

1919 Riverside Drive Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report (Revised #2)

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December 2022

PN: 2021-045

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Design Review component and the Network Impact Component. This TIA is in support of a zoning by-law amendment and site plan application.

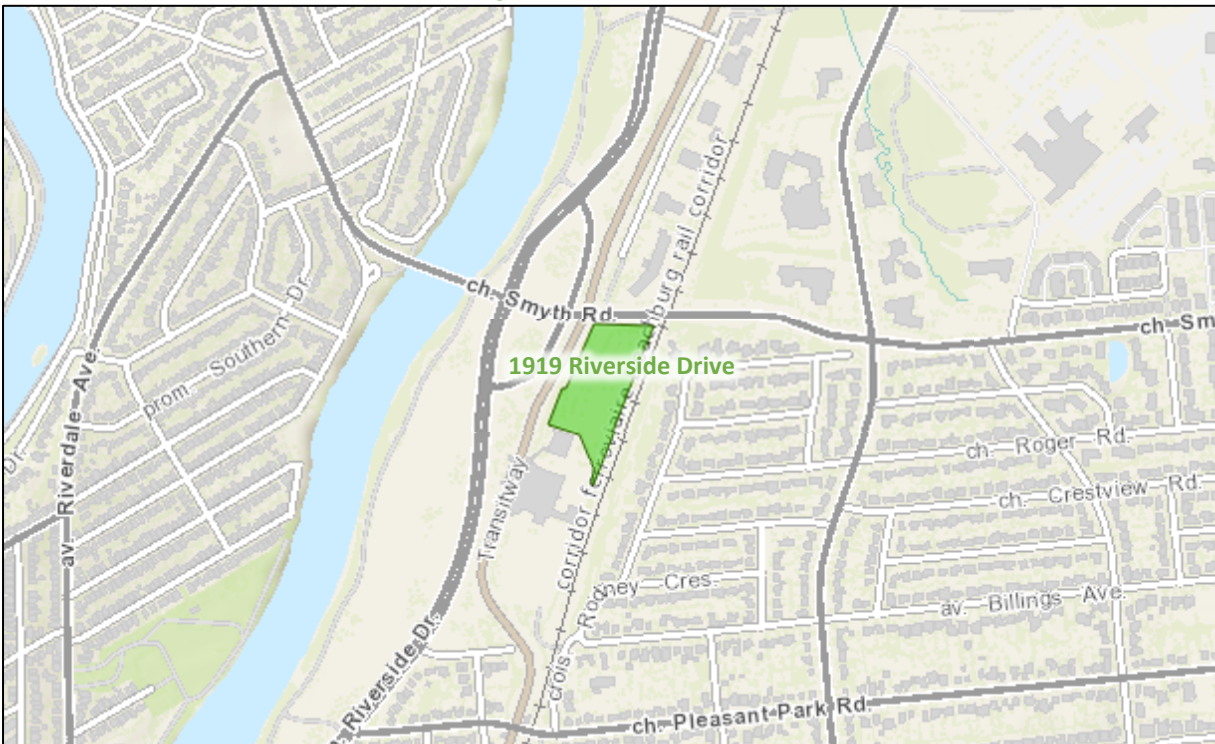
2 Existing and Planned Conditions

2.1 Proposed Development

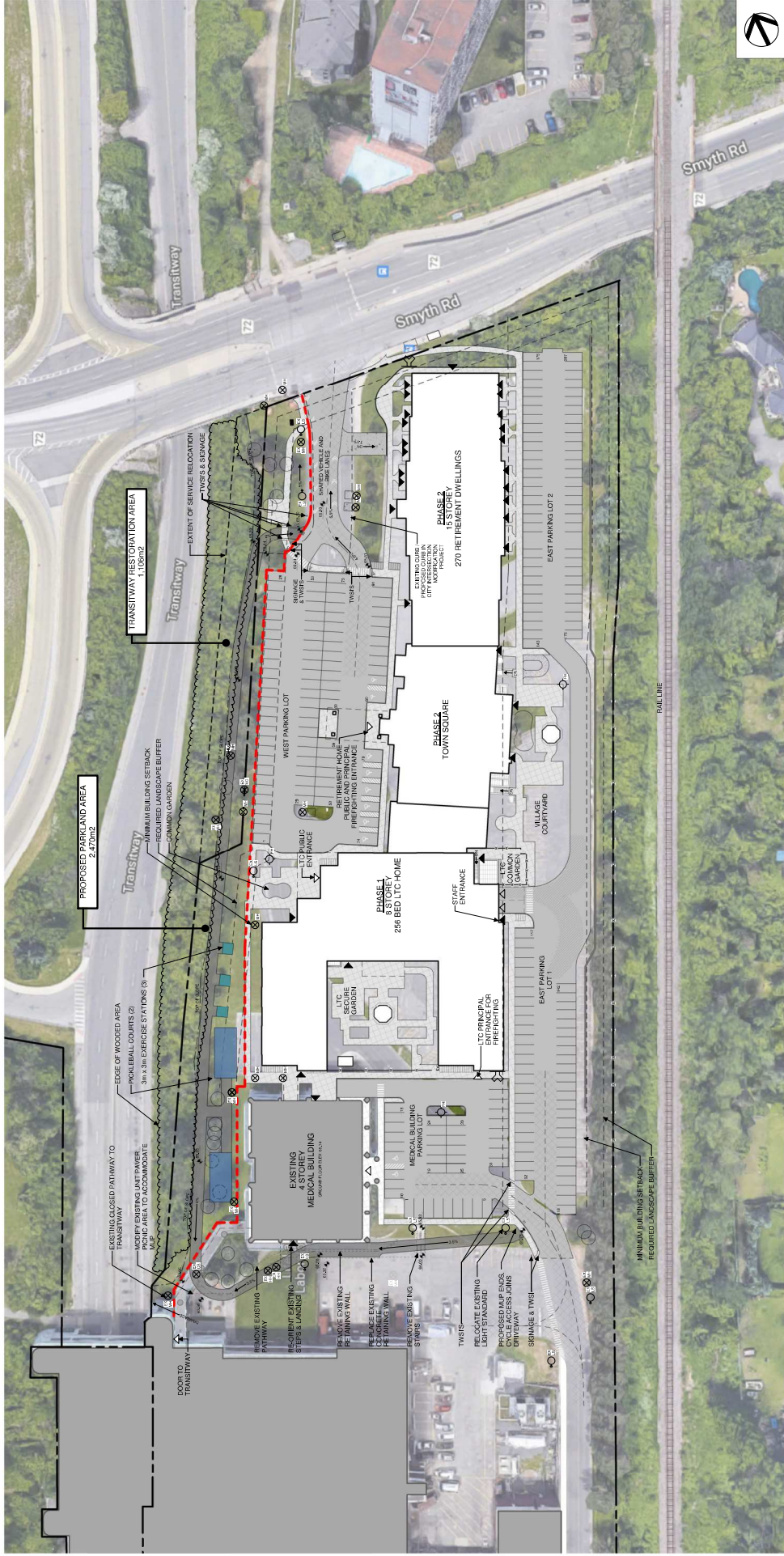
The subject site is currently zoned as Major Institutional (I2 F(1.0)) and is occupied by The Ottawa Hospital Riverside Campus' surface parking lots. The development concept proposes the replacement of these parking facilities with a continuing care facility comprising an eight-storey building with 256 long-term care beds and a 15-storey building with 270 retirement dwelling units, each structure connected by a town square building. Total parking for the development is proposed as 275 vehicle spaces with 209 in surface lots and 66 underground. Access to two surface lots is proposed via a connection to the hospital's existing signalized access intersection with Riverside Drive, and access to the underground parking and another surface lot is proposed via the hospital's existing signalized intersection at Smyth Road. Through the redevelopment, the hospital's access to Smyth Road is proposed as being severed and a MUP connection is proposed between each access' drive aisle. The long-term care home structure is to be built-out in the first phase and the retirement dwelling structure and town square connection are to be built-out in the second phase, by 2026.

Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan

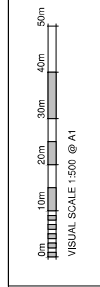


Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: April 28, 2021



CSV ARCHITECTS
 sustainable design - conception écologique
SCHLEGEL VILLAGES
 OTTAWA
 SITE MASTER PLAN

1919, 1967 RIVERSIDE DRIVE, OTTAWA, ONTARIO
 2022-11-01



MASTER SITE PLAN SHOWING PROPOSED MULTI-USE PATHWAY & LINEAR PARK



CORNERSTONE
 ARCHITECTURE

2.2 Existing Conditions

2.2.1 Area Road Network

Riverside Drive: Riverside Drive is a City of Ottawa arterial road with a divided four-lane urban cross-section including a sidewalk on the east side of the road. Bike lanes are along both sides of the road north of the Smyth Road north ramp. On the east side of Riverside Drive, an auxiliary receiving lane from the hospital access transitions to a transit priority lane to the Transitway access, which becomes an auxiliary turn lane for the downstream ramp to Smyth Road. The posted speed limit is 60 km/h, and the City-protected right of way is 44.5 metres to the north and 37.5 metres to the south of Smyth Road within the study area.

Smyth Road: Smyth Road is a City of Ottawa arterial road with a divided four-lane urban cross-section including sidewalks on both sides of the road. Bike lanes are along both sides of the road west of the ramps to Riverside Drive. Smyth Road passes over the Transitway and Riverside Drive, and the cross-section is undivided west of the ramps to Riverside Drive. The posted speed limit is 50 km/h, and the City-protected right of way is 30.0 metres east of Alta Vista Drive and the measured right of way is 42.5 metres between Alta Vista and the Transitway, and 67.5 metres to the west within the study area.

Alta Vista Drive: Alta Vista Drive is a City of Ottawa major collector road with a two-lane urban cross-section including bike lanes and sidewalks on both sides of the road. The posted speed limit is 50 km/h, and the City-protected right of way is subject to the Alta Vista Transportation Corridor Environmental Assessment Study and the measured right of way is 30.5 metres within the study area.

2.2.2 Existing Intersections

The key existing signalized area intersections within 400 metres of the site have been summarized below:

Smyth Road North Ramp at Riverside Drive The intersection of the Smyth Road north ramp at Riverside Drive is a signalized intersection. The northbound approach of Riverside Drive consists of two through lanes and an auxiliary channelized right-turn lane, and the southbound approach consists of two through lanes and an auxiliary left-turn lane. The westbound approach consists of a left-turn lane and an auxiliary channelized right-turn lane, and an upstream inlet to the transitway is located adjacent to the right-turn channel. Northbound U-turns are restricted at this intersection.

Smyth Road South Ramp at Riverside Drive The intersection of the Smyth Road south ramp at Riverside Drive is a signalized intersection. The northbound approach consists of two through lanes and a right-turn lane, and the southbound approach consists of two through lanes and an auxiliary left-turn lane. The westbound approach consists of a left-turn lane and an auxiliary channelized right-turn lane. Northbound U-turns are restricted at this intersection.

Transitway at Riverside Drive The intersection of the Transitway at Riverside Drive is a signalized intersection. The northbound approach consists of two through lanes and an auxiliary channelized transit-only right-turn lane and the southbound approach consist of a through lane and a shared through/transit-only left-turn lane. The westbound approach consists of a shared right-turn/left-turn lane. All turning movements onto the east leg of the intersection are restricted to buses only.

The Ottawa Hospital Riverside Campus at Riverside Drive The intersection of The Ottawa Hospital Riverside Campus access at Riverside Drive is a signalized intersection. The northbound approach consists of two through lanes and a right-turn lane, and the southbound approach consists of two through lanes and an auxiliary left-turn lane. The westbound approach consists of a left-turn lane and an auxiliary channelized right-turn lane. No turn restrictions were noted.

Smyth Road at Ramps to Riverside Drive The intersection of Smyth Road at its ramps to Riverside Drive is an unsignalized intersection, yield controlled on the minor approaches of the ramps. The northbound and southbound approaches each consist of a channelized right-turn lane and the eastbound and westbound approaches each consist of two through lanes and an auxiliary right-turn lane. A median and right-turn islands prevent all but the right-turn movement on all approaches and the through movements on the eastbound and westbound approaches. No turn restrictions were noted beyond the physical restrictions of the centre median.

Smyth Road at The Ottawa Hospital Riverside Campus The intersection of Smyth Road at The Ottawa Hospital Riverside Campus access is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a right-turn lane, and the southbound approach consists of a ten-metre segment of two-way bicycle path that connects to a sidewalk to the north. The eastbound approach consists of two through lanes and a shared through/right-turn lane and the westbound approach consists of an auxiliary left-turn lane, two through lanes, and an auxiliary through lane. No turn restrictions were noted.

Smyth Road at Alta Vista Drive The intersection of Smyth Road at Alta Vista Drive is a signalized intersection with auxiliary left-turn lanes and auxiliary channelized right-turn lanes on each approach. The northbound and southbound approaches each also have a through lane and a bike lane between the through and right-turn lanes, and the eastbound and westbound approaches each also have two through lanes. A mixed-use path (MUP) extension of Balmoral Place connects to the intersection at the pedestrian crossing of the southwest turn channel. No turn restrictions were noted.

2.2.3 Existing Driveways

No driveways are present along Smyth Road within 200 metres of the site access. Eight driveways to detached residential dwellings are present on the east side of Riverside Drive south of The Ottawa Hospital Riverside Campus access at Riverside Drive intersection.

The subject redevelopment proposes severing The Ottawa Hospital Riverside Campus' access to Smyth Road, which would redirect all of the hospital traffic to the Riverside Drive access.

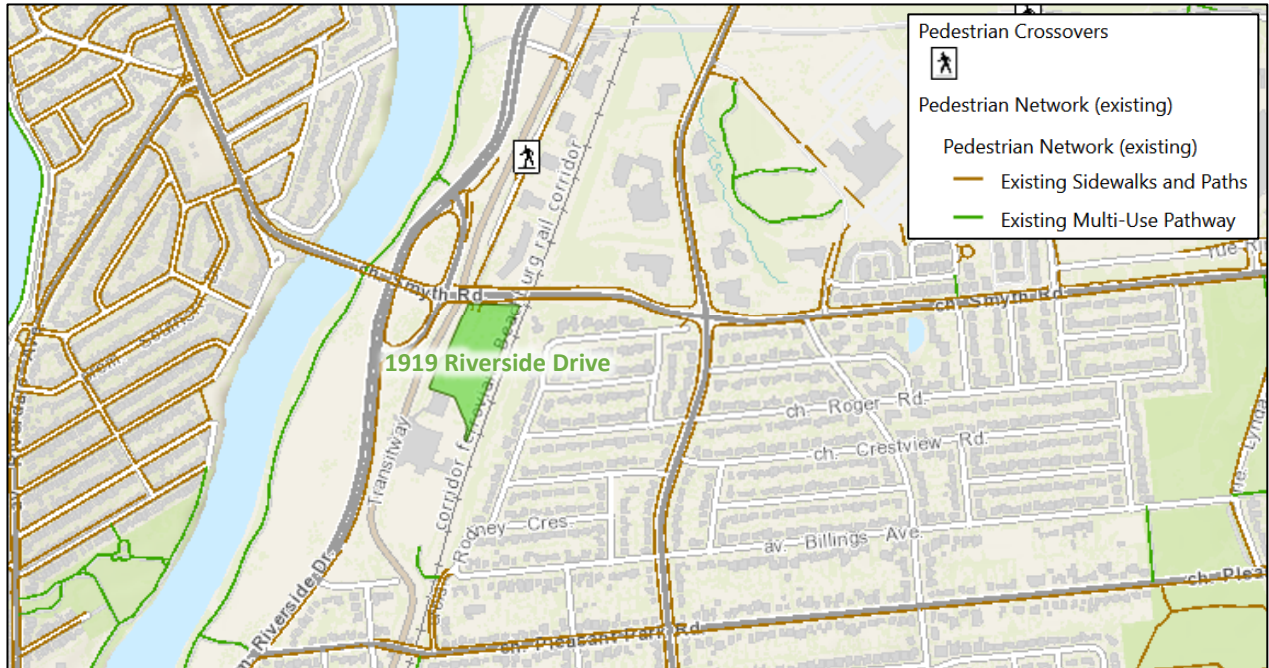
2.2.4 Cycling and Pedestrian Facilities

Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

Sidewalks are provided along both sides of Smyth Road, its ramps to Riverside Drive, and Alta Vista Drive and along the east side of Riverside Drive. A pedestrian pathway is present opposite The Ottawa Hospital Riverside Campus at Smyth Road.

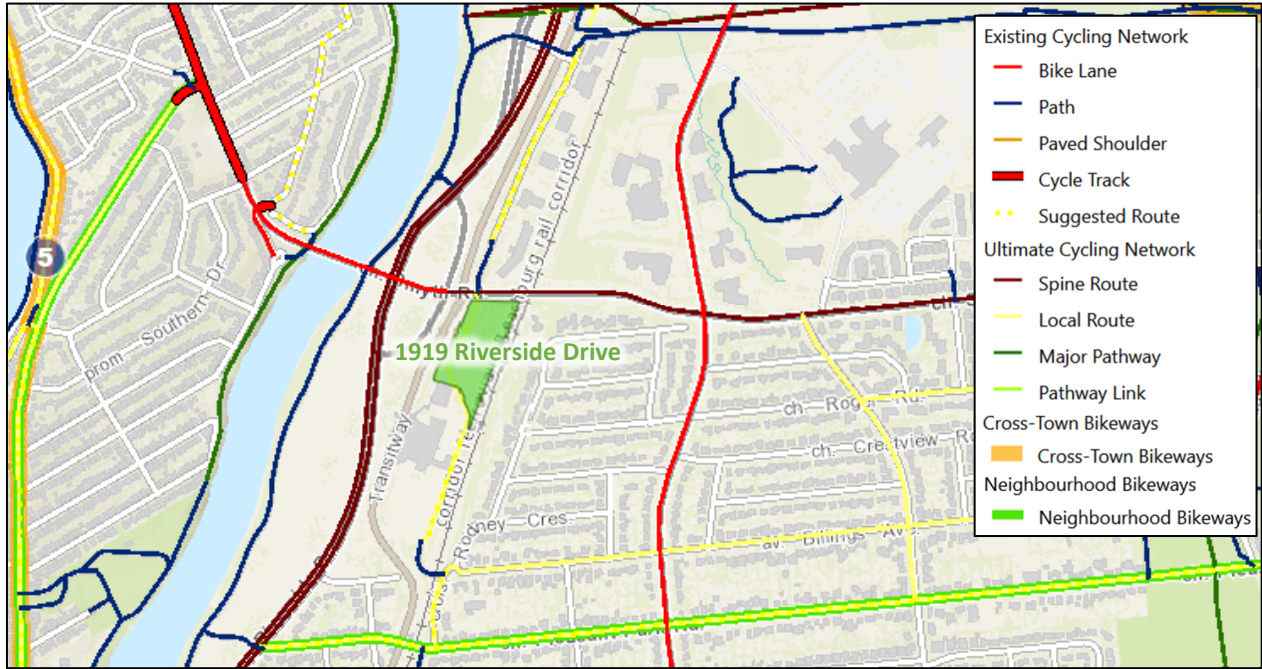
Cycling facilities include bike lanes along Alta Vista Drive, Riverside Drive to the north of the north ramp to Smyth Road, and along Smyth Road west of its ramps to Riverside Drive. The Rideau River Eastern Pathway is present along the east side of the river and the Rideau River Nature Trail is present along the west side within the study area. Riverside Drive, Smyth Road, and Alta Vista Drive are spine routes, Frobisher Lane is a local route that continues through the subject site connecting to Rodney Crescent and Billings Avenue

Figure 3: Study Area Pedestrian Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: April 28, 2021

Figure 4: Study Area Cycling Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: April 28, 2021

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 5 and Figure 6 respectively.

Figure 5: Existing Pedestrian Volumes

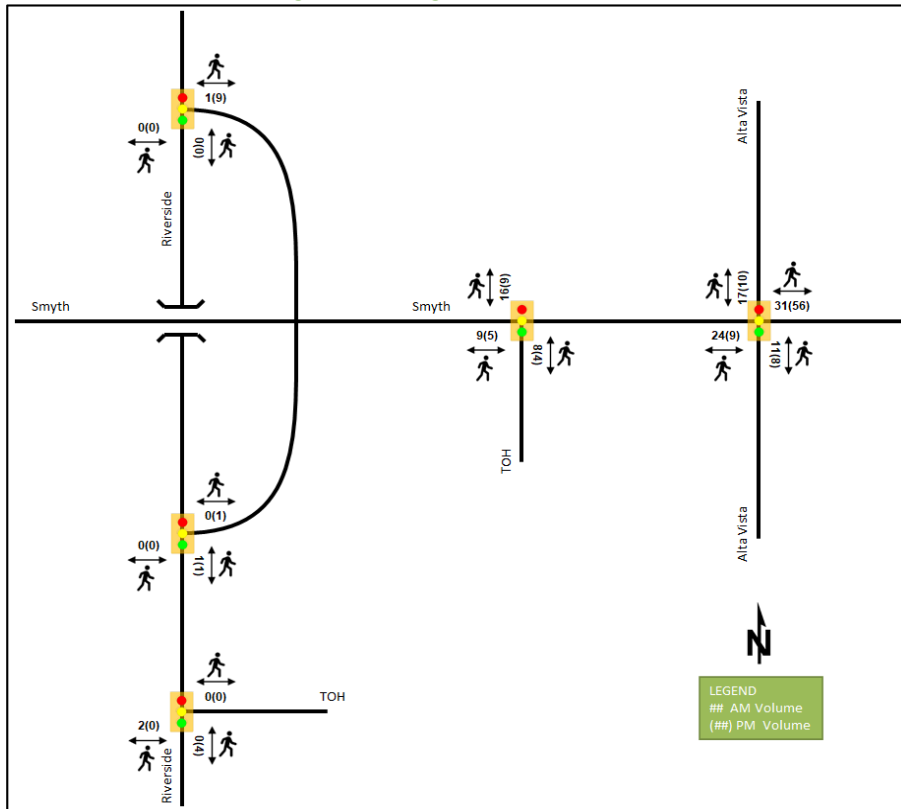
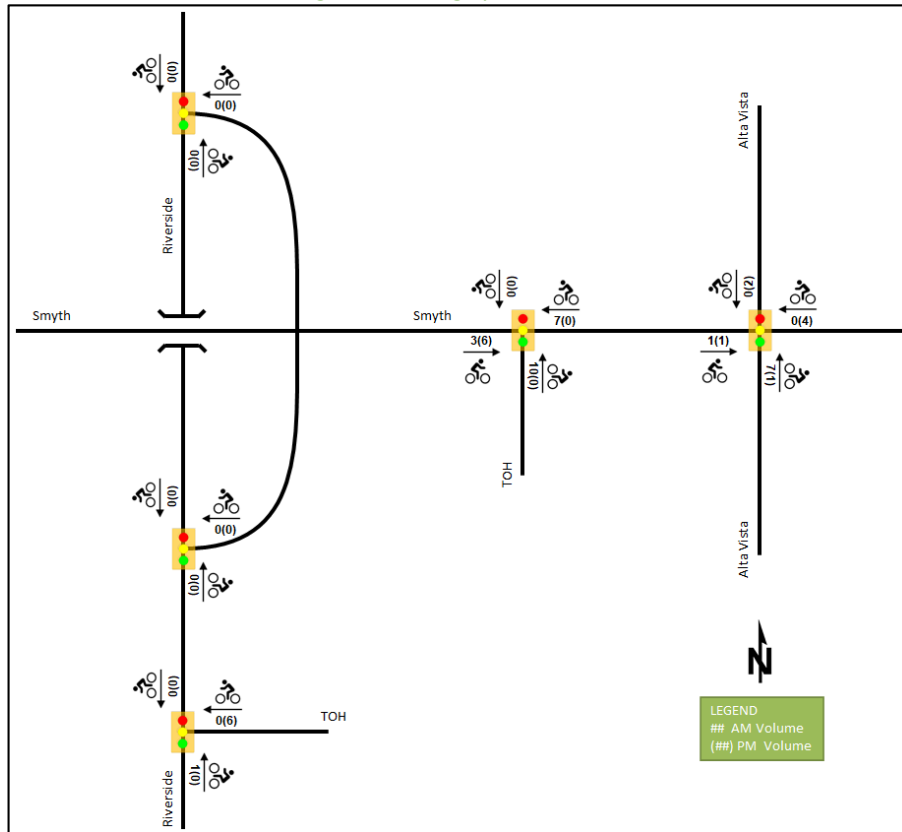


Figure 6: Existing Cyclist Volumes



2.2.5 Existing Transit

Within the study area, as of April 2021, the routes #10, 40, 48, 49, 88, 90, 92, 93, 96, 97, 98, 99, 190, 199, 290, 291, 294, 299 travel along the transitway stopping at Riverside Station, the route #55 travels along Smyth Road, and the route #44 travels along Alta Vista Drive. The frequency of these routes within proximity of the proposed site as of April 2021 are:

- Route # 10 – 15-minute daytime service, 30-minute after 6:30PM
- Route # 40 – 15-minute service in the peak period/direction only
- Route # 44 – 15-minute daytime service, 30-minute after 7:00PM
- Route # 48 – 15-minute service in peak period/direction, 30-minute daytime service, one-hour service after 8:00PM
- Route # 49 – 20-30-minute service operating primarily during peak periods
- Route # 55 – 15-minute daytime service, 30-minute after 7:00PM
- Route # 88 – 7-10-minute service during peak periods, 15-minute daytime service, 20-minute service after 9:00PM
- Route # 90 – 15-minute daytime service, 30-minute service after 7:00PM
- Route # 92 – 15-minute service during peak periods, 30-minute service all day
- Route # 93 – 7-10-minute service in peak direction, 30-minute service in off-peak direction, operating during peak periods only
- Route # 96 – 15-minute service in peak period/direction, one-hour service all day
- Route # 97 – 15-minute service all day

- Route # 98 – 15-minute daytime service, 30-minute after 8:00PM
- Route # 99 – 15-minute service in peak direction, 30-minute service in off-peak direction, operating during peak periods only
- Route # 190 – one bus in each direction per peak period
- Route # 199 – two buses each peak period/direction only
- Route # 290 – 30-minute service in peak period/direction only
- Route # 291 – 15-30-minute service in peak period/direction only
- Route # 294 – 30-minute service in peak period/direction only
- Route # 299 – two buses each peak period/direction only

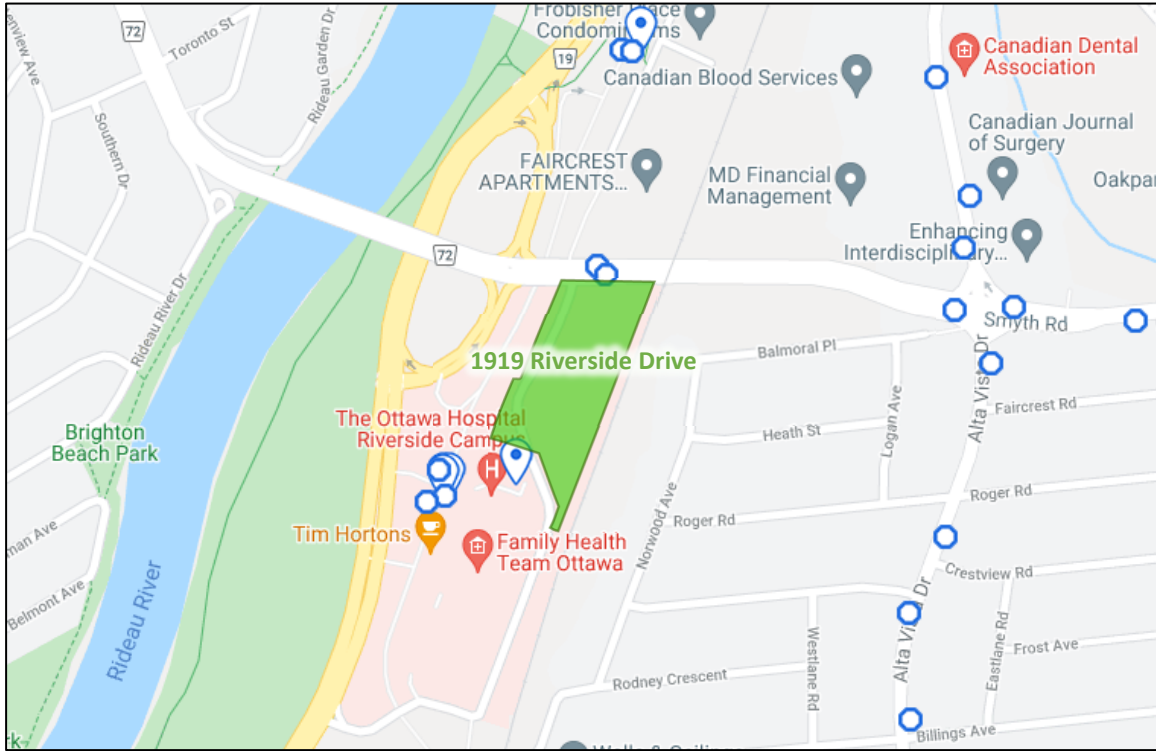
Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates nearby transit stops.

