Attachment 4

SUPERIOR ROAD DEVELOPMENT

Transportation Impact Assessment

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1.0 INTRODUCTION

Watt Consulting Group was retained by the District of Lantzville to conduct a traffic impact assessment (TIA) for a proposed residential / mixed use development within the District adjacent to Superior Road. The proposed development is a mix of commercial / industrial and residential.

This report examines the existing and long-term conditions within the study area, highlights any potential operational issues, and recommends mitigation measures to ensure accommodation of development traffic. A review of the transit, pedestrian, and cycling accommodations is provided.

1.1 Study Area

The site for the proposed development is located on the southwest of the Highway 19 / Superior Road intersection. The Ministry identified that an access across from Harley Drive is too close to the Highway 19 / Superior Road intersection. The final location and number of accesses has yet to be determined. One access is likely to be located at Stone Road and with an additional access on the south side of the development west of Stone Road. The following intersections are included in the study area:

- Highway 19 / Superior Road;
- Harley Drive / Superior Road;
- Vandenhoek Road / Superior Road;
- Stone Road / Superior Road;
- Proposed Access south side of the development to Superior Road between Stone Road and Normarel Drive.

See **Figure 1** for the study area and site location.

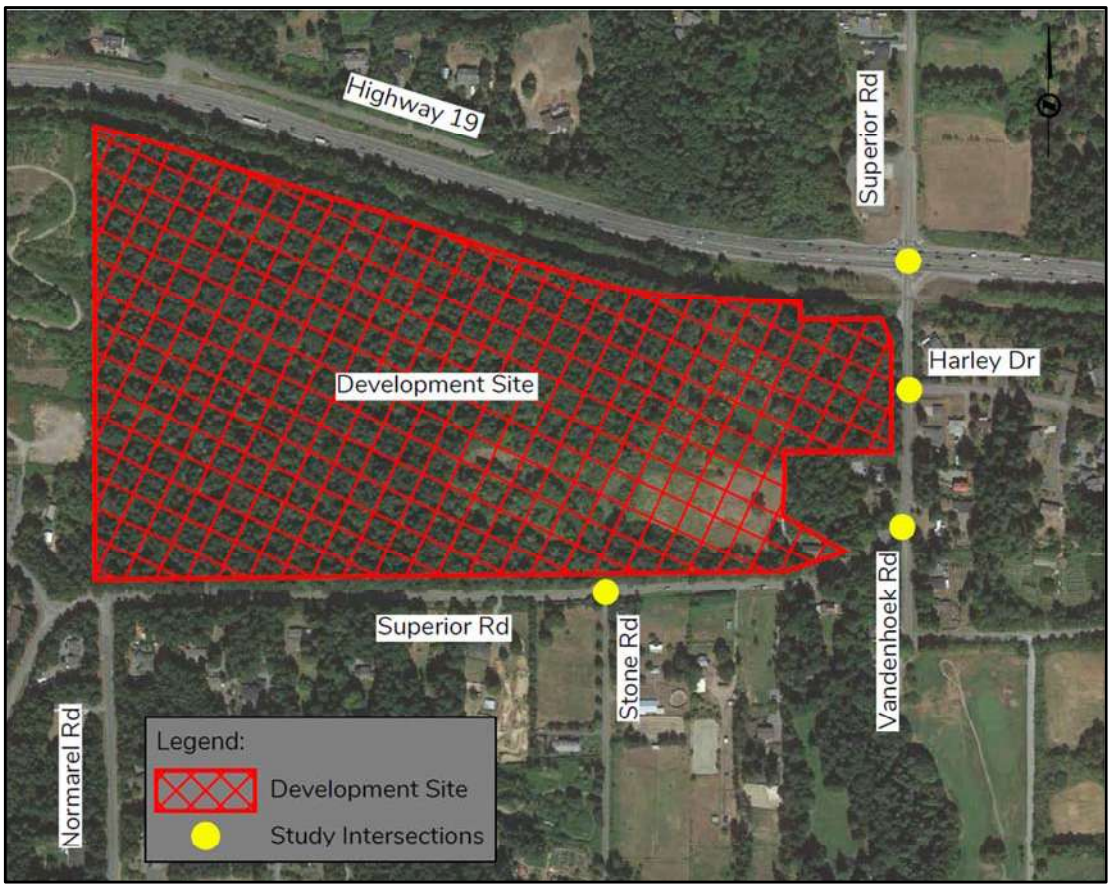


Figure 1: Study Area

2.0 EXISTING CONDITIONS

2.1 Land Use

The development site is currently undeveloped and zoned as Future Special Area Plan Zone (F-SAP). The surrounding land is comprised of Residential 1 Zone (R1), Estate Zone (EST), Agricultural Zone (A), and Nanoose First Nation's Land.

2.2 Road Network

There are five roadways within the study area as described below:

- **Highway 19** is a four-lane, divided roadway that is part of the Ministry's Primary Highway System. Highway 19 connects to Highway 1 at the south end of Nanaimo and runs to Port Hardy at the north end of Vancouver Island.
- **Superior Road** is a two-lane, Major / Journeyway road. The road runs north / south from Highway 19 to Vandenhoek Road where Superior Road then runs east / west. Journeyway

roads have vehicle traffic and non-vehicular transportation such as pedestrians and cyclists.

- **Stone Road** is a two-lane, local / Journeyway road that runs north / south.
- **Vandenhoek Road** is a two-lane, local / Journeyway road that runs north / south.
- **Harley Drive** is a two-lane, local / Journeyway road that runs east / west.

The posted speed limit on Highway 19 is 90 km/h within the study area. The posted speed limit on all other roads in the study area is 50 km/h. There are four intersections within the study area:

- **Highway 19 / Superior Road** is a four-leg, signalized intersection. There are eastbound / westbound left and right turn lanes. The Highway 19 left turn phases are protected.
- **Vandenhoek Road / Superior Road** is a three-leg, unsignalized intersection. Superior Road changes from a north / south road to an east / west road at this intersection. There is a stop for the northbound left and a yield for the northbound through. Superior Road is free flow through this intersection.
- **Stone Road / Superior Road** is a three-leg, unsignalized intersection with stop control on the south leg. There are no auxiliary lanes at this intersection.
- **Harley Drive / Superior Road** is a three-leg, unsignalized intersection with stop control on the east leg. There are no auxiliary lanes at this intersection.

2.3 Traffic Modelling – Background Information

Analysis of the traffic conditions at the study intersections was undertaken using Synchro Studio (version 10). Synchro / SimTraffic is a two-part traffic modelling software that provides analysis of the traffic conditions based on the Highway Capacity Manual (2010) evaluation methodology. A detailed description is provided in **Appendix A.**

For unsignalized (stop-controlled) intersections, the level of service (LOS) is based on the computed delay on each of the critical movements. LOS A represents minimal delays for minor street traffic movements, and LOS F represents a scenario with an insufficient number of gaps on the major street for minor street motorists to complete their movements without significant delays. For signalized intersections, the methodology considers the intersection geometry, traffic volumes, the traffic signal phasing / timing plan, and pedestrian volumes. The average delay for each lane group is calculated, as well as the delay for the overall intersection.

2.4 Existing Traffic Conditions

This study focuses on the weekday PM peak hour of travel which typically accounts for the highest traffic volumes throughout the day; however, a sensitivity analysis was conducted to ensure that the results of the study reflect other peak travel times. See **Figure 2** and **Table 2** for the existing PM peak hour conditions.

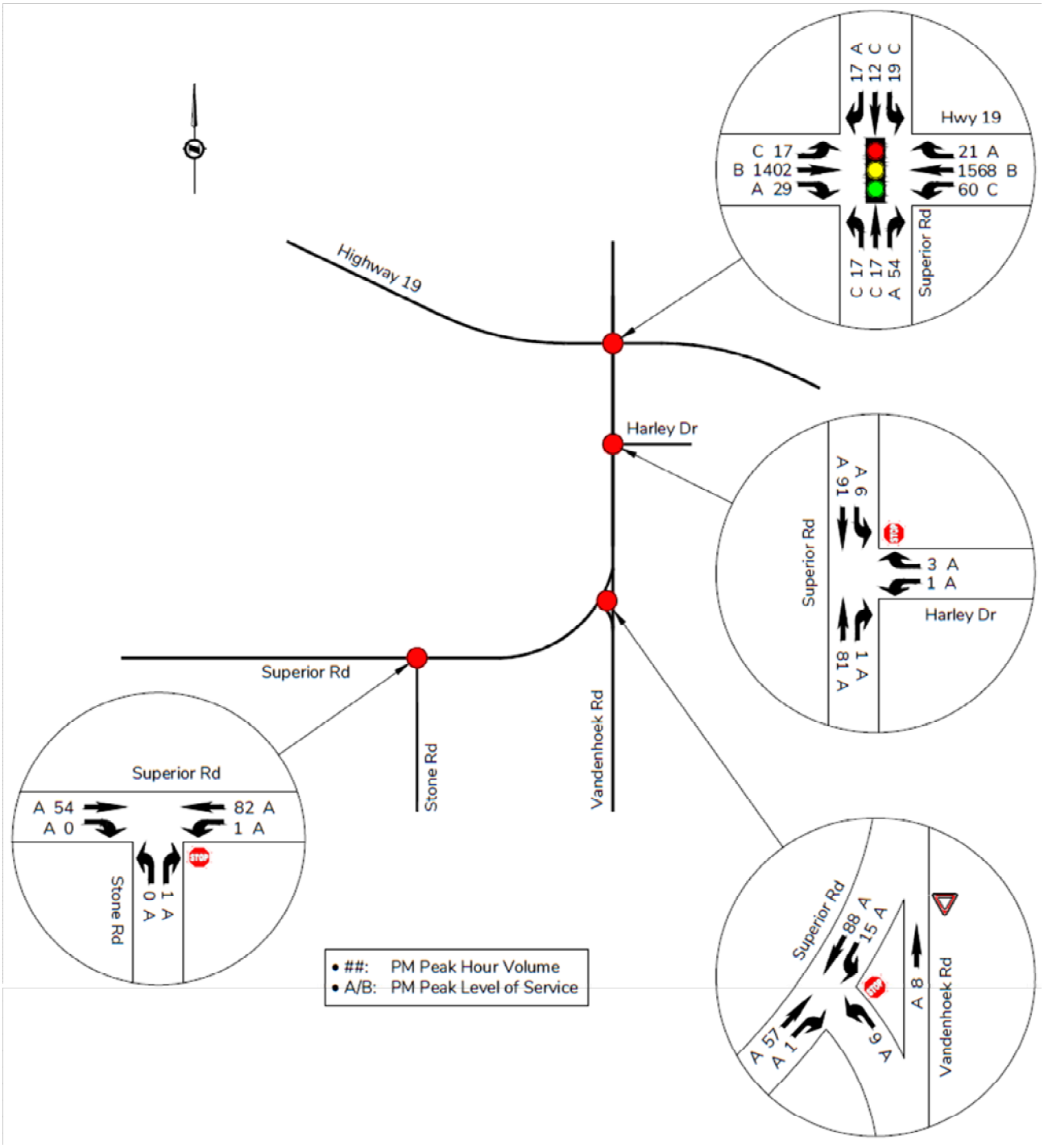


Figure 2: Existing 2021 PM Peak Hour Volumes / LOS

Table 1: 2021 Existing Conditions – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Highway 19 / Superior Rd	EBL	C	32.8	7.6
	EBT	B	13.2	122.1
	EBR	A	0.0	0.0
	WBL	C	34.4	19.1
	WBT	B	10.2	142.0
	WBR	A	0.0	0.0
	NB L/T	C	31.4	12.5
	NBR	A	0.1	0.0
	SB L/T	C	32.1	11.7
	SBR	A	0.0	0.0
Harley Dr / Superior Rd	WB L/R	A	9.4	0.7
	NB T/R	A	0.0	0.0
	SB L/T	A	7.4	0.0
Vandenhoek Rd / Superior Rd	WBL (Vandenhoek Rd)	A	9.9	0.7
	WBR (Vandenhoek Rd)	A	8.7	0.0
	NB T/R (Superior Rd)	A	0.0	0.0
	SB L/T (Superior Rd)	A	7.4	0.7
Stone Rd / Superior Rd	EB T/R	A	0.0	0.0
	WB L/T	A	7.4	0.0
	NB L/R	A	9.2	0.7

The existing traffic during the PM peak hour at Highway 19 / Superior Road operates at LOS C or better. All other intersections in the study area operate at LOS A for all movements during the PM peak hour.

3.0 POST DEVELOPMENT

3.1 Proposed Land Use and Site Access

The proposed development will consist of residential and commercial / industrial. The final configuration of the site plan has not been finalized; however, **Figure 3** shows two of the potential road / access locations.

Figure 3: Site Plan

The number and location of the accesses are not set; however, two accesses are likely to be located as shown in **Figure 3**: across from Stone Road and approximately halfway between Stone Road and Normarel Drive. The access between Stone Road and Normarel Drive is for residential use only while the other access is for both residential and commercial / industrial use. **Table 2** shows the Transportation Association of Canada's (TAC) sight distances requirements and the actual sight distances for the two stop-controlled accesses on the south side of the lot.

Table 2: Sight Distances at the Proposed Stop Controlled Accesses

Access	Design Vehicle	Posted Speed	Required Sight Distance (m)	Actual Sight Distance (m)	Achieved
Southeast Access	Passenger Vehicle	50 km/h	105	200	Yes
	WB-20 Truck	50 km/h	160		Yes
Southwest Access	Passenger Vehicle	50 km/h	105	200	Yes

There are no sight distance deficiencies for the proposed accesses.

3.2 Trip Generation

Site trips were estimated from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual (10th Edition)*. The *Trip Generation Manual* provides trip rates for a wide variety of land uses gathered from actual sites across North America over the past 35 years.

The construction of the proposed development could be split into two phases. The first phase is to include the residential land use with the smaller scale commercial and / or industrial. The second phase is to include the larger scale commercial. The site plan has not been finalized at this time; therefore, an estimate of likely commercial uses was used to generate a conservative number of trips to / from the site.

The hardware / paint store land use could be replaced by a similar commercial use or light industrial. The light industrial trip generation rate is significantly lower than commercial uses; however, the light industrial land use would not require the surface parking lots that are commonly associated with commercial land use and therefore allow for more building square footage. It would require approximately four times the amount of light industrial land use to generate the equivalent number of trips generated by the hardware / paint store land use.

The large commercial trip generation was taken from traffic counts conducted at comparable sites on Vancouver Island. Comparable site data was used instead of an ITE trip rate because this type of development can generate far more traffic than typical commercial developments. **Table 3** and **Table 4** summarizes the trip generation for the proposed development during the PM and Saturday peak hours.

