funeral home.

Sincerely,

Dan Brink

Square One Properties Ltd.

Encl.: Report JCB Engineering Ltd.

Cc: Ward Councillor (ray.jones@calgary.ca)