Figure 7: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: April 28, 2021

Figure 8: Existing Study Area Transit Stops



Source: <http://www.octranspo.com/> Accessed: April 28, 2021

2.2.6 Existing Area Traffic Management Measures

There are no existing area traffic management measures within the study area.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area intersections. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
Smyth Road North Ramp at Riverside Drive	Wednesday, November 29, 2017
Smyth Road South Ramp at Riverside Drive	Tuesday, November 21, 2017
The Ottawa Hospital RC at Riverside Drive	Thursday, August 20, 2015
Smyth Road at The Ottawa Hospital RC	Tuesday, November 20, 2018
Smyth Road at Alta Vista Drive	Wednesday, February 14, 2018

Figure 9 illustrates the existing traffic counts balanced along the Riverside Drive and Smyth Road Corridors and Table 2 summarizes the existing intersection operations. It is noted that the volumes at the intersection of Smyth Road with its ramps to Riverside Drive were estimated from the adjacent intersection volumes. The level of service for signalized intersections is based on volume-to-capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 9: Existing Traffic Counts

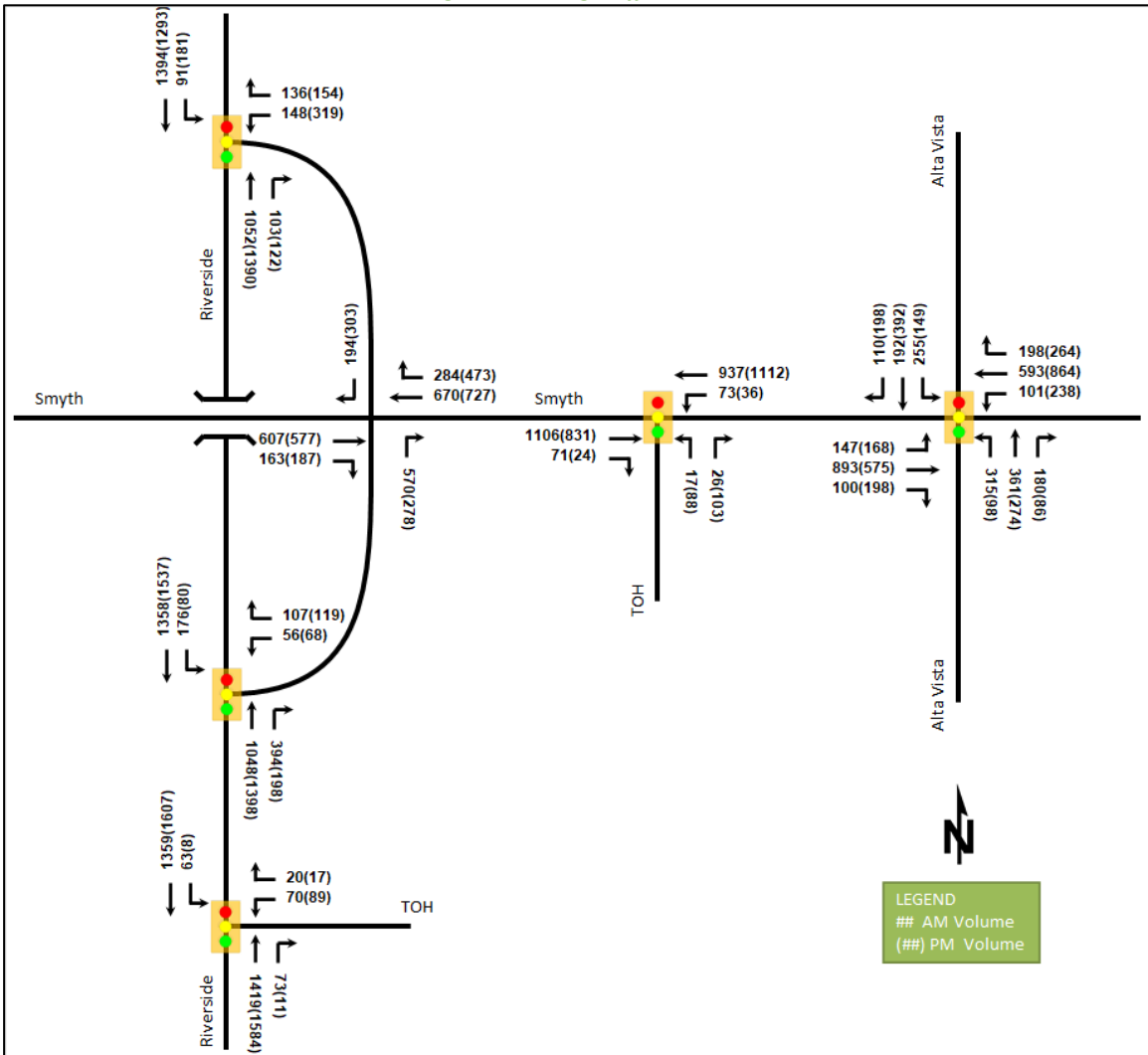


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive <i>Signalized</i>	WBL	B	0.62	45.2	43.3	D	0.90	59.7	#104.9
	WBR	A	0.50	19.6	24.4	A	0.48	27.2	38.0
	NBT	A	0.49	1.6	7.6	C	0.74	4.7	24.0
	NBR	A	0.11	0.2	m0.2	A	0.14	0.5	m0.0
	SBL	A	0.38	11.3	19.5	F	1.75	391.9	#75.3
	SBT	B	0.66	9.4	106.2	B	0.68	13.0	101.3
	Overall	B	0.65	8.6	-	F	1.51	33.9	-
Smyth Road South Ramp at Riverside Drive <i>Signalized</i>	WBL	A	0.33	41.3	21.4	A	0.40	42.5	24.6
	WBR	A	0.43	12.4	14.5	A	0.44	11.6	15.0
	NBT	A	0.59	9.9	41.9	C	0.74	11.8	70.9
	NBR	A	0.42	2.0	16.4	A	0.22	2.8	m12.0
	SBL	A	0.49	10.6	m29.8	A	0.39	10.5	m10.0
	SBT	A	0.57	9.2	129.8	B	0.69	10.6	115.6
	Overall	B	0.62	9.3	-	C	0.72	11.3	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
The Ottawa Hospital Riverside Campus at Riverside Drive Signalized	WBL	A	0.34	36.6	21.1	A	0.46	43.1	30.0
	WBR	A	0.10	12.7	5.4	A	0.09	15.2	5.9
	NBT	B	0.62	8.0	129.8	B	0.66	7.1	107.2
	NBR	A	0.07	3.0	7.9	A	0.01	2.6	1.6
	SBL	A	0.40	11.8	m8.5	A	0.06	3.6	m0.6
	SBT	A	0.59	4.8	61.9	B	0.67	4.6	53.7
	Overall	A	0.60	7.2	-	B	0.68	6.9	-
Smyth Road at The Ottawa Hospital Riverside Campus Signalized	EBT/R	A	0.37	8.7	70.0	A	0.31	7.7	48.1
	WBL	A	0.34	17.9	26.1	A	0.13	9.9	10.5
	WBT	A	0.29	8.1	53.0	A	0.40	8.4	66.1
	NBL	A	0.06	25.8	7.4	A	0.32	26.4	22.7
	NBR	A	0.10	9.8	6.0	A	0.31	7.2	10.6
	SBT	A	-	-	-	A	-	-	-
	Overall	A	0.34	8.9	-	A	0.39	8.8	-
Smyth Road at Alta Vista Drive Signalized	EBL	A	0.55	26.9	35.9	C	0.75	39.2	#51.8
	EBT	E	0.95	57.1	#160.7	A	0.57	33.6	81.6
	EBR	A	0.21	3.1	6.9	A	0.37	11.6	30.2
	WBL	A	0.58	34.2	28.7	B	0.69	25.9	49.8
	WBT	B	0.67	39.9	91.2	C	0.76	36.2	123.8
	WBR	A	0.45	15.3	35.7	A	0.54	17.8	52.3
	NBL	C	0.80	40.0	#89.7	A	0.60	39.1	29.1
	NBT	D	0.87	60.8	#139.3	C	0.79	58.6	#108.3
	NBR	A	0.41	13.9	30.2	A	0.22	3.1	4.7
	SBL	E	0.94	63.6	#89.8	A	0.60	35.3	42.6
	SBT	A	0.47	39.2	63.1	F	1.03	94.0	#166.6
	SBR	A	0.25	5.1	10.5	A	0.48	17.7	37.3
Overall	E	0.91	42.6	-	D	0.87	38.9	-	

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90

m = metered queue
= volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate satisfactorily where queuing issues are present at the intersection of Smyth Road and Alta Vista Drive and capacity issues are noted on various movements throughout the study area.

The intersection of the Smyth Road north ramp at Riverside Drive is modelled as being over theoretical capacity during the PM peak hour. The westbound left movement may exhibit extended queues, and the southbound left-turn movement is over theoretical capacity and may experience high delays and extended queues also during the PM peak hour.

The Smyth Road at Alta Vista Drive intersection may exhibit extended queues on the eastbound through, northbound left, northbound through, and southbound left movements during the AM peak hour and on the eastbound left and northbound through movements during the PM peak hour. The southbound through movement is also over theoretical capacity during the PM peak hour and may be subject to high delays and extended queues.

Mitigation during the PM peak hour for the intersection of the Smyth Road north ramp at Riverside Drive may include the addition of a protected southbound left-turn phase which would reduce v/c of all movements at this

intersection to 1.00 or below with existing traffic. Signal phase optimization could resolve the theoretical capacity issues at the intersection of Smyth Road at Alta Vista Drive.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collisions types and conditions in the study area, Figure 10 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2015-2019

		Number	%
Total Collisions		225	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	48	21%
	Property Damage Only	177	79%
Initial Impact Type	Angle	12	5%
	Rear end	100	44%
	Sideswipe	18	8%
	Turning Movement	76	34%
	SMV Other	14	6%
	Other	5	2%
Road Surface Condition	Dry	164	73%
	Wet	37	16%
	Loose Snow	7	3%
	Slush	5	2%
	Packed Snow	3	1%
	Ice	9	4%
Pedestrian Involved		1	0%
Cyclists Involved		6	3%

Figure 10: Study Area Collision Records – Representation of 2015-2019

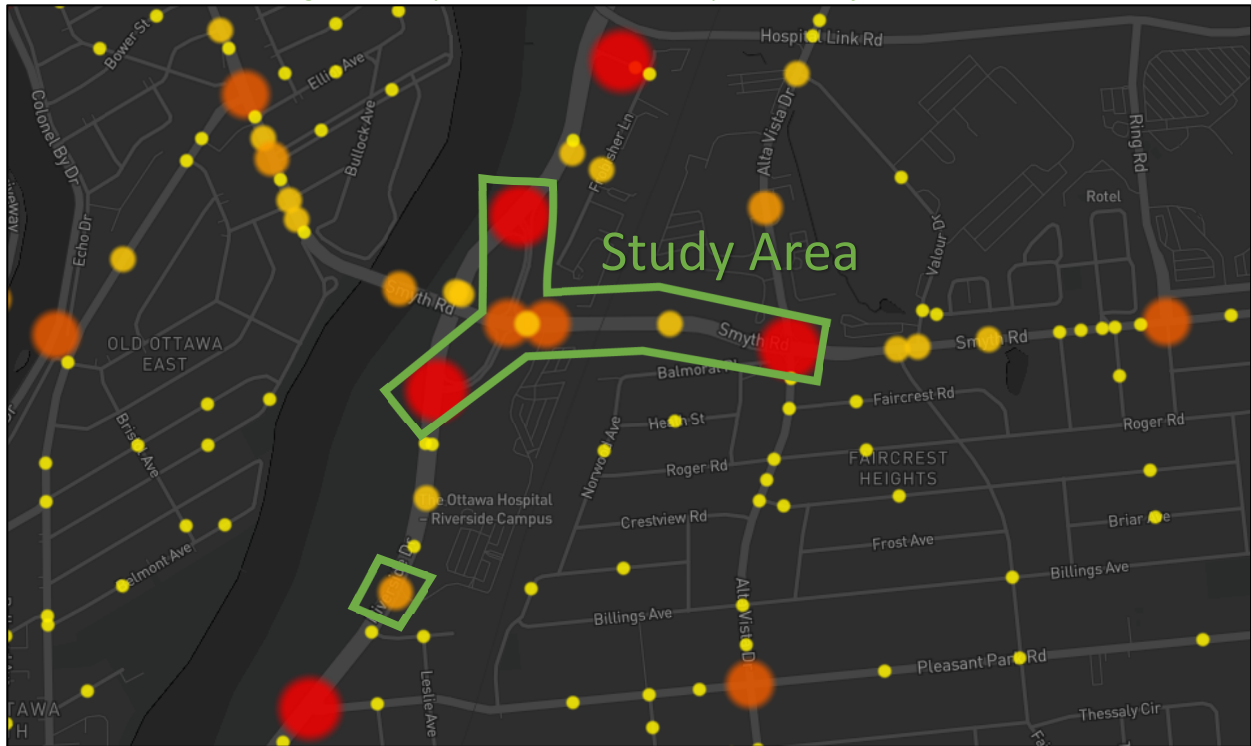


Table 4: Summary of Collision Locations, 2015-2019

Intersections / Segments	Number	%
	225	100%
Smyth Road North Ramp at Riverside Drive	30	11%
Smyth Road South Ramp at Riverside Drive	38	13%
The Ottawa Hospital RC at Riverside Drive	11	4%
Smyth Road at Ramps to Riverside Drive	19	7%
Smyth Road at The Ottawa Hospital RC	18	6%
Smyth Road at Alta Vista Drive	98	35%
Smyth Road between Riverside Hospital & Smyth Road South Side Ramp	5	2%
Smyth Road between Riverside Hospital & Alta Vista Drive	6	2%

Within the study area, the intersections of the Smyth Road north ramp at Riverside Drive, the Smyth Road south ramp at Riverside Drive, Smyth Road at its ramps to Riverside Drive, Smyth Road at The Ottawa Hospital Riverside Campus, and Smyth Road at Alta Vista Drive are noted to have experienced higher collisions than other locations. Table 5, Table 6, Table 7, Table 8 and Table 9 summarize the collision types and conditions for the intersections of Smyth Road at its ramps to Riverside Drive, Smyth Road at The Ottawa Hospital Riverside Campus, and Smyth Road at Alta Vista Drive respectively.

It is additionally noteworthy that the three cyclist collisions occurred on the segment of Smyth Road between The Ottawa Hospital Riverside Campus access and the south side ramp to Riverside Drive. As the bike lane ends before the south side ramp, cyclists are left to navigate a short lane between the ramp and the Ottawa Hospital access and either merging into vehicles flowing onto Smyth Road or avoiding vehicles merging through them onto the continuous lanes on Smyth Road.

The Smyth Road Cycling Safety Improvements project includes the goal of modifying the ramps on Smyth Road and to provide cycling facilities between Riverside Drive and the hospital access. The City’s design includes the

removal of the dedicated receiving lane from the Riverside Drive south ramp and the inclusion of cycletracks through the intersection. As this area is being addressed, no mitigation is required as part of the subject development application and no further review is required as part of this study.

Table 5: Smyth Road North Ramp at Riverside Drive Collision Summary

		Number	%
Total Collisions		30	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	6	20%
	Property Damage Only	24	80%
Initial Impact Type	Angle	1	3%
	Rear end	13	43%
	Sideswipe	5	17%
	Turning Movement	7	23%
	SMV Other	4	13%
Road Surface Condition	Dry	20	67%
	Wet	5	17%
	Slush	2	7%
	Ice	3	10%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Smyth Road north ramp at Riverside Drive intersection had a total of 30 collisions during the 2015-2019 time period, with 24 involving property damage only and the remaining six having non-fatal injuries. The collision types are most represented by rear end with 13 collisions, followed by turning movement with seven, sideswipe with five, SMV (other) with four, and angle with one. Rear end and sideswipe collisions are typically associated with congestion. Turning movement collisions may be associated with the two right-turn channels at the intersection. To improve conditions at this intersection, the City may wish to investigate the addition of a ramp to the adjacent MUP from the on-street cycling facilities that terminate at this intersection on the southbound approach. Weather conditions are not considered to affect collisions at this location. No further review is required as part of this study.

Table 6: Smyth Road South Ramp at Riverside Drive Collision Summary

		Number	%
Total Collisions		38	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	9	24%
	Property Damage Only	29	76%
Initial Impact Type	Angle	3	8%
	Rear end	21	55%
	Sideswipe	1	3%
	Turning Movement	11	29%
	SMV Other	2	5%
Road Surface Condition	Dry	25	66%
	Wet	6	16%
	Loose Snow	4	11%
	Slush	1	3%
	Ice	2	5%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Smyth Road south ramp at Riverside Drive intersection had a total of 38 collisions during the 2015-2019 time period, with 29 involving property damage only and the remaining nine having non-fatal injuries. The collision types are most represented by rear end with 21 collisions, followed by turning movement with 11, angle with three, SMV (other) with two, and sideswipe with one. Rear end collisions are typically associated with congestion and turning movement collisions may be associated with the right-turn channel, the intersection skew, or the large northbound right-turn radius. Weather conditions are not considered to affect collisions at this location. No further review is required as part of this study.

Table 7: Smyth Road at Ramps to Riverside Drive Collision Summary

		Number	%
Total Collisions		19	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	4	21%
	Property Damage Only	15	79%
Initial Impact Type	Angle	2	11%
	Rear end	15	79%
	SMV Other	2	11%
Road Surface Condition	Dry	14	74%
	Wet	4	21%
	Slush	1	5%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Smyth Road at its ramps to Riverside Drive intersection had a total of 19 collisions during the 2015-2019 time period, with 15 involving property damage only and the remaining four having non-fatal injuries. The collision types are most represented by rear end with 15 collisions, followed by angle and SMV (other) with two collisions each. Rear end collisions are typically associated with congestion. Weather conditions do not affect collisions at this location. As noted above, the Smyth Road Cycling Safety Improvements may also improve the collision rates at this intersection. No further review is required as part of this study.

Table 8: Smyth Road at The Ottawa Hospital Riverside Campus Collision Summary

		Number	%
Total Collisions		18	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	5	28%
	Property Damage Only	13	72%
Initial Impact Type	Angle	1	6%
	Rear end	7	39%
	Sideswipe	1	6%
	Turning Movement	8	44%
	SMV Other	1	6%
Road Surface Condition	Dry	16	89%
	Wet	2	11%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Smyth Road at The Ottawa Hospital Riverside Campus intersection had a total of 18 collisions during the 2015-2019 time period, with 13 involving property damage only and the remaining five having non-fatal injuries. The collision types are most represented by turning movement with eight collisions, followed by rear end with seven, and one each as angle, sideswipe, and SMV (other). Turning movement collisions are likely associated with the

right-turn out of the Ottawa Hospital access onto Smyth Road, where there is a short merge lane and a bus stop located in close proximity to the corner. Rear end collisions are typical of congested conditions and may have contributing factors along Smyth Road from the merge lanes on the south side, lane additions on the north side, and bus stops located within these lanes. Weather conditions do not affect collisions at this location. As noted above, the Smyth Road Cycling Safety Improvements may also improve the collision rates at this intersection. No further review is required as part of this study.

Table 9: Smyth Road at Alta Vista Drive Collision Summary

		Number	%
Total Collisions		98	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	16	16%
	Property Damage Only	82	84%
Initial Impact Type	Angle	4	4%
	Rear end	37	38%
	Sideswipe	6	6%
	Turning Movement	46	47%
	SMV Other	1	1%
	Other	4	4%
Road Surface Condition	Dry	73	74%
	Wet	17	17%
	Loose Snow	2	2%
	Slush	1	1%
	Packed Snow	2	2%
	Ice	3	3%
Pedestrian Involved		1	1%
Cyclists Involved		0	0%

The Smyth Road at Alta Vista Drive intersection had a total of 98 collisions during the 2015-2019 time period, with 82 involving property damage only and the remaining 16 having non-fatal injuries. The collision types are most represented by turning movement with 46 collisions, followed by rear end with 37, sideswipe with six, angle and other with four collisions each, and SMV (other) with one. Turning movement and sideswipe collisions may be associated with the four right-turn channels at the intersection, and rear end and sideswipe collisions are typically associated with congestion. Weather conditions do not affect collisions at this location. The intersection would require reconstruction to remove the right turn channels or convert them to smart channels to reduce turning movement collisions. No further review is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

Within the vicinity of the study area, the Transportation Master Plan's Road Network's Network Concept diagram shows a new arterial extending from Conroy Road at Walkley Road through Smyth Avenue, curving westward north of the hospital to connect to Riverside Drive and beyond to Lees Avenue, however it is not included in the Affordable Network. Hospital Link Road is a newly constructed local road that intersects this right of way.

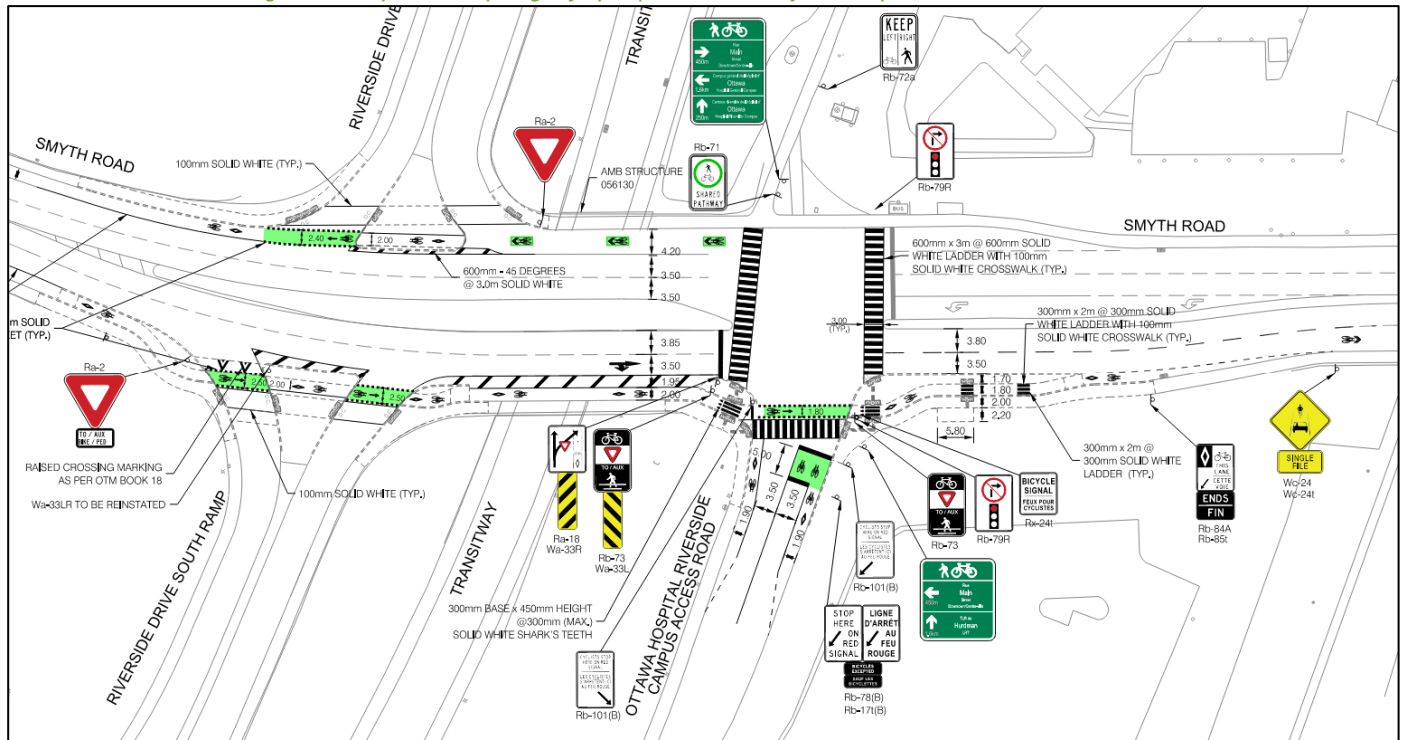
The Smyth Road Cycling Safety Improvements project is planned for implementation in one-to-two years and proposes improvements throughout and surrounding the study area that include:

- The provision of cycling facilities on Smyth Road between Riverside Drive and the hospital access
- Modifications to the ramps to Riverside Drive at Smyth Road

- Improvements at the intersection of Smyth Road at The Ottawa Hospital Riverside Campus access
- Cycling facilities at the south end of Frobisher Lane connecting to Smyth Road
- Cycling facilities and/or route and wayfinding signage along Pleasant Park Road, Rodney Crescent, Billings Avenue

Changes proposed to the site access intersection at Smyth Road through this City initiative as provided by the City on May 25, 2022 are illustrated in Figure 11.

Figure 11: Smyth Road Cycling Safety Improvements Project – Smyth Road at Site Access



2.3.2 Other Study Area Developments

At the time of this report, no other development applications were available for the adjacent properties.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Riverside Drive at:
 - Smyth Road North Ramp
 - Smyth Road South Ramp
 - The Ottawa Hospital Riverside Campus access
- Smyth Road
 - The Ottawa Hospital Riverside Campus access
 - Alta Vista Drive

While the intersection of the Transitway and Riverside Drive is a signalized intersection within 400 metres of the proposed development, it is discounted from analysis due to the low potential for site-generated impact from additional through movements.

The boundary roads will be Smyth Road and Riverside Drive and, while not analyzed as part of this study, TRANS screenline SL19 is to the west of the site intersecting the Smyth Road Bridge, and SL54 is to the north of the site intersecting the Rideau River Eastern Pathway, Riverside Drive, the Transitway, and Alta Vista Drive.

3.2 Time Periods

As the proposed development is composed primarily of residential units, the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2026. As a result, the full build-out plus five years horizon year is 2031.

4 Exemption Review

Table 10 summarizes the exemptions for this TIA.

Table 10: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development-Generated Travel Demand

5.1 Trip Generation and Mode Shares

This TIA has been prepared using the vehicle trip rates and derived person trip rates for Continuing Care Retirement Communities from the ITE Trip Generation Manual 10th Edition (2017) using the fitted curve rates and

the City-prescribed conversion factor of 1.28. Table 11 summarizes the person trip rates for the proposed land use.

Table 11: Trip Generation Person Trip Rates

Dwelling Type	Land Use Code	Peak Hour	Vehicle Trip Rate	Person Trip Rates
Continuing Care Retirement Community	255 (ITE)	AM	0.17	0.22
		PM	0.24	0.31

Using the above Person Trip rates, the total person trip generation has been estimates. Table 12 below illustrates the total person trip generation for the land use.

Table 12: Total Person Trip Generation

Land Use	Units / Beds	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Continuing Care Retirement Community	526	75	41	116	64	99	163

As is typical of such land uses, it is assumed that a majority of the peak hour trip generation for the site will be from staff and deliveries. As such, the subject land use will be considered under the category of “Employment Generator.” From the TRANS Trip Generation Manual (2020), derived from most recent National Capital Region Origin-Destination survey (OD Survey), the existing Employment Generator mode shares for Alta Vista have been determined. Additionally presented are mode shares with increased transit use based upon the proximity to Riverside Station on the Transitway. Table 13 summarizes these modal shares.

Table 13: Mode Shares

Travel Mode	Alta Vista – Employment Generator – AM and PM Mode Shares	Transitway – Employment Generator – AM and PM Mode Shares
Auto Driver	69%	42%
Auto Passenger	7%	7%
Transit	18%	45%
Cycling	3%	3%
Walking	3%	3%
Total	100%	100%

Using the above Transitway mode share targets and person trip rates, the person trips by mode have been projected. Table 14 summarizes the trip generation by mode.

Table 14: Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	42%	32	17	49	27	42	68
Auto Passenger	7%	5	3	8	4	7	11
Transit	45%	34	18	52	29	45	73
Cycling	3%	2	1	3	2	3	5
Walking	3%	2	1	3	2	3	5
Total	100%	75	41	116	64	99	163

As shown above, 49 new AM and 68 new PM peak hour two-way vehicle trips are projected as a result of the proposed development.

5.2 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the district, and these patterns were applied based on the build-out of Alta Vista. Table 15 below summarizes the distributions.