Table 3: Trip Generation during the PM Peak Hour

Phase	ITE Code	Land Use	Unit(s)	Trip Rate	Total Trips	Trips In	Trips Out
1	210	Single Family	52 units	0.99 trips / unit	52	33	19
	820	Shopping Centre	51,148 ft^2	3.81 trips/1000 ft^2	195	94	101
	816 (110)	Hardware / Paint Store (Light Industrial)	100,000 ft^2 (425,000 ft^2)	2.68 trips/1000 ft^2 (0.63 trips/1000 ft^2)	268 (268)	126 (35)	142 (233)
				Phase 1 Total	**515**	**253**	**262**
2	n/a	Large Commercial	150,000 ft^2	7.09 trips/1000 ft^2	1064	521	543
	944	Gas*	16 pumps	14.03 trips/pumps	113	57	56
				Phase 2 Total	**1177**	**578**	**599**
				Total	**1692**	**831**	**861**

**50% of trips to the gas station were estimated to also visit the large commercial store*

Table 4: Trip Generation during the Saturday Peak Hour

Phase	ITE Code	Land Use	Unit(s)	Trip Rate	Total Trips	Trips In	Trips Out
1	210	Single Family	52 units	0.93 trips / unit	49	26	23
	820	Shopping Centre	51,148 ft^2	4.50 trips/1000 ft^2	231	120	111
	816 (110)	Hardware / Paint Store (Light Industrial)	100,000 ft^2 (547,000 ft^2)	2.25 trips/1000 ft^2 (2.25 trips/1000 ft^2)	225 (225)	126 (106)	99 (119)
				Phase 1 Total	**505**	**272**	**233**
2	n/a	Large Commercial	150,000 ft^2	7.68 trips/1000 ft^2	1152	564	588
	944	Gas*	16 pumps	12.77 trips/pumps	103	52	51
				Phase 2 Total	**1255**	**616**	**639**
				Total	**1760**	**888**	**872**

50% of trips to the gas station were estimated to also visit the large commercial store

Before passby trips are taken into consideration the proposed development generates 68 more trips during the Saturday peak hour than the weekday PM peak hour.

Table 5: Passby Trips during the PM and Saturday Peak Hours

Trip Type	PM Peak Hour			Saturday Peak Hour		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Total Trips	831	861	1692	888	872	1760
Pass-By Trips	(-) 280	(-) 291	(-) 571	(-) 255	(-) 252	(-) 507
Net External Trips	**551**	**570**	**1121**	**633**	**620**	**1253**

After passby trips are taken into account the Saturday peak hour generates 132 more trips than the weekday PM peak hour; however, there is approximately 12.0 percent more traffic (or 280 more vehicles per hour) on Highway 19 during the weekday PM peak hour compared to the Saturday peak hour. While the proposed development generates more traffic during the Saturday peak hour there will be more implications to the surrounding traffic network during the weekday PM peak hour; therefore the analysis focuses on the weekday PM peak hour of travel. Although there could be a few internal trips between the residential and commercial land uses as a conservative estimate no internal trips were removed for these potential internal trips.

Mixed-commercial developments will have some internal or shared trips between the on-site commercial land uses. Therefore an internal capture rate was applied to the various commercial

land uses for this development site. This is in addition the sharing between the gas station and large commercial store which are expected to be under the same ownership / brand. The internal capture rate is a percentage reduction to the trip generation estimates for individual land uses to account for internal trips on the site. The internal trips are subtracted from the total trips to determine the external trips to / from the site. The number of trips generated from the development after internal capture is applied is 1,121 total (551 entering and 570 exiting).

3.3 Trip Assignment

The trip assignment was based on the existing trip distribution and popular destinations for traffic in the area. The Ministry required any access on Superior Road be located further south than Harley Drive. Therefore, this analysis assumed a majority of the traffic would utilize the access at Stone Road on the south side of the property; however, the location of the Main Access could be adjusted as the development moves ahead. The traffic operations at the Main Access will not be significantly different wherever it is located along the Superior Road corridor other than potential safety considerations. See **Figure 4** for the proposed development's PM peak hour trip assignment which are based on the following trip distribution pattern:

- 64% to / from the south on Highway 19;
- 32% to / from the north on Highway 19;
- 3% to / from the south on Superior Road / Vandenhoek Road;
- 1% to / from the north on Superior Road.

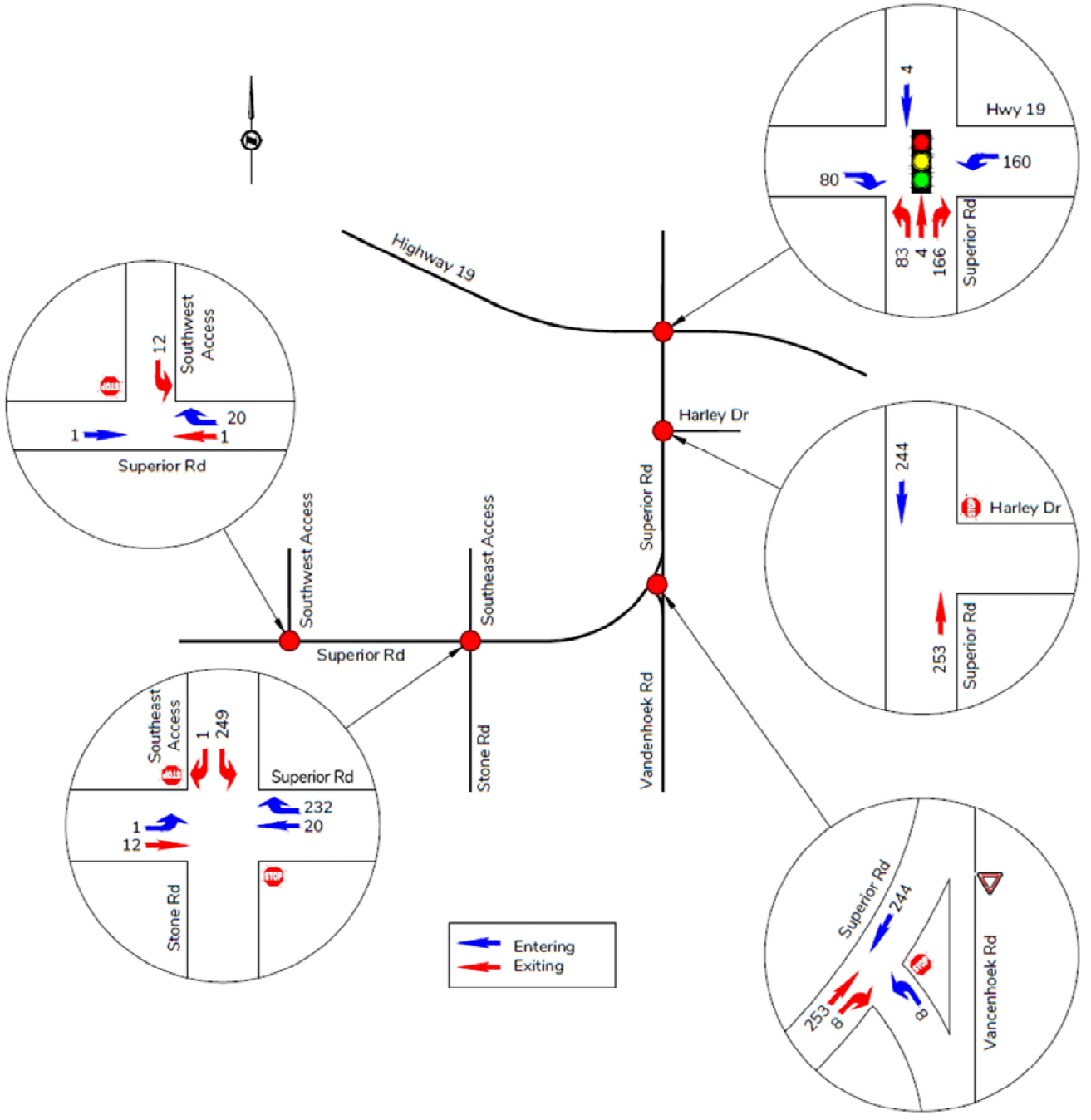


Figure 4: PM Trip Assignment – Phase 1

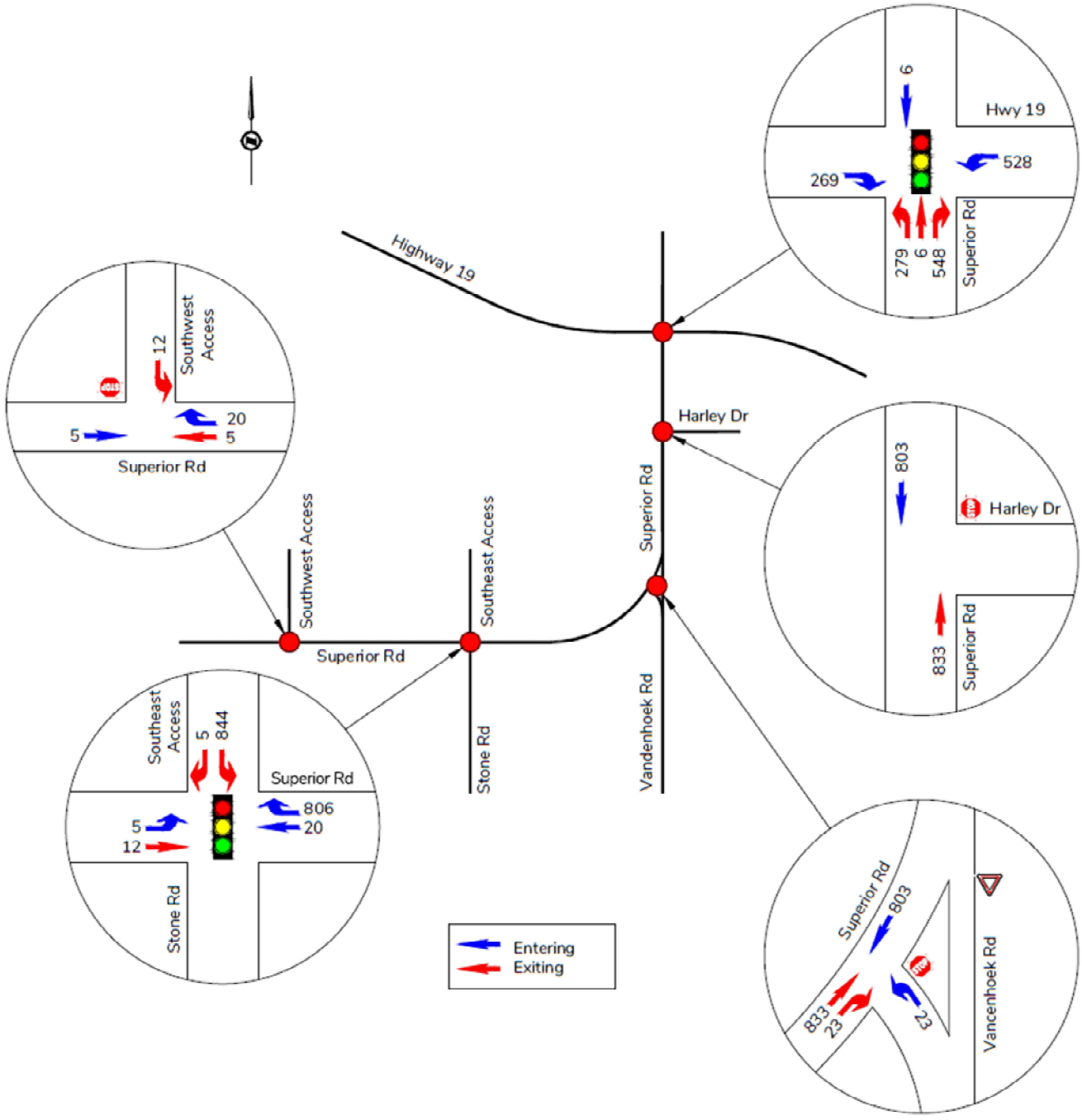


Figure 5: PM Trip Assignment – Phases 1 and 2

3.4 Post Development Analysis Results

3.4.1 Analysis Assumptions

The original report used a high growth rate of 3.5% for through traffic on Highway 19 and 2.5% for all other traffic. Further analysis was conducted on traffic growth in the area. Historical traffic growth along the highway was analyzed using data from the Ministry of Transportation's *Traffic Data Program* (site 14-060NS). When the Average Annual Daily Traffic (AADT) was compared over the last ten years there was negative growth; however, when the PM peak hour traffic was compared there was a 1.7% growth in traffic. Therefore, the existing measured traffic volumes were adjusted using a 2.0% per year linear growth rate as a conservative analysis. The weekday PM peak hour was chosen to analyze the post development traffic given the higher background traffic volumes at this time. This review does not consider the rail crossing south of Highway 19 on Superior Road or any potential upgrades that may be required with changes to Superior Road's asphalt width.

3.4.2 2022 Background Analysis Results

The 2022 background traffic conditions were analyzed during the PM peak hour within the study area. **Figure 6** and **Table 6** show the 2022 background PM peak hour traffic conditions.

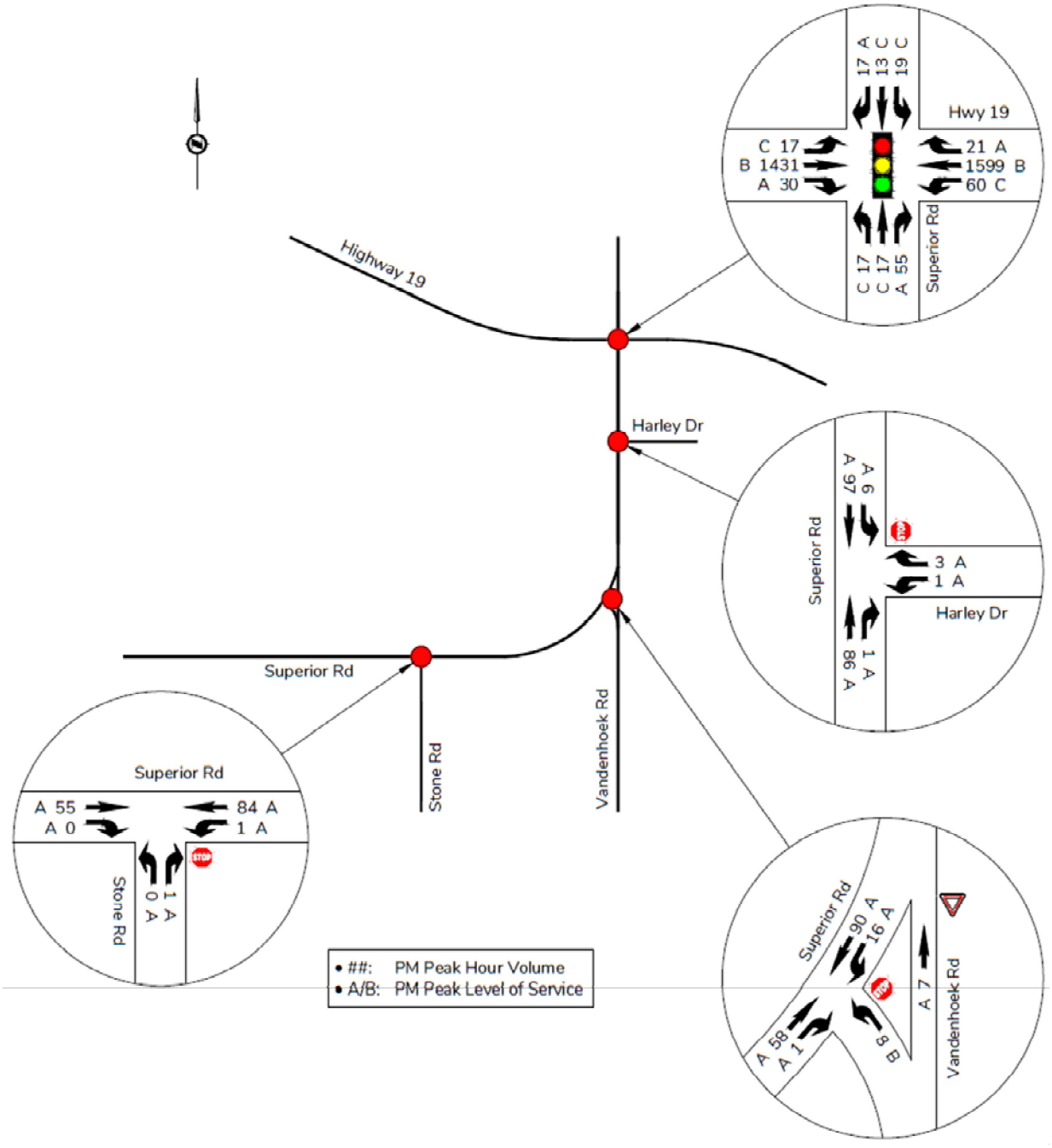


Figure 6: 2022 Background Traffic Conditions during the PM Peak Hour

Table 6: 2022 Background Traffic Conditions during the PM Peak Hour

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Highway 19 / Superior Rd	EBL	C	32.8	7.6
	EBT	B	13.7	129.1
	EBR	A	0.0	0.0
	WBL	C	34.5	19.2
	WBT	B	10.6	161.6
	WBR	A	0.0	0.0
	NB L/T	C	31.3	12.5
	NBR	A	0.1	0.0
	SB L/T	C	32.1	12.1
	SBR	A	0.0	0.0
Harley Dr / Superior Rd	WB L/R	A	9.5	0.7
	NB T/R	A	0.0	0.0
	SB L/T	A	7.4	0.0
Vandenhoek Rd / Superior Rd	WBL (Vandenhoek Rd)	B	10.0	0.7
	WBR (Vandenhoek Rd)	A	8.7	0.0
	NB T/R (Superior Rd)	A	0.0	0.0
	SB L/T (Superior Rd)	A	7.4	0.7
Stone Rd / Superior Rd	EB T/R	A	0.0	0.0
	WB L/T	A	7.4	0.0
	NB L/R	A	9.2	0.7

During the weekday 2022 background PM peak hour of travel at Highway 19 / Superior Road all movements operate at LOS C or better. All other intersections in the study area operate at LOS B or better.