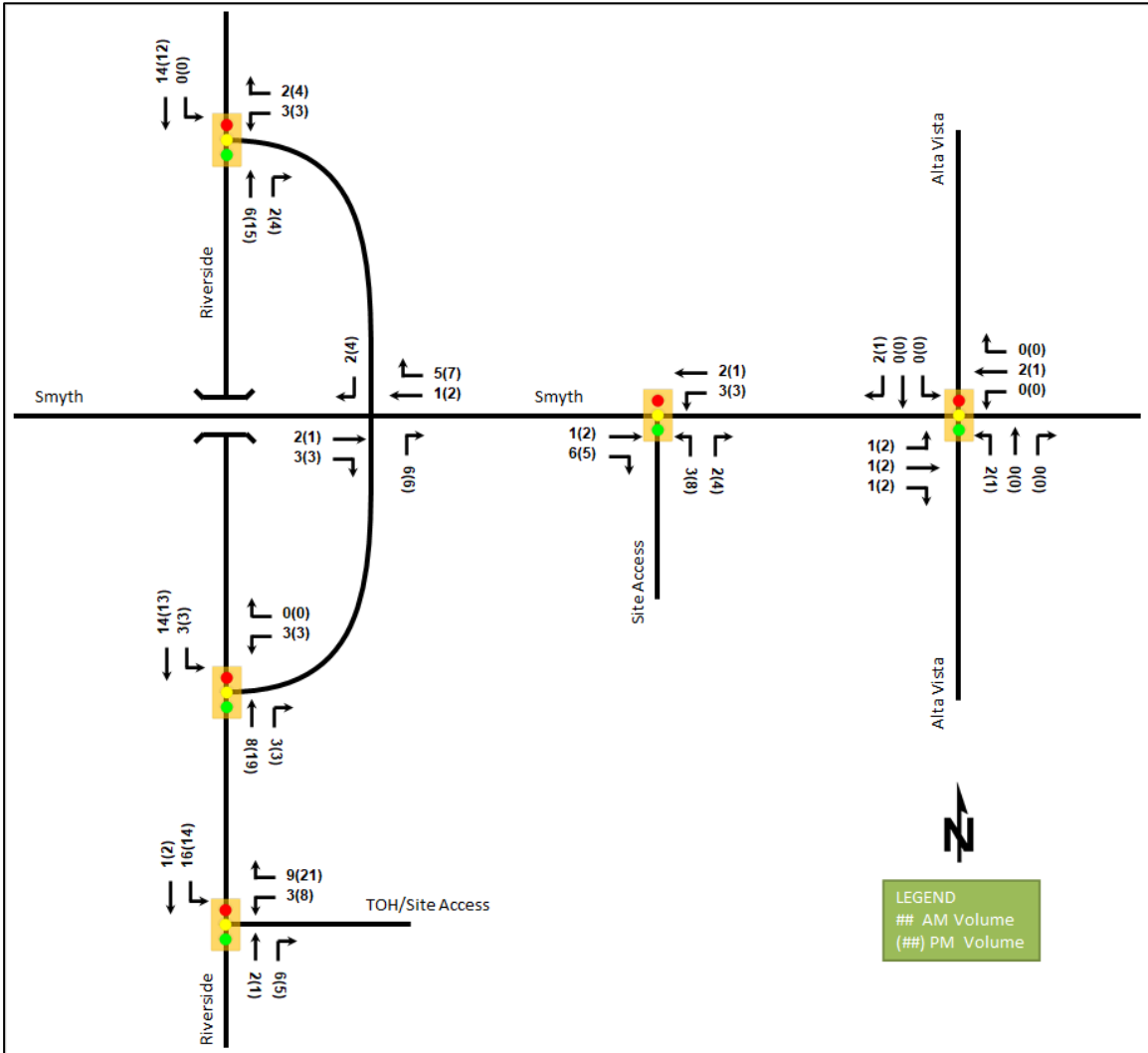
Table 15: OD Survey Distribution – Alta Vista

To/From	% of Trips	Via
North	30%	15% Smyth Rd (W), 10% Riverside Dr, 5% Alta Vista Dr
South	25%	20% Riverside Dr 5% Alta Vista Dr
East	25%	5% Smyth Rd, 20% Riverside Dr (N)
West	20%	15% Riverside Dr (N), 5% Riverside Dr (S)
Total	100%	100%

5.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Figure 12 illustrates the new site generated volumes.

Figure 12: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. Changes from the Smyth Road Cycling Safety Improvements project will be included in the future conditions.

6.2 Background Growth

A review of the background projections from the City’s TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways, and these horizons were compared to the existing roadway volumes. Table 16 summarizes the results of the model, and the projections are provided in Appendix E.

Table 16: TRANS Regional Model Projections – Study Area Growth Rates

Street	Direction Growth % from 2011 to 2031		Direction Growth % from Existing to 2031	
	Eastbound	Westbound	Eastbound	Westbound
North Ramp	-1.04%	9.93%	-2.16%	-4.99%
South Ramp	0.00%	-1.64%	-3.60%	-13.98%
Smyth Rd	0.27%	-1.35%	-0.07%	-1.21%
	Northbound	Southbound	Northbound	Southbound
Riverside Dr	0.36%	-0.44%	1.51%	-1.28%
Alta Vista Dr	0.26%	-2.15%	-2.71%	-6.51%

From examining the remaining growth required to meet the 2031 TRANS model horizon volumes, it is noted that the study area roadways have generally achieved any predicted growth from the 2011 model horizon, where not forecasted to contract. Growth rates derived from the existing volumes, rounded to the nearest 0.25% per annum, will be applied to mainline volumes on Riverside Drive in the AM peak hour and reversed in the PM peak hour, with all other negative growth rates within the study area taken as zero. Table 17 summarizes the applied growth rates.

Table 17: Applied Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
North Ramp	-	-	-	-
South Ramp	-	-	-	-
Smyth Rd	-	-	-	-
	Northbound	Southbound	Northbound	Southbound
Riverside Dr	1.50%	-	-	1.50%
Alta Vista Dr	-	-	-	-

6.3 Other Developments

As no developments were noted in the study area in Section 2.3.2, all study area growth is assumed to be captured within the background rates applied.

7 Demand Rationalization

7.1 2026 Future Background Operations

Figure 13 illustrates the 2026 background volumes and Table 18 summarizes the 2026 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2026 future background horizon are provided in Appendix F.

Figure 13: 2026 Future Background Volumes

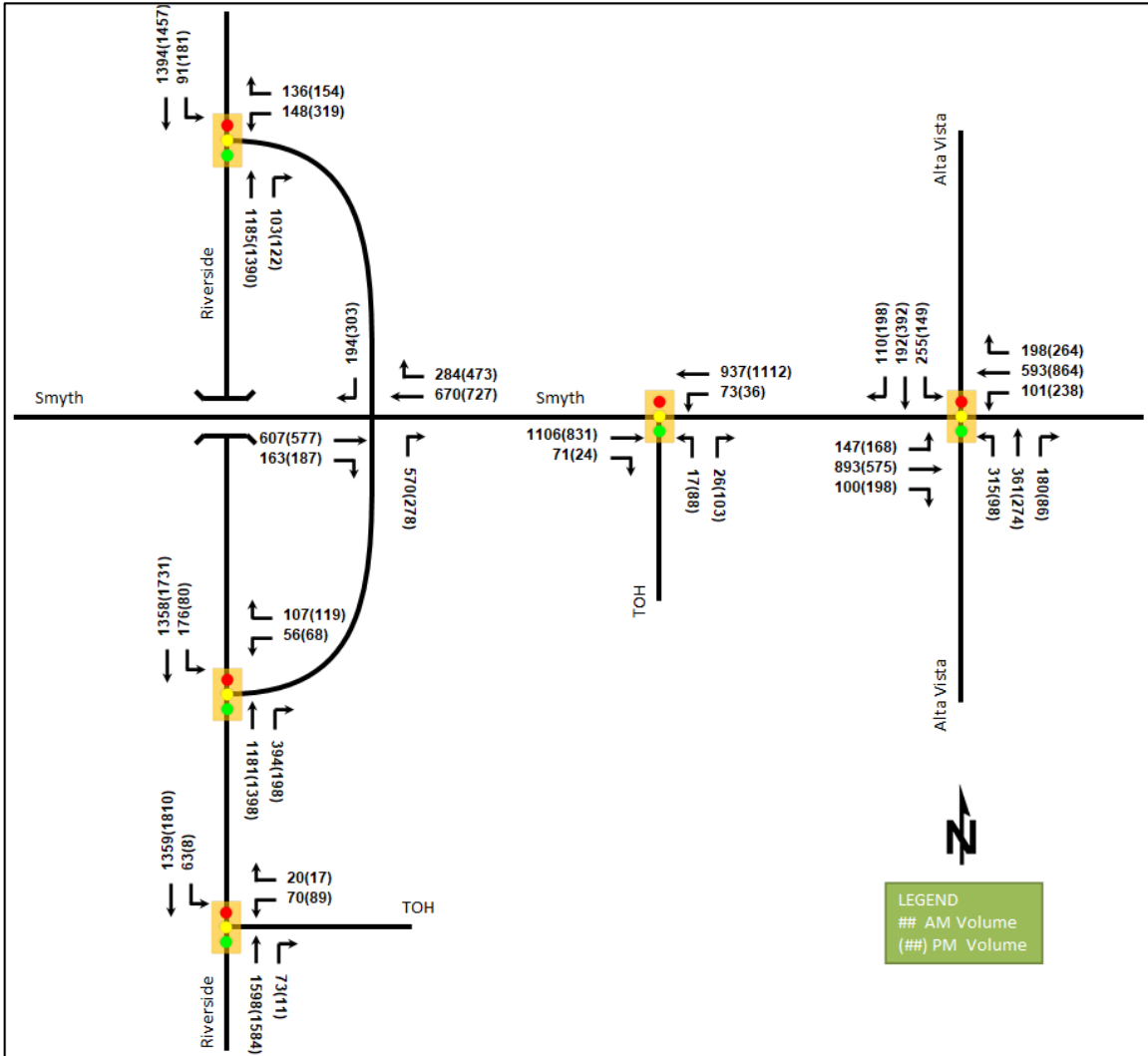


Table 18: 2026 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive Signalized	WBL	A	0.59	44.5	40.1	D	0.85	54.1	#90.4
	WBR	A	0.47	18.2	21.5	A	0.44	22.5	31.2
	NBT	A	0.50	1.5	6.9	B	0.66	3.8	19.4
	NBR	A	0.10	0.2	m0.1	A	0.13	0.3	m0.0
	SBL	A	0.35	10.1	16.6	F	1.15	141.5	#51.6
	SBT	A	0.59	7.9	85.1	B	0.68	12.6	103.9
	Overall	A	0.59	7.5	-	F	1.07	19.3	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road South Ramp at Riverside Drive <i>Signalized</i>	WBL	A	0.30	40.9	19.9	A	0.37	42.0	22.8
	WBR	A	0.41	12.7	14.1	A	0.42	11.9	14.4
	NBT	A	0.58	9.2	43.4	B	0.66	9.6	54.3
	NBR	A	0.38	1.9	16.2	A	0.20	1.6	6.4
	SBL	A	0.46	10.4	29.9	A	0.30	7.7	m7.9
	SBT	A	0.52	7.5	108.8	B	0.70	10.6	121.0
	Overall	A	0.59	8.3	-	B	0.70	10.3	-
The Ottawa Hospital Riverside Campus at Riverside Drive <i>Signalized</i>	WBL	A	0.30	35.9	19.3	A	0.43	42.8	27.5
	WBR	A	0.10	12.9	5.2	A	0.09	16.3	5.6
	NBT	B	0.62	8.1	133.2	A	0.59	5.9	82.6
	NBR	A	0.07	3.0	7.3	A	0.01	2.4	1.4
	SBL	A	0.37	10.8	m7.9	A	0.04	3.0	m0.5
	SBT	A	0.53	3.9	43.6	B	0.68	4.7	53.6
	Overall	A	0.60	6.9	-	B	0.68	6.2	-
Smyth Road at The Ottawa Hospital Riverside Campus <i>Signalized</i>	EBT/R	A	0.47	10.2	106.1	A	0.41	9.0	70.2
	WBL	A	0.27	14.4	20.1	A	0.11	9.8	9.4
	WBT	A	0.26	7.7	46.4	A	0.37	8.3	58.0
	NBL/R	A	0.14	16.0	10.2	A	0.53	20.5	30.8
	Overall	A	0.44	9.4	-	A	0.42	9.7	-
Smyth Road at Alta Vista Drive <i>Signalized</i>	EBL	A	0.47	24.3	32.7	B	0.62	26.4	31.6
	EBT	D	0.85	45.9	#135.3	A	0.51	31.9	72.4
	EBR	A	0.19	2.4	4.6	A	0.33	9.6	24.6
	WBL	A	0.50	28.2	23.5	A	0.59	22.0	44.6
	WBT	A	0.60	37.6	80.7	B	0.68	33.2	108.0
	WBR	A	0.40	12.8	29.3	A	0.48	15.2	43.5
	NBL	B	0.69	32.7	71.2	A	0.48	32.9	26.4
	NBT	C	0.78	51.6	#118.2	C	0.71	52.6	#91.9
	NBR	A	0.37	11.5	24.7	A	0.20	2.0	2.3
	SBL	C	0.77	39.4	#58.6	A	0.50	31.3	38.3
	SBT	A	0.42	38.1	57.3	E	0.92	70.5	#144.1
	SBR	A	0.23	3.6	7.7	A	0.43	14.9	31.0
Overall	C	0.78	35.2	-	C	0.76	33.0	-	

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections at the 2026 future background operate similarly to the existing conditions. No new capacity issues are noted, and minor operational improvements are noted at the intersection of Smyth Road at Alta Vista Drive with the peak hour factor of 1.00 for forecasted conditions, including a reduction of the v/c ratio of the southbound through movement from 1.03 to 0.92. Table 19 summarizes the operations at this horizon with the proposed mitigation of the inclusion of a protected southbound left-turn phase at the intersection of the Smyth Road north ramp at Riverside Drive.

Table 19: 2026 Future Background Intersection Operations with New Phasing

Intersection	Lane	PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive Signalized	WBL	D	0.89	61.2	#97.0
	WBR	A	0.37	7.8	14.7
	NBT	D	0.84	16.6	55.1
	NBR	A	0.16	3.5	m5.7
	SBL	C	0.80	43.0	#49.6
	SBT	B	0.67	11.6	96.5
	Overall	D	0.87	19.0	-

Notes: Saturation flow rate of 1800 veh/h/lane m = metered queue
 Queue is measured in metres # = volume for the 95th %ile cycle exceeds
 Peak Hour Factor = 1.00 capacity

The addition of a protected southbound left-turn phase result in operational improvements at the Smyth Road north ramp at Riverside Drive intersection during the PM peak hour, with the overall intersection and the southbound left-turn movement levels of service reduced to D and C respectively from F.

7.2 2031 Future Background Operations

Figure 14 illustrates the 2031 background volumes and Table 20 summarizes the 2031 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2031 future background horizon are provided in Appendix G.

Figure 14: 2031 Future Background Volumes

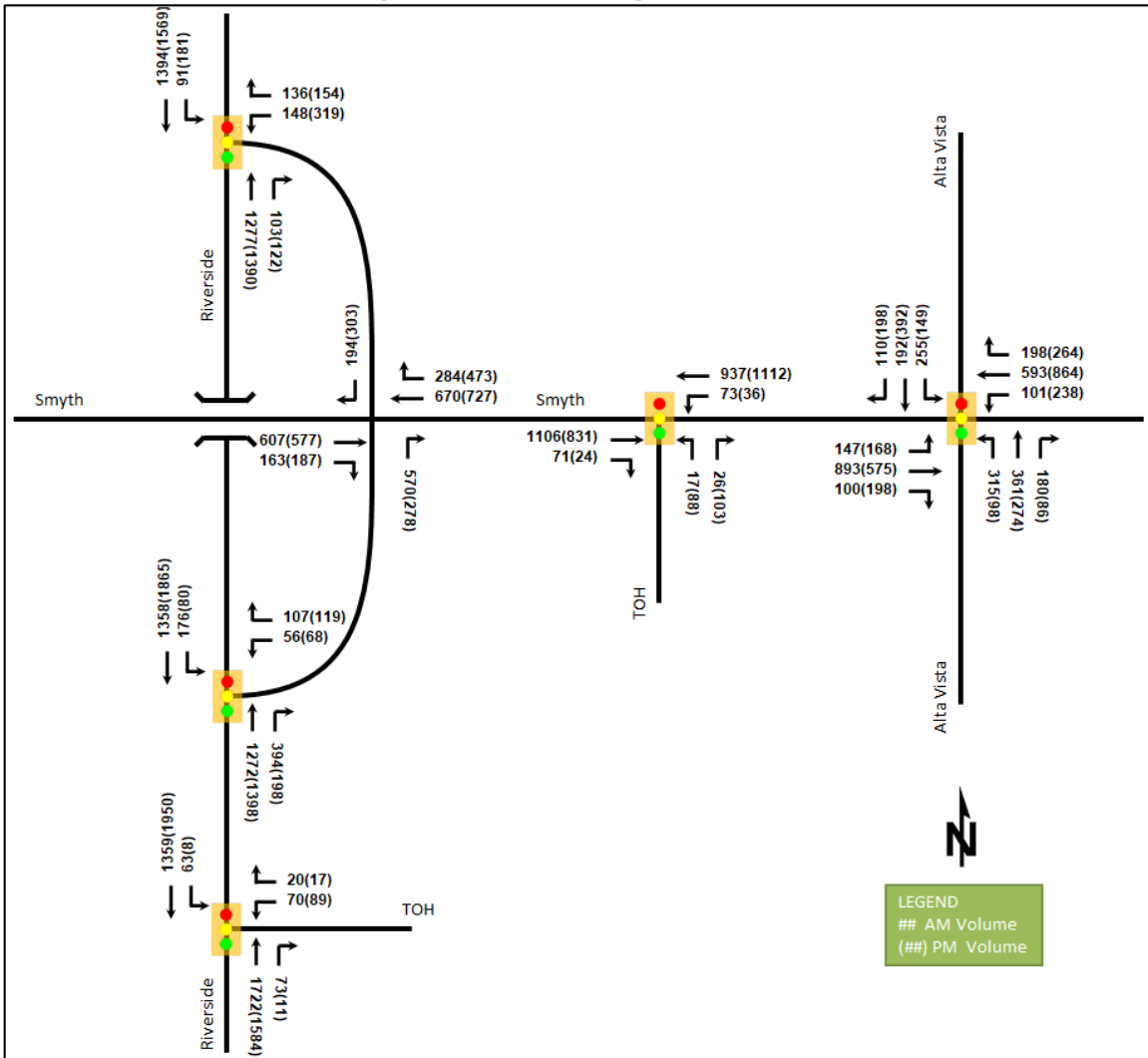


Table 20: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive <i>Signalized</i>	WBL	A	0.59	44.5	40.1	D	0.85	54.1	#90.4
	WBR	A	0.49	22.6	24.6	A	0.44	22.5	31.2
	NBT	A	0.54	1.5	6.9	B	0.66	3.8	19.4
	NBR	A	0.10	0.2	m0.0	A	0.13	0.3	m0.0
	SBL	A	0.39	12.0	18.7	F	1.15	141.5	#51.6
	SBT	A	0.59	7.9	85.1	C	0.73	13.8	119.3
	Overall	A	0.59	7.6	-	F	1.07	19.6	-
Smyth Road South Ramp at Riverside Drive <i>Signalized</i>	WBL	A	0.30	40.9	19.9	A	0.37	42.0	22.8
	WBR	A	0.41	12.7	14.1	A	0.42	11.9	14.4
	NBT	B	0.63	9.8	49.4	B	0.66	9.6	54.3
	NBR	A	0.38	2.0	18.6	A	0.20	1.6	6.4
	SBL	A	0.50	12.0	30.8	A	0.30	7.3	m7.0
	SBT	A	0.52	7.5	108.8	C	0.75	12.1	143.0
Overall	B	0.62	8.7	-	C	0.75	11.0	-	

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
The Ottawa Hospital Riverside Campus at Riverside Drive Signalized	WBL	A	0.30	35.9	19.3	A	0.43	42.8	27.5
	WBR	A	0.10	12.9	5.2	A	0.09	16.3	5.6
	NBT	B	0.67	9.1	155.8	A	0.59	5.9	82.6
	NBR	A	0.07	3.2	7.5	A	0.01	2.4	1.4
	SBL	A	0.45	17.9	m#24.5	A	0.04	3.2	m0.5
	SBT	A	0.53	3.9	43.6	C	0.73	5.1	62.2
	Overall	B	0.64	7.6	-	C	0.73	6.4	-
Smyth Road at The Ottawa Hospital Riverside Campus Signalized	EBT/R	A	0.47	10.2	106.1	A	0.41	9.0	70.2
	WBL	A	0.27	14.4	20.1	A	0.11	9.8	9.4
	WBT	A	0.26	7.7	46.4	A	0.37	8.3	58.0
	NBL/R	A	0.14	16.0	10.2	A	0.53	20.5	30.8
	Overall	A	0.44	9.4	-	A	0.42	9.7	-
Smyth Road at Alta Vista Drive Signalized	EBL	A	0.47	24.3	32.7	B	0.62	26.4	31.6
	EBT	D	0.85	45.9	#135.3	A	0.51	31.9	72.4
	EBR	A	0.19	2.4	4.6	A	0.33	9.6	24.6
	WBL	A	0.50	28.2	23.5	A	0.59	22.0	44.6
	WBT	A	0.60	37.6	80.7	B	0.68	33.2	108.0
	WBR	A	0.40	12.8	29.3	A	0.48	15.2	43.5
	NBL	B	0.69	32.7	71.2	A	0.48	32.9	26.4
	NBT	C	0.78	51.6	#118.2	C	0.71	52.6	#91.9
	NBR	A	0.37	11.5	24.7	A	0.20	2.0	2.3
	SBL	C	0.77	39.4	#58.6	A	0.50	31.3	38.3
	SBT	A	0.42	38.1	57.3	E	0.92	70.5	#144.1
	SBR	A	0.23	3.6	7.7	A	0.43	14.9	31.0
Overall	C	0.78	35.2	-	C	0.76	33.0	-	

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the 2031 future background study area intersections operate similarly to the 2026 future background conditions. During the AM peak hour, the southbound left movement at the intersection of The Ottawa Hospital Riverside Campus access at Riverside Drive may exhibit extended queues at this horizon. Table 21 summarizes the operations at the 2031 future background horizon with the inclusion of a protected southbound left-turn phase at the intersection of the Smyth Road north ramp at Riverside Drive.

Table 21: 2031 Future Background Intersection Operations with New Phasing

Intersection	Lane	PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive Signalized	WBL	D	0.89	61.2	#97.0
	WBR	A	0.37	7.8	14.7
	NBT	D	0.84	16.6	55.1
	NBR	A	0.16	3.5	m5.7
	SBL	C	0.80	43.0	#49.6
	SBT	C	0.72	12.8	110.6
	Overall	D	0.87	19.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

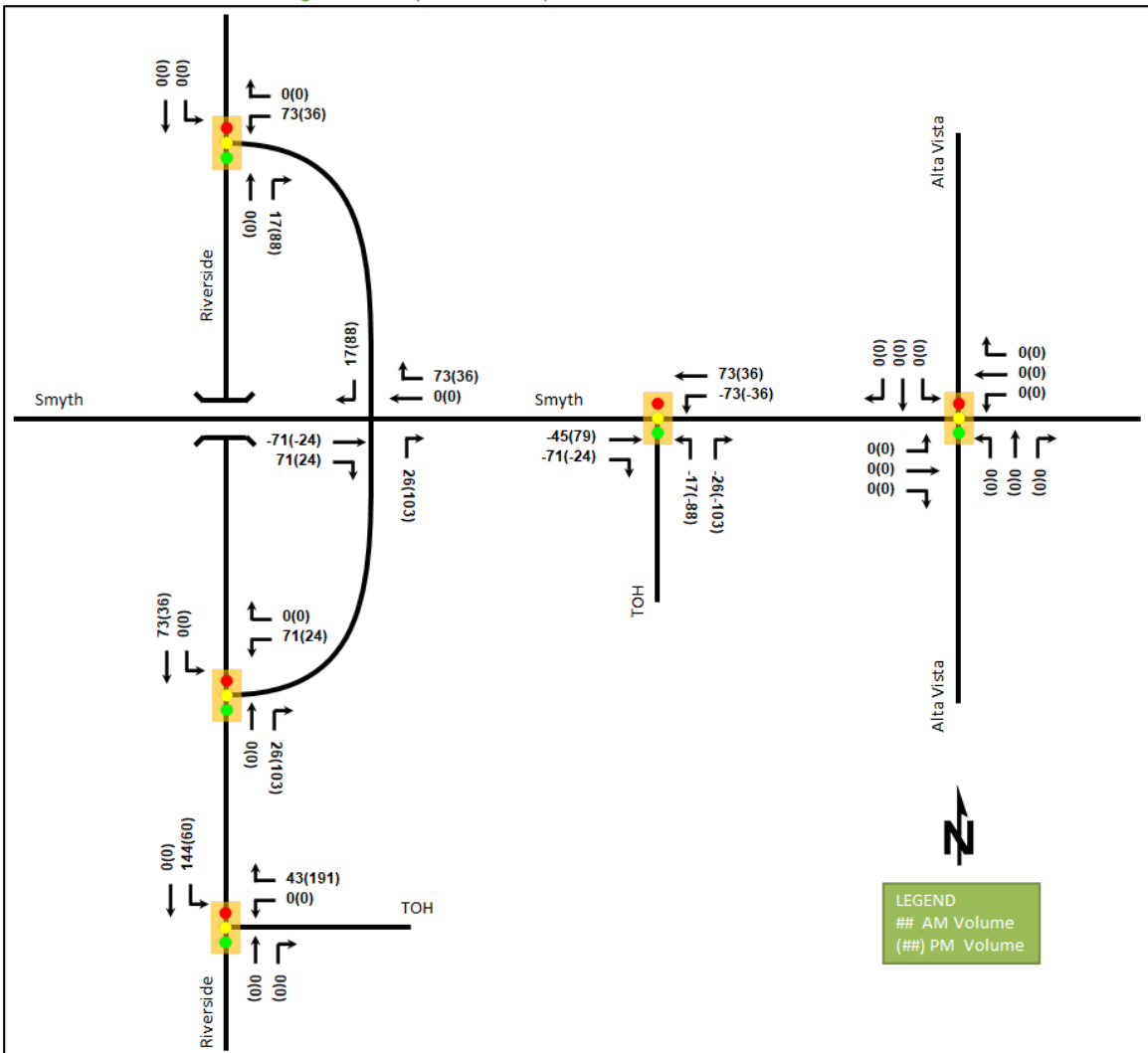
m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The Smyth Road north ramp at Riverside Drive intersection with new signal phasing at the 2031 future background horizon operate similarly to the 2026 future background conditions with the new phasing. No new capacity issues are noted.

7.3 Study Area Changes from Redevelopment

At this time, the hospital is exploring options for additional parking to offset the loss in surface parking through the redevelopment of the site. Based upon the current site plan, and absent any proposed parking reductions introduced by the hospital in the context of the parking examination, the proposed redevelopment would result all traffic associated with The Ottawa Hospital Riverside Campus relocating to its access at Riverside Drive. Figure 15 illustrates the redistribution of the Smyth Road access volumes to the Riverside Drive access.

Figure 15: Smyth Road Hospital Access Closure Redistribution



7.4 Modal Share Sensitivity and Demand Rationalization Conclusions

As the site directly accesses the Transitway, more than a doubling of the of the district transit mode share is proposed as a value more typical of BRT contexts. Given there is residual capacity at all study area intersections as modeled, no substantial impacts are anticipated from the failure to achieve modal shares, and no rationalization for adjusted demand is required.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a continuing care facility with parking provided both underground, accessed via Smyth Road, and in two surface lots, one for visitors on Smyth Road and one for staff from Riverside Drive through the Riverside Campus internal drive aisle. Bicycle parking is proposed via racks interspersed around the site near the major building entrances and within the underground parking level.

A MUP is proposed along the west side of the property connecting the drive aisle that accesses Riverside Drive to drive aisle connecting to the site access intersection at Smyth Road by circulating south of the adjacent medical building. A direct connection to Riverside Station is also being pursued via this MUP through the existing gated path to the platform. Walkways are proposed as circulating the building, connecting all building entrances to the surrounding pedestrian facilities on Smyth Road and on the hospital property.

8.2 Circulation and Access

The site will be accessed via the existing Smyth Road intersection and an internal aisle with the Riverside Campus to Riverside Drive. The Smyth Road intersection will support visitors and residents of the site and the internal access to the Riverside Campus will be for staff. Garbage and loading operations will be accessed through the internal Riverside Campus drive aisle. The Phase 1 Long Term Care Facility building will have a fire route within the rear parking lot from the Riverside Campus and the proximity to Smyth Road does not require a fire route for the Phase 2 retirement dwelling and town square buildings.

9 Parking

9.1 Parking Supply

The site provides 275 vehicle parking spaces, with 93 spaces in a surface lot and 66 underground spaces connecting to Smyth Road and 116 spaces in a surface lot connecting through the Riverside Campus to Riverside Drive.

A total of 76 bicycle parking spaces are provided through a combination of surface racks and internal storage locations.

As the facility is within 600 metres of a rapid transit station, the zoning by-law prescribes 68 vehicle spaces for the retirement dwelling residents, 27 for the retirement dwelling visitors, 32 for the long-term care units, and six for the on-site services. The total minimum vehicle parking for the proposed development is 133. The minimum bicycle parking rate for the development is 74 spaces.

The minimum vehicle and bicycle parking provision rates are being met by the site plan.

10 Boundary Street Design

Table 22 summarizes the MMLOS analysis for the boundary streets of Smyth Road. The existing and future conditions for Smyth Road will be considered in separate rows. The boundary street analysis is based on the policy area of "Within 600m of a rapid transit station". The MMLOS worksheets has been provided in Appendix H.

Table 22: Boundary Street MMLoS Analysis

Segment		Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Smyth Road	Ex.	C	A	F	C	D	D	A	D
	Fut.	D	A	C	C	D	D	A	D

The boundary street will not meet the pedestrian LOS targets and will meet the bicycle LOS targets with proposed changes from the Smyth Road Cycling Safety Improvements project.

Given the operating speeds of the boundary road, no sidewalk configuration can meet pedestrian LOS targets. The pedestrian LOS is anticipated to reduce with the removal of the lane taper as a buffer from traffic as proposed in the Smyth Road Cycling Safety Improvements project. A widened sidewalk is proposed as part of these improvements however, and functionally this may be an improvement to area pedestrian experience, despite the limits of the MMLoS framework, and the proposed plan satisfies City MMLoS objectives.

11 Access Intersections Design

11.1 Location and Design of Access

The development accesses will connect to the adjacent arterial road network via the existing signalized intersection on Smyth Road for the residents and visitors, and through the Riverside Campus to Riverside Drive for staff.

The Smyth Road access will serve as the continuation of the local cycling route from the MUP to which its drive aisle connects. The access is proposed as including shared use lanes in each direction enabling access to the facilities provided as part of the Smyth Road Cycling Safety Improvements project.

At the site access on Smyth Road, TAC Table 8.9.3 identifies a desired throat length of 40 metres from the intersection for an apartment site with over 200 units and the underground parking garage ramp for the resident parking is located 15 metres from Smyth Road. While it is noted the grading of the site, and adjacent facilities such as Smyth Road, the CN Rail line and the Transitway restrict the ability to shift the underground parking access and above ground lots, the TAC land use for apartments does not directly apply to this site and the 40-metre requirement is considered excessive to what a continuing care facility would require.

To assess the throat length needs for the site, garage surveys were conducted at other Schlegel facilities to determine if the garage ramp would present a conflict point near the access. During the winter months, which would represent the highest proportional auto use, the total two-way volumes for the garages averaged 45 cars per day. Assuming a similar operation for the proposed site, this would be less than a single car per 10 minutes during the peak hours entering or exiting the garage ramp. The results of this volume would result in approximately 10 two-way vehicles accessing the surface parking lot, or a single car ever 6 minutes passing the garage ramp. These low volumes do not represent a risk for outbound vehicles queuing across the garage ramp nor a delay for turning into the garage ramp and queuing to the Smyth Road intersection.

Therefore, it is recommended that a 15-metre throat length is adequate for the proposed site, meeting the minimum throat length for any land use accessing an arterial road.

11.2 Intersection Control

No change in control is proposed for the existing signalized site accesses.

11.3 Access Intersection Design

11.3.1 2026 Future Total Access Intersection Operations

The 2026 future total intersection volumes are illustrated in Figure 16 and the access intersection operations are summarized below in Table 23. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix I.

Figure 16: 2026 Future Total Volumes

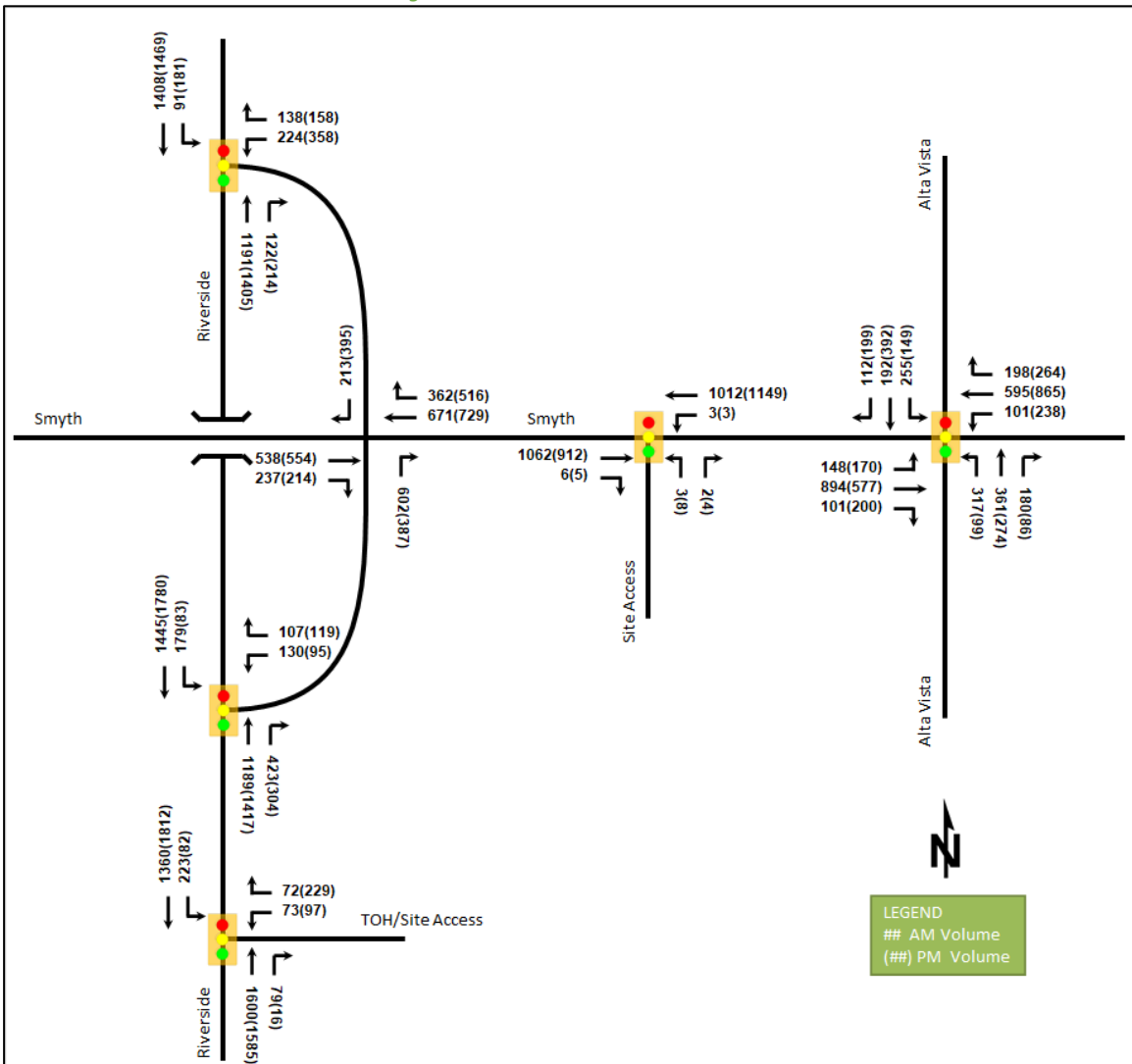


Table 23: 2026 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
The Ottawa Hospital Riverside Campus at Riverside Drive Signalized	WBL	A	0.32	36.1	20.1	A	0.30	31.2	25.0
	WBR	A	0.33	24.7	15.6	C	0.75	43.6	51.5
	NBT	B	0.62	8.1	133.3	B	0.70	11.8	129.4
	NBR	A	0.07	3.0	7.7	A	0.02	4.7	2.9
	SBL	F	1.31	192.1	#99.5	B	0.63	33.5	m#18.8
	SBT	A	0.53	5.2	71.7	C	0.80	15.8	#186.1
	Overall	F	1.21	19.8	-	C	0.78	16.5	-
Smyth Road at Site Access Signalized	EBT/R	A	0.38	6.3	91.7	A	0.33	5.4	74.9
	WBL	A	0.01	7.7	1.6	A	0.01	7.3	1.6
	WBT	A	0.25	5.0	50.6	A	0.28	4.8	59.0
	NBL/R	A	0.02	24.0	3.2	A	0.04	23.1	5.4
	Overall	A	0.39	5.7	-	A	0.34	5.2	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The site access intersection at Smyth Road for the 2026 future total horizon operates well, where capacity issues are noted in the AM peak hour for the Riverside Drive access with existing signal phasing for both the southbound left movement and the overall intersection, and queueing is noted on the southbound left and through movements at the intersection during the PM peak hour. As Riverside Campus auto volumes have shifted from the Smyth Road intersection to the Riverside Drive intersection, AM peak hour operations with newly proposed signal phasing, with the introduction of a protected southbound left-turn phase, are summarized in Table 24.

Table 24: 2026 Future Total Access Intersection Operations with New Phasing

Intersection	Lane	AM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)
The Ottawa Hospital RC at Riverside Drive Signalized	WBL	A	0.32	36.1	20.1
	WBR	A	0.28	10.3	9.5
	NBT	E	0.91	30.3	#195.5
	NBR	A	0.10	8.3	11.6
	SBL	A	0.60	28.8	#77.6
	SBT	A	0.53	7.5	101.6
	Overall	B	0.65	20.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The Riverside Drive access intersection with signal phasing changes horizon operate adequately. Queuing is noted on the northbound through and southbound left movement. It is noted that queueing is not anticipated to exceed existing turning lane storage.

11.3.2 2031 Future Total Access Intersection Operations

The 2031 future total intersection volumes are illustrated in Figure 17 and the access intersection operations, including the addition of the protected movement proposed in Section 11.3.1, are summarized below in Table 25. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix J.

Figure 17: 2031 Future Total Volumes

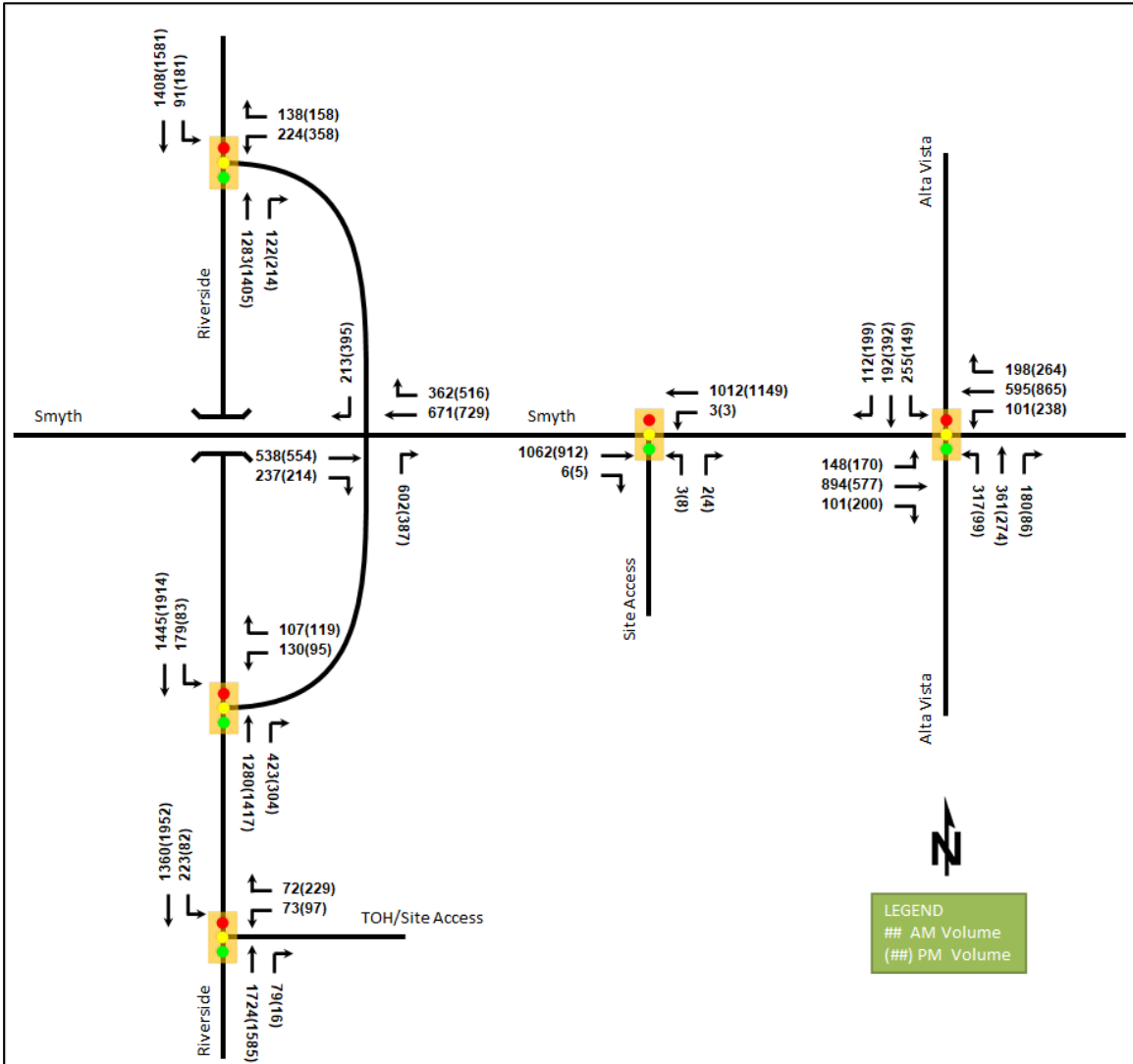


Table 25: 2031 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
The Ottawa Hospital Riverside Campus at Riverside Drive Signalized	WBL	A	0.32	36.1	20.1	A	0.30	31.2	25.0
	WBR	A	0.28	10.3	9.5	C	0.75	43.6	51.5
	NBT	E	0.99	41.4	#219.6	B	0.70	11.8	129.4
	NBR	A	0.10	8.5	11.7	A	0.02	4.7	2.9
	SBL	A	0.60	28.8	#77.6	B	0.63	31.3	m7.4
	SBT	A	0.53	7.5	101.6	D	0.86	17.4	#221.3
	Overall		C	0.83	26.1	-	D	0.83	17.2

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road at Site Access Signalized	EBT/R	A	0.38	6.3	91.7	A	0.33	5.4	74.9
	WBL	A	0.01	7.7	1.6	A	0.01	7.3	1.6
	WBT	A	0.25	5.0	50.6	A	0.28	4.8	59.0
	NBL/R	A	0.02	24.0	3.2	A	0.04	23.1	5.4
	Overall	A	0.39	5.7	-	A	0.39	5.2	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The access intersections for the 2031 future total horizon operate similar to the 2031 future background conditions.

Examining the queueing at the Riverside Drive access intersection, the modeled southbound left turn queue is noted to approach the end of the auxiliary lane, and the modeled northbound through movement queue is noted to approach the upstream intersection of Pleasant Park Road at Riverside Drive each during the AM peak hour.

Examining the queueing at these locations further by performing a SimTraffic analysis using City-provided parameters, the 95th percentile queue was 56.3 metres on the southbound left-turn movement and 201.1 metres on the northbound through movement during the AM peak hour. Therefore, as both methods of analysis indicate queues will be contained within auxiliary lane and block, respectively, no blocking concerns are anticipated in the 2031 future total conditions. The SimTraffic reports are provided in appendix J.

11.3.3 Access Intersection MMLOS

Table 26 summarizes the MMLOS analysis for the site access intersections. Where the existing and future conditions will be the same, they are considered in one row. The intersection analysis is based on the policy area of “Within 600m of a rapid transit station”. The MMLOS worksheets has been provided in Appendix H.

Table 26: Access Intersection MMLOS Analysis

Intersection		Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
The Ottawa Hospital Riverside Campus at Riverside Drive	Ex./Fut.	F	A	F	C	-	-	-	-	D	E
	Ex.	F	A	F	C	B	D	-	-	A	E
Smyth Road at Site Access	Fut.	F	A	F	C	B	D	-	-	A	E

The MMLOS targets for the pedestrian and bicycle LOS will not be met at both signalized access intersections.

The pedestrian level of service would require crossing distances of a maximum of two lane-widths at each crossing to meet a LOS A.

To meet bicycle LOS targets, the westbound approach at the Smyth Road access intersection and the southbound approach at the Riverside Drive access intersection would require a left-turn box or two-stage left-turn, and the westbound approach at the Riverside Drive access intersection would nominally require a pocket bike lane.

The future Smyth Road access intersection conditions have been designed through the Smyth Road Cycling Safety Improvements project and thus satisfy City objectives for the intersection. As the Riverside Drive access

intersection is a T-intersection, the pocket bike lane on the westbound approach is not considered to be an appropriate treatment, and this condition is considered adequate.

11.3.4 Recommended Design Elements

A protected southbound left-turn phase should be included at the Riverside Drive and The Ottawa Hospital access intersection. No other changes are noted for the access intersections. The development is anticipated to result in a reduction of traffic at the Smyth Road access intersection and the proposed changes from the Smyth Road Cycling Safety Improvements project are not required to support site operations.

12 Transportation Demand Management

12.1 Context for TDM

The mode shares used within the TIA represent a shift from auto modes to transit modes, due to the proximity of the site to Riverside Station along the Transitway. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

The subject site is not within a design priority area. A total of 426 bedrooms are estimated for the site, including both long term care and retirement dwelling units. The site will serve retired and senior adults.

12.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel with an increase in transit ridership with the proximity to the Riverside BRT station, and those assumptions have been carried through the analysis. The study area intersections are anticipated to have residual capacity and the increase in transit ridership is achievable.

12.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix K. The key TDM measures recommended include:

- Display local area maps with walking cycling destinations, relevant transit schedules and route maps at entrances
- Provide a shuttle service for seniors’ homes (e.g. scheduled mall or supermarket runs)
- Provide a multimodal information package to new employees and residents
- Offer personalized trip planning to new residents
- Inclusion of a 6-month Presto card for first time new unit rental, with a set time frame for this offer (e.g. 3 months) from the initial opening of the site

13 Transit

13.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 27 summarizes the transit trip generation.

Table 27: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Transit	45%	34	18	52	29	45	73

The proposed development is anticipated to generate an additional 52 AM peak hour transit trips and 73 PM peak hour transit trips. Of these trips, 34 inbound AM trips and 45 outbound PM trips are anticipated.

It is assumed that a majority of site transit users will use the Transitway bus routes given it lies less than 300 metres from the site, however even if half of all of forecasted transit trips were taken via the route #55, this would amount to fewer than five additional riders per bus averaged over the peak hours. Thus, no transit service changes are anticipated to be required from the proposed development.

13.2 Transit Priority

No change in Transit LOS is noted for any of the transit movements within the study area due to the traffic associated with the proposed development.

14 Network Intersection Design

14.1 Network Intersection Control

No change to the existing signalized control is recommended for the network intersections.

14.2 Network Intersection Design

14.2.1 2026 Future Total Network Intersection Operations

The 2026 future total network intersection operations, including the signal phasing changes recommended in Section 7.1, are summarized below in Table 28. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix I.

Table 28: 2026 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive <i>Signalized</i>	WBL	C	0.73	47.8	57.2	E	0.95	72.8	#113.4
	WBR	A	0.43	19.5	24.3	A	0.38	9.5	17.2
	NBT	A	0.56	1.5	7.6	D	0.87	20.6	#59.3
	NBR	A	0.12	0.2	m0.0	A	0.27	4.6	m10.3
	SBL	A	0.43	15.6	21.7	C	0.80	42.7	#49.2
	SBT	B	0.63	10.0	95.0	C	0.74	13.4	112.2
	Overall	B	0.65	9.4	-	E	0.90	22.2	-
Smyth Road South Ramp at Riverside Drive <i>Signalized</i>	WBL	A	0.56	44.4	36.4	A	0.47	43.5	28.8
	WBR	A	0.36	10.2	13.0	A	0.40	10.9	13.9
	NBT	C	0.71	8.1	m23.8	B	0.68	12.5	94.9
	NBR	A	0.43	1.0	m1.3	A	0.30	3.2	m20.1
	SBL	A	0.56	15.7	35.0	A	0.33	7.3	m6.6
	SBT	B	0.61	12.1	123.3	C	0.78	8.3	m108.7
	Overall	B	0.66	10.6	-	C	0.74	10.3	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road at Alta Vista Drive Signalized	EBL	A	0.47	24.5	32.8	B	0.63	26.8	32.0
	EBT	D	0.85	45.9	#135.6	A	0.51	31.9	72.7
	EBR	A	0.19	2.4	4.8	A	0.34	9.6	24.8
	WBL	A	0.50	28.3	23.5	A	0.59	22.0	44.6
	WBT	A	0.60	37.6	81.3	B	0.68	33.3	108.0
	WBR	A	0.40	12.8	29.3	A	0.48	15.2	43.5
	NBL	B	0.70	33.1	72.0	A	0.49	33.0	26.8
	NBT	C	0.78	51.6	#118.2	C	0.71	52.6	#91.9
	NBR	A	0.37	11.5	24.7	A	0.20	2.0	2.3
	SBL	C	0.77	39.4	#58.4	A	0.50	31.3	38.3
	SBT	A	0.42	38.1	57.3	E	0.92	70.6	#144.1
SBR	A	0.23	3.9	8.0	A	0.43	15.1	31.2	
Overall	C	0.78	35.2	-	-	C	0.77	33.1	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The network intersections for the 2026 future total horizon operate similarly to the 2026 future background conditions. The northbound through movement at the intersection of Riverside Drive at the Smyth Road north ramp may exhibit extended queuing. Of note at this intersection, the westbound left movement is approaching capacity, however, while capacity exists on the conflicting north and southbound movements, the proposed splits are considered appropriate to prioritize flow on the Riverside Drive corridor.

14.2.2 2031 Future Total Network Intersection Operations

The 2031 future total network intersection operations, including the signal phasing changes recommended in Section 7.2, are summarized below in Table 29. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix J.

Table 29: 2031 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road North Ramp at Riverside Drive Signalized	WBL	C	0.73	47.8	57.2	E	0.95	72.8	#113.4
	WBR	A	0.43	19.5	24.3	A	0.37	9.5	17.0
	NBT	A	0.56	1.5	7.6	D	0.87	20.3	#58.3
	NBR	A	0.12	0.2	m0.0	A	0.27	4.6	m10.1
	SBL	A	0.43	15.6	21.7	C	0.80	42.7	#49.2
	SBT	B	0.63	10.0	95.0	C	0.74	13.4	111.7
	Overall	B	0.65	9.4	-	-	E	0.91	22.1
Smyth Road South Ramp at Riverside Drive Signalized	WBL	A	0.56	44.4	36.4	A	0.47	43.4	28.8
	WBR	A	0.36	10.2	13.0	A	0.40	11.0	13.9
	NBT	C	0.71	8.1	m23.8	B	0.68	12.5	94.5
	NBR	A	0.43	1.0	m1.3	A	0.30	3.2	m20.2
	SBL	A	0.56	15.7	35.0	A	0.32	7.1	m6.4
	SBT	B	0.61	12.1	123.3	C	0.78	8.2	m108.3
	Overall	B	0.70	10.6	-	-	C	0.79	10.3

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Smyth Road at Alta Vista Drive Signalized	EBL	A	0.47	24.5	32.8	B	0.63	26.8	32.0
	EBT	D	0.85	45.9	#135.6	A	0.51	31.9	72.7
	EBR	A	0.19	2.4	4.8	A	0.34	9.6	24.8
	WBL	A	0.50	28.3	23.5	A	0.59	22.0	44.6
	WBT	A	0.60	37.6	81.3	B	0.68	33.3	108.0
	WBR	A	0.40	12.8	29.3	A	0.48	15.2	43.5
	NBL	B	0.70	33.1	72.0	A	0.49	33.0	26.8
	NBT	C	0.78	51.6	#118.2	C	0.71	52.6	#91.9
	NBR	A	0.37	11.5	24.7	A	0.20	2.0	2.3
	SBL	C	0.77	39.4	#58.4	A	0.50	31.3	38.3
	SBT	A	0.42	38.1	57.3	E	0.92	70.6	#144.1
	SBR	A	0.23	3.9	8.0	A	0.43	15.1	31.2
Overall	C	0.78	35.2	-	-	C	0.77	33.1	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

The network intersections for the 2031 future total horizon operate similarly to the 2026 future total conditions. No new capacity issues are noted.

14.2.3 Network Intersection MMLOS

Table 30 summarizes the MMLOS analysis for the network intersections of Smyth Road at the north and south ramps to Riverside Drive, and Smyth Road at Alta Vista Drive. The existing and future conditions for both intersections will be the same and are considered in one row. The intersection analysis is based on the policy area of “Within 600m of a rapid transit station”. The MMLOS worksheets has been provided in Appendix H.

Table 30: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Smyth Road North Ramp at Riverside Drive	F	A	F	C	-	-	C	D	E	E
Smyth Road South Ramp at Riverside Drive	F	A	F	C	-	-	C	D	C	E
Smyth Road at Alta Vista Drive	F	A	F	C	F	D	-	-	C	E

The MMLOS targets will not be met for the pedestrian and bicycle LOS at all network intersections, transit LOS at the intersection of Smyth Road and Alta Vista Drive.

The pedestrian level of service would require crossing distances of a maximum of two lane-widths at each crossing to meet a LOS A.

To meet bicycle LOS targets, the eastbound and westbound approaches at the intersection of Smyth Road and Alta Vista Drive would require pocket bike lanes, and all approaches would require two stage left-turn boxes. To meet bicycle LOS targets on the Riverside Drive intersections, the southbound approaches would require bike boxes or two-stage left turns, and the northbound approach at the south Smyth Road ramp would require separated facilities.

Transit LOS is limited by the mixed flow conditions and high delays at the intersection of Smyth Road at Alta Vista Drive and would require delays on all through movements to be reduced to 30 seconds or less.

No improvements are recommended within this study for the network intersections.

14.2.4 Recommended Design Elements

No study area intersection design elements are proposed as part of this study.