3.4.3 2022 Post Development Analysis Results

The 2022 post development traffic conditions were analyzed at full build out (Phases 1 and 2) during the PM peak hour within the study area. Highway 19 / Superior Road intersection will have multiple movements that operate at LOS E / F without any improvements with Phase 1 and Phase 1/2 traffic.

Highway 19 / Superior Road will require the following improvements:

- Dual westbound left (from Highway 19 to Superior Road);
- Additional southbound receiving lane on Superior Road south of Highway 19;
- Add a separate northbound left turn lane for Phase 1 (short and long term) and Phase 2 (short term);
    - Add dual northbound left turn lane in the long term (Phase 2);
- Add a separate southbound left turn lane;
- Increased storage / parallel lengths for most auxiliary lanes.

With the above improvements Highway 19 / Superior Road operates at LOS D or better for all movements during the PM peak hour for the 2022 post development timeframe. The original report did not consider a roundabout at the Main Access due to the proximity of the railway; however, if the access is to be located further south a roundabout could be a viable option. The exact location of the Main Access has not been decided at this time. Therefore, this analysis assumed the Main Access to be at Stone Road in order to assess traffic operations at the stop-controlled intersections along Superior Road. This analysis also extended the two southbound lanes on Superior Road from Highway 19 to Stone Road.

The Main Access will operate with some movements at LOS E / F without improvements. If the Main Access is located away from the railway then a single lane roundabout would be the recommended option; however, this report identifies the operations for both a roundabout and traffic signal. **Figure 7** and **Table 7** show the 2022 full build out, post development PM peak hour traffic conditions with improvements.

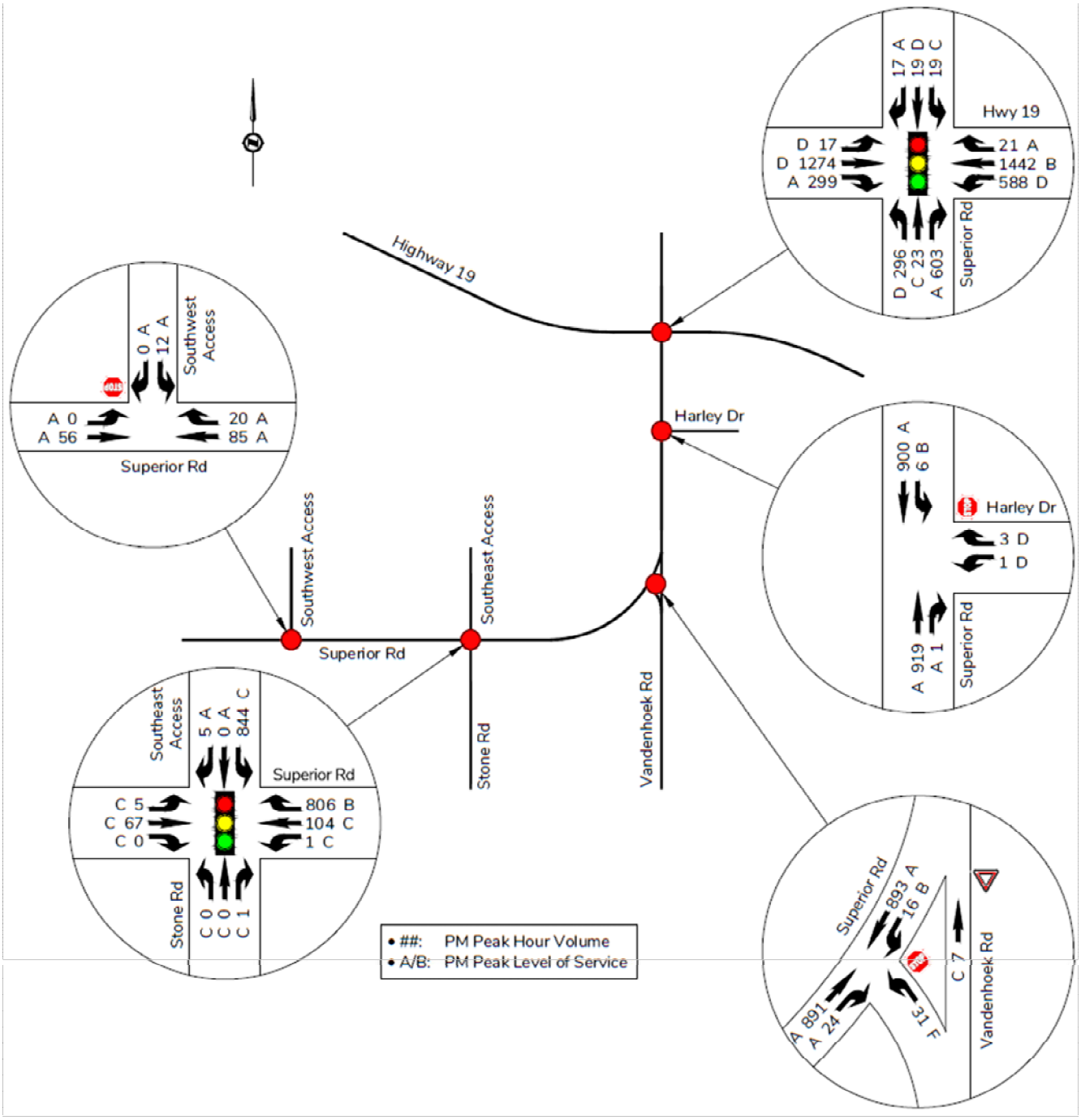


Figure 7: 2022 Post Development Conditions with Improvements – PM

Table 7: 2022 Post Development Conditions with Improvements – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Highway 19 / Superior Rd	EBL	D	48.9	10.1
	EBT	D	53.0	199.9
	EBR	A	0.3	0.0
	WBL	D	53.8	99.1
	WBT	B	19.0	172.1
	WBR	A	0.0	0.0
	NBL	D	53.4	97.8
	NBT	C	33.2	11.1
	NBR	A	0.8	0.0
	SBL	C	29.8	8.1
	SBT	D	46.9	11.0
	SBR	A	0.0	0.0
East Access / Harley Dr / Superior Rd	WB L/T/R	D	31.2	2.8
	NB L/T/R	A	0.0	0.0
	SB L/T	B	10.5	0.0
Vandenhoek Rd / Superior Rd	WBL (Vandenhoek Rd)	F	78.2	16.8
	WBR (Vandenhoek Rd)	C	18.4	0.7
	NB T/R (Superior Rd)	A	0.0	0.0
	SB L/T (Superior Rd)	B	10.7	3.5
Stone Rd / Southeast Access / Superior Rd (Signalized)	EB L/T/R	C	24.0	20.1
	WB L/T	C	27.0	27.1
	WBR	B	13.0	35.5
	NB L/T/R	C	25.7	5.6
	SBL	C	26.3	173.2
	SB T/R	A	4.2	1.5
Southwest Access / Superior Rd	EB L/T	A	7.6	0.0
	WB T/R	A	0.0	0.0
	SB L/R	A	9.9	0.7

During the 2022 full build out, post development Highway 19 / Superior Road operates at LOS D or better for all movements with the previously mentioned improvements. If the Main Access is signalized, then the intersection will operate at LOS C or better for all movements. The eastbound movements for Harley Drive / Superior Road drop to LOS D and the Vandenhoek Road movements operate at LOS F / C; however, all other movements in the study area operate at LOS B or better. If the Main Access is located west of Vandenhoek Road, then this intersection will require upgrades. For the traffic operations of roundabouts at Vanderhoek Road / Superior Road and Stone Road / Superior Road (as the Main Access) see **Figure 8** and **Table 8**.

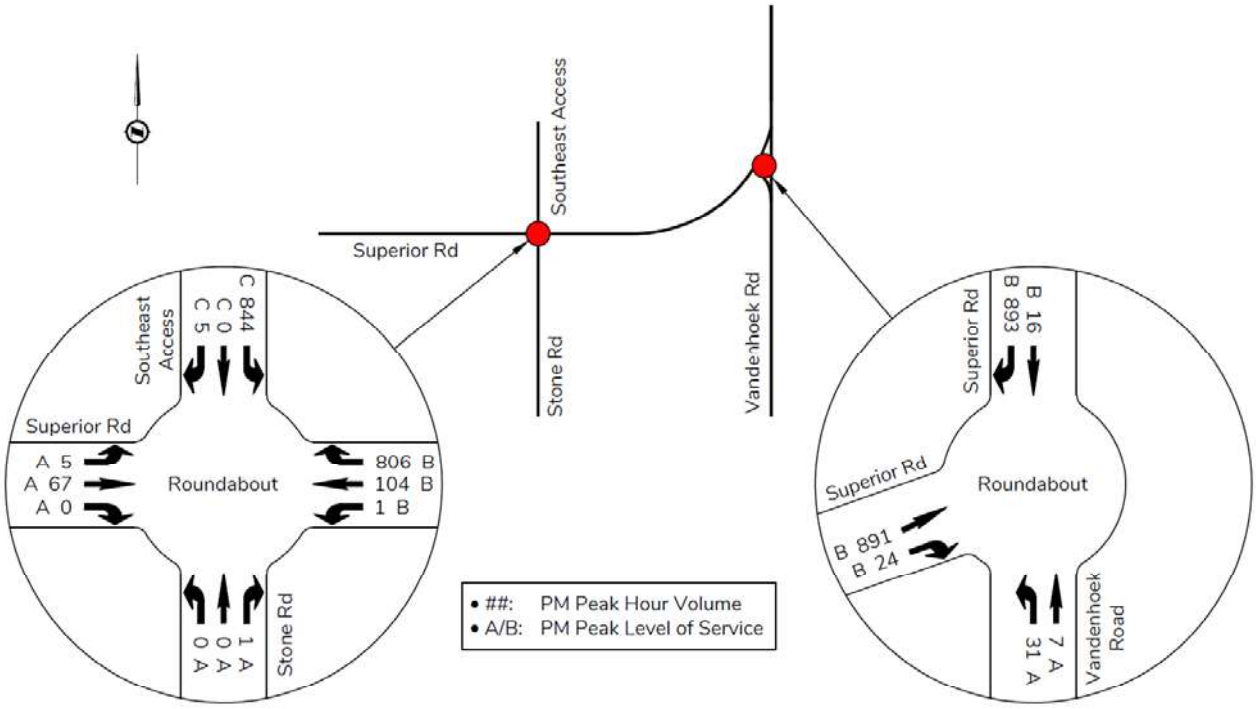


Figure 8: 2022 Roundabout Post Development Conditions – PM

Table 8: 2022 Roundabout Post Development Conditions – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Vandenhoek Rd / Superior Rd	EB L/R (Superior Rd)	B	14.0	85.0
	NB L/T (Vandenhoek Rd)	A	8.2	2.3
	SB T/R (Superior Rd)	B	13.7	82.8
Stone Rd / Southeast Access / Superior Rd	EB L/T/R	A	9.1	4.7
	WB L/T/R	B	14.0	84.9
	NB L/T/R	A	7.8	0.9
	SB L/T/R	C	16.7	78.0

During the PM peak hour all movements operate at LOS B or better except for the movements exiting the Main Access which will operate at LOS C when the intersections are upgraded to single lane roundabouts.

3.4.4 2032 Background Analysis Results

The 2032 background traffic conditions were analyzed during the PM peak hour within the study area. **Figure 9** and **Table 9** show the 2032 background PM peak hour traffic conditions.

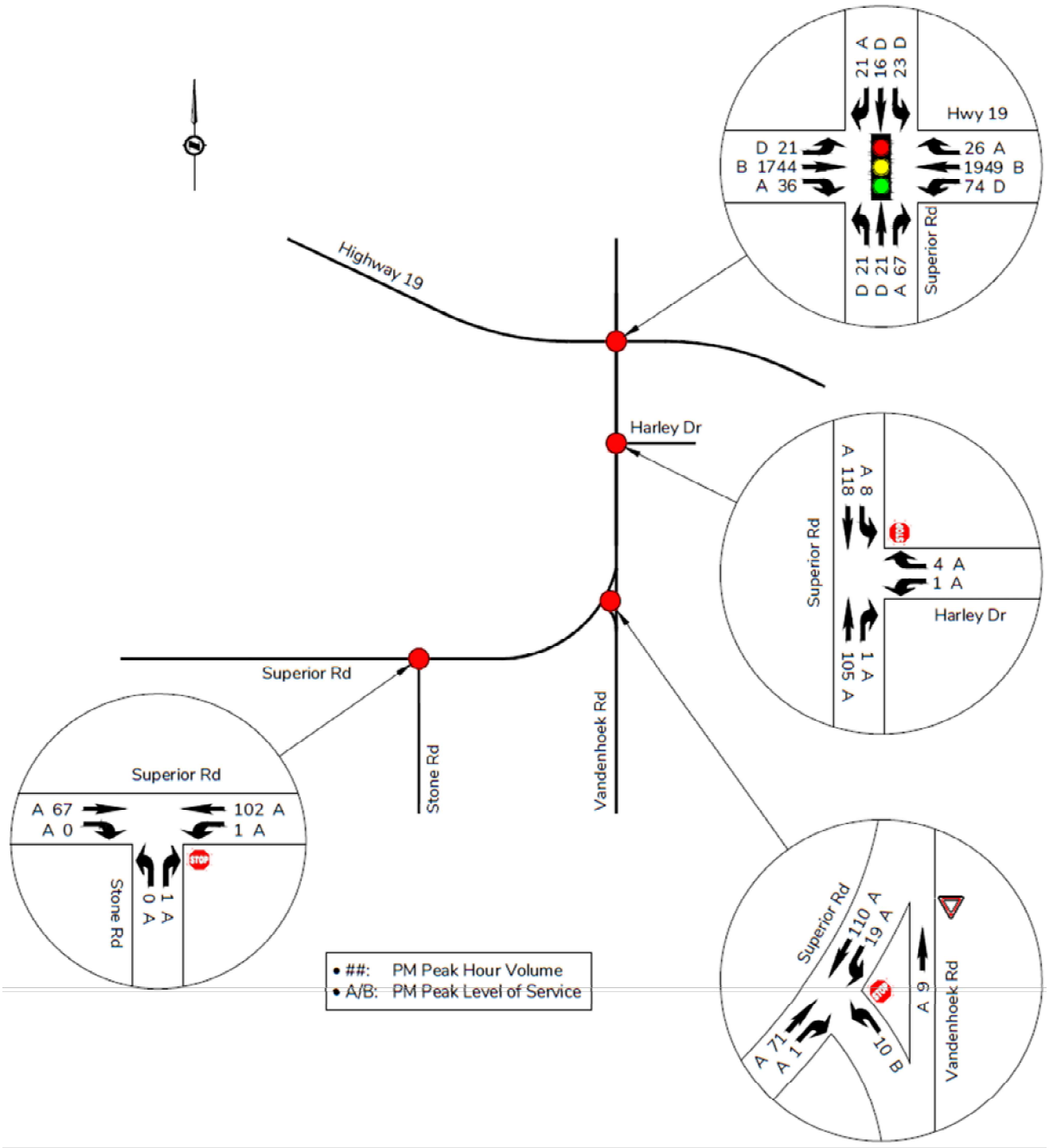


Figure 9: 2032 Background Traffic Conditions during the PM Peak Hour

Table 9: 2032 Background Traffic Conditions during the PM Peak Hour

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Highway 19 / Superior Rd	EBL	D	47.3	10.8
	EBT	B	17.9	230.0
	EBR	A	0.0	0.0
	WBL	D	47.9	28.1
	WBT	B	15.3	251.2
	WBR	A	0.0	0.0
	NB L/T	D	44.2	17.9
	NBR	A	0.1	0.0
	SB L/T	D	46.1	17.5
	SBR	A	0.0	0.0
Harley Dr / Superior Rd	WB L/R	A	9.7	0.7
	NB T/R	A	0.0	0.0
	SB L/T	A	7.5	0.0
Vandenhoek Rd / Superior Rd	WBL (Vandenhoek Rd)	B	10.4	0.7
	WBR (Vandenhoek Rd)	A	8.7	0.0
	NB T/R (Superior Rd)	A	0.0	0.0
	SB L/T (Superior Rd)	A	7.4	0.7
Stone Rd / Superior Rd	EB T/R	A	0.0	0.0
	WB L/T	A	7.4	0.0
	NB L/R	A	9.3	0.7

All movements at Highway 19 / Superior Road operate at LOS D or better during the PM peak hour with existing laning. All other intersection in the study area operate at LOS B or better during the PM peak hour for the 2032 background traffic.