15 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed site concept is a continuing care facility with 256 long-term care beds and 270 retirement dwelling units, replacing surface parking for the adjacent hospital and medical building on-site
- Accesses will be provided along via the existing signalized site access for The Ottawa Hospital Riverside Campus on Smyth Road and Riverside Drive, severing the internal connection between these intersections
- The development is proposed to be completed as two phases by 2026
- The Trip Generation and Safety Triggers were met for the TIA Screening
- This report is in support of a zoning by-law amendment and site plan application

Existing Conditions

- Riverside Drive and Smyth Road are arterial roads, and Alta Vista Drive is a major collector road in the study area
- Sidewalks are provided on both sides of Smyth Road and Alta Vista Drive and on the east side of Riverside Drive within the study area, and a pathway is provided on the east side of Riverside Drive along the river within the study area
- Bike lanes are present along Alta Vista Drive, along Riverside Drive north of the northern ramp to Smyth Road, and along Smyth Road west of the ramps to Riverside Drive
- Riverside Drive, Smyth Road, and Alta Vista Drive are spine cycling routes, Frobisher Lane is a local route that continues through the subject site connecting to Rodney Crescent and Billings Avenue
- The site is within 300 metres of Riverside Station along the Transitway BRT corridor
- The high volumes roadways have produced a high number of collisions at the study area intersections, primarily at the Smyth Road at Alta Vista Drive and the Smyth Road ramps at Riverside Drive intersections
- The collisions are predominantly rear end and turning movement collisions indicating that they may be associated with congestion and right-turn channels
- Capacity issues are noted in the PM peak hour at the intersection of Riverside Drive and the Smyth Road north Ramp, and queueing and capacity issues are noted at the intersection of Smyth Road at Alta Vista Drive

Development Generated Travel Demand

- The proposed development is forecasted produce 116 two-way people trips during the AM peak hour and 163 two-way people trips during the PM peak hour
- Of the forecasted people trips, 49 two-way trips will be vehicle trips during the AM peak hour and 68 two-way trips will be vehicle trips during the PM peak hour based on a 42% auto and 45% transit modal share target
- Of the forecasted trips, 30% are anticipated to travel north, 25% to travel each south and east, and 20% to travel west

Background Conditions

- Changes from the Smyth Road Cycling Safety Improvements project will be included in the future conditions
- No background developments were noted within the study area, and a background growth of 1.50% per annum along Riverside Drive northbound in the AM peak and southbound in the PM peak was applied
- The study area intersections at both future background horizons are forecasted to operate similarly to the existing conditions, with operational improvements noted for the intersection of the Smyth Road north ramp at Riverside Drive with signal phasing changes
- Severing the internal connection between the site accesses will cause existing site traffic accessing the Smyth Road access to detour to the Riverside Drive access

Development Design

- The bike parking will be via surface racks interspersed around major building entrances on site, and auto parking areas are to be located surrounding the site in surface lots each accessing the separate accesses, and via an underground garage accessing the drive aisle to the Smyth Road access
- Pedestrian connections will be made from all building entrances to the surrounding pedestrian facilities on Smyth Road and on Riverside Drive via the hospital pedestrian network, with a multi-use pathway connection along the west side of the site from the Smyth Road access drive aisle to the drive aisle connected to the Riverside Drive access circulating south of the adjacent medical building
- Garbage and loading operations are proposed to access the surface lot connecting to Riverside Drive, and emergency services are anticipated to access this lot and the surface lot connecting to Smyth Road

Parking

- The site plan includes 275 vehicle parking spaces, meeting the by-law minimum of 133, with 66 of these being within the underground parking level
- Bicycle parking is located across surface racks and within the underground parking level, meeting the minimum provision of 74 spaces

Boundary Street Design

- The boundary street cannot meet pedestrian LOS targets due to operating speeds will meet bicycle LOS targets with the Smyth Road Cycling Safety Improvements
- A widened sidewalk is proposed as part of these improvements which may improve area pedestrian experience, and the proposed plan satisfies City MMLOS objectives

Access Intersections Design

- The site will use the existing access intersections at Smyth Road and Riverside Drive, and no geometric changes are proposed to support site operations
- The access at Smyth Road will include shared use lanes to facilitate the local cycling route through the site
- The proposed 15-metre throat length at the access intersection on Smyth Road is considered to be adequate based upon the low site volumes
- The re-assignment of traffic from the closure of hospital access from Smyth Road results in capacity issues at the Riverside Drive access intersection with existing signal phasing
- The inclusion of a protected southbound left-turn phase would be required for this intersection to operate adequately, and the Smyth Road access intersection is forecasted to operate well, however queueing may

be approaching the storage length of the southbound left-turn lane, and the upstream intersection at Pleasant Park Road on the northbound through movement, each during the AM peak hour

- The MMLoS targets for pedestrians and bicycles will not be met, where the conditions at the Riverside Drive access intersection are deemed to be appropriate, and the Smyth Road intersection design is within the scope of the Smyth Road Cycling Safety Improvements project
- The future Smyth Road access intersection conditions have been designed through the Smyth Road Cycling Safety Improvements project and thus satisfy City objectives for the intersection
- A protected southbound left-turn phase should be included at the Riverside Drive and The Ottawa Hospital access intersection
- The development is anticipated to result in a reduction of traffic at the Smyth Road access intersection and the proposed changes from the Smyth Road Cycling Safety Improvements project are not required to support site operations

TDM

- Supportive TDM measures to be included within the proposed development should include:
 - Display local area maps with walking cycling destinations, relevant transit schedules and route maps at entrances
 - Provide a shuttle service for seniors homes (e.g. scheduled mall or supermarket runs)
 - Provide a multimodal information package to new employees and residents
 - Offer personalized trip planning to new residents
 - Inclusion of a 6-month Presto card for new unit rental, with a set time frame for this offer (e.g. 3 months) from the initial opening of the site

Transit

- The site is within 300 metres of the Riverside BRT station along the Transitway
- Transitway routes should be able to accommodate site transit users and service on existing local area routes should is not forecasted to be impacted by site transit users
- No specific transit priority measures were considered as part of this development

Network Intersection Design

- Generally, the network intersections with the addition of site traffic and the reassignment from the access connection severance will operate similarly to the background conditions
- The MMLoS targets will not be met for the pedestrian and bicycle LOS at all network intersections, transit LOS at the intersection of Smyth Road and Alta Vista Drive
- Improved cycling facilities, generally including left-turn configurations out of mixed flow and pocket bike lanes or separated facilities could meet the LOS targets, but due to the nature of arterials roadways, the pedestrian and transit LOS cannot be met
- No network intersection improvements are recommended within the study area

16 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:



John Kingsley, EIT
Transportation Engineering-Intern

Reviewed By:



Andrew Harte, P.Eng
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 28-Apr-21
Project Number: 2021-045
Project Reference: Schlegel Villages

1.1 Description of Proposed Development	
Municipal Address	1919 Riverside Drive
Description of Location	South of Smyth Rd, between Transitway and rail line
Land Use Classification	Major Institutional: I2 F(1.0)
Development Size	256 Long-term Care Beds, 250 Retirement Units
Accesses	Existing signalized onto Smyth Rd, Connection to TOH parking with connection to Riverside Dr
Phase of Development	Two
Buildout Year	2025
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger	
Land Use Type	Townhomes or apartments
Development Size	250 Units
Trip Generation Trigger	Yes

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	No
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	No
Location Trigger	No

1.4. Safety Triggers	
Are posted speed limits on a boundary street 80 km/hr or greater?	No
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No Existing Driveway
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	No Existing Driveway
Is the proposed driveway within auxiliary lanes of an intersection?	No Existing Driveway
Does the proposed driveway make use of an existing median break that serves an existing site?	No Existing Driveway
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes Smyth Rd @ Alta Vista Dr: 98 collisions 2015-2019
Does the development include a drive-thru facility?	No
Safety Trigger	Yes



TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check appropriate field(s)] is either transportation engineering or transportation planning .

1,2 License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.


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Urbanisme et Gestion de la croissance
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Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at Ottawa this 20 day of September, 2018.
(City)

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer



Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)
Address: 13 Markham Avenue
City / Postal Code: Ottawa / K2G 3Z1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com



Appendix B

Turning Movement Counts



Transportation Services - Traffic Services

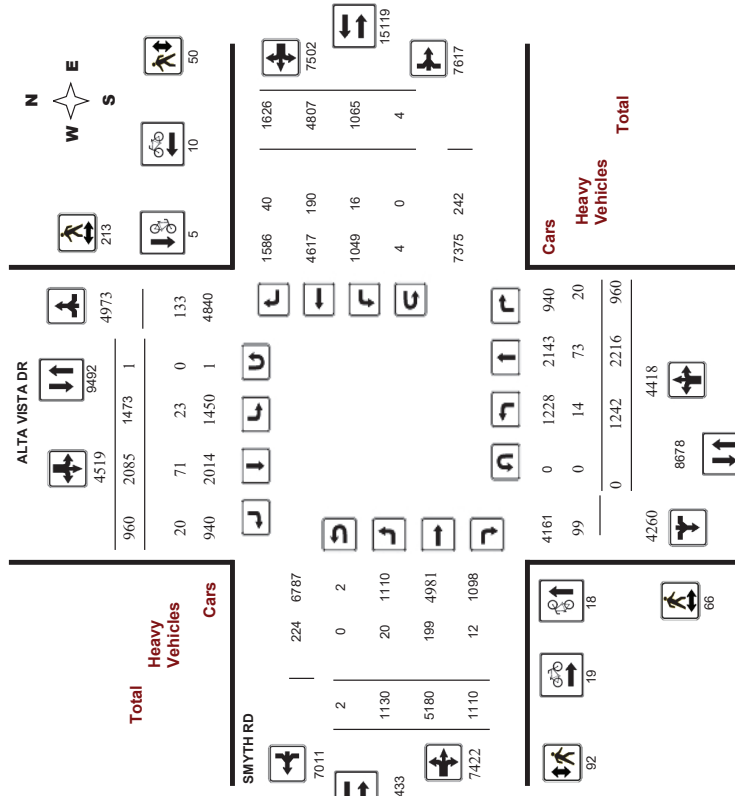
Turning Movement Count - Study Results

ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

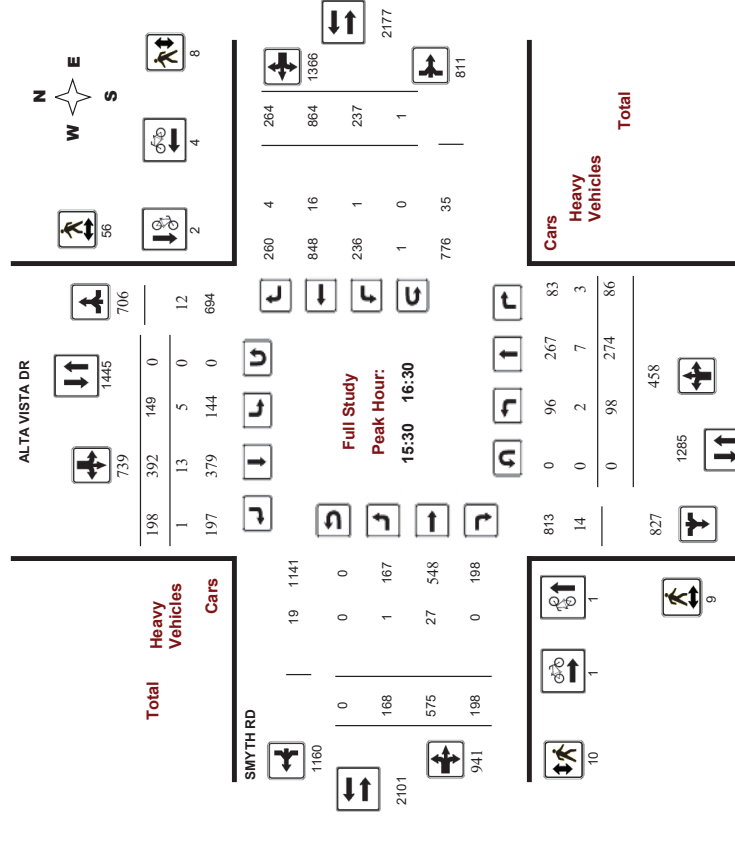
Turning Movement Count - Study Results

ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study Peak Hour Diagram





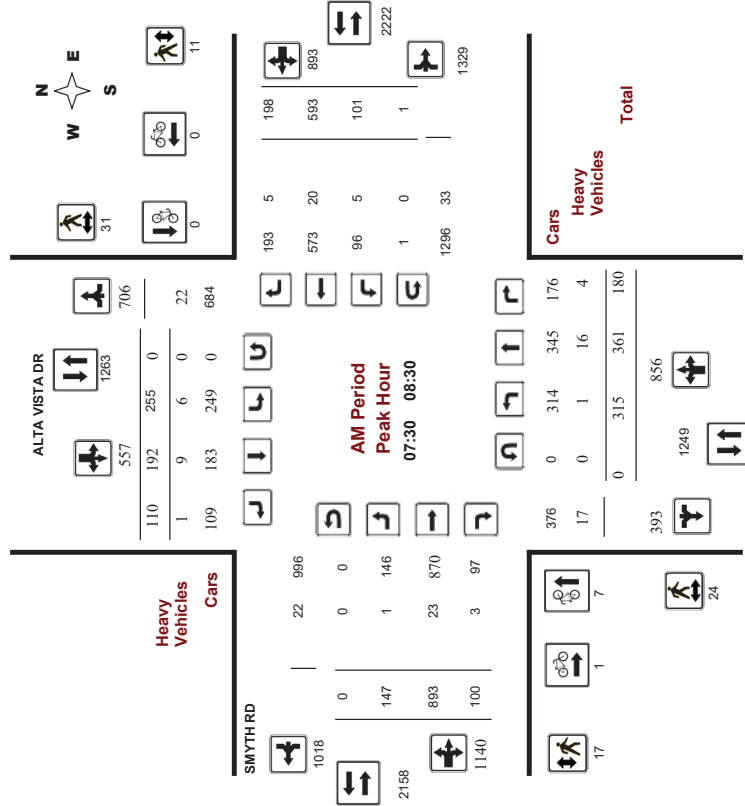
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision



Comments



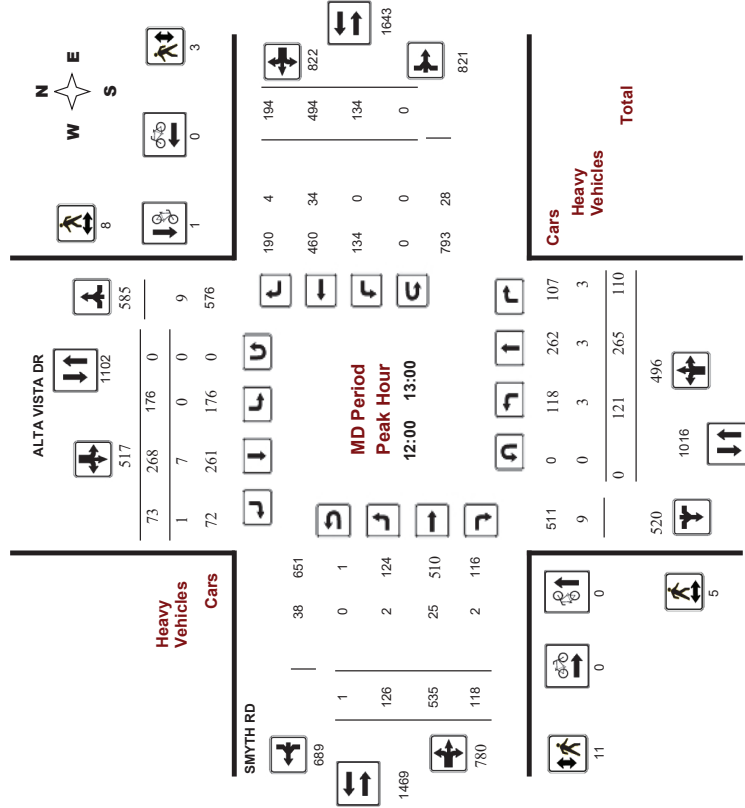
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

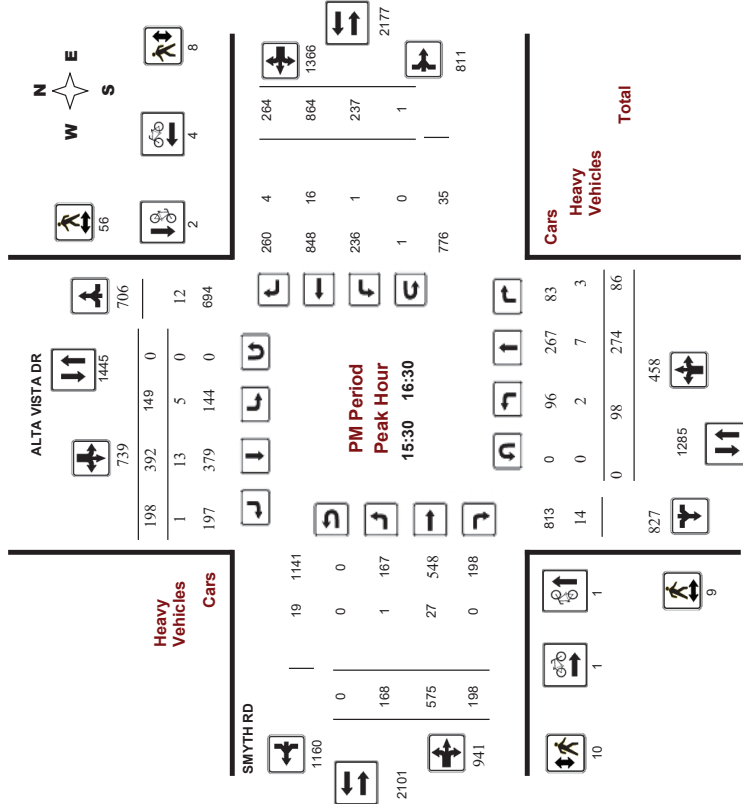
ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018

Start Time: 07:00

WO No: 37527

Device: Miovision



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018

Start Time: 07:00

WO No: 37527

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 14, 2018

Total Observed U-Turns

Southbound: 0

Eastbound: 2

AAADT Factor

1.00

SMYTH RD

ALTA VISTA DR

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total			
	LT	ST	RT	TOT	U-T	NB	LT	ST	RT	TOT	SB	LT	ST	RT	TOT	EB	LT	ST	RT	TOT		WB	LT	ST
07:00-08:00	235	263	178	676	0	180	104	104	475	1151	125	833	90	1148	95	560	197	852	2000	3151				
08:00-09:00	264	397	197	858	0	205	117	595	1453	177	849	108	1134	98	563	184	845	1979	3432					
09:00-10:00	151	245	126	522	0	168	95	490	1012	132	643	104	879	96	416	162	674	1553	2565					
11:30-12:30	103	271	103	477	0	147	250	66	463	940	110	498	109	717	138	474	220	832	1549	2489				
12:30-13:30	119	256	94	469	0	188	256	88	532	1001	119	511	123	753	98	470	180	748	1501	2502				
15:00-16:00	122	257	93	472	0	167	355	174	696	1168	151	541	181	873	219	917	260	1396	2269	3437				
16:00-17:00	121	290	86	497	0	133	378	184	695	1192	184	624	194	1002	185	740	239	1164	2166	3338				
17:00-18:00	127	237	83	447	0	127	313	132	572	1019	132	581	201	914	136	667	184	987	1901	2920				
Sub Total	1242	2216	960	4418	0	1473	2085	960	4518	8936	1130	5180	1110	7420	1065	4807	1626	7488	14918	23854				
U-Turns	0	0	0	0	0	1	1	1	1	1	1	2	2	2	4	4	4	4	6	7				
Total	1242	2216	960	4418	0	1474	2085	960	4519	8937	1132	5180	1110	7422	1069	4807	1626	7502	14924	23861				
EQ 12hr	1726	3080	1334	6140	0	2049	2898	1334	6281	12421	1573	7200	1543	10316	1486	6882	2260	10428	20744	33165				
Note: These values are calculated by multiplying the totals by the appropriate expansion factor: 1.39																								
AVG 12hr	1726	3080	1334	6140	0	2049	2898	1334	6281	12421	1573	7200	1543	10316	1486	6882	2260	10428	20744	33165				
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor: 1.00																								
AVG 24hr	2261	4035	1748	8044	0	2684	3786	1748	8228	16272	2061	9432	2021	13514	1947	8753	2961	13861	27175	43447				
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor: 1.31																								
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																								



Transportation Services - Traffic Services
Turning Movement Count - Study Results
ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study 15 Minute Increments
SMYTH RD

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total			
	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT				
07:00	35	36	49	120	45	40	21	106	226	26	227	31	284	20	100	35	155	439	665	
07:15	07:30	48	57	44	149	46	39	31	113	262	25	224	16	265	20	145	50	215	480	742
07:30	07:45	62	77	44	183	64	49	29	142	325	33	249	21	303	27	159	51	237	540	865
07:45	08:00	90	93	41	224	56	35	23	114	338	41	233	22	266	28	156	61	245	541	879
08:00	08:15	90	81	56	227	64	45	31	140	367	32	199	24	255	20	147	42	209	484	831
08:15	08:30	73	110	39	222	71	63	27	161	383	41	212	33	286	27	131	44	202	488	871
08:30	08:45	56	99	56	211	65	48	33	146	357	48	225	20	263	22	140	50	212	505	862
08:45	09:00	45	107	46	198	73	49	26	148	346	56	213	31	300	30	145	48	223	523	869
09:00	09:15	55	84	44	183	72	56	32	160	343	41	206	24	271	26	133	60	219	490	833
09:15	09:30	35	59	26	120	58	38	28	124	244	38	139	25	202	29	96	22	147	349	593
09:30	09:45	35	45	32	112	51	37	19	107	219	20	167	28	213	17	109	37	163	376	595
09:45	10:00	26	57	24	107	46	37	16	99	206	33	131	29	183	24	78	43	145	338	544
10:00	10:15	26	58	21	105	27	56	15	98	203	20	108	18	146	30	119	43	192	338	541
10:15	12:00	25	79	33	137	39	64	22	125	262	30	112	26	168	30	104	67	201	369	631
12:00	12:15	24	62	20	106	29	77	10	116	222	32	130	31	183	43	121	61	225	418	640
12:15	12:30	28	72	29	129	52	53	19	124	253	28	148	34	210	35	130	49	214	424	677
12:30	12:45	40	75	33	148	47	61	18	126	274	35	115	28	178	29	121	54	204	382	656
12:45	13:00	29	56	28	113	48	77	26	151	264	32	142	25	199	27	122	30	179	378	642
13:00	13:15	21	70	15	106	49	55	20	124	230	31	130	37	198	21	126	49	196	394	624
13:15	13:30	26	55	18	102	44	63	24	131	233	22	124	33	179	22	101	47	170	349	562
15:00	15:15	38	66	24	128	47	69	40	166	284	36	127	41	204	56	250	60	366	570	854
15:15	15:30	38	66	25	129	43	83	39	165	294	34	129	45	208	43	232	73	348	556	850
15:30	15:45	28	63	18	109	49	102	49	200	309	39	139	50	228	58	225	58	341	569	878
15:45	16:00	18	62	26	106	28	101	46	175	281	42	146	45	233	63	210	69	342	575	856
16:00	16:15	26	69	23	118	40	97	54	191	309	43	148	41	232	66	214	71	351	583	892
16:15	16:30	26	80	19	125	32	92	49	173	298	44	142	62	248	51	215	66	332	580	878
16:30	16:45	30	81	23	134	27	86	35	148	282	45	153	44	242	31	156	61	248	490	772
16:45	17:00	39	60	21	120	35	103	46	184	304	52	181	47	280	38	155	41	234	514	818
17:00	17:15	27	52	15	94	37	84	30	151	245	41	132	56	229	46	191	64	301	530	775
17:15	17:30	31	61	22	114	23	88	46	157	271	38	149	46	233	33	178	45	256	489	760
17:30	17:45	38	66	25	129	28	67	26	121	280	21	140	47	208	33	169	36	238	446	696
17:45	18:00	31	58	21	110	39	74	30	143	253	33	160	52	245	24	129	39	192	437	690
Total:		1242	2216	960	4418	1474	2085	960	4519	8937	1132	5180	1110	7422	1069	4807	1626	7502	8937	23,861

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study Cyclist Volume
SMYTH RD

Time Period	Northbound		Southbound		Street Total		Eastbound		Westbound		Street Total		Grand Total
	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	
07:00	07:15	2	0	0	0	2	1	0	0	0	1	0	3
07:15	07:30	3	1	1	1	4	0	0	0	0	0	0	4
07:30	07:45	2	0	0	0	2	0	0	0	0	0	0	2
07:45	08:00	1	0	0	0	1	0	0	0	0	0	0	1
08:00	08:15	3	0	0	0	3	1	0	0	0	1	0	4
08:15	08:30	1	0	0	0	1	0	0	0	0	0	0	1
08:30	08:45	1	0	0	0	1	1	1	0	0	1	1	2
08:45	09:00	0	0	0	0	0	2	4	1	0	3	3	3
09:00	09:15	1	0	0	0	1	0	0	0	0	0	0	1
09:15	09:30	1	0	0	0	1	0	0	0	0	0	0	1
09:30	09:45	0	0	0	0	0	1	0	0	0	1	0	1
09:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0
10:15	11:45	0	0	0	0	0	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0	0	0	0	0	0
12:00	12:15	0	1	1	1	1	0	0	0	0	0	0	1
12:15	12:30	0	0	0	0	0	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	2	0	0	0	2	0	2
15:00	15:15	0	0	0	0	0	0	0	0	0	0	0	0
15:15	15:30	2	0	0	0	2	0	0	0	0	0	0	2
15:30	15:45	0	0	0	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0	0	0	0
16:15	16:30	1	1	1	1	2	0	0	0	0	0	0	2
16:30	16:45	0	0	0	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0	0
Total		18	5	5	5	23	19	10	10	10	29	29	52



Transportation Services - Traffic Services
Turning Movement Count - Study Results
ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study Pedestrian Volume
ALTA VISTA DR
SMYTH RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	3	3	1	0	1	4
07:15 07:30	1	3	4	3	1	4	8
07:30 07:45	1	6	7	2	1	3	10
07:45 08:00	5	10	15	4	2	6	21
08:00 08:15	8	7	15	3	3	6	21
08:15 08:30	10	8	18	3	5	8	26
08:30 08:45	3	7	10	2	0	2	12
08:45 09:00	4	12	16	8	3	11	27
09:00 09:15	0	13	13	4	2	6	19
09:15 09:30	1	3	4	1	1	2	6
09:30 09:45	4	4	8	3	1	4	12
09:45 10:00	0	6	6	1	0	1	7
10:00 10:15	0	1	1	0	0	0	1
10:15 10:30	2	3	5	2	2	4	9
10:30 10:45	0	2	2	0	1	1	3
10:45 11:00	1	1	2	4	1	5	7
11:00 11:15	2	2	4	3	0	3	7
11:15 11:30	2	2	4	4	0	4	8
11:30 11:45	2	2	4	3	1	4	8
11:45 12:00	2	2	4	3	1	4	8
12:00 12:15	1	1	2	4	1	5	7
12:15 12:30	2	2	4	3	0	3	7
12:30 12:45	2	3	5	4	1	5	10
12:45 13:00	2	3	5	4	1	5	10
13:00 13:15	1	1	2	3	0	3	5
13:15 13:30	0	1	1	1	0	1	2
13:30 13:45	1	9	10	1	3	4	14
13:45 14:00	0	4	4	4	1	5	9
14:00 14:15	0	19	19	5	0	5	24
14:15 14:30	0	12	12	0	0	0	12
14:30 14:45	2	13	15	1	4	5	20
14:45 15:00	7	12	19	4	4	8	27
15:00 15:15	2	16	18	4	2	6	24
15:15 15:30	2	6	8	3	2	5	13
15:30 15:45	3	11	14	4	3	7	21
15:45 16:00	2	8	10	6	5	11	21
16:00 16:15	4	4	8	1	2	3	11
16:15 16:30	2	3	5	2	0	2	7
16:30 16:45	4	2	6	2	0	2	8
16:45 17:00	3	6	9	3	2	5	14
17:00 17:15	8	11	19	4	3	7	26
17:15 17:30	2	8	10	6	5	11	21
17:30 17:45	4	4	8	1	2	3	11
17:45 18:00	2	3	5	2	0	2	7
Total	66	213	279	92	50	142	421



Transportation Services - Traffic Services
Turning Movement Count - Study Results
ALTA VISTA DR @ SMYTH RD