3.4.5 2032 Post Development Analysis Results

The full build out 2032 post development traffic conditions were analyzed during the weekday PM peak hour within the study area. **Figure 10** and **Table 10** show the 2032 post development PM peak hour traffic conditions with the improvements identified in the 2022 post development conditions section.

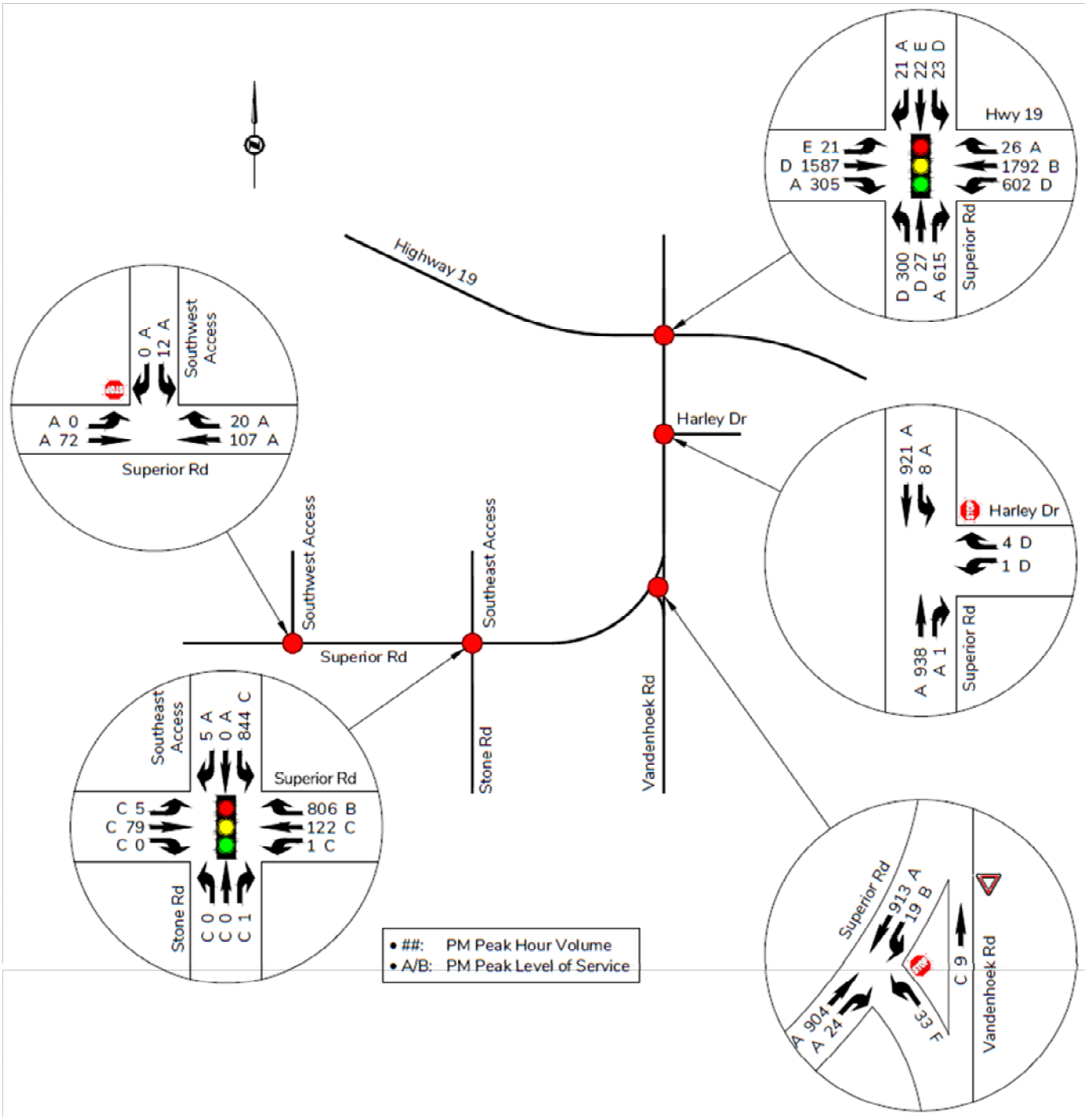


Figure 10: 2032 Post Development Conditions with Improvements – PM

Table 10: 2032 Post Development Conditions with Improvements – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Highway 19 / Superior Rd	EBL	E	67.0	14.6
	EBT	D	51.3	319.5
	EBR	A	0.3	0.0
	WBL	D	54.5	106.4
	WBT	B	18.3	251.8
	WBR	A	0.0	0.0
	NBL	D	53.9	54.5
	NBT	D	49.9	15.8
	NBR	A	0.8	0.0
	SBL	D	45.1	12.5
	SBT	E	58.1	14.0
	SBR	A	0.0	0.0
East Access / Harley Dr / Superior Rd	WB L/T/R	D	33.5	2.8
	NB L/T/R	A	0.0	0.0
	SB L/T	B	10.6	0.7
Vandenhoek Rd / Superior Rd	WBL (Vandenhoek Rd)	F	96.0	20.3
	WBR (Vandenhoek Rd)	C	18.8	1.4
	NB T/R (Superior Rd)	A	0.0	0.0
	SB L/T (Superior Rd)	B	10.8	1.4
Stone Rd / Southeast Access / Superior Rd (Signalized)	EB L/T/R	C	24.4	22.5
	WB L/T	C	27.7	30.9
	WBR	B	12.8	35.5
	NB L/T/R	C	25.8	5.6
	SBL	C	27.4	173.2
	SB T/R	A	4.2	1.5
Southwest Access / Superior Rd	EB L/T	A	7.6	0.0
	WB T/R	A	0.0	0.0
	SB L/R	A	9.9	0.7

The Highway 19 / Superior Road intersection operates at LOS D or better for all movements during the weekday PM peak hour in the long term except for the eastbound left and the southbound through; however, these levels of service are due to the cycle length of the traffic signal. If a vehicle is stopped at one of these locations just after the signal has turned from green to red the time it takes the light to turn green again puts the movement at LOS E. All vehicles at these movements with LOS E will get through the intersection in one cycle length. All other intersections in the study area operate at LOS B or better during the weekday PM peak hour except for the eastbound left at Harley Drive / Superior Road which operates at LOS D and the Vandenhoek Road movements.

The Vandenhoek Road movements could be improvement with a traffic signal, roundabout, or locating the Main Access north of Vandenhoek Road. See **Figure 11** and **Table 11** for roundabout traffic operations at the Main Access (Stone Road) and the Vandenhoek Road intersection.

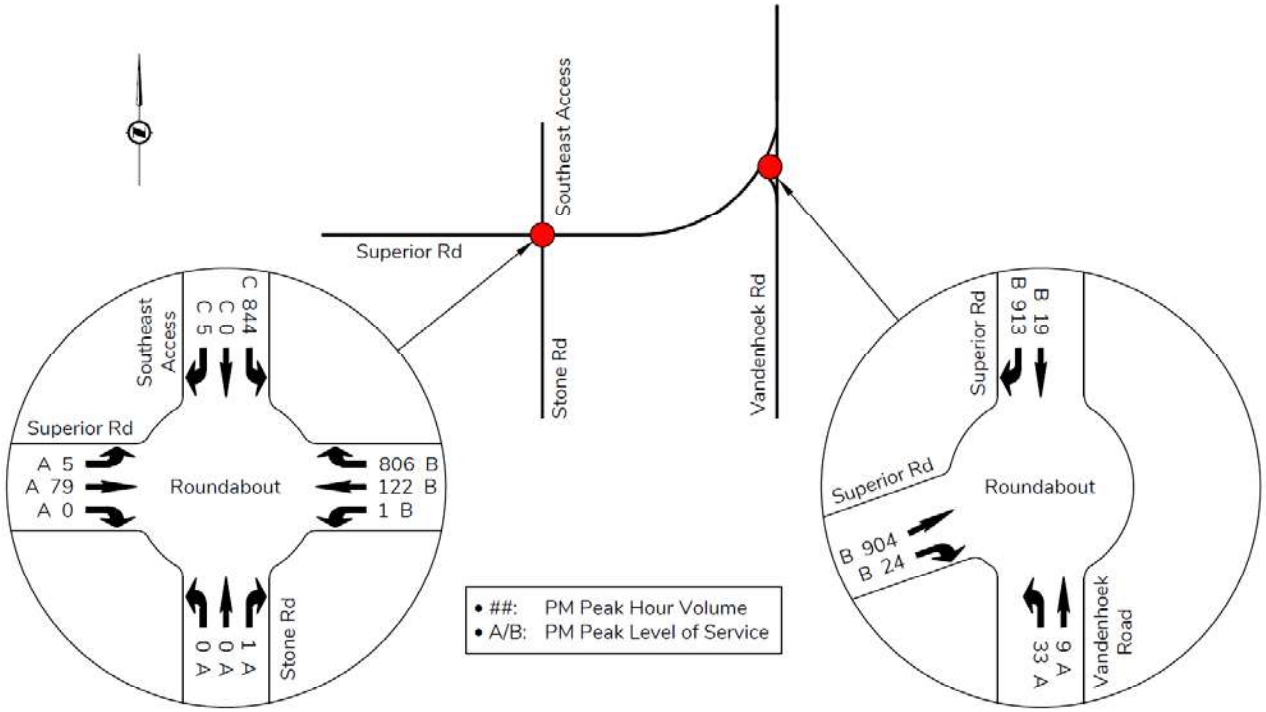


Figure 11: 2032 Roundabout Post Development Conditions – PM

Table 11: 2032 Roundabout Post Development Conditions – PM

Intersection	Movement	LOS	Delay (s)	Queue (m) 95th
Vandenhoek Rd / Superior Rd	EB L/R (Superior Rd)	B	14.6	89.7
	NB L/T (Vandenhoek Rd)	A	8.4	2.6
	SB T/R (Superior Rd)	B	14.6	90.9
Stone Rd / Southeast Access / Superior Rd	EB L/T/R	A	9.4	5.5
	WB L/T/R	B	14.6	91.2
	NB L/T/R	A	7.9	0.9
	SB L/T/R	C	17.9	135.8

During the PM peak hour all movements operate at LOS B or better except for the movements exiting the main access which will operate at LOS C when the intersections are upgraded to single lane roundabout. If the Main Access could be located at Vandehoek Road then a second roundabout (or traffic signal) would not be required at Stone Road.

4.0 SENSITIVITY ANALYSIS

On most roads the PM peak hour contains the largest traffic volumes for any given time throughout the day. There are some locations that can have larger traffic impacts outside of the PM peak hour such as near schools and employment centres with shift changes. Further investigation was conducted to determine if the PM peak hour reflected the worst-case scenario for this study. When looking at the Highway 19 traffic volumes the PM peak hour had 23.6 percent more traffic than the AM peak hour (or 526 more vehicles per hour) and 12 percent more traffic than the Saturday peak hour (or 280 more vehicles per hour). Therefore, the combine existing PM peak hour traffic with the development traffic is the worst total volume travelling through the Highway 19/Superior Road intersection.

5.0 POTENTIAL DEVELOPMENT ADJACENT TO SITE

The Snaw-naw-as Nation has a potential future development on Lot 50, adjacent to this Superior Road development on the west side of the property. A separate traffic study was prepared by Bunt & Associates Engineering addressing Lot 50's future access potential. The exact land use for the development has not been finalized; however, two potential land use scenarios have been estimated. Scenario 1 includes 1,183 total trips (284 entering / 899 exiting) and Scenario 2 includes 513 total trips (202 entering, 311 exiting) during the PM peak hour. Lot 50 will likely access Superior Road directly from the property and potentially through the development site to the east. The nearest Highway 19 access will be at Superior Road.

The Bunt report examined the Superior Road / Highway 17 intersection with the improvements suggested in this report as well as with the following additional mitigation measures:

- dual northbound right-turn lanes,
- two additional highway acceleration lanes, and
- dual eastbound right-turn lanes.

The Lot 50 report assessed the intersection using the 2000 Highway Capacity Manual and Synchro analysis (version 9.2). The following table shows the 2032 PM peak hour LOS and volume-to-capacity (v/c) for Superior Road / Highway 19 with both developments traffic. The v/c represents the ratio of demand volume and available capacity. There are three main classifications for v/c ratios:

- Less than 0.85 indicates there is sufficient capacity.
- Between 0.85 and 0.95 indicate the intersection could be approaching capacity.
- Over 0.95 means indicates the intersection could be close to exceeding capacity.

Table 12: 2032 Lot 50 Post Development Conditions with Improvements – PM

Intersection	Movement	Scenario 1		Scenario 2	
		LOS	V/C	LOS	V/C
Highway 19 / Superior Rd	EBL	E	0.43	E	0.28
	EBT	F	1.02	F	1.14
	EBR	A	0.22	A	0.28
	WBL	F	0.80	E	0.98
	WBT	C	0.77	C	0.80
	WBR	A	0.03	A	0.03
	NBL	F	0.70	E	0.87
	NBT	D	0.15	D	0.15
	NBR	A	0.48	A	0.60
	SBL	E	0.49	E	0.58
	SBT	D	0.44	E	0.35
	SBR	A	0.02	A	0.02

The combined traffic from the two developments will cause the Highway 19 / Superior Road intersection to breakdown in the long term even with the suggested improvements. In order to accommodate the projected traffic for both developments major corridor improvements are needed on Highway 19 through Lantzville. The Ministry of Transportation and Infrastructure is in the process of conducting a traffic study along Highway 19 through Lantzville and Nanoose. It is recommended that the District work with the Ministry to achieve a cohesive transportation plan to help maximize the highway and District roads in the area.