Survey Date: Wednesday, February 14, 2018
Start Time: 07:00

WO No: 37527
Device: Miovision

Full Study Heavy Vehicles
ALTA VISTA DR
SMYTH RD

Time Period	Northbound			Southbound			Eastbound			Westbound			W	STR	Grand Total				
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT							
07:00 07:15	0	2	0	2	0	3	1	4	6	0	6	1	7	0	3	2	5	12	18
07:15 07:30	2	3	0	5	0	2	3	5	10	0	7	0	7	2	10	0	12	19	29
07:30 07:45	0	1	0	1	0	2	0	2	3	0	6	0	6	0	5	0	5	11	14
07:45 08:00	1	6	2	9	1	2	0	3	12	0	3	2	5	0	5	1	6	11	23
08:00 08:15	0	5	2	7	2	1	0	3	10	0	8	1	9	1	3	1	5	14	24
08:15 08:30	0	4	0	4	3	4	1	8	12	1	6	0	7	4	7	3	14	21	33
08:30 08:45	0	5	1	6	0	1	0	1	7	1	8	1	10	1	15	1	17	27	34
08:45 09:00	1	4	2	7	0	1	1	2	9	1	11	0	12	0	8	2	10	22	31
09:00 09:15	1	5	3	9	2	4	2	8	17	1	12	1	14	0	8	4	12	26	43
09:15 09:30	0	2	0	2	1	3	4	8	10	1	3	0	4	1	5	2	8	12	22
09:30 09:45	0	2	0	2	2	1	1	4	6	0	5	1	6	1	8	0	9	15	21
09:45 10:00	0	2	0	2	1	1	1	3	5	0	7	0	7	0	7	2	9	16	21
10:00 10:15	1	0	2	1	0	1	0	1	3	0	8	0	8	1	6	0	7	15	18
10:15 10:30	0	3	0	3	1	1	1	3	6	1	8	1	10	0	6	1	7	17	23
10:30 10:45	1	0	1	2	0	2	1	3	5	1	4	2	7	0	5	1	6	13	18
10:45 11:00	1	2	1	4	0	1	0	1	5	0	5	0	5	0	10	2	12	17	22
11:00 11:15	0	1	1	2	0	1	0	1	3	1	6	0	7	0	9	1	10	17	20
11:15 11:30	1	0	0	1	0	3	0	3	4	0	10	0	10	0	10	0	10	20	24
11:30 11:45	1	0	0	1	0	3	0	3	4	0	10	0	10	0	10	0	10	20	24
11:45 12:00	1	0	0	1	0	3	0	3	4	0	10	0	10	0	10	0	10	20	24
12:00 12:15	1	0	1	2	0	2	1	3	5	1	4	2	7	0	5	1	6	13	18
12:15 12:30	1	2	1	4	0	1	0	1	5	0	5	0	5	0	10	2	12	17	22
12:30 12:45	0	1	1	2	0	1	0	1	3	1	6	0	7	0	9	1	10	17	20
12:45 13:00	1	0	0	1	0	3	0	3	4	0	10	0	10	0	10	0	10	20	24
13:00 13:15	0	2	0	2	0	3	0	3	5	1	5	0	6	0	8	1	9	15	20
13:15 13:30	1	0	2	1	2	1	2	4	6	1	6	1	8	0	7	4	11	19	25
13:30 13:45	1	3	1	5	2	1	0	3	8	1	7	0	8	1	8	2	11	19	27
13:45 14:00	0	1	0	1	0	3	0	4	5	0	6	1	7	0	4	5	9	16	21
14:00 14:15	1	0	2	3	0	3	0	6	8	0	9	0	9	1	5	0	6	15	23
14:15 14:30	0	1	0	1	1	4	1	6	7	0	6	0	6	0	4	2	6	12	19
14:30 14:45	1	3	1	5	0	3	0	3	8	1	6	0	7	0	2	1	3	10	18
14:45 15:00	0	2	2	4	1	3	0	4	8	0	6	0	6	0	5	1	6	12	20
15:00 15:15	0	2	0	2	1	3	0	4	6	1	4	0	5	0	3	1	4	9	15
15:15 15:30	0	3	2	5	0	2	1	3	8	1	4	0	5	0	4	0	4	9	17
15:30 15:45	0	0	0	0	0	3	0	3	3	2	4	0	6	1	1	0	2	8	11
15:45 16:00	0	1	0	1	0	1	1	2	1	5	0	6	1	3	0	4	10	16	21
16:00 16:15	0	1	0	1	0	3	0	3	3	2	4	0	6	1	3	0	4	10	16
16:15 16:30	1	3	1	5	0	3	0	3	8	1	6	0	7	0	2	1	3	10	18
16:30 16:45	0	2	2	4	1	3	0	4	8	0	6	0	6	0	5	1	6	12	20
16:45 17:00	0	2	0	2	0	4	0	4	6	1	4	0	5	0	3	1	4	9	15
17:00 17:15	0	3	2	5	0	2	1	3	8	1	4	0	5	0	4	0	4	9	17
17:15 17:30	0	2	0	2	1	3	0	4	6	2	4	0	6	1	3	0	4	10	16
17:30 17:45	0	0	0	0	0	3	0	3	3	2	4	0	6	1	1	0	2	8	11
17:45 18:00	1	3	1	5	0	3	0	3	8	1	4	0	5	0	3	0	4	10	16
Total	14	73	20	107	23	71	20	114	221	20	199	12	231	16	190	40	246	477	698

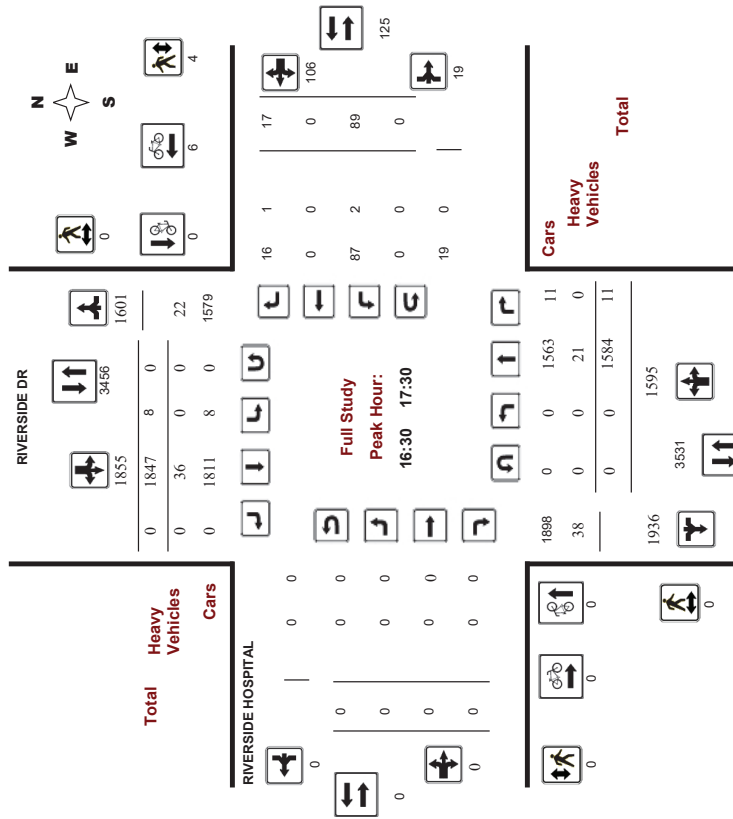


Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015
 Start Time: 07:00

WO No: 35289
 Device: Jamar Technologies, Inc

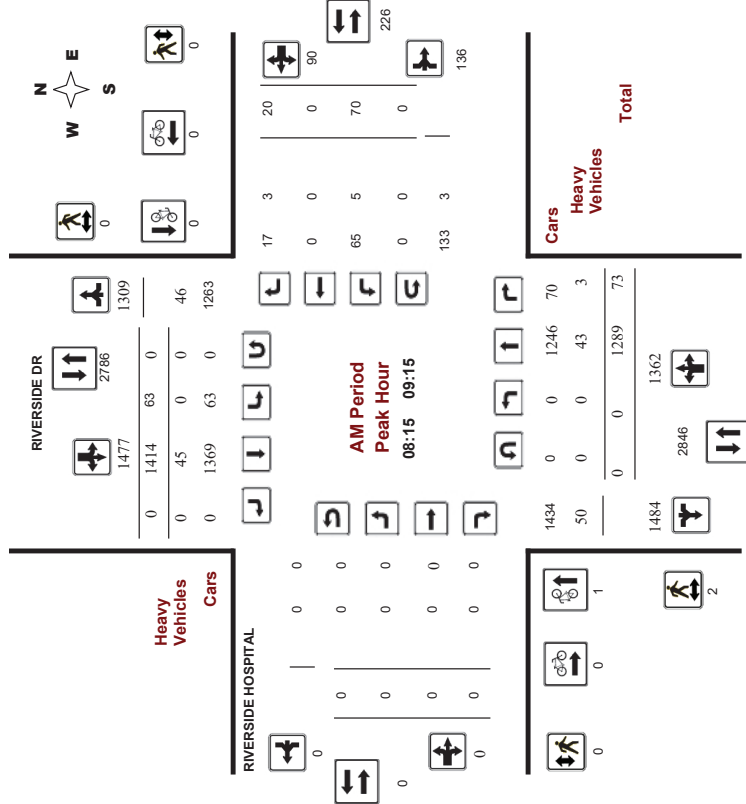
Full Study Peak Hour Diagram



Transportation Services - Traffic Services
Turning Movement Count - Peak Hour Diagram
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015
 Start Time: 07:00

WO No: 35289
 Device: Jamar Technologies, Inc





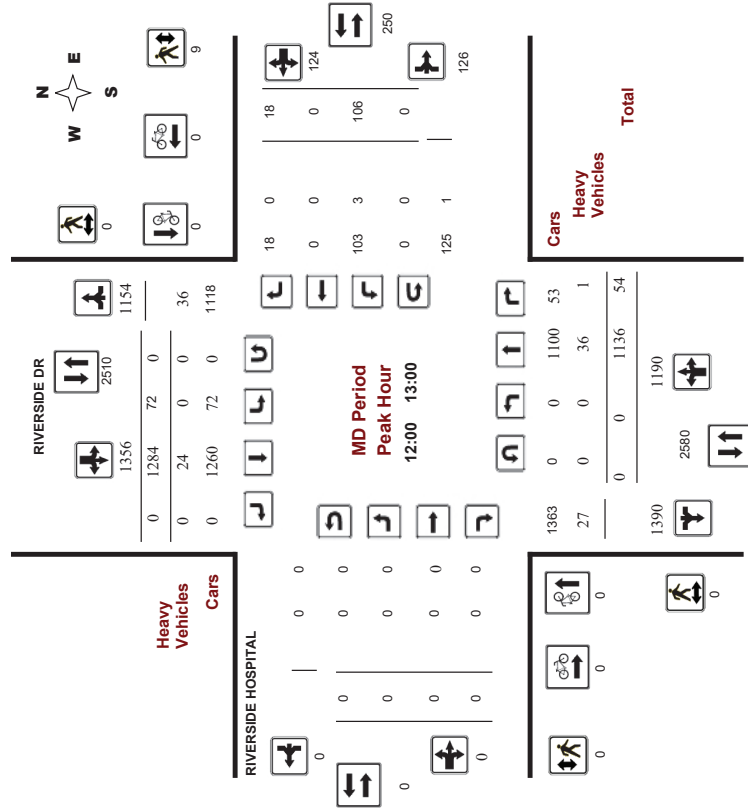
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015
Start Time: 07:00

WO No: 35289
Device: Jamar Technologies, Inc



Comments



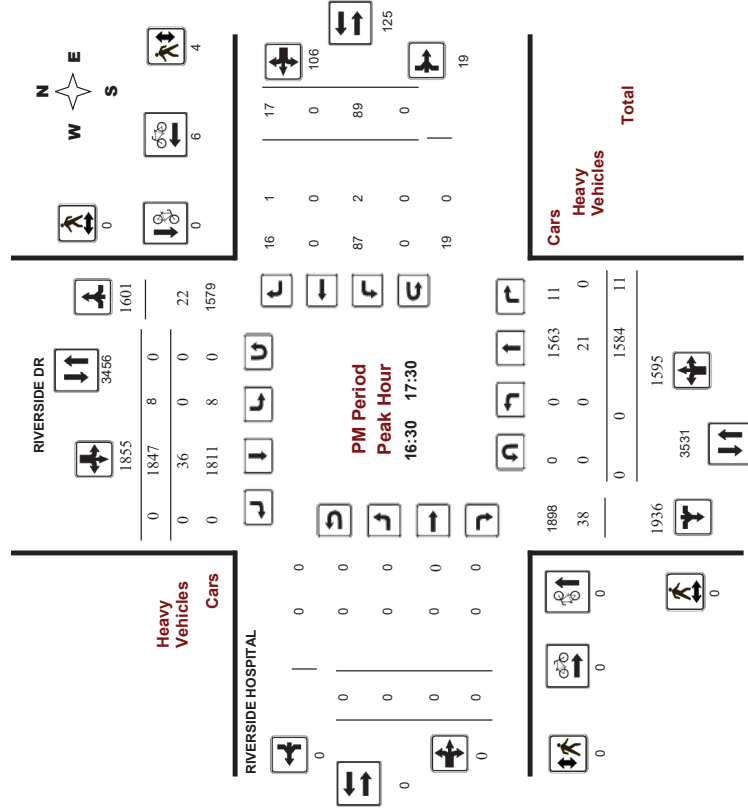
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015
Start Time: 07:00

WO No: 35289
Device: Jamar Technologies, Inc



Comments



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Summary (8 HR Standard)

Survey Date: Thursday, August 20, 2015 **Total Observed U-Turns** **AAADT Factor**
 Northbound: 0 Southbound: 0 90
 Eastbound: 0 Westbound: 0

Period	RIVERSIDE DR				RIVERSIDE HOSPITAL				WB TOT	STR TOT	Grand Total				
	Northbound		Southbound		Eastbound		Westbound								
	LT	RT	ST	RT	LT	ST	RT	EB TOT	LT	ST	RT				
07:00 08:00	0	1202	116	1318	55	1288	0	0	0	0	30	0	12	42	2703
08:00 09:00	0	1276	92	1368	57	1403	0	0	0	69	0	19	88	88	2916
09:00 10:00	0	1252	85	1337	72	1207	0	0	0	89	0	33	122	122	2738
11:30 12:30	0	1124	41	1165	58	1222	0	0	0	120	0	29	149	149	2594
12:30 13:30	0	1077	60	1137	62	1205	0	0	0	97	0	10	107	107	2511
15:00 16:00	0	1185	55	1240	48	1710	0	0	0	166	0	41	207	207	3205
16:00 17:00	0	1253	23	1276	8	1993	0	0	0	143	0	18	161	161	3438
17:00 18:00	0	1499	7	1506	9	1606	0	0	0	56	0	12	68	68	3189
Sub Total	0	9868	479	10347	369	11634	0	0	0	770	0	174	944	944	23294
U-Turns	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	9868	479	10347	369	11634	0	0	0	770	0	174	944	944	23294
EQ 12hr	0	13717	666	14383	513	16171	0	0	0	1070	0	242	1312	1312	33379

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.
 Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.
 Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.
 Note: U-Turns provided for approach totals. Refer to U-Turn Report for specific breakdown.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study 15 Minute Increments

Survey Date: Thursday, August 20, 2015 **Total Observed U-Turns** **AAADT Factor**
 Northbound: 0 Southbound: 0 90
 Eastbound: 0 Westbound: 0

Time Period	RIVERSIDE DR				RIVERSIDE HOSPITAL				E	RT	ST	RT	W	STR	Grand Total		
	Northbound		Southbound		Eastbound		Westbound										
	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	
07:00 07:15	0	283	20	303	1	332	0	333	0	0	0	0	0	3	0	3	639
07:15 07:30	0	282	26	308	15	306	0	321	0	0	0	0	4	11	11	11	640
07:30 07:45	0	305	30	335	20	330	0	350	0	0	0	0	9	0	4	13	698
07:45 08:00	0	332	40	372	19	320	0	339	0	0	0	0	4	15	15	15	726
08:00 08:15	0	275	34	309	14	330	0	344	0	0	0	0	4	22	22	22	675
08:15 08:30	0	305	25	330	12	348	0	360	0	0	0	0	4	14	14	14	704
08:30 08:45	0	338	15	353	19	347	0	366	0	0	0	0	4	24	24	24	743
08:45 09:00	0	388	18	406	12	378	0	390	0	0	0	0	7	28	28	28	794
09:00 09:15	0	288	15	303	20	341	0	361	0	0	0	0	5	24	24	24	688
09:15 09:30	0	318	26	344	17	290	0	297	0	0	0	0	6	25	25	25	666
09:30 09:45	0	285	19	304	17	282	0	289	0	0	0	0	4	27	27	27	600
09:45 10:00	0	361	25	386	18	334	0	352	0	0	0	0	28	18	46	46	764
10:00 10:15	0	252	9	261	9	294	0	293	0	0	0	0	33	10	43	43	597
10:15 10:30	0	313	10	323	10	277	0	287	0	0	0	0	22	0	7	29	639
10:30 10:45	0	281	10	291	10	301	0	309	0	0	0	0	42	10	52	52	702
10:45 11:00	0	268	12	280	22	329	0	351	0	0	0	0	23	2	25	25	656
11:00 11:15	0	265	18	283	21	266	0	287	0	0	0	0	24	0	4	28	598
11:15 11:30	0	312	14	326	12	357	0	369	0	0	0	0	17	0	19	19	714
11:30 11:45	0	264	10	274	16	301	0	317	0	0	0	0	26	0	1	27	618
11:45 12:00	0	236	18	254	13	281	0	294	0	0	0	0	30	0	3	33	561
12:00 12:15	0	288	9	297	12	409	0	421	0	0	0	0	45	0	12	57	775
12:15 12:30	0	296	18	314	26	402	0	428	0	0	0	0	42	0	8	50	792
12:30 12:45	0	333	18	351	2	459	0	461	0	0	0	0	49	0	13	62	874
12:45 13:00	0	288	10	298	8	440	0	448	0	0	0	0	30	0	8	38	764
13:00 13:15	0	282	9	291	1	456	0	457	0	0	0	0	46	0	4	52	800
13:15 13:30	0	270	8	278	2	529	0	531	0	0	0	0	36	0	2	38	847
13:30 13:45	0	292	4	296	2	485	0	487	0	0	0	0	30	0	9	39	822
13:45 14:00	0	409	2	411	3	523	0	526	0	0	0	0	28	0	3	32	969
14:00 14:15	0	449	4	453	2	400	0	402	0	0	0	0	20	0	3	23	878
14:15 14:30	0	434	1	435	1	439	0	440	0	0	0	0	10	0	2	12	887
14:30 14:45	0	340	2	342	4	385	0	389	0	0	0	0	11	0	4	15	726
14:45 15:00	0	898	479	1034	369	11634	0	12003	0	0	0	0	174	944	944	23294	

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Time Period	RIVERSIDE DR				Street Total	Street Total	Grand Total
	Northbound	Southbound	Eastbound	Westbound			
07:00 07:15	0	0	0	1	1	1	
07:15 07:30	0	0	0	0	0	0	
07:30 07:45	0	0	0	0	0	0	
07:45 08:00	0	1	1	0	2	1	
08:00 08:15	0	0	0	0	0	0	
08:15 08:30	0	0	0	0	0	0	
08:30 08:45	1	0	1	0	2	1	
08:45 09:00	0	0	0	0	0	0	
09:00 09:15	0	0	0	0	0	0	
09:15 09:30	0	0	0	0	0	0	
09:30 09:45	0	0	0	0	0	0	
09:45 10:00	0	0	0	0	0	0	
10:00 10:15	0	0	0	0	0	0	
10:15 10:30	0	0	0	0	0	0	
10:30 10:45	0	0	0	0	0	0	
10:45 11:00	0	0	0	0	0	0	
11:00 11:15	0	0	0	0	0	0	
11:15 11:30	0	0	0	0	0	0	
11:30 11:45	0	0	0	0	0	0	
11:45 12:00	0	0	0	0	0	0	
12:00 12:15	0	0	0	0	0	0	
12:15 12:30	0	0	0	0	0	0	
12:30 12:45	0	0	0	0	0	0	
12:45 13:00	0	0	0	0	0	0	
13:00 13:15	1	0	1	0	2	1	
13:15 13:30	0	0	0	0	0	0	
13:30 13:45	0	0	0	0	0	0	
13:45 14:00	0	0	0	0	0	0	
14:00 14:15	0	0	0	0	0	0	
14:15 14:30	0	0	0	0	0	0	
14:30 14:45	1	0	1	0	2	1	
14:45 15:00	0	0	0	0	0	0	
15:00 15:15	0	0	0	0	0	0	
15:15 15:30	0	0	0	0	0	0	
15:30 15:45	0	0	0	0	0	0	
15:45 16:00	0	0	0	0	0	0	
16:00 16:15	0	0	0	0	0	0	
16:15 16:30	0	0	0	0	0	0	
16:30 16:45	0	0	0	2	2	2	
16:45 17:00	0	0	0	2	2	2	
17:00 17:15	0	0	0	2	2	2	
17:15 17:30	0	0	0	0	0	0	
17:30 17:45	0	0	0	1	1	1	
17:45 18:00	0	0	0	0	0	0	
Total	3	1	4	11	11	15	



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Time Period	RIVERSIDE DR			RIVERSIDE HOSPITAL			Total	Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total		
07:00 07:15	0	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0	0
08:45 09:00	2	0	2	0	0	0	2	2
09:00 09:15	0	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0	0
10:00 10:15	0	0	0	0	0	0	0	0
10:15 10:30	0	0	0	0	0	0	0	0
10:30 10:45	0	0	0	0	0	0	0	0
10:45 11:00	0	0	0	0	0	0	0	0
11:00 11:15	0	0	0	0	0	0	0	0
11:15 11:30	0	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0	0
13:15 13:30	1	0	1	0	0	0	1	1
13:30 13:45	0	0	0	0	0	0	0	0
13:45 14:00	0	0	0	0	0	0	0	0
14:00 14:15	0	0	0	0	0	0	0	0
14:15 14:30	0	0	0	0	0	0	0	0
14:30 14:45	0	0	0	0	0	0	0	0
14:45 15:00	0	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0	0
Total	3	0	3	0	0	3	27	30



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Heavy Vehicles

Time Period	Northbound						Southbound						Eastbound						Westbound						Grand Total
	RT		ST		LT		RT		ST		LT		RT		ST		LT		RT		ST		LT		
	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	
07:00	0	3	0	3	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
07:15	0	7	1	8	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	16
07:30	0	5	0	5	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15
07:45	0	8	1	9	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	23
08:00	0	12	0	12	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	22
08:15	0	9	1	10	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	23
08:30	0	6	1	7	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	23
08:45	0	16	0	16	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	30
09:00	0	12	1	13	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	23
09:15	0	9	2	11	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
09:30	0	6	0	6	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	19
09:45	0	8	1	9	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	26
10:00	0	3	0	3	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15
11:30	0	15	1	16	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
11:45	0	7	0	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
12:00	0	9	0	9	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
12:15	0	7	0	7	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
12:30	0	7	0	7	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12:45	0	13	1	14	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	18
13:00	0	4	0	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
13:15	0	5	1	6	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
13:30	0	3	0	3	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
13:45	0	13	1	14	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
14:00	0	8	0	8	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
14:15	0	9	1	10	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
14:30	0	9	0	9	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
14:45	0	6	1	7	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
15:00	0	6	0	6	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
15:15	0	6	0	6	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
15:30	0	5	0	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
15:45	0	4	0	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
16:00	0	5	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
16:15	0	5	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31
16:30	0	243	14	257	3	290	0	293	550	0	0	0	0	24	0	0	7	31	0	7	0	0	0	0	561



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ RIVERSIDE HOSPITAL

Survey Date: Thursday, August 20, 2015 **WO No:** 35269
Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study 15 Minute U-Turn Total

Time Period	Northbound		Southbound		Eastbound		Westbound		Total
	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	
	RIVERSIDE DR								
07:00	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0



Transportation Services - Traffic Services

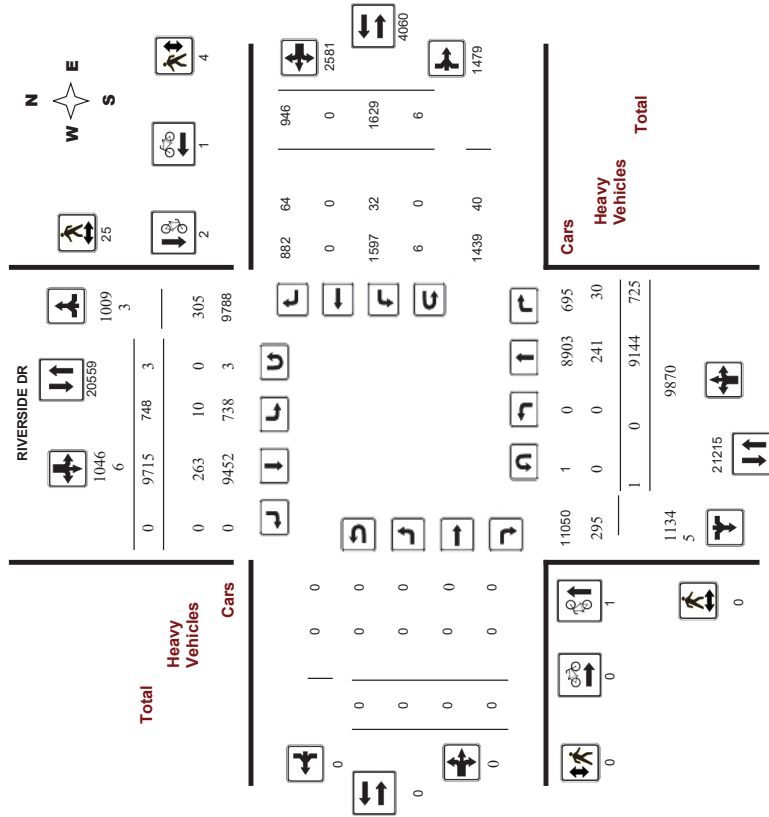
Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

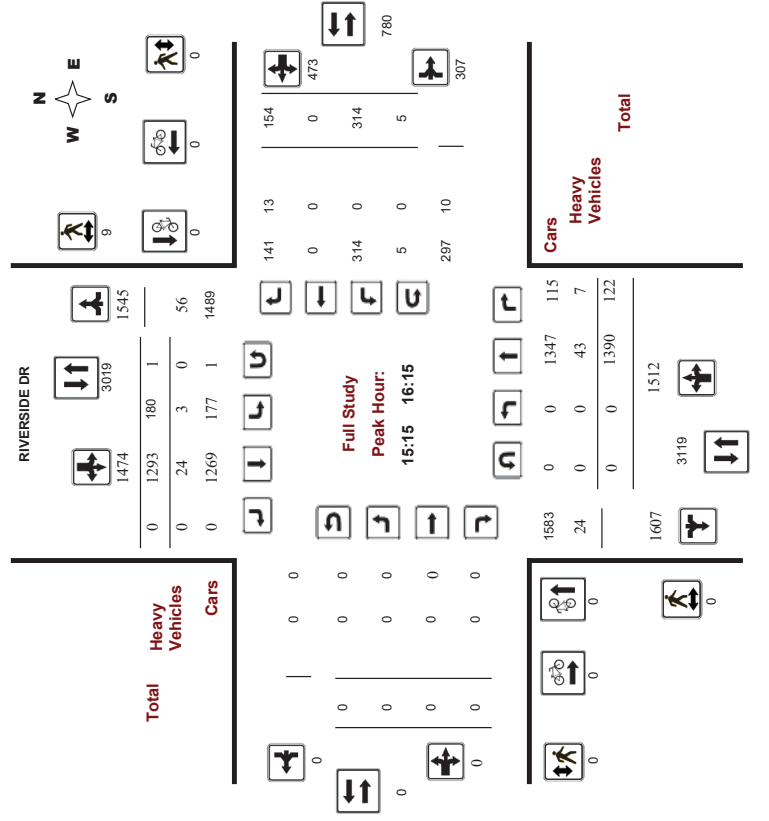
Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study Peak Hour Diagram





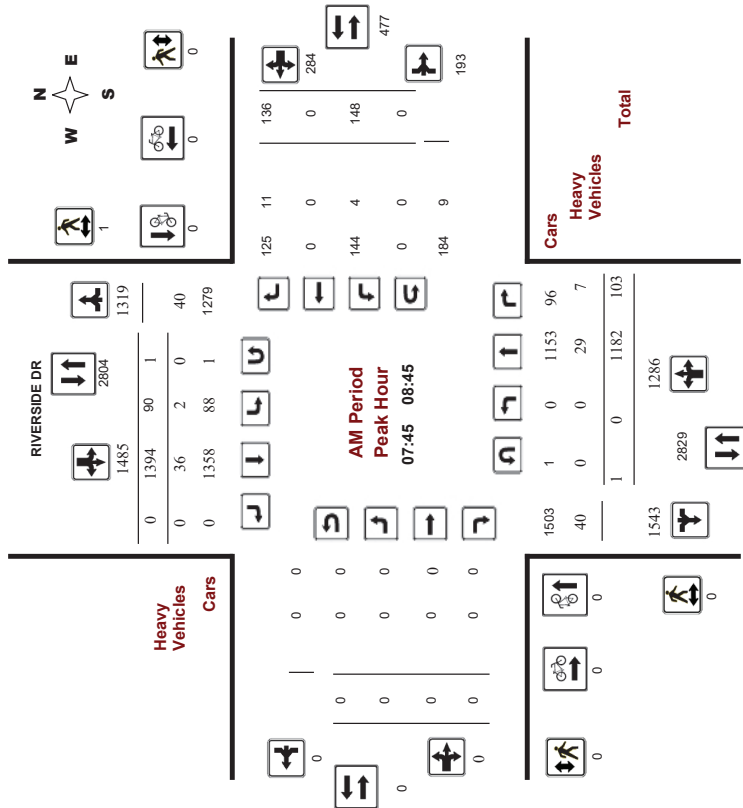
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision



Comments



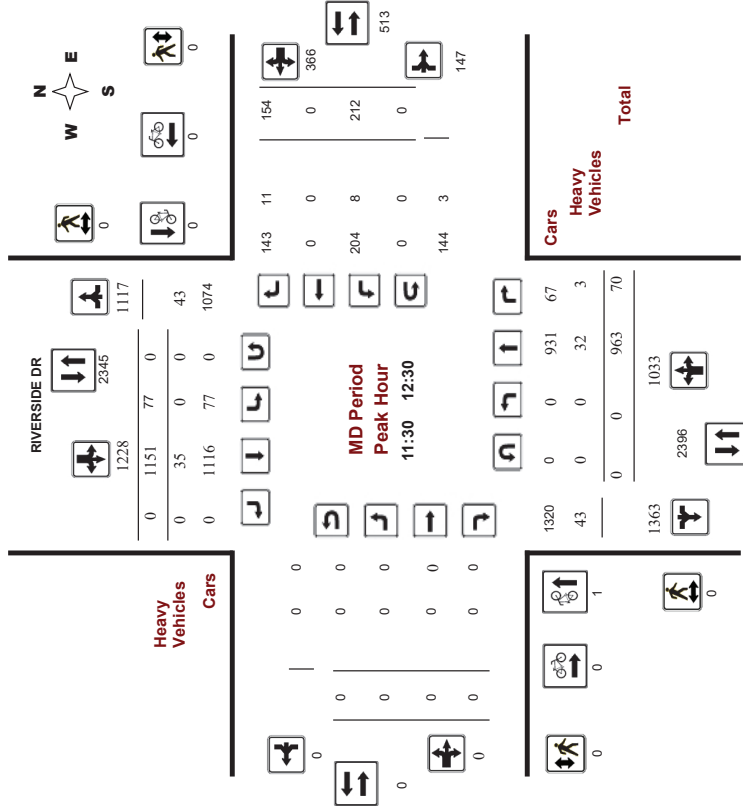
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

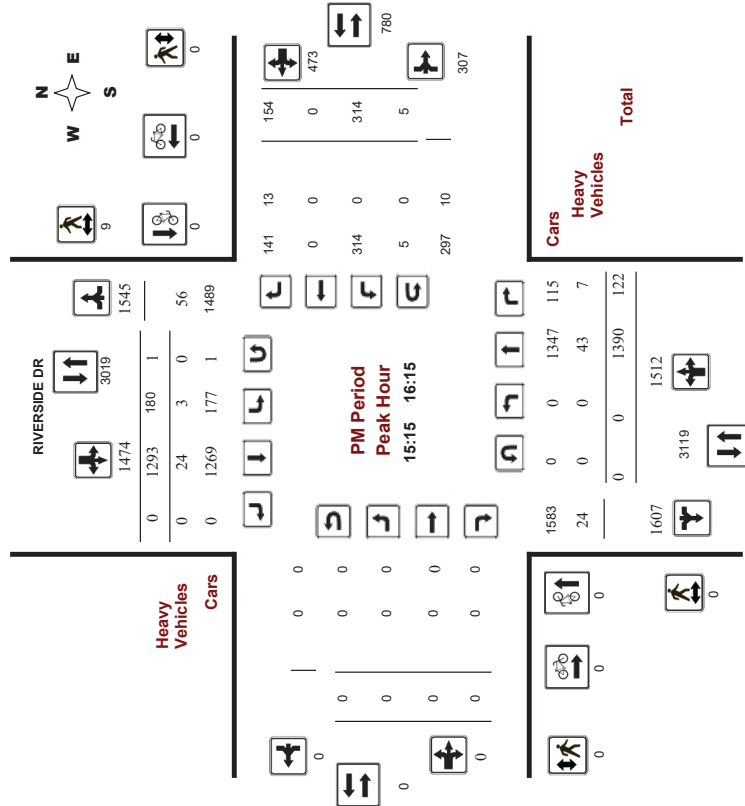
RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017

Start Time: 07:00

WO No: 37348

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017

Start Time: 07:00

WO No: 37348

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, November 29, 2017

Total Observed U-Turns

Northbound: 1

Southbound: 3

Eastbound: 0

Westbound: 6

AA DT Factor

.90

RIVERSIDE DR

Period	Northbound			Southbound			Eastbound			Westbound			WB TOT	STR TOT	Grand Total			
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT	ST	RT	EB TOT				LT	ST	RT
07:00-08:00	0	1008	64	1072	45	1179	0	1224	2296	0	0	0	0	130	0	70	200	2496
08:00-09:00	0	1154	104	1258	91	1388	0	1489	2747	0	0	0	0	143	0	138	281	3028
09:00-10:00	0	937	103	1040	46	1071	0	1117	2157	0	0	0	0	155	0	93	248	2405
11:30-12:30	0	963	70	1033	77	1151	0	1228	2281	0	0	0	0	212	0	154	366	2627
12:30-13:30	0	904	89	993	70	986	0	1056	2049	0	0	0	0	184	0	115	289	2348
15:00-16:00	0	1374	109	1483	139	1300	0	1439	2922	0	0	0	0	324	0	150	474	3396
16:00-17:00	0	1421	81	1502	179	1286	0	1465	2967	0	0	0	0	269	0	139	408	3375
17:00-18:00	0	1383	105	1488	101	1344	0	1445	2933	0	0	0	0	212	0	87	299	3232
Sub Total	0	9144	725	9869	748	9715	0	10463	20332	0	0	0	0	1629	0	946	2575	22907
U-Turns	1	9144	725	9870	751	9715	0	10466	20336	0	0	0	0	1635	0	946	2581	22917
Total	1	12710	1008	13719	1044	13504	0	14548	28267	0	0	0	0	2273	0	1315	3588	31855

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12hr 1 11439 907 12347 940 12154 0 13094 25441 0 0 0 0 0 2046 0 1184 3230 28671

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.

AVG 24hr 1 14985 1188 16174 1231 15922 0 17153 33327 0 0 0 0 0 2680 0 1551 4231 37558

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study 15 Minute Increments

Time Period	Northbound				Eastbound				Westbound				W	STR	Grand		
	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT				RT	ST
07:00	0	205	15	220	8	282	0	260	480	0	0	0	0	14	40	520	
07:15	0	219	11	230	10	271	0	281	511	0	0	0	25	11	36	547	
07:30	0	288	16	304	10	307	0	317	621	0	0	0	42	20	62	683	
07:45	0	286	22	318	17	349	0	366	684	0	0	0	37	25	62	746	
08:00	1	285	25	321	24	313	0	337	658	0	0	0	31	42	73	731	
08:15	0	322	31	353	23	362	0	385	738	0	0	0	36	0	35	71	809
08:30	0	269	25	294	27	370	0	397	691	0	0	0	44	0	34	78	769
08:45	0	288	23	291	18	353	0	371	662	0	0	0	32	0	27	59	721
09:00	0	249	35	284	15	304	0	319	603	0	0	0	45	0	22	67	670
09:15	0	226	22	248	11	251	0	262	510	0	0	0	35	0	26	61	571
09:30	0	288	25	283	6	280	0	266	549	0	0	0	37	0	22	59	608
09:45	0	204	21	225	14	256	0	270	495	0	0	0	38	0	23	61	556
10:00	0	224	15	239	23	296	0	319	558	0	0	0	48	0	38	86	644
10:15	0	280	18	268	22	331	0	353	621	0	0	0	44	0	35	79	700
10:30	0	227	17	244	15	232	0	247	491	0	0	0	57	0	51	108	599
10:45	0	262	20	282	17	292	0	309	591	0	0	0	63	0	30	83	664
11:00	0	232	25	257	18	238	0	256	513	0	0	0	51	0	31	82	595
11:15	0	224	25	249	23	288	0	290	539	0	0	0	44	0	30	74	613
11:30	0	228	14	242	17	240	0	254	499	0	0	0	46	0	43	0	575
11:45	0	330	13	343	14	312	0	326	669	0	0	0	100	0	35	135	804
12:00	0	342	28	370	27	356	0	383	753	0	0	0	88	0	32	120	873
12:15	0	343	33	376	42	341	0	383	759	0	0	0	67	0	43	110	869
12:30	0	359	35	394	57	291	0	348	742	0	0	0	74	0	40	114	856
12:45	0	346	26	372	55	305	0	360	732	0	0	0	90	0	39	129	861
13:00	0	370	12	382	47	317	0	364	746	0	0	0	69	0	34	103	849
13:15	0	361	25	386	34	320	0	354	740	0	0	0	58	0	39	97	837
13:30	0	344	18	362	43	344	0	387	749	0	0	0	53	0	27	80	829
13:45	0	331	25	356	27	337	0	364	720	0	0	0	66	0	23	89	809
14:00	0	368	31	369	28	355	0	383	782	0	0	0	49	0	28	77	859
14:15	0	368	21	389	22	340	0	362	751	0	0	0	53	0	19	72	823
14:30	0	316	28	344	24	312	0	336	680	0	0	0	44	0	17	61	741
14:45	0	1	9144	725	9970	751	9715	0	10466	20336	0	0	0	946	2581	22917	

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study Cyclist Volume

Time Period	RIVERSIDE DR		Street Total	RIVERSIDE DR		Street Total	Grand Total
	Northbound	Southbound		Eastbound	Westbound		
07:00	0	0	0	0	0	0	0
07:15	0	1	1	0	0	1	1
07:30	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0
10:00	1	0	1	0	0	1	1
10:15	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0
16:15	0	1	1	0	0	1	1
16:30	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0
Total	1	2	3	0	1	1	4



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study Pedestrian Volume

RIVERSIDE DR

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	1	1	0	0	0	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	1	1	0	0	0	1
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	1	1	1
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	2	2	0	0	0	2
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	1	1	0	0	0	1
15:00 15:15	0	1	1	0	0	0	1
15:15 15:30	0	3	3	0	0	0	3
15:30 15:45	0	2	2	0	0	0	2
15:45 16:00	0	3	3	0	0	0	3
16:00 16:15	0	1	1	0	0	0	1
16:15 16:30	0	5	5	0	0	0	5
16:30 16:45	0	0	0	0	1	1	1
16:45 17:00	0	3	3	0	0	0	3
17:00 17:15	0	1	1	0	0	0	1
17:15 17:30	0	1	1	0	1	1	2
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	1	1	1
Total	0	25	25	0	4	4	29



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017
Start Time: 07:00

WO No: 37348
Device: Miovision

Full Study Heavy Vehicles

RIVERSIDE DR

Time Period	Northbound			Southbound			Eastbound			Westbound			W	STR	Grand Total		
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT					
07:00 07:15	0	3	6	9	0	14	0	14	23	0	0	0	1	0	3	4	27
07:15 07:30	0	4	1	5	0	13	0	13	18	0	0	0	0	0	1	1	19
07:30 07:45	0	8	1	9	1	5	0	6	15	0	0	0	2	0	2	4	19
07:45 08:00	0	9	0	9	0	12	0	12	21	0	0	0	2	0	2	4	25
08:00 08:15	0	7	4	11	1	6	0	7	18	0	0	0	1	0	4	5	23
08:15 08:30	0	8	2	10	1	13	0	14	24	0	0	0	0	0	3	3	27
08:30 08:45	0	5	1	6	0	5	0	5	11	0	0	0	1	0	2	3	14
08:45 09:00	0	8	0	8	0	15	0	15	23	0	0	0	0	0	1	1	24
09:00 09:15	0	9	1	10	1	11	0	12	22	0	0	0	3	0	4	7	29
09:15 09:30	0	15	2	17	0	6	0	6	23	0	0	0	0	0	2	2	25
09:30 09:45	0	11	2	13	0	8	0	8	21	0	0	0	2	0	4	4	25
09:45 10:00	0	8	0	8	1	6	0	7	15	0	0	0	1	0	3	4	19
11:30 11:45	0	11	1	12	0	11	0	11	23	0	0	0	2	0	3	5	28
11:45 12:00	0	10	1	11	0	6	0	6	17	0	0	0	3	0	2	5	22
12:00 12:15	0	5	0	5	0	9	0	9	14	0	0	0	2	0	4	4	18
12:15 12:30	0	6	1	7	0	9	0	9	16	0	0	0	1	0	4	5	21
12:30 12:45	0	7	0	7	0	9	0	9	16	0	0	0	1	0	2	2	17
12:45 13:00	0	7	0	7	0	14	0	14	21	0	0	0	2	0	2	2	23
13:00 13:15	0	6	0	6	0	15	0	15	21	0	0	0	1	0	0	1	22
13:15 13:30	0	7	0	7	0	8	0	8	15	0	0	0	1	0	0	1	16
15:00 15:15	0	5	0	5	0	11	0	11	16	0	0	0	3	0	2	5	21
15:15 15:30	0	8	0	8	2	8	0	10	18	0	0	0	0	0	2	2	20
15:30 15:45	0	10	3	13	1	5	0	6	19	0	0	0	0	0	6	6	25
15:45 16:00	0	15	3	18	0	7	0	7	25	0	0	0	0	0	3	3	28
16:00 16:15	0	10	1	11	0	4	0	4	15	0	0	0	0	0	2	2	17
16:15 16:30	0	9	0	9	0	9	0	9	18	0	0	0	0	0	2	2	20
16:30 16:45	0	7	0	7	1	2	0	3	10	0	0	0	1	0	3	4	14
16:45 17:00	0	3	0	3	0	1	0	1	4	0	0	0	0	0	2	2	6
17:00 17:15	0	9	0	9	1	5	0	6	15	0	0	0	0	0	0	0	15
17:15 17:30	0	5	0	5	0	7	0	7	12	0	0	0	0	0	1	1	13
17:30 17:45	0	4	0	4	0	4	0	4	8	0	0	0	2	0	1	3	11
17:45 18:00	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	7
Total: None	0	241	30	271	10	263	0	273	544	0	0	0	32	0	64	96	640



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD NORTH SIDE RAMP

Survey Date: Wednesday, November 29, 2017

WO No: 37348

Device: Miovision

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

Time Period	Northbound		Southbound		Eastbound		Westbound		Total
	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	
07:00	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	0	0	0	1
08:30	0	1	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0
12:45	0	1	0	0	0	0	0	0	1
13:00	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0
16:00	0	1	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0
Total	1	3	0	0	0	0	0	0	10



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017

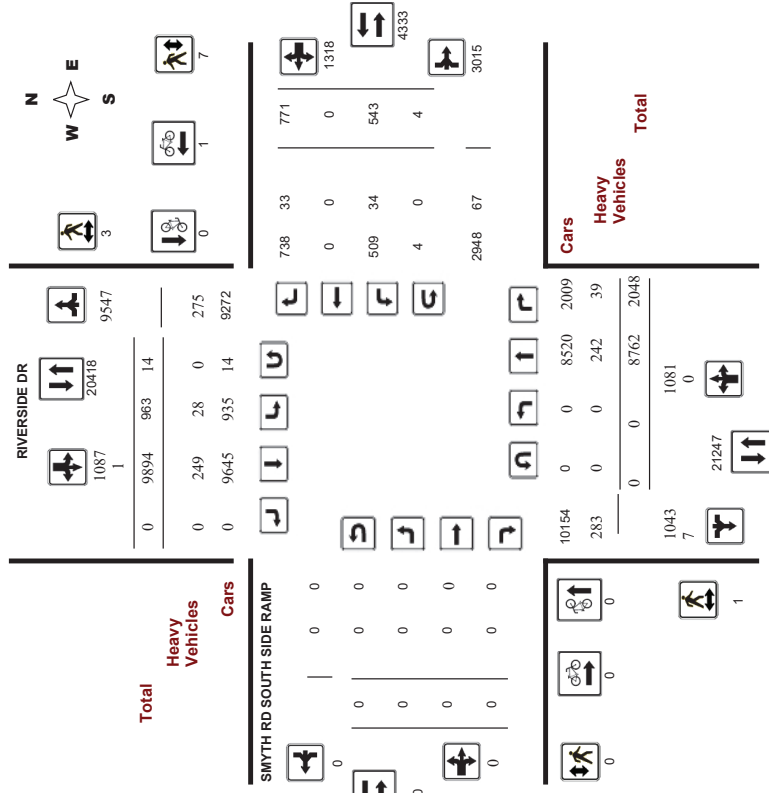
WO No: 37306

Device: Miovision

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

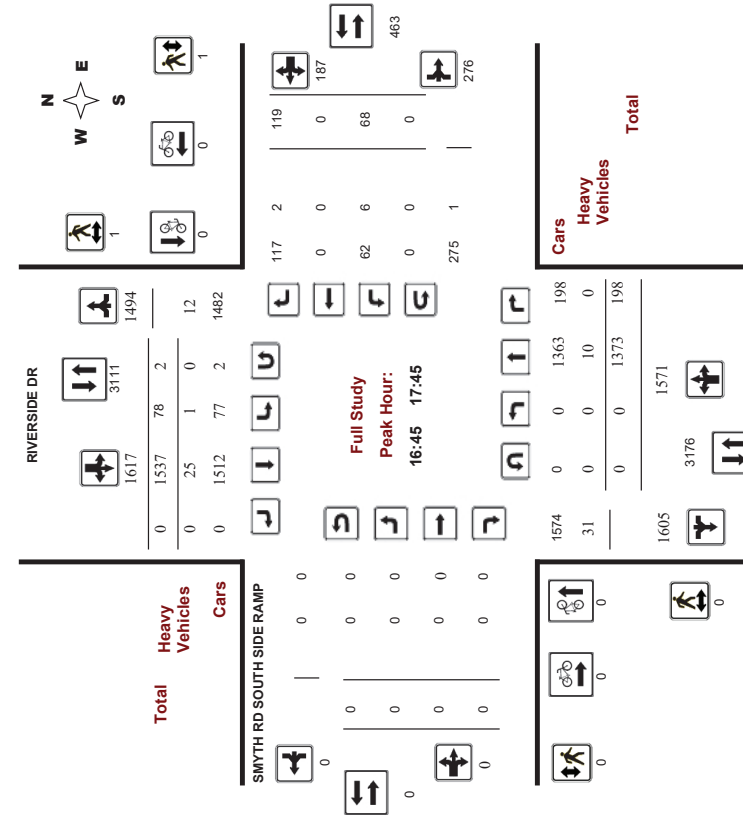
Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study Peak Hour Diagram



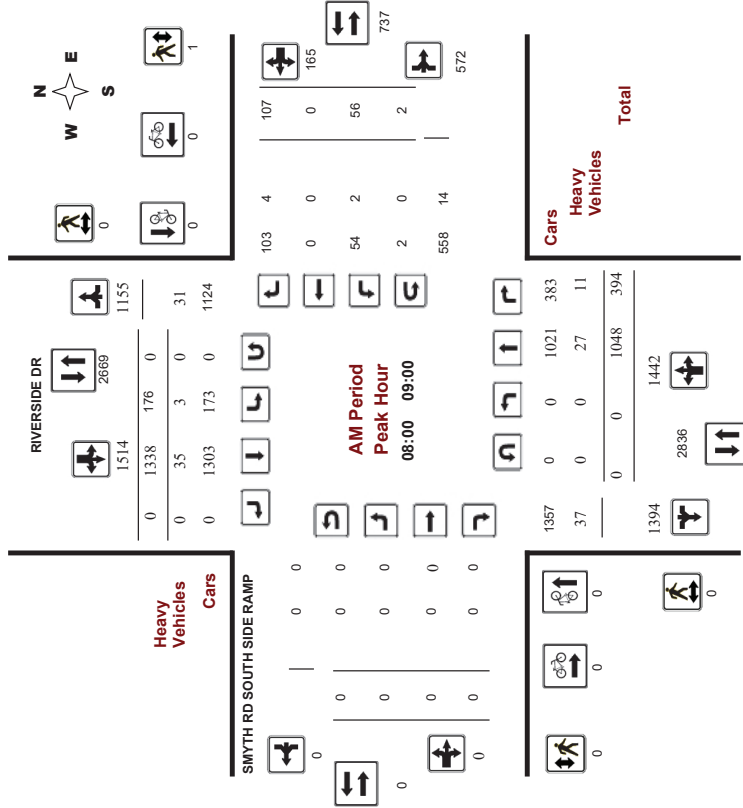
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision





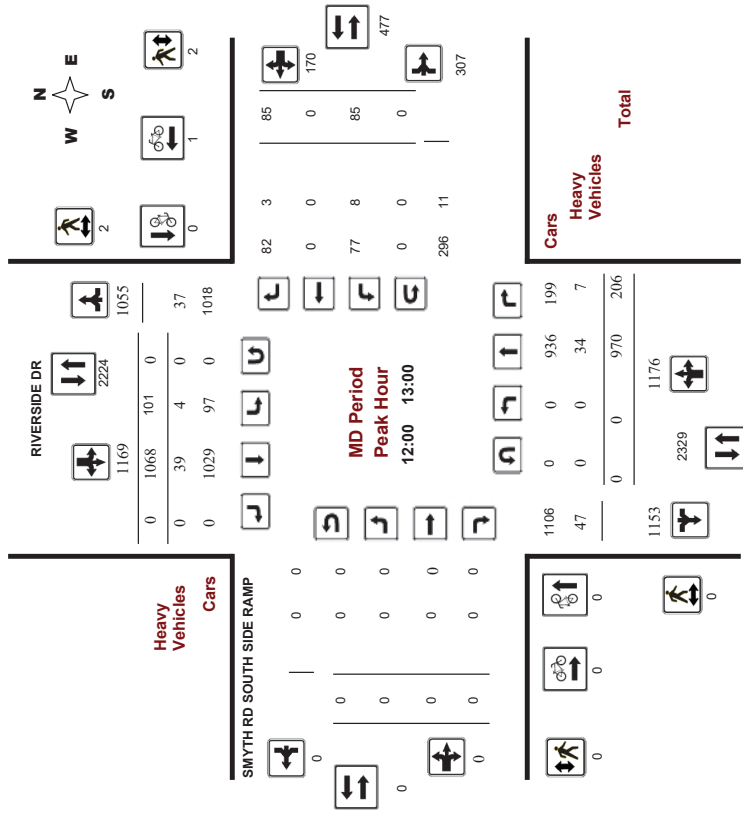
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision



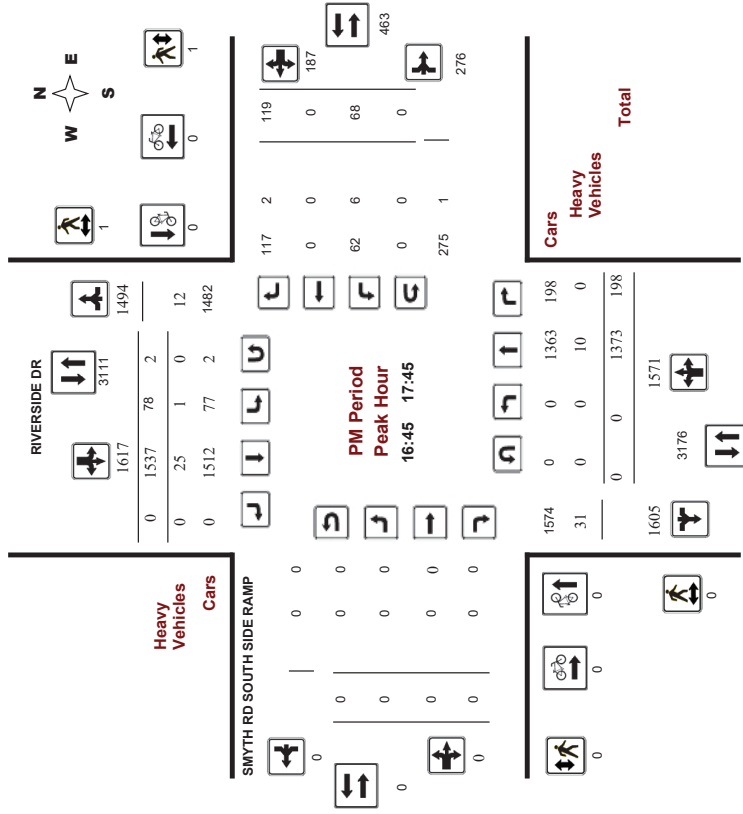
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision





Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, November 21, 2017
Total Observed U-Turns
 Northbound: 0 Southbound: 14
 Eastbound: 0 Westbound: 4

AAADT Factor
 1.00

Period	Northbound				Southbound				Eastbound				Westbound				WB TOT	STR TOT	Grand Total
	LT	ST	RT	TOT	NB	LT	ST	RT	EB	LT	ST	RT	WB	LT	ST	RT			
07:00-08:00	0	967	380	1347	132	1091	0	1223	2570	0	0	0	0	46	0	58	104	2674	674
08:00-09:00	0	1048	394	1442	176	1338	0	1514	2956	0	0	0	0	56	0	107	163	3119	809
09:00-10:00	0	945	332	1277	112	1012	0	1124	2401	0	0	0	0	87	0	72	159	2580	792
11:30-12:30	0	968	185	1153	91	1007	0	1098	2251	0	0	0	0	75	0	107	182	2433	674
12:30-13:30	0	980	205	1185	113	1031	0	1144	2329	0	0	0	0	88	0	81	169	2498	624
15:00-16:00	0	1219	194	1413	135	1460	0	1595	3008	0	0	0	0	67	0	112	179	3187	584
16:00-17:00	0	1280	173	1453	123	1489	0	1612	3065	0	0	0	0	62	0	115	177	3242	618
17:00-18:00	0	1355	185	1540	81	1466	0	1547	3087	0	0	0	0	62	0	119	181	3268	618
Sub Total	0	8762	2046	10810	963	9894	0	10857	21667	0	0	0	543	0	771	1314	1314	22981	634
U-Turns	0	8762	2046	10810	977	9894	0	10871	21681	0	0	0	547	0	771	1318	1318	22989	638
Total	0	12179	2847	15026	1359	13753	0	15111	30137	0	0	0	760	0	1072	1832	1832	31969	850

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.
 EQ 12hr 0 12179 2847 15026 1359 13753 0 15111 30137 0 0 0 0 760 0 1072 1832 1832 31969
 Note: These values are calculated by multiplying the totals by the appropriate expansion factor.
 AVG 12hr 0 12179 2847 15026 1359 13753 0 15111 30137 0 0 0 0 760 0 1072 1832 1832 31969
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.
 AVG 24hr 0 15954 3730 19684 1779 18016 0 19795 39479 0 0 0 0 996 0 1404 2400 2400 41879
 Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.
 Note: U-Turns provided for approach totals. Refer to "U-Turn" Report for specific breakdown.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study 15 Minute Increments

Survey Date: Tuesday, November 21, 2017
Total Observed U-Turns
 Northbound: 0 Southbound: 14
 Eastbound: 0 Westbound: 4

Time Period	Northbound				Southbound				Eastbound				Westbound				W TOT	STR TOT	Grand Total
	LT	ST	RT	TOT	NB	LT	ST	RT	EB	LT	ST	RT	WB	LT	ST	RT			
07:00-07:15	0	203	94	297	19	224	0	243	540	0	0	0	0	4	0	5	9	549	688
07:15-07:30	0	231	91	322	38	274	0	312	634	0	0	0	0	15	0	9	24	658	722
07:30-07:45	0	245	110	355	34	301	0	335	690	0	0	0	0	12	0	20	32	722	746
07:45-08:00	0	288	85	373	41	292	0	333	706	0	0	0	0	16	0	24	40	746	723
08:00-08:15	0	242	77	319	48	324	0	370	689	0	0	0	0	9	0	25	34	723	797
08:15-08:30	0	269	80	349	42	353	0	395	744	0	0	0	0	18	0	35	53	797	809
08:30-08:45	0	258	118	376	40	349	0	389	765	0	0	0	0	14	0	30	44	809	792
08:45-09:00	0	279	119	398	48	372	0	360	758	0	0	0	0	17	0	17	34	792	700
09:00-09:15	0	233	94	327	40	285	0	325	652	0	0	0	0	23	0	25	48	700	674
09:15-09:30	0	245	81	326	35	293	0	318	644	0	0	0	0	19	0	11	30	674	624
09:30-09:45	0	241	71	312	22	242	0	264	576	0	0	0	0	25	0	23	48	624	584
09:45-10:00	0	226	86	312	15	202	0	217	529	0	0	0	0	20	0	13	33	562	511
11:30-11:45	0	234	45	279	27	235	0	262	541	0	0	0	0	14	0	26	40	584	612
11:45-12:00	0	238	40	278	24	243	0	267	545	0	0	0	0	20	0	29	49	594	618
12:00-12:15	0	237	40	277	24	263	0	287	564	0	0	0	0	19	0	29	48	612	647
12:15-12:30	0	239	53	292	24	256	0	260	572	0	0	0	0	22	0	23	45	647	634
12:30-12:45	0	259	60	319	17	266	0	283	602	0	0	0	0	22	0	23	46	647	634
13:00-13:15	0	247	52	299	26	244	0	270	569	0	0	0	0	16	0	24	40	609	850
13:15-13:30	0	259	47	306	28	248	0	276	582	0	0	0	0	26	0	28	50	634	850
15:00-15:15	0	336	50	386	26	388	0	414	800	0	0	0	0	22	0	28	50	850	763
15:15-15:30	0	293	47	340	21	387	0	408	748	0	0	0	0	16	0	25	41	769	769
15:30-15:45	0	306	49	355	42	333	0	375	730	0	0	0	0	17	0	36	53	763	821
15:45-16:00	0	284	48	332	50	352	0	402	734	0	0	0	0	12	0	23	35	769	830
16:00-16:15	0	309	46	355	41	378	0	419	774	0	0	0	0	13	0	34	47	821	830
16:15-16:30	0	352	35	387	42	360	0	402	789	0	0	0	0	11	0	30	41	830	763
16:30-16:45	0	313	43	356	27	351	0	378	734	0	0	0	0	16	0	33	49	763	856
16:45-17:00	0	306	49	355	21	400	0	421	776	0	0	0	0	23	0	18	41	817	856
17:00-17:15	0	376	50	426	20	356	0	376	802	0	0	0	0	14	0	40	54	856	883
17:15-17:30	0	369	46	415	22	406	0	428	843	0	0	0	0	16	0	34	50	883	809
17:30-17:45	0	322	53	375	17	375	0	392	767	0	0	0	0	15	0	27	42	809	710
17:45-18:00	0	288	36	324	22	329	0	351	675	0	0	0	0	17	0	18	35	710	22,999
Total:	0	8762	2046	10810	977	9894	0	10871	21681	0	0	0	547	0	771	1318	1318	22,999	