6.0 SUSTAINABLE TRANSPORTATION REVIEW

A sustainable transportation review was conducted to determine the pedestrian, cycling, and transit connection to the proposed development.

6.1 Pedestrian and Cycling Network

There are no existing pedestrian or bicycling facilities in the vicinity of the development. Superior Road is classified as a Major Road / Journeyway and the Subdivision and Development Works and Services Bylaw recommends 3.0m shared path. The pedestrian pathway should be placed along the development side of Superior Road. The Major Road Journeyway cross-section is shown in **Figure 12**.

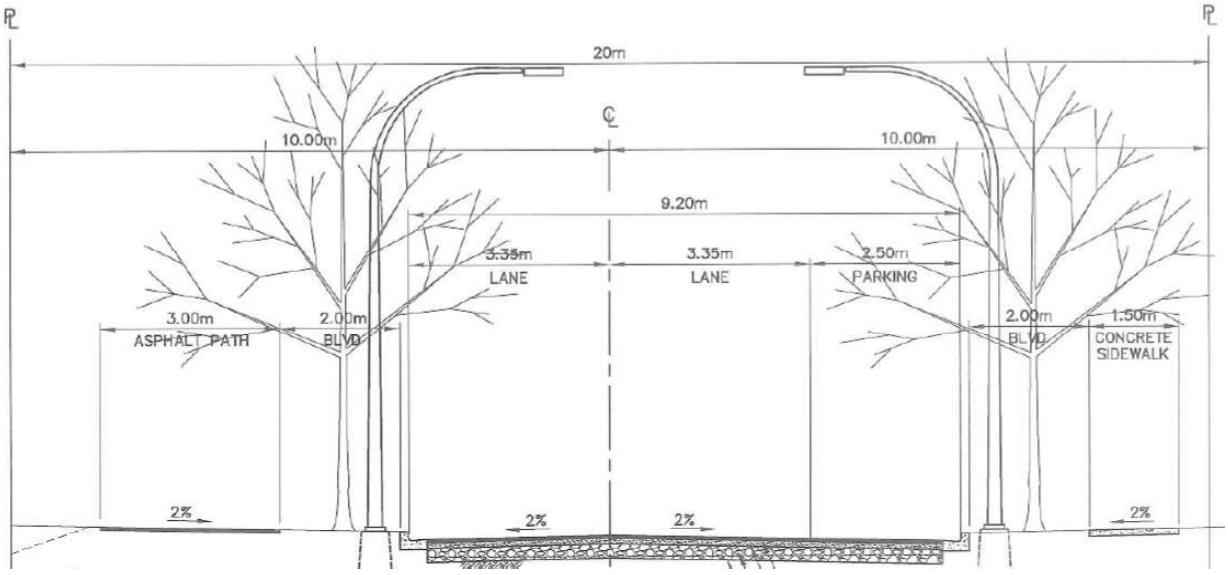


Figure 12: Urban Collector Cross-Section

6.2 Transit Network

Transit services are provided by RDN Transit. The Route 11: Lantzville connects the Eastwind Drive (through Superior Road) to Uplands Road in Nanaimo via Lantzville Road, Superior Road, and Aulds Road (among others). The route is shown in **Figure 13**. There are bus stops near the intersection of Superior Road / Stone Road in each direction. Improvements to the pedestrian facilities fronting the development along Superior Road, will improve access to the adjacent bus stop. A bus landing to provide a safe accessible waiting area and additional lighting would provide significant improvements to the stop. Furniture, refuse containers, and a shelter may also be considered.

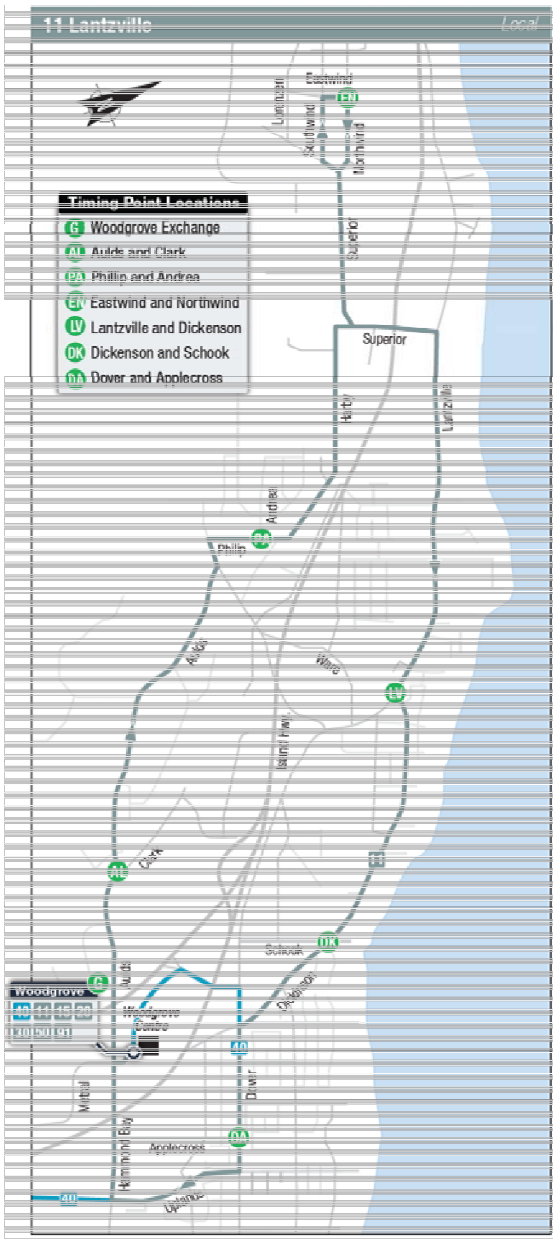


Figure 13: Route 11 - Lantzville

There is an existing informal park and ride on south side of the Highway 19 / Superior Road intersection that can be formalized and used as an additional area for motorists to safely park and use transit or access the proposed trail on the northern end of the property.

7.0 CONCLUSIONS

The proposed development is located southwest of the Highway 19 / Superior Road intersection. The number and location of the accesses are not yet determined; however, two accesses are likely

to be located on the south side of the property one across from Stone Road and the other approximately halfway between Stone Road and Normarel Drive. The Ministry has identified that Harley Drive is too close to Highway 19 to be used as a site access and that the additional southbound receiving lane at Superior Road / Highway 19 needs to be extended further. As the Main Access to the site has not yet been finalized this report analyzes the results if the Main Access were located at Stone Road. This location not only provides traffic operations for the Main Access but also an analysis of the traffic operations at the existing stop-controlled intersections if the development traffic is required to travel further along Superior Road.

This report does not consider the existing rail crossing on Superior Road just south of Highway 19 and any potential upgrades that may be required with any changes in the Superior Road cross section.

The Highway 19 / Superior Road intersection can accommodate the increased traffic from the development in the long term; however, the intersection would require upgrades including dual left turn lanes for the westbound and northbound movements. A full list of the upgrades and the extent of the improvements can be found in the recommendations. The Main Access will need to be either a single lane roundabout or traffic signal. If the Main Access is located west of Vandenhoek Road then then Vandenhoek Road / Superior Road will also have to be upgraded to a roundabout (or traffic signal).

Upgrades to the site frontage on Superior Road will support pedestrian and cyclists in the area. Bus stop improvements will also be beneficial for the bus stop on the site frontage south of the site.

The Snaw-naw-as Nation has planned a development, Lot 50, for the property immediately west of this development. Lot 50 will access Superior Road beside and / or through this development making Highway 19 / Superior Road the nearest access point to Highway 19. Full build out for both developments is expected to require major improvements at Highway 19 / Superior Road. The Ministry is currently working on a traffic study for Highway 19 through the region.

8.0 RECOMMENDATIONS

- Increase the parallel length (P.L.) for the right turns to 100m at Highway 19 / Superior Road;
- Dual westbound left turn lane from Highway 19 to Superior Road (110m storage and 100m P.L.);
- Additional southbound receiving lane on Superior Road from Highway 19 to the Main Access;
- Dual northbound left turn lane from Superior Road to Highway 19 (55m storage);
- Add separate left turn lane for southbound traffic on Superior Road (15m storage);
- Increase the eastbound left lane (30m storage and 100m P.L.);
- Build single lane roundabout at Main Access (or signalize);
    - If the Main Access is signalized, then a separate right turn lane into the site is required (or additional southbound receiving lane ending in a right turn) and separate left and right turn lanes are required for exiting traffic at Main Access;
- Upgrade Vandenhoek Road / Superior Road to a single lane roundabout (or traffic signal) if the Main Access is located at or west of Vandenhoek Road;
- Upgrade Superior Road cross-section fronting property to Major Road Journeyway with pedestrian facilities fronting the development side;
- Provide bus landing for the bus stop on Superior Road on the development side of the road.
- District to work with the Ministry to maximize road capacity through Lantzville.

APPENDIX A: SYNCHRO BACKGROUND

SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro and SimTraffic traffic modelling software. Results were measured in delay, level of service (LOS), 95th percentile queue length and volume to capacity ratio. Synchro is based on the Highway Capacity Manual (HCM) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly "seeding" or positioning vehicles travelling throughout the network. The simulation is run ten times (ten different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while D is considered to be on the threshold between acceptable and unacceptable operations. Highway operations will typically need to operate at LOS C or better for through movements and LOS E or better for other traffic movements with lower order roads.

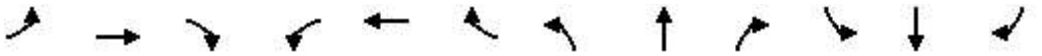
The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

Table A1: LOS Criteria, by Intersection Traffic Control

Level of Service (LOS)	Unsignalized Intersection Average Vehicle Delay (sec/veh)	Signalized Intersection Average Vehicle Delay (sec/veh)
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

APPENDIX B: 2020 EXISTING PEAK HOUR TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1402	29	60	1568	21	17	17	54	19	12	17
Future Volume (vph)	17	1402	29	60	1568	21	17	17	54	19	12	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	70.0		40.0	0.0		20.0	0.0		20.0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.976			0.969	
Satd. Flow (prot)	1805	3539	1599	1787	3438	1615	0	1845	1599	0	1841	1615
Flt Permitted	0.950			0.950				0.817			0.777	
Satd. Flow (perm)	1805	3539	1599	1787	3438	1615	0	1545	1599	0	1476	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187			187			187			187
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		453.3			437.8			129.2			166.3	
Travel Time (s)		18.1			17.5			9.3			12.0	
Peak Hour Factor	0.63	0.93	0.65	0.75	0.95	0.68	0.75	0.75	0.77	0.61	0.69	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	27	1508	45	80	1651	31	23	23	70	31	17	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1508	45	80	1651	31	0	46	70	0	48	23
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	1	6		5	2			4			8	



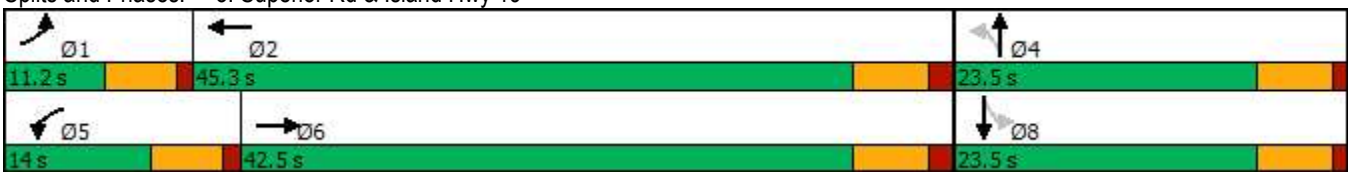
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	11.2	24.0		11.3	24.0		23.5	23.5		23.5	23.5	
Total Split (s)	11.2	42.5		14.0	45.3		23.5	23.5		23.5	23.5	
Total Split (%)	14.0%	53.1%		17.5%	56.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	6.0	36.5		8.7	39.3		18.0	18.0		18.0	18.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0			5.5			5.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.0	43.5	66.9	7.7	51.2	66.9		8.0	66.9		8.0	66.9
Actuated g/C Ratio	0.09	0.65	1.00	0.12	0.77	1.00		0.12	1.00		0.12	1.00
v/c Ratio	0.17	0.65	0.03	0.39	0.63	0.02		0.25	0.04		0.27	0.01
Control Delay	32.8	13.2	0.0	34.4	10.2	0.0		31.4	0.1		32.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	32.8	13.2	0.0	34.4	10.2	0.0		31.4	0.1		32.1	0.0
LOS	C	B	A	C	B	A		C	A		C	A
Approach Delay		13.2			11.1			12.5			21.7	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	3.5	82.1	0.0	10.2	48.3	0.0		5.9	0.0		6.1	0.0
Queue Length 95th (m)	7.6	122.1	0.0	19.1	#142.0	0.0		12.5	0.0		11.7	0.0
Internal Link Dist (m)		429.3			413.8			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	70.0		40.0			20.0			20.0
Base Capacity (vph)	162	2303	1599	233	2631	1615		417	1599		398	1615
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.17	0.65	0.03	0.34	0.63	0.02		0.11	0.04		0.12	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19



Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	81	5	6	91
Future Vol, veh/h	5	5	81	5	6	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	77	60	65	77
Heavy Vehicles, %	0	0	2	0	0	4
Mvmt Flow	8	8	105	8	9	118

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	245	109	0	0	113	0
Stage 1	109	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	748	950	-	-	1489	-
Stage 1	921	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	744	950	-	-	1489	-
Mov Cap-2 Maneuver	744	-	-	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	834	1489	-
HCM Lane V/C Ratio	-	-	0.02	0.006	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	57	5	15	88	8	7
Future Vol, veh/h	57	5	15	88	8	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	75	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	66	8	25	117	13	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	74	0	237	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	167	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1538	-	756	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	867	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1538	-	743	998
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	852	-

Approach	NB	SB	NW
HCM Control Delay, s	0	1.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	743	998	1538	-
HCM Lane V/C Ratio	-	-	0.018	0.012	0.016	-
HCM Control Delay (s)	-	-	9.9	8.7	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

Intersection	
Int Delay, s/veh	1

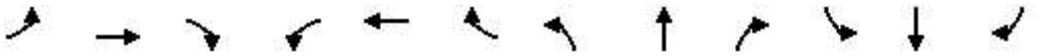
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	5	5	82	5	5
Future Vol, veh/h	54	5	5	82	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	60	60	77	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	70	8	8	106	8	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	196	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1533	-	797	993
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	792	993
Mov Cap-2 Maneuver	-	-	-	-	792	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	903	-

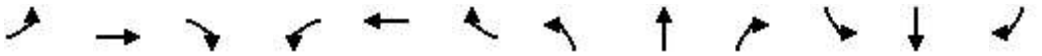
Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	881	-	-	1533	-
HCM Lane V/C Ratio	0.019	-	-	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	-

APPENDIX C: BACKGROUND PEAK HOUR TRAFFIC CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1431	30	60	1599	21	17	17	55	19	13	17
Future Volume (vph)	17	1431	30	60	1599	21	17	17	55	19	13	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	70.0		40.0	0.0		20.0	0.0		20.0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.976			0.970	
Satd. Flow (prot)	1805	3539	1599	1787	3438	1615	0	1845	1599	0	1843	1615
Flt Permitted	0.950			0.950				0.816			0.784	
Satd. Flow (perm)	1805	3539	1599	1787	3438	1615	0	1543	1599	0	1490	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187			187			187			187
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		453.3			437.8			129.2			166.3	
Travel Time (s)		18.1			17.5			9.3			12.0	
Peak Hour Factor	0.63	0.93	0.65	0.75	0.95	0.68	0.75	0.75	0.77	0.61	0.69	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	27	1539	46	80	1683	31	23	23	71	31	19	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1539	46	80	1683	31	0	46	71	0	50	23
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	1	6		5	2			4			8	



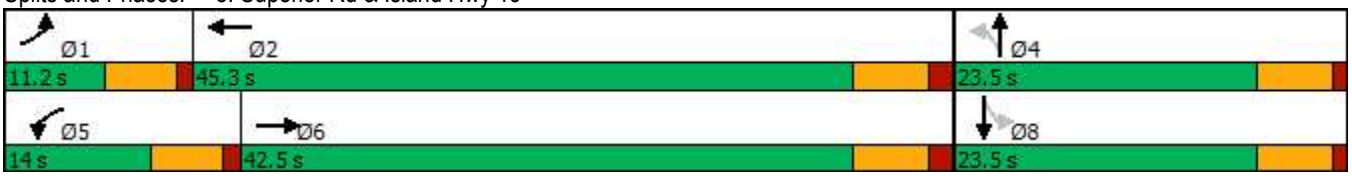
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	11.2	24.0		11.3	24.0		23.5	23.5		23.5	23.5	
Total Split (s)	11.2	42.5		14.0	45.3		23.5	23.5		23.5	23.5	
Total Split (%)	14.0%	53.1%		17.5%	56.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	6.0	36.5		8.7	39.3		18.0	18.0		18.0	18.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0			5.5			5.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.0	43.6	67.0	7.7	51.2	67.0		8.1	67.0		8.1	67.0
Actuated g/C Ratio	0.09	0.65	1.00	0.11	0.76	1.00		0.12	1.00		0.12	1.00
v/c Ratio	0.17	0.67	0.03	0.39	0.64	0.02		0.25	0.04		0.28	0.01
Control Delay	32.8	13.7	0.0	34.5	10.6	0.0		31.3	0.1		32.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	32.8	13.7	0.0	34.5	10.6	0.0		31.3	0.1		32.1	0.0
LOS	C	B	A	C	B	A		C	A		C	A
Approach Delay		13.6			11.4			12.3			22.0	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	3.5	85.4	0.0	10.2	50.6	0.0		5.9	0.0		6.4	0.0
Queue Length 95th (m)	7.6	#129.1	0.0	19.2	#161.6	0.0		12.5	0.0		12.1	0.0
Internal Link Dist (m)		429.3			413.8			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	70.0		40.0			20.0			20.0
Base Capacity (vph)	162	2301	1599	233	2629	1615		416	1599		402	1615
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.17	0.67	0.03	0.34	0.64	0.02		0.11	0.04		0.12	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19



Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	86	5	6	97
Future Vol, veh/h	5	5	86	5	6	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	77	60	65	77
Heavy Vehicles, %	0	0	2	0	0	4
Mvmt Flow	8	8	112	8	9	126

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	260	116	0	0	120	0
Stage 1	116	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	733	942	-	-	1480	-
Stage 1	914	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	728	942	-	-	1480	-
Mov Cap-2 Maneuver	728	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	882	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	821	1480	-
HCM Lane V/C Ratio	-	-	0.02	0.006	-
HCM Control Delay (s)	-	-	9.5	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	58	5	16	90	8	7
Future Vol, veh/h	58	5	16	90	8	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	75	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	67	8	27	120	13	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	245	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	174	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1537	-	748	997
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1537	-	734	997
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	845	-

Approach	NB	SB	NW
HCM Control Delay, s	0	1.3	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	734	997	1537	-
HCM Lane V/C Ratio	-	-	0.018	0.012	0.017	-
HCM Control Delay (s)	-	-	10	8.7	7.4	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

Intersection	
Int Delay, s/veh	1

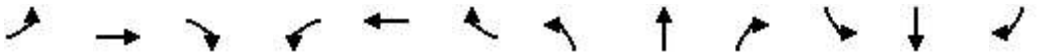
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	5	5	84	5	5
Future Vol, veh/h	55	5	5	84	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	60	60	77	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	71	8	8	109	8	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	200	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	125	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1532	-	793	992
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1532	-	788	992
Mov Cap-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	901	-

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)	878	-	-	1532	-
HCM Lane V/C Ratio	0.019	-	-	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	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1744	36	74	1949	26	21	21	67	23	16	21
Future Volume (vph)	21	1744	36	74	1949	26	21	21	67	23	16	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	70.0		40.0	0.0		20.0	0.0		20.0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.976			0.970	
Satd. Flow (prot)	1805	3539	1599	1787	3438	1615	0	1845	1599	0	1843	1615
Flt Permitted	0.950			0.950				0.810			0.777	
Satd. Flow (perm)	1805	3539	1599	1787	3438	1615	0	1531	1599	0	1476	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207			207			207			207
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		453.3			437.8			129.2			166.3	
Travel Time (s)		18.1			17.5			9.3			12.0	
Peak Hour Factor	0.63	0.93	0.65	0.75	0.95	0.68	0.75	0.75	0.77	0.61	0.69	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	33	1875	55	99	2052	38	28	28	87	38	23	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	1875	55	99	2052	38	0	56	87	0	61	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	1	6		5	2			4			8	



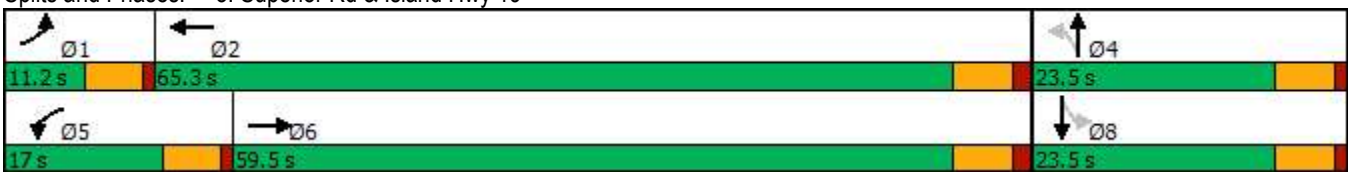
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	11.2	24.0		11.3	24.0		23.5	23.5		23.5	23.5	
Total Split (s)	11.2	59.5		17.0	65.3		23.5	23.5		23.5	23.5	
Total Split (%)	11.2%	59.5%		17.0%	65.3%		23.5%	23.5%		23.5%	23.5%	
Maximum Green (s)	6.0	53.5		11.7	59.3		18.0	18.0		18.0	18.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0			5.5			5.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	6.0	59.9	89.0	9.7	65.9	89.0		9.2	89.0		9.2	89.0
Actuated g/C Ratio	0.07	0.67	1.00	0.11	0.74	1.00		0.10	1.00		0.10	1.00
v/c Ratio	0.27	0.79	0.03	0.51	0.81	0.02		0.35	0.05		0.40	0.02
Control Delay	47.3	17.9	0.0	47.9	15.3	0.0		44.2	0.1		46.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	47.3	17.9	0.0	47.9	15.3	0.0		44.2	0.1		46.1	0.0
LOS	D	B	A	D	B	A		D	A		D	A
Approach Delay		17.9			16.5			17.4			31.6	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	5.9	140.4	0.0	17.4	153.2	0.0		9.8	0.0		10.7	0.0
Queue Length 95th (m)	10.8	#230.0	0.0	28.1	#251.2	0.0		17.9	0.0		17.5	0.0
Internal Link Dist (m)		429.3			413.8			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	70.0		40.0			20.0			20.0
Base Capacity (vph)	122	2382	1599	235	2544	1615		310	1599		299	1615
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.27	0.79	0.03	0.42	0.81	0.02		0.18	0.05		0.20	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 80.0%		ICU Level of Service D	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19



Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	105	5	8	118
Future Vol, veh/h	5	5	105	5	8	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	77	60	65	77
Heavy Vehicles, %	0	0	2	0	0	4
Mvmt Flow	8	8	136	8	12	153

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	317	140	0	0	144	0
Stage 1	140	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	680	913	-	-	1451	-
Stage 1	892	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	674	913	-	-	1451	-
Mov Cap-2 Maneuver	674	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1451	-
HCM Lane V/C Ratio	-	-	0.021	0.008	-
HCM Control Delay (s)	-	-	9.7	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	71	5	19	110	10	9
Future Vol, veh/h	71	5	19	110	10	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	75	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	82	8	32	147	17	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	90	0	297	86
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1518	-	698	978
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1518	-	682	978
Mov Cap-2 Maneuver	-	-	-	-	682	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	810	-

Approach	NB	SB	NW
HCM Control Delay, s	0	1.3	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	682	978	1518	-
HCM Lane V/C Ratio	-	-	0.024	0.015	0.021	-
HCM Control Delay (s)	-	-	10.4	8.7	7.4	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	67	5	5	102	5	5
Future Vol, veh/h	67	5	5	102	5	5
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	77	60	60	77	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	87	8	8	132	8	8

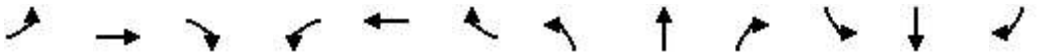
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	95	0	239	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	148	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1512	-	754	972
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1512	-	749	972
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	846	-	-	1512	-
HCM Lane V/C Ratio	0.02	-	-	0.006	-
HCM Control Delay (s)	9.3	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

APPENDIX D: POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1274	299	588	1442	21	296	23	603	19	19	17
Future Volume (vph)	17	1274	299	588	1442	21	296	23	603	19	19	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	3467	3438	1615	1787	1900	1599	1805	1900	1615
Flt Permitted	0.950			0.950			0.500					
Satd. Flow (perm)	1805	3539	1599	3467	3438	1615	941	1900	1599	1900	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			295			295			500			295
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		689.0			753.6			129.2			166.3	
Travel Time (s)		27.6			30.1			9.3			12.0	
Peak Hour Factor	0.70	0.96	0.88	0.93	0.97	0.72	0.90	0.75	0.93	0.70	0.70	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	24	1327	340	632	1487	29	329	31	648	27	27	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1327	340	632	1487	29	329	31	648	27	27	23
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	1	6		5	2		7	4		3	8	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	11.2	23.0		11.3	23.0		8.0	25.5		8.0	12.5	
Total Split (s)	11.2	41.5		25.0	55.3		21.0	25.5		8.0	12.5	
Total Split (%)	11.2%	41.5%		25.0%	55.3%		21.0%	25.5%		8.0%	12.5%	
Maximum Green (s)	6.0	35.5		19.7	49.3		17.0	20.0		4.0	7.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.0		0.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0		4.0	5.5		4.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0				
Flash Dont Walk (s)		10.0			10.0			13.0				
Pedestrian Calls (#/hr)		2			2			2				
Act Effct Green (s)	6.0	35.7	94.1	19.3	56.1	94.1	23.7	17.7	94.1	8.8	7.0	94.1
Actuated g/C Ratio	0.06	0.38	1.00	0.21	0.60	1.00	0.25	0.19	1.00	0.09	0.07	1.00
v/c Ratio	0.21	0.99	0.21	0.89	0.73	0.02	0.85	0.09	0.41	0.16	0.19	0.01
Control Delay	48.9	53.0	0.3	53.8	19.0	0.0	53.4	33.2	0.8	29.8	46.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	53.0	0.3	53.8	19.0	0.0	53.4	33.2	0.8	29.8	46.9	0.0
LOS	D	D	A	D	B	A	D	C	A	C	D	A
Approach Delay		42.3			28.9			19.0			26.9	
Approach LOS		D			C			B			C	
Queue Length 50th (m)	4.8	~157.0	0.0	65.8	102.8	0.0	57.9	5.2	0.0	3.9	5.3	0.0
Queue Length 95th (m)	10.1	#199.9	0.0	#99.1	172.1	0.0	#97.8	11.1	0.0	8.1	11.0	0.0
Internal Link Dist (m)		665.0			729.6			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Base Capacity (vph)	115	1343	1599	730	2050	1615	395	406	1599	173	142	1615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.99	0.21	0.87	0.73	0.02	0.83	0.08	0.41	0.16	0.19	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 94.1			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 89.1%		ICU Level of Service E	
Analysis Period (min) 15			

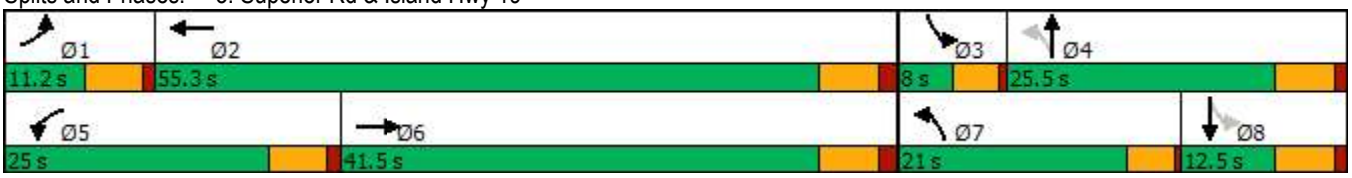
~ Volume exceeds capacity, queue is theoretically infinite.

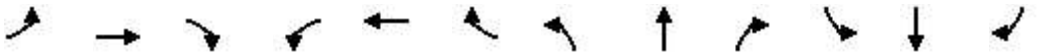
Queue shown is maximum after two cycles.

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

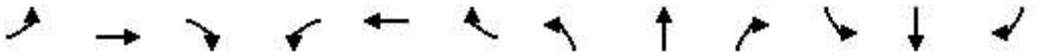
Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	67	5	5	104	806	5	5	5	844	5	5
Future Volume (vph)	5	67	5	5	104	806	5	5	5	844	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.990				0.850		0.955			0.925	
Flt Protected		0.996			0.997			0.984		0.950		
Satd. Flow (prot)	0	1839	0	0	1825	1583	0	1785	0	1770	1758	0
Flt Permitted		0.974			0.983			0.892		0.653		
Satd. Flow (perm)	0	1798	0	0	1800	1583	0	1619	0	1216	1758	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				926		8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		305.0			171.0			200.3			494.7	
Travel Time (s)		22.0			12.3			14.4			35.6	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.60	0.77	0.60	0.60	0.77	0.87	0.60	0.60	0.60	0.88	0.60	0.60
Heavy Vehicles (%)	0%	2%	0%	0%	4%	2%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	8	87	8	8	135	926	8	8	8	959	8	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	143	926	0	24	0	959	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0	23.0	12.0	12.0		12.0	23.0	
Total Split (s)	24.0	24.0		24.0	24.0	24.0	13.0	13.0		38.0	51.0	
Total Split (%)	32.0%	32.0%		32.0%	32.0%	32.0%	17.3%	17.3%		50.7%	68.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	8.0	8.0		33.0	46.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0					7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0					11.0	
Pedestrian Calls (#/hr)	2	2		2	2	2					2	
Act Effct Green (s)		13.9			13.9	13.9		7.2		44.4	44.4	
Actuated g/C Ratio		0.20			0.20	0.20		0.11		0.65	0.65	
v/c Ratio		0.28			0.39	0.87		0.13		0.91	0.01	
Control Delay		24.0			27.0	13.0		25.7		26.3	4.2	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		24.0			27.0	13.0		25.7		26.3	4.2	
LOS		C			C	B		C		C	A	
Approach Delay		24.0			14.9			25.7			26.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)		11.3			16.9	0.0		2.0		76.4	0.3	
Queue Length 95th (m)		20.1			27.1	#35.5		5.6		#173.2	1.5	
Internal Link Dist (m)		281.0			147.0			176.3			470.7	
Turn Bay Length (m)						50.0				100.0		
Base Capacity (vph)		507			504	1110		198		1059	1194	
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		0.20			0.28	0.83		0.12		0.91	0.01	

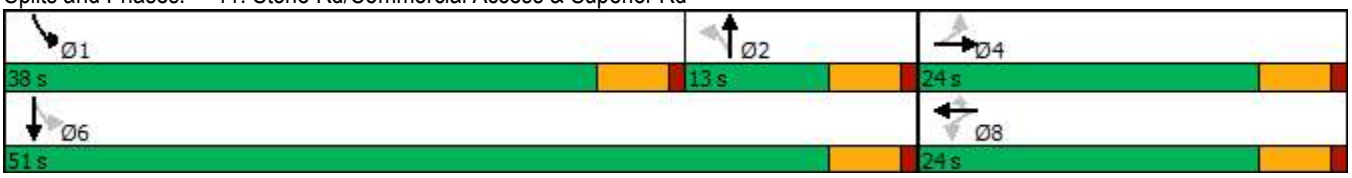
Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 68.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 11: Stone Rd/Commercial Access & Superior Rd



Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	919	5	6	900
Future Vol, veh/h	5	5	919	5	6	900
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	87	60	65	88
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	8	8	1056	8	9	1023

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1590	1060	0	0	1064	0
Stage 1	1060	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Critical Hdwy	6.6	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	110	275	-	-	662	-
Stage 1	336	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	107	275	-	-	662	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	543	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.2	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	154	662	-
HCM Lane V/C Ratio	-	-	0.108	0.014	-
HCM Control Delay (s)	-	-	31.2	10.5	0.2
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	891	24	16	893	31	7
Future Vol, veh/h	891	24	16	893	31	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	88	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	1024	40	27	1015	52	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1064	0	1606	1044
Stage 1	-	-	-	-	1044	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	662	-	107	281
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	662	-	97	281
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	490	-

Approach	NB	SB	NW
HCM Control Delay, s	0	0.8	67.2
HCM LOS			F

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	97	281	662	-
HCM Lane V/C Ratio	-	-	0.533	0.042	0.04	-
HCM Control Delay (s)	-	-	78.2	18.4	10.7	0.5
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	2.4	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.1

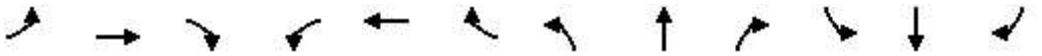
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	72	107	20	12	5
Future Vol, veh/h	5	72	107	20	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	60	77	77	60	60	60
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	8	94	139	33	20	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	266	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1417	-	-	-	727	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1417	-	-	-	723	895
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	766
HCM Lane V/C Ratio	0.006	-	-	-	0.037
HCM Control Delay (s)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1587	305	602	1792	26	300	27	615	23	22	21
Future Volume (vph)	21	1587	305	602	1792	26	300	27	615	23	22	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	3467	3438	1615	3467	1900	1599	1805	1900	1615
Flt Permitted	0.950			0.950			0.430			0.755		
Satd. Flow (perm)	1805	3539	1599	3467	3438	1615	1569	1900	1599	1434	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227			227			467			227
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		689.0			753.6			129.2			166.3	
Travel Time (s)		27.6			30.1			9.3			12.0	
Peak Hour Factor	0.70	0.96	0.88	0.93	0.97	0.72	0.90	0.75	0.93	0.70	0.70	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	30	1653	347	647	1847	36	333	36	661	33	31	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1653	347	647	1847	36	333	36	661	33	31	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	1	6		5	2		7	4		3	8	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	11.2	23.0		11.3	23.0		8.0	25.5		8.0	12.5	
Total Split (s)	11.2	59.0		37.0	84.8		15.5	25.5		8.5	18.5	
Total Split (%)	8.6%	45.4%		28.5%	65.2%		11.9%	19.6%		6.5%	14.2%	
Maximum Green (s)	6.0	53.0		31.7	78.8		11.5	20.0		4.5	13.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.0		0.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0		4.0	5.5		4.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0				
Flash Dont Walk (s)		10.0			10.0			13.0				
Pedestrian Calls (#/hr)		2			2			2				
Act Effct Green (s)	6.1	55.0	116.3	25.9	80.1	116.3	19.9	13.7	116.3	10.6	8.5	116.3
Actuated g/C Ratio	0.05	0.47	1.00	0.22	0.69	1.00	0.17	0.12	1.00	0.09	0.07	1.00
v/c Ratio	0.32	0.99	0.22	0.84	0.78	0.02	0.73	0.16	0.41	0.23	0.22	0.02
Control Delay	67.0	51.3	0.3	54.5	18.3	0.0	53.9	49.9	0.8	45.1	58.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.0	51.3	0.3	54.5	18.3	0.0	53.9	49.9	0.8	45.1	58.1	0.0
LOS	E	D	A	D	B	A	D	D	A	D	E	A
Approach Delay		42.8			27.3			19.7			35.8	
Approach LOS		D			C			B			D	
Queue Length 50th (m)	7.6	~238.5	0.0	82.3	185.0	0.0	39.6	8.5	0.0	7.0	7.8	0.0
Queue Length 95th (m)	14.6	#319.5	0.0	106.4	251.8	0.0	54.5	15.8	0.0	12.5	14.0	0.0
Internal Link Dist (m)		665.0			729.6			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Base Capacity (vph)	94	1674	1599	956	2367	1615	458	330	1599	145	214	1615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.99	0.22	0.68	0.78	0.02	0.73	0.11	0.41	0.23	0.14	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 116.3			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 31.6		Intersection LOS: C	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

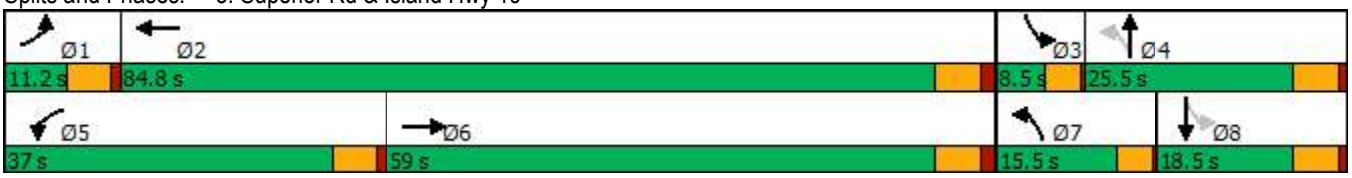
~ Volume exceeds capacity, queue is theoretically infinite.

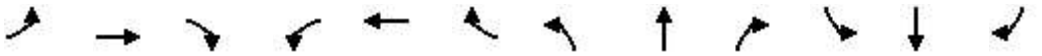
Queue shown is maximum after two cycles.

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

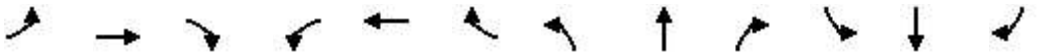
Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	79	5	5	122	806	5	5	5	844	5	5
Future Volume (vph)	5	79	5	5	122	806	5	5	5	844	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		50.0	0.0		0.0	100.0		0.0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.991				0.850		0.955			0.925	
Flt Protected		0.997			0.998			0.984		0.950		
Satd. Flow (prot)	0	1842	0	0	1827	1583	0	1785	0	1770	1758	0
Flt Permitted		0.976			0.985			0.892		0.653		
Satd. Flow (perm)	0	1804	0	0	1803	1583	0	1619	0	1216	1758	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				926		8			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		305.0			171.0			200.3			494.7	
Travel Time (s)		22.0			12.3			14.4			35.6	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.60	0.77	0.60	0.60	0.77	0.87	0.60	0.60	0.60	0.88	0.60	0.60
Heavy Vehicles (%)	0%	2%	0%	0%	4%	2%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	8	103	8	8	158	926	8	8	8	959	8	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	166	926	0	24	0	959	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	23.0	23.0	12.0	12.0		12.0	23.0	
Total Split (s)	24.0	24.0		24.0	24.0	24.0	13.0	13.0		38.0	51.0	
Total Split (%)	32.0%	32.0%		32.0%	32.0%	32.0%	17.3%	17.3%		50.7%	68.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	8.0	8.0		33.0	46.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0					7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0					11.0	
Pedestrian Calls (#/hr)	2	2		2	2	2					2	
Act Effct Green (s)		14.4			14.4	14.4		7.2		44.4	44.4	
Actuated g/C Ratio		0.21			0.21	0.21		0.10		0.65	0.65	
v/c Ratio		0.31			0.44	0.87		0.14		0.92	0.01	
Control Delay		24.4			27.7	12.8		25.8		27.4	4.2	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		24.4			27.7	12.8		25.8		27.4	4.2	
LOS		C			C	B		C		C	A	
Approach Delay		24.4			15.1			25.8			27.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)		13.3			19.9	0.0		2.0		80.7	0.3	
Queue Length 95th (m)		22.5			30.9	#35.5		5.6		#173.2	1.5	
Internal Link Dist (m)		281.0			147.0			176.3			470.7	
Turn Bay Length (m)						50.0				100.0		
Base Capacity (vph)		504			501	1108		196		1051	1185	
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		0.24			0.33	0.84		0.12		0.91	0.01	

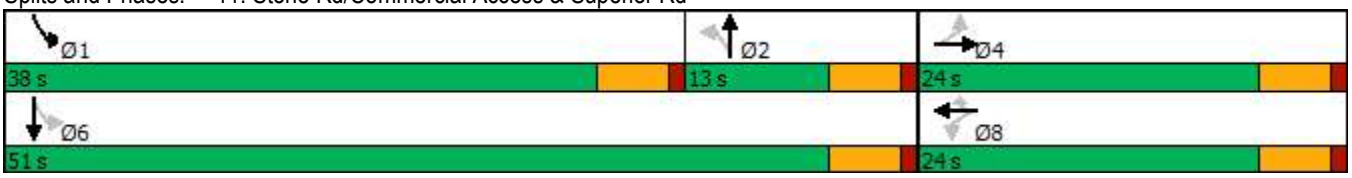
Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 68.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 11: Stone Rd/Commercial Access & Superior Rd



Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	938	5	8	921
Future Vol, veh/h	5	5	938	5	8	921
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	87	60	65	88
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	8	8	1078	8	12	1047

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1630	1082	0	0	1086	0
Stage 1	1082	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Critical Hdwy	6.6	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	103	267	-	-	650	-
Stage 1	328	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	267	-	-	650	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.5	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	143	650	-
HCM Lane V/C Ratio	-	-	0.117	0.019	-
HCM Control Delay (s)	-	-	33.5	10.6	0.2
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	904	24	19	913	33	9
Future Vol, veh/h	904	24	19	913	33	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	88	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	1039	40	32	1038	55	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1079	0	1642	1059
Stage 1	-	-	-	-	1059	-
Stage 2	-	-	-	-	583	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	654	-	101	275
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	527	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	654	-	89	275
Mov Cap-2 Maneuver	-	-	-	-	89	-
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	466	-

Approach	NB	SB	NW
HCM Control Delay, s	0	0.9	79.5
HCM LOS			F

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	89	275	654	-
HCM Lane V/C Ratio	-	-	0.618	0.055	0.048	-
HCM Control Delay (s)	-	-	96	18.8	10.8	0.6
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	2.9	0.2	0.2	-

Intersection	
Int Delay, s/veh	1.1

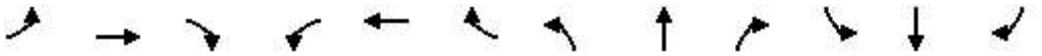
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	72	107	20	12	5
Future Vol, veh/h	5	72	107	20	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	60	77	77	60	60	60
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	8	94	139	33	20	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	266	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1417	-	-	-	727	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1417	-	-	-	723	895
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	920	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	766
HCM Lane V/C Ratio	0.006	-	-	-	0.037
HCM Control Delay (s)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1363	110	220	1531	21	100	21	221	19	17	17
Future Volume (vph)	17	1363	110	220	1531	21	100	21	221	19	17	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	3467	3438	1615	1787	1900	1599	1805	1900	1615
Flt Permitted	0.950			0.950			0.488			0.952		
Satd. Flow (perm)	1805	3539	1599	3467	3438	1615	918	1900	1599	1809	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			215			215			260			215
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		689.0			753.6			129.2			166.3	
Travel Time (s)		27.6			30.1			9.3			12.0	
Peak Hour Factor	0.63	0.93	0.85	0.85	0.95	0.68	0.85	0.75	0.85	0.61	0.69	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	27	1466	129	259	1612	31	118	28	260	31	25	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1466	129	259	1612	31	118	28	260	31	25	23
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	1	6		5	2		7	4		3	8	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	11.2	23.0		11.3	23.0		8.0	25.5		8.0	12.5	
Total Split (s)	11.2	43.8		12.7	45.3		10.0	25.5		8.0	23.5	
Total Split (%)	12.4%	48.7%		14.1%	50.3%		11.1%	28.3%		8.9%	26.1%	
Maximum Green (s)	6.0	37.8		7.4	39.3		6.0	20.0		4.0	18.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.0		0.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0		4.0	5.5		4.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0				
Flash Dont Walk (s)		10.0			10.0			13.0				
Pedestrian Calls (#/hr)		2			2			2				
Act Effct Green (s)	6.1	39.1	73.1	7.6	49.7	73.1	12.6	9.7	73.1	8.8	9.0	73.1
Actuated g/C Ratio	0.08	0.53	1.00	0.10	0.68	1.00	0.17	0.13	1.00	0.12	0.12	1.00
v/c Ratio	0.18	0.78	0.08	0.72	0.69	0.02	0.48	0.11	0.16	0.14	0.11	0.01
Control Delay	38.8	20.4	0.1	47.7	16.1	0.0	32.4	30.2	0.2	25.9	31.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	20.4	0.1	47.7	16.1	0.0	32.4	30.2	0.2	25.9	31.5	0.0
LOS	D	C	A	D	B	A	C	C	A	C	C	A
Approach Delay		19.1			20.1			11.6			20.1	
Approach LOS		B			C			B			C	
Queue Length 50th (m)	3.5	73.8	0.0	17.8	44.5	0.0	15.3	3.6	0.0	4.2	3.2	0.0
Queue Length 95th (m)	9.1	#188.1	0.0	#43.2	#216.6	0.0	26.7	9.1	0.0	6.7	8.0	0.0
Internal Link Dist (m)		665.0			729.6			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Base Capacity (vph)	151	1891	1599	358	2336	1615	244	531	1599	218	478	1615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.78	0.08	0.72	0.69	0.02	0.48	0.05	0.16	0.14	0.05	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	339	5	6	341
Future Vol, veh/h	5	5	339	5	6	341
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	87	60	65	88
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	8	8	390	8	9	388

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	606	394	0	0	398	0
Stage 1	394	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.6	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	448	659	-	-	1172	-
Stage 1	686	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	444	659	-	-	1172	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	531	1172	-
HCM Lane V/C Ratio	-	-	0.031	0.008	-
HCM Control Delay (s)	-	-	12	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	311	9	16	334	16	7
Future Vol, veh/h	311	9	16	334	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	88	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	357	15	27	380	27	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	372	0	609	365
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	244	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1198	-	446	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1198	-	433	685
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	757	-

Approach	NB	SB	NW
HCM Control Delay, s	0	0.6	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	433	685	1198	-
HCM Lane V/C Ratio	-	-	0.062	0.017	0.022	-
HCM Control Delay (s)	-	-	13.9	10.3	8.1	0.1
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	67	5	5	104	232	5	5	5	249	5	5
Future Vol, veh/h	5	67	5	5	104	232	5	5	5	249	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	77	60	60	77	87	60	60	60	88	60	60
Heavy Vehicles, %	0	2	0	0	4	2	0	0	0	2	0	0
Mvmt Flow	8	87	8	8	135	267	8	8	8	283	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	95	0	0	400	525	91	400	396	269
Stage 1	-	-	-	-	-	-	107	107	-	285	285	-
Stage 2	-	-	-	-	-	-	293	418	-	115	111	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4	3.3
Pot Cap-1 Maneuver	1168	-	-	1512	-	-	564	460	972	560	544	775
Stage 1	-	-	-	-	-	-	903	811	-	722	679	-
Stage 2	-	-	-	-	-	-	719	594	-	890	807	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1168	-	-	1512	-	-	545	454	972	542	536	775
Mov Cap-2 Maneuver	-	-	-	-	-	-	545	454	-	542	536	-
Stage 1	-	-	-	-	-	-	897	805	-	717	674	-
Stage 2	-	-	-	-	-	-	698	590	-	867	801	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	11.3	19.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	592	1168	-	-	1512	-	-	546
HCM Lane V/C Ratio	0.042	0.007	-	-	0.006	-	-	0.549
HCM Control Delay (s)	11.3	8.1	0	-	7.4	0	-	19.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	3.3

Intersection	
Int Delay, s/veh	1.3

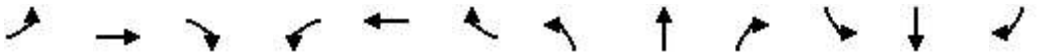
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	56	85	20	12	5
Future Vol, veh/h	5	56	85	20	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	60	77	77	60	60	60
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	8	73	110	33	20	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	143	0	-	0	216	127
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	89	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1452	-	-	-	777	929
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1452	-	-	-	772	929
Mov Cap-2 Maneuver	-	-	-	-	772	-
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1452	-	-	-	812
HCM Lane V/C Ratio	0.006	-	-	-	0.035
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1676	116	234	1881	26	104	25	233	23	20	21
Future Volume (vph)	21	1676	116	234	1881	26	104	25	233	23	20	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	3467	3438	1615	1787	1900	1599	1805	1900	1615
Flt Permitted	0.950			0.950			0.443			0.736		
Satd. Flow (perm)	1805	3539	1599	3467	3438	1615	833	1900	1599	1398	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			228			228			251			228
Link Speed (k/h)		90			90			50			50	
Link Distance (m)		689.0			753.6			129.2			166.3	
Travel Time (s)		27.6			30.1			9.3			12.0	
Peak Hour Factor	0.70	0.96	0.88	0.90	0.97	0.72	0.88	0.75	0.93	0.70	0.70	0.75
Heavy Vehicles (%)	0%	2%	1%	1%	5%	0%	1%	0%	1%	0%	0%	0%
Adj. Flow (vph)	30	1746	132	260	1939	36	118	33	251	33	29	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1746	132	260	1939	36	118	33	251	33	29	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	1	6		5	2		7	4		3	8	



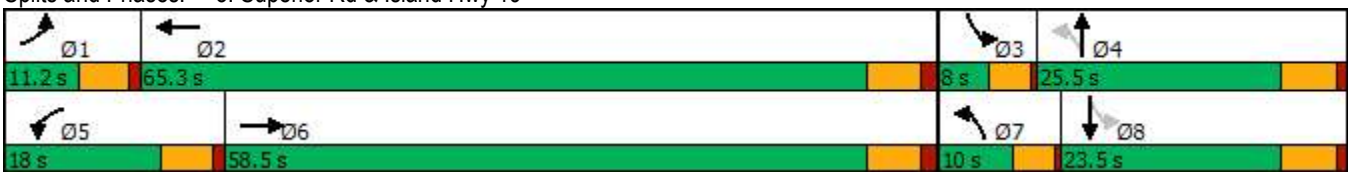
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			Free			Free	4		Free	8		Free
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	11.2	23.0		11.3	23.0		8.0	25.5		8.0	12.5	
Total Split (s)	11.2	58.5		18.0	65.3		10.0	25.5		8.0	23.5	
Total Split (%)	10.2%	53.2%		16.4%	59.4%		9.1%	23.2%		7.3%	21.4%	
Maximum Green (s)	6.0	52.5		12.7	59.3		6.0	20.0		4.0	18.0	
Yellow Time (s)	4.2	4.5		4.3	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	1.5		1.0	1.5		0.5	1.0		0.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.2	6.0		5.3	6.0		4.0	5.5		4.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0				
Flash Dont Walk (s)		10.0			10.0			13.0				
Pedestrian Calls (#/hr)		2			2			2				
Act Effct Green (s)	6.1	53.0	96.1	11.4	63.5	96.1	15.1	10.2	96.1	10.9	9.1	96.1
Actuated g/C Ratio	0.06	0.55	1.00	0.12	0.66	1.00	0.16	0.11	1.00	0.11	0.09	1.00
v/c Ratio	0.27	0.89	0.08	0.63	0.85	0.02	0.58	0.16	0.16	0.19	0.16	0.02
Control Delay	52.8	28.4	0.1	49.0	21.3	0.0	47.3	41.6	0.2	35.3	43.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	28.4	0.1	49.0	21.3	0.0	47.3	41.6	0.2	35.3	43.3	0.0
LOS	D	C	A	D	C	A	D	D	A	D	D	A
Approach Delay		26.8			24.2			17.4			26.9	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	5.9	162.8	0.0	25.9	175.4	0.0	20.9	6.3	0.0	5.6	5.6	0.0
Queue Length 95th (m)	12.8	#268.0	0.0	43.4	#295.5	0.0	36.1	12.6	0.0	10.5	11.0	0.0
Internal Link Dist (m)		665.0			729.6			105.2			142.3	
Turn Bay Length (m)	55.0		40.0	150.0		40.0	75.0		20.0	15.0		20.0
Base Capacity (vph)	113	1951	1599	462	2270	1615	202	398	1599	175	358	1615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.89	0.08	0.56	0.85	0.02	0.58	0.08	0.16	0.19	0.08	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 96.1			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Superior Rd & Island Hwy 19



Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	358	5	8	362
Future Vol, veh/h	5	5	358	5	8	362
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	60	87	60	65	88
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	8	8	411	8	12	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	645	415	0	0	419	0
Stage 1	415	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.6	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	424	642	-	-	1151	-
Stage 1	671	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	418	642	-	-	1151	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	506	1151	-
HCM Lane V/C Ratio	-	-	0.033	0.011	-
HCM Control Delay (s)	-	-	12.4	8.2	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	324	9	19	354	18	9
Future Vol, veh/h	324	9	19	354	18	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	60	60	88	60	60
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	372	15	32	402	30	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	387	0	645	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	265	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1183	-	424	671
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	761	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1183	-	409	671
Mov Cap-2 Maneuver	-	-	-	-	409	-
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	734	-

Approach	NB	SB	NW
HCM Control Delay, s	0	0.7	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBR	NWLn1	NWLn2	SBL	SBT
Capacity (veh/h)	-	-	409	671	1183	-
HCM Lane V/C Ratio	-	-	0.073	0.022	0.027	-
HCM Control Delay (s)	-	-	14.5	10.5	8.1	0.1
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	79	5	5	122	232	5	5	5	249	5	5
Future Vol, veh/h	5	79	5	5	122	232	5	5	5	249	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	77	60	60	77	87	60	60	60	88	60	60
Heavy Vehicles, %	0	2	0	0	4	2	0	0	0	2	0	0
Mvmt Flow	8	103	8	8	158	267	8	8	8	283	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	111	0	0	439	564	107	439	435	292
Stage 1	-	-	-	-	-	-	123	123	-	308	308	-
Stage 2	-	-	-	-	-	-	316	441	-	131	127	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4	3.3
Pot Cap-1 Maneuver	1145	-	-	1492	-	-	532	438	953	528	517	752
Stage 1	-	-	-	-	-	-	886	798	-	702	664	-
Stage 2	-	-	-	-	-	-	699	580	-	873	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1145	-	-	1492	-	-	514	432	953	510	510	752
Mov Cap-2 Maneuver	-	-	-	-	-	-	514	432	-	510	510	-
Stage 1	-	-	-	-	-	-	880	792	-	697	659	-
Stage 2	-	-	-	-	-	-	678	576	-	850	789	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	11.7	21.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	565	1145	-	-	1492	-	-	515
HCM Lane V/C Ratio	0.044	0.007	-	-	0.006	-	-	0.582
HCM Control Delay (s)	11.7	8.2	0	-	7.4	0	-	21.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	3.7

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	68	103	20	12	5
Future Vol, veh/h	5	68	103	20	12	5
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	60	77	77	60	60	60
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	8	88	134	33	20	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	167	0	-	0	255	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1423	-	-	-	738	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	925	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1423	-	-	-	734	901
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1423	-	-	-	776
HCM Lane V/C Ratio	0.006	-	-	-	0.037
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

MOVEMENT SUMMARY

Site: [Stone Rd-Superior Rd - 2022]

Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stone Rd												
3	L2	5	0.0	0.033	7.8	LOS A	0.1	0.9	0.65	0.62	0.65	53.6
8	T1	5	0.0	0.033	7.8	LOS A	0.1	0.9	0.65	0.62	0.65	53.4
18	R2	5	0.0	0.033	7.8	LOS A	0.1	0.9	0.65	0.62	0.65	52.0
Approach		16	0.0	0.033	7.8	LOS A	0.1	0.9	0.65	0.62	0.65	53.0
East: Superior Rd												
1	L2	5	0.0	0.748	13.9	LOS B	11.0	84.9	0.27	0.08	0.27	50.2
6	T1	113	2.0	0.748	14.0	LOS B	11.0	84.9	0.27	0.08	0.27	50.1
16	R2	876	2.0	0.748	14.0	LOS B	11.0	84.9	0.27	0.08	0.27	48.8
Approach		995	2.0	0.748	14.0	LOS B	11.0	84.9	0.27	0.08	0.27	48.9
North: Southeast Access												
7	L2	917	2.0	0.781	16.7	LOS C	10.1	78.0	0.76	0.49	0.78	45.5
4	T1	5	0.0	0.781	16.7	LOS C	10.1	78.0	0.76	0.49	0.78	45.5
14	R2	5	0.0	0.781	16.7	LOS C	10.1	78.0	0.76	0.49	0.78	44.5
Approach		928	2.0	0.781	16.7	LOS C	10.1	78.0	0.76	0.49	0.78	45.5
West: Superior Rd												
5	L2	5	0.0	0.162	9.0	LOS A	0.6	4.7	0.67	0.67	0.67	53.7
2	T1	73	2.0	0.162	9.1	LOS A	0.6	4.7	0.67	0.67	0.67	53.5
12	R2	5	0.0	0.162	9.0	LOS A	0.6	4.7	0.67	0.67	0.67	52.2
Approach		84	1.7	0.162	9.1	LOS A	0.6	4.7	0.67	0.67	0.67	53.5
All Vehicles		2023	2.0	0.781	15.0	LOS B	11.0	84.9	0.52	0.30	0.52	47.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Vandenhoek Rd-Superior Rd - 2022]

Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Vandenhoek Rd												
3x	L2	34	0.0	0.082	8.2	LOS A	0.3	2.3	0.66	0.66	0.66	51.4
18ax	R1	8	0.0	0.082	8.2	LOS A	0.3	2.3	0.66	0.66	0.66	50.9
Approach		41	0.0	0.082	8.2	LOS A	0.3	2.3	0.66	0.66	0.66	51.3
North: Superior Rd												
7a	L1	17	0.0	0.742	13.7	LOS B	10.9	82.8	0.41	0.15	0.41	50.2
14a	R1	971	0.0	0.742	13.7	LOS B	10.9	82.8	0.41	0.15	0.41	50.3
Approach		988	0.0	0.742	13.7	LOS B	10.9	82.8	0.41	0.15	0.41	50.3
SouthWest: Superior Rd												
5ax	L1	968	2.0	0.748	14.0	LOS B	11.0	85.0	0.28	0.08	0.28	47.2
12x	R2	26	0.0	0.748	14.0	LOS B	11.0	85.0	0.28	0.08	0.28	46.5
Approach		995	1.9	0.748	14.0	LOS B	11.0	85.0	0.28	0.08	0.28	47.2
All Vehicles		2024	1.0	0.748	13.7	LOS B	11.0	85.0	0.35	0.13	0.35	48.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Stone Rd-Superior Rd - 2032]

Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Stone Rd												
3	L2	5	0.0	0.034	7.9	LOS A	0.1	0.9	0.66	0.63	0.66	53.5
8	T1	5	0.0	0.034	7.9	LOS A	0.1	0.9	0.66	0.63	0.66	53.3
18	R2	5	0.0	0.034	7.9	LOS A	0.1	0.9	0.66	0.63	0.66	51.9
Approach		16	0.0	0.034	7.9	LOS A	0.1	0.9	0.66	0.63	0.66	52.9
East: Superior Rd												
1	L2	5	0.0	0.763	14.6	LOS B	11.8	91.2	0.29	0.08	0.29	49.8
6	T1	133	2.0	0.763	14.6	LOS B	11.8	91.2	0.29	0.08	0.29	49.6
16	R2	876	2.0	0.763	14.6	LOS B	11.8	91.2	0.29	0.08	0.29	48.4
Approach		1014	2.0	0.763	14.6	LOS B	11.8	91.2	0.29	0.08	0.29	48.5
North: Southeast Access												
7	L2	917	2.0	0.797	17.9	LOS C	17.6	135.8	0.83	0.68	1.10	44.9
4	T1	5	0.0	0.797	17.8	LOS C	17.6	135.8	0.83	0.68	1.10	44.9
14	R2	5	0.0	0.797	17.8	LOS C	17.6	135.8	0.83	0.68	1.10	43.9
Approach		928	2.0	0.797	17.9	LOS C	17.6	135.8	0.83	0.68	1.10	44.9
West: Superior Rd												
5	L2	5	0.0	0.187	9.4	LOS A	0.7	5.5	0.68	0.68	0.68	53.5
2	T1	86	2.0	0.187	9.5	LOS A	0.7	5.5	0.68	0.68	0.68	53.3
12	R2	5	0.0	0.187	9.4	LOS A	0.7	5.5	0.68	0.68	0.68	51.9
Approach		97	1.8	0.187	9.5	LOS A	0.7	5.5	0.68	0.68	0.68	53.2
All Vehicles		2055	2.0	0.797	15.8	LOS C	17.6	135.8	0.55	0.38	0.68	47.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Vandenhoek Rd-Superior Rd - 2032]

Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Vandenhoek Rd												
3x	L2	36	0.0	0.092	8.4	LOS A	0.3	2.6	0.66	0.66	0.66	51.4
18ax	R1	10	0.0	0.092	8.4	LOS A	0.3	2.6	0.66	0.66	0.66	50.9
Approach		46	0.0	0.092	8.4	LOS A	0.3	2.6	0.66	0.66	0.66	51.2
North: Superior Rd												
7a	L1	21	0.0	0.762	14.6	LOS B	12.0	90.9	0.46	0.18	0.46	49.6
14a	R1	992	0.0	0.762	14.6	LOS B	12.0	90.9	0.46	0.18	0.46	49.7
Approach		1013	0.0	0.762	14.6	LOS B	12.0	90.9	0.46	0.18	0.46	49.7
SouthWest: Superior Rd												
5ax	L1	983	2.0	0.762	14.6	LOS B	11.6	89.7	0.33	0.10	0.33	46.8
12x	R2	26	0.0	0.762	14.6	LOS B	11.6	89.7	0.33	0.10	0.33	46.2
Approach		1009	1.9	0.762	14.6	LOS B	11.6	89.7	0.33	0.10	0.33	46.8
All Vehicles		2067	1.0	0.762	14.5	LOS B	12.0	90.9	0.40	0.15	0.40	48.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.