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study Cyclist Volume

Time Period	RIVERSIDE DR		SMYTH RD SOUTH SIDE RAMP		Street Total	Grand Total
	Northbound	Southbound	Eastbound	Westbound		
07:00 07:15	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0
10:00 10:15	0	0	0	0	0	0
10:15 10:30	0	0	0	0	0	0
10:30 10:45	0	0	0	0	0	0
10:45 11:00	0	0	0	0	0	0
11:00 11:15	0	0	0	0	0	0
11:15 11:30	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0
13:30 13:45	0	0	0	0	0	0
13:45 14:00	0	0	0	0	0	0
14:00 14:15	0	0	0	0	0	0
14:15 14:30	0	0	0	0	0	0
14:30 14:45	0	0	0	0	0	0
14:45 15:00	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0
Total	0	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study Pedestrian Volume

Time Period	RIVERSIDE DR		SMYTH RD SOUTH SIDE RAMP		Total	Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)		
07:00 07:15	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0
10:00 10:15	0	0	0	0	0	0
10:15 10:30	0	0	0	0	0	0
10:30 10:45	0	0	0	0	0	0
10:45 11:00	0	0	0	0	0	0
11:00 11:15	0	0	0	0	0	0
11:15 11:30	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0
13:30 13:45	0	0	0	0	0	0
13:45 14:00	0	0	0	0	0	0
14:00 14:15	0	0	0	0	0	0
14:15 14:30	0	0	0	0	0	0
14:30 14:45	0	0	0	0	0	0
14:45 15:00	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0
Total	1	3	4	0	7	11



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study Heavy Vehicles

SMYTH RD SOUTH SIDE RAMP

Westbound

Time Period	Northbound				Southbound				Eastbound				Westbound				W STR TOT	R STR TOT	Grand Total
	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT			
07:00	0	10	1	11	1	10	0	11	22	0	0	0	0	0	0	0	22		
07:15	0	5	0	5	0	8	0	8	13	0	0	0	0	0	0	0	14		
07:30	0	9	1	10	2	13	0	15	25	0	0	0	0	0	0	2	27		
07:45	0	9	0	9	0	8	0	8	17	0	0	0	0	0	0	2	19		
08:00	0	2	3	5	1	6	0	7	12	0	0	0	0	0	0	2	14		
08:15	0	4	0	4	0	10	0	10	14	0	0	0	0	0	0	1	15		
08:30	0	6	3	9	0	8	0	8	17	0	0	0	0	0	0	2	19		
08:45	0	15	5	20	2	11	0	13	33	0	0	0	0	0	0	1	34		
09:00	0	12	1	13	1	13	0	14	27	0	0	0	0	0	0	1	31		
09:15	0	14	1	15	1	13	0	14	29	0	0	0	0	0	0	4	33		
09:30	0	14	0	14	1	4	0	5	19	0	0	0	0	0	0	6	25		
09:45	0	10	2	12	3	6	0	9	21	0	0	0	0	0	0	2	23		
10:00	0	5	3	8	0	4	0	4	12	0	0	0	0	0	0	2	14		
11:30	0	6	2	8	0	8	0	8	16	0	0	0	0	0	0	2	18		
11:45	0	9	1	10	1	8	0	9	18	0	0	0	0	0	0	1	19		
12:00	0	9	3	12	0	5	0	5	17	0	0	0	0	0	0	4	21		
12:15	0	7	3	10	1	17	0	18	28	0	0	0	0	0	0	4	32		
12:30	0	9	1	10	2	9	0	11	21	0	0	0	0	0	0	2	23		
12:45	0	7	3	10	1	17	0	18	28	0	0	0	0	0	0	4	32		
13:00	0	10	1	11	2	15	0	17	28	0	0	0	0	0	0	3	31		
13:15	0	12	1	13	1	11	0	12	25	0	0	0	0	0	0	2	27		
13:30	0	8	1	9	0	4	0	4	13	0	0	0	0	0	0	1	14		
15:00	0	8	0	8	1	2	0	3	11	0	0	0	0	0	0	2	13		
15:15	0	4	1	5	4	4	0	8	13	0	0	0	0	0	0	0	13		
15:30	0	7	2	9	2	7	0	9	16	0	0	0	0	0	0	2	20		
15:45	0	5	3	8	0	3	0	3	11	0	0	0	0	0	0	5	16		
16:00	0	10	0	10	1	9	0	10	20	0	0	0	0	0	0	1	21		
16:15	0	6	0	6	0	6	0	6	12	0	0	0	0	0	0	1	13		
16:30	0	3	0	3	0	6	0	6	9	0	0	0	0	0	0	4	13		
16:45	0	4	0	4	1	9	0	10	14	0	0	0	0	0	0	0	14		
17:00	0	3	0	3	0	5	0	5	8	0	0	0	0	0	0	2	10		
17:15	0	0	0	0	0	5	0	5	5	0	0	0	0	0	0	2	7		
17:30	0	8	0	8	0	2	0	2	10	0	0	0	0	0	0	0	10		
17:45	0	242	39	281	28	249	0	277	558	0	0	0	0	0	0	67	625		
Total	None	0	242	39	281	28	249	0	277	558	0	0	0	0	0	67	625		



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ SMYTH RD SOUTH SIDE RAMP

Survey Date: Tuesday, November 21, 2017
Start Time: 07:00

WO No: 37306
Device: Miovision

Full Study 15 Minute U-Turn Total

RIVERSIDE DR

SMYTH RD SOUTH SIDE RAMP

Time Period	Northbound		Southbound		Eastbound		Westbound		Total
	U-Turn	Total	U-Turn	Total	U-Turn	Total	U-Turn	Total	
07:00	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0



Transportation Services - Traffic Services

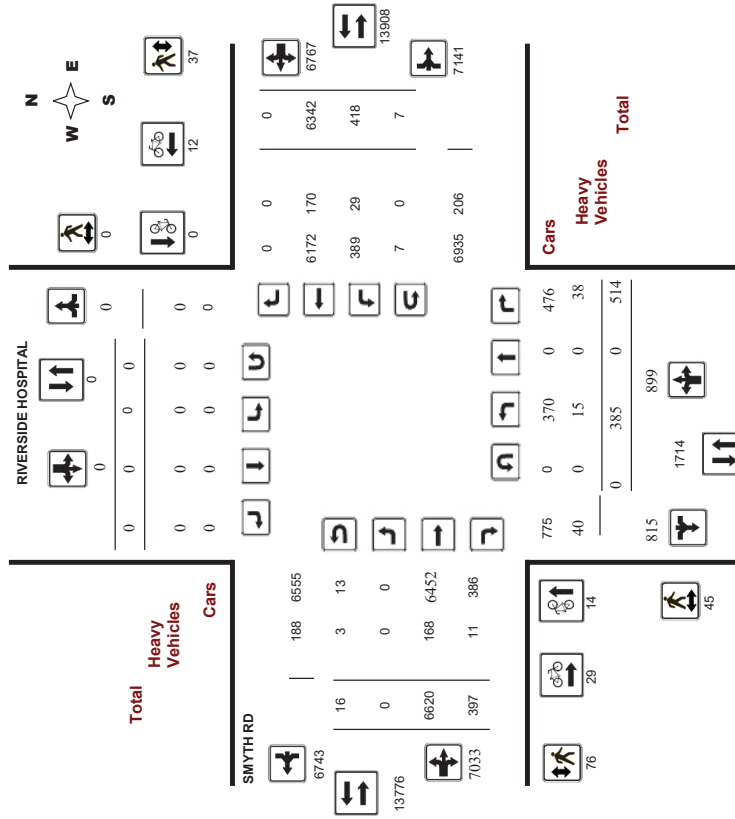
Turning Movement Count - Study Results

SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

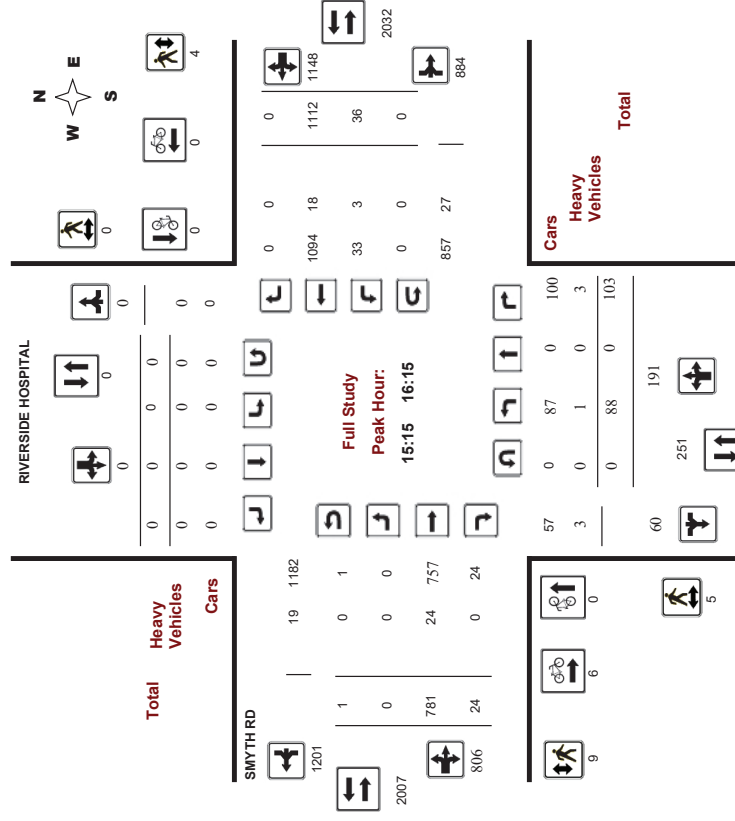
Turning Movement Count - Study Results

SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

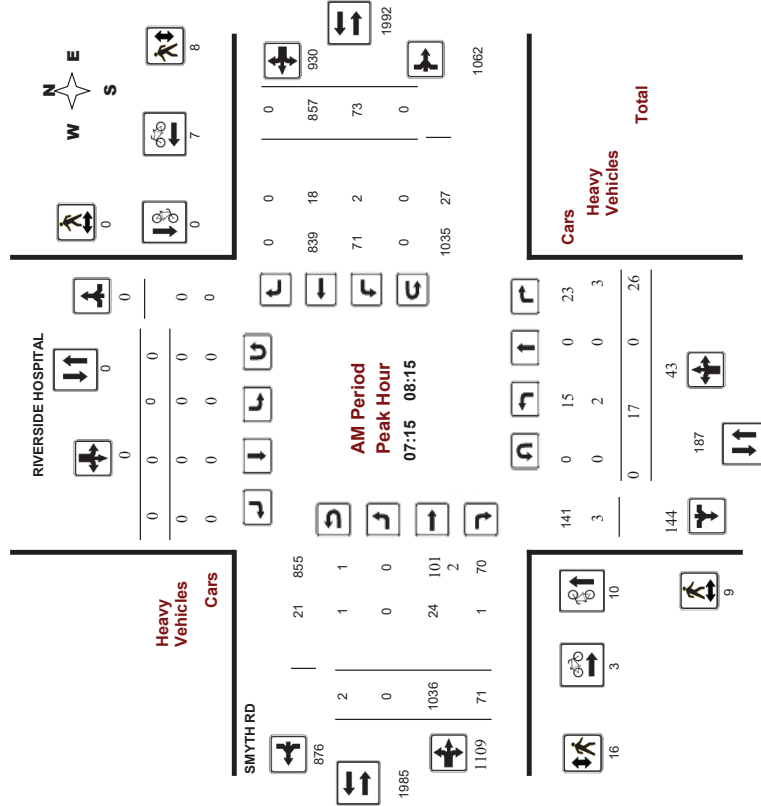
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018

WO No: 38129

Start Time: 07:00

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

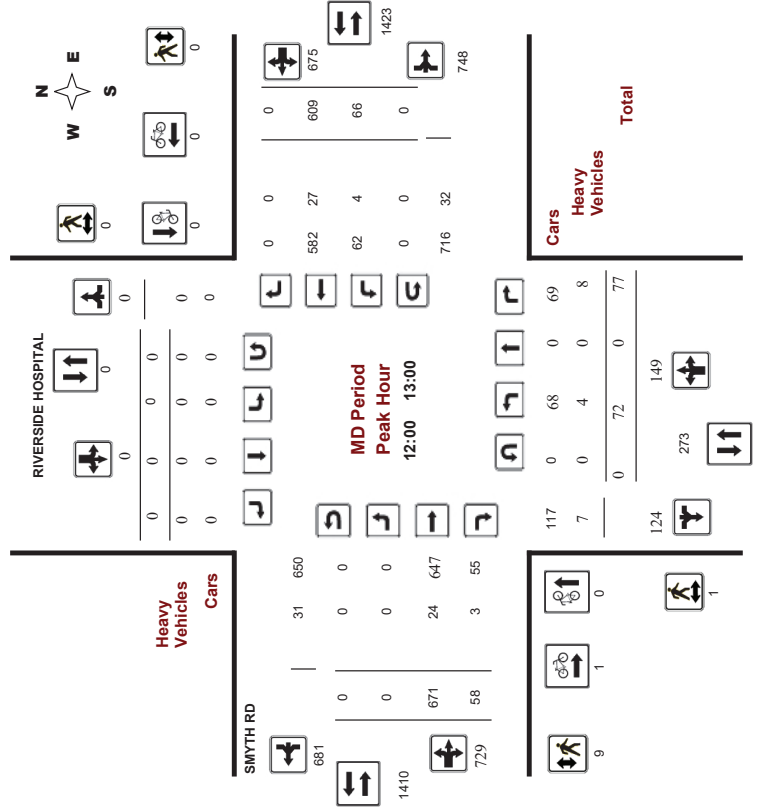
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018

WO No: 38129

Start Time: 07:00

Device: Miovision



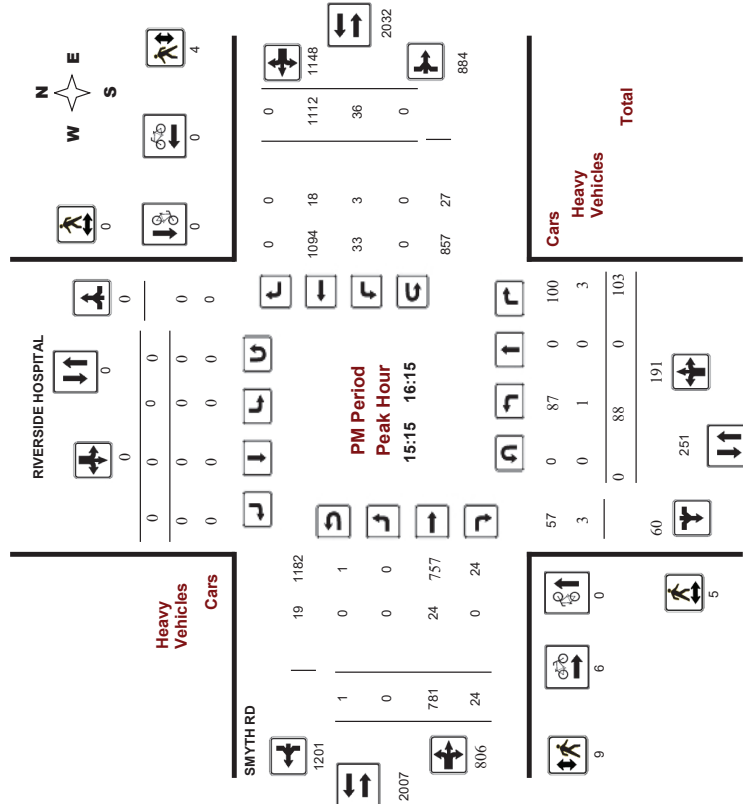
Comments



Transportation Services - Traffic Services
Turning Movement Count - Peak Hour Diagram
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision



Comments



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, November 20, 2018
Total Observed U-Turns
 Northbound: 0 Southbound: 0
 Eastbound: 16 Westbound: 7
AADT Factor
 1.00

RIVERSIDE HOSPITAL

Period	Northbound			Southbound			Eastbound			Westbound			WB TOT	STR TOT	Grand Total				
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT	ST	RT	EB TOT				LT	ST	RT	
07:00-08:00	20	0	33	53	0	0	0	0	53	0	1037	79	1116	76	743	0	819	1935	1988
08:00-09:00	15	0	37	52	0	0	0	0	52	0	984	64	1048	76	846	0	922	1970	2022
09:00-10:00	45	0	64	109	0	0	0	0	109	0	880	74	954	64	700	0	764	1718	1827
11:30-12:30	73	0	83	156	0	0	0	0	156	0	626	51	677	52	557	0	639	1316	1472
12:30-13:30	52	0	69	121	0	0	0	0	121	0	642	63	705	72	578	0	650	1355	1476
15:00-16:00	86	0	97	183	0	0	0	0	183	0	773	27	800	32	1096	0	1128	1928	2111
16:00-17:00	53	0	91	144	0	0	0	0	144	0	903	21	924	31	934	0	985	1889	2033
17:00-18:00	41	0	40	81	0	0	0	0	81	0	775	18	793	15	858	0	873	1666	1747
Sub Total	385	0	514	899	0	0	0	0	899	0	6620	397	7017	418	6342	0	6760	13777	14676
U-Turns	0	0	0	0	0	0	0	0	0	0	16	7	23	7	23	0	7	23	23
Total	385	0	514	899	0	0	0	0	899	16	6620	397	7033	425	6342	0	6767	13800	14699
EQ 12hr	535	0	714	1249	0	0	0	0	1249	22	9202	552	9776	591	8815	0	9406	19182	20431
AVG 12hr	535	0	714	1249	0	0	0	0	1249	22	9202	552	9776	591	8815	0	9406	19182	20431
AVG 24hr	701	0	935	1636	0	0	0	0	1636	29	12055	723	12807	774	11548	0	12322	25129	26765

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. 1.31
 Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study 15 Minute Increments
SMYTH RD

Time Period	Northbound				Southbound				Eastbound				Westbound				W	STR	Grand	
	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT				RT
07:00	5	0	11	16	0	0	0	0	0	242	21	263	24	123	0	147	410	426		
07:15	07:30	5	0	7	12	0	0	0	0	243	20	263	17	189	0	206	469	481		
07:30	07:45	7	0	8	15	0	0	0	0	15	1	279	21	222	0	243	544	559		
07:45	08:00	3	0	7	10	0	0	0	0	1	273	17	291	14	209	0	223	514	524	
08:00	08:15	2	0	4	6	0	0	0	0	6	0	241	13	254	21	237	0	258	512	518
08:15	08:30	3	0	9	12	0	0	0	0	0	229	16	245	13	191	0	204	449	461	
08:30	08:45	4	0	14	18	0	0	0	0	0	251	20	271	23	229	0	252	523	541	
08:45	09:00	6	0	10	16	0	0	0	0	2	283	15	280	20	189	0	209	489	505	
09:00	09:15	9	0	17	26	0	0	0	0	0	266	18	284	18	180	0	198	482	508	
09:15	09:30	8	0	19	27	0	0	0	0	1	216	17	234	13	199	0	212	446	473	
09:30	09:45	17	0	20	37	0	0	0	0	1	212	22	235	19	172	0	191	426	463	
09:45	10:00	11	0	8	19	0	0	0	0	0	186	17	203	16	149	0	165	368	387	
10:00	10:15	12	0	22	34	0	0	0	0	0	145	9	155	9	140	0	149	304	338	
10:15	10:30	23	0	22	45	0	0	0	0	0	163	16	179	15	136	0	151	330	375	
10:30	10:45	21	0	19	40	0	0	0	0	0	146	13	159	14	154	0	168	327	367	
10:45	11:00	17	0	20	37	0	0	0	0	0	172	13	185	16	157	0	173	358	395	
11:00	11:15	16	0	19	35	0	0	0	0	0	192	15	207	18	155	0	173	360	415	
11:15	11:30	18	0	19	37	0	0	0	0	0	161	17	178	18	143	0	161	339	376	
11:30	11:45	12	0	13	25	0	0	0	0	0	151	14	165	15	156	0	171	336	360	
11:45	12:00	12	0	13	25	0	0	0	0	0	138	17	156	22	124	0	146	302	327	
12:00	12:15	17	0	28	45	0	0	0	0	0	172	7	179	9	250	0	259	438	483	
12:15	12:30	23	0	24	47	0	0	0	0	0	181	6	187	8	293	0	301	488	535	
12:30	12:45	29	0	21	50	0	0	0	0	0	194	8	202	10	293	0	303	505	555	
12:45	13:00	17	0	24	41	0	0	0	0	0	226	6	233	5	260	0	265	498	559	
13:00	13:15	19	0	34	53	0	0	0	0	0	180	4	184	13	266	0	279	463	516	
13:15	13:30	7	0	22	29	0	0	0	0	0	234	7	244	8	224	0	232	476	505	
13:30	13:45	18	0	20	38	0	0	0	0	0	243	7	250	5	213	0	218	468	506	
13:45	14:00	9	0	15	24	0	0	0	0	0	24	1	246	3	250	0	236	486	510	
14:00	14:15	12	0	14	26	0	0	0	0	0	224	7	231	4	264	0	268	499	525	
14:15	14:30	15	0	13	28	0	0	0	0	0	166	4	173	2	203	0	205	378	406	
14:30	14:45	3	0	5	8	0	0	0	0	0	216	2	218	5	221	0	226	444	482	
14:45	15:00	11	0	8	19	0	0	0	0	0	169	5	174	5	170	0	175	349	368	
Total:		385	0	514	899	0	0	0	0	899	16	6620	397	7033	425	6342	0	6767	899	14,699

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Cyclist Volume
SMYTH RD

Time Period	RIVERSIDE HOSPITAL		RIVERSIDE HOSPITAL		SMYTH RD		Street Total	Grand Total
	Northbound	Southbound	Eastbound	Westbound	Street Total			
07:00	1	0	0	0	1	1	1	2
07:15	0	0	0	0	0	0	0	2
07:30	1	0	0	0	1	1	1	2
07:45	3	0	0	0	3	3	3	6
08:00	6	0	0	0	6	6	6	10
08:15	1	0	0	0	1	1	1	2
08:30	2	0	0	0	2	2	2	2
08:45	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0
Total	14	0	0	0	14	12	41	55



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Pedestrian Volume
RIVERSIDE HOSPITAL
SMYTH RD

Time Period	SB Approach (E or W Crossing)		EB Approach (N or S Crossing)		Total	Grand Total
	E or W	S or N	N or S	E or W		
07:00	0	0	0	0	0	0
07:15	2	0	5	0	7	7
07:30	3	0	3	3	6	10
07:45	1	0	1	2	3	4
08:00	3	0	6	3	9	12
08:15	1	0	2	3	5	6
08:30	4	0	6	4	10	14
08:45	2	0	3	3	6	8
09:00	1	0	2	4	6	7
09:15	2	0	2	0	4	4
09:30	0	0	0	0	0	0
09:45	3	0	4	1	8	8
10:00	2	0	2	0	4	4
10:15	0	0	0	0	0	0
10:30	1	0	3	0	4	4
10:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0
12:00	0	0	0	0	0	0
12:15	0	0	0	0	0	0
12:30	0	0	0	0	0	0
12:45	0	0	0	0	0	0
13:00	2	0	1	0	3	3
13:15	1	0	2	2	5	5
13:30	1	0	5	0	6	6
13:45	0	0	2	0	2	2
14:00	0	0	3	1	4	5
14:15	4	0	1	4	9	8
14:30	0	0	1	2	3	3
14:45	0	0	6	0	6	6
15:00	0	0	4	2	6	6
15:15	5	0	0	0	5	5
15:30	1	0	2	1	4	4
15:45	2	0	0	0	2	2
16:00	3	0	0	0	3	4
16:15	0	0	76	37	113	158
Total	45	0	45	37	113	158



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study Heavy Vehicles
RIVERSIDE HOSPITAL
SMYTH RD

Time Period	Northbound			Southbound			Eastbound			Westbound			W STR TOT	STR TOT	Grand Total					
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT								
07:00	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0				
07:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
07:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
07:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
08:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
08:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
08:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
08:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
09:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
09:15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
09:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
09:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
10:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
10:15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
10:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
10:45	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
11:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
11:15	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0				
11:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
11:45	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
12:00	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0				
12:15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
12:30	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0				
12:45	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0				
13:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
13:15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
13:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
13:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
14:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
14:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
14:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
14:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
15:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
15:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
15:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
15:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
16:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
16:15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
16:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
16:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
17:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
17:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
17:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
17:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
Total	15	0	38	53	0	0	0	0	0	53	0	168	11	179	29	170	0	199	378	434



Transportation Services - Traffic Services
Turning Movement Count - Study Results
SMYTH RD @ RIVERSIDE HOSPITAL

Survey Date: Tuesday, November 20, 2018
Start Time: 07:00

WO No: 38129
Device: Miovision

Full Study 15 Minute U-Turn Total
SMYTH RD

Time Period	RIVERSIDE HOSPITAL		SMYTH RD		Total
	Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	
07:00	0	0	0	0	0
07:15	0	0	0	0	0
07:30	0	0	0	0	0
07:45	0	0	1	0	1
08:00	0	0	1	0	1
08:15	0	0	0	0	0
08:30	0	0	0	0	0
08:45	0	0	0	1	1
09:00	0	0	2	0	2
09:15	0	0	0	0	0
09:30	0	0	1	1	2
09:45	0	0	1	1	2
10:00	0	0	0	0	0
11:30	0	0	1	0	1
11:45	0	0	0	2	2
12:00	0	0	0	0	0
12:15	0	0	0	0	0
12:30	0	0	0	0	0
12:45	0	0	0	0	0
13:00	0	0	0	0	0
13:15	0	0	0	1	1
13:30	0	0	1	0	1
15:00	0	0	0	0	0
15:15	0	0	0	0	0
15:30	0	0	0	0	0
15:45	0	0	0	0	0
16:00	0	0	1	0	1
16:15	0	0	0	0	0
16:30	0	0	3	0	3
16:45	0	0	0	0	0
17:00	0	0	1	0	1
17:15	0	0	0	0	0
17:30	0	0	3	0	3
17:45	0	0	0	1	1
18:00	0	0	0	0	0
Total	0	0	16	7	23

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

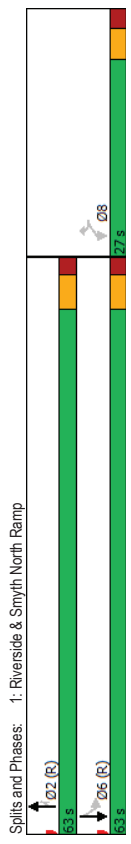
WBL	WBR	NBT	NBR	SBL	SBT
148	136	1052	103	91	1394
148	136	1052	103	91	1394
164	151	1169	114	101	1549
Perm	Perm	NA	Perm	Perm	NA
Protected Phases	8	8	2	2	6
Permitted Phases	8	8	2	2	6
Detector Phase	8	8	2	2	6
Switch Phase	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	24.6	24.6	37.8	37.8	15.8
Minimum Split (s)	27.0	27.0	63.0	63.0	63.0
Total Split (s)	30.0%	30.0%	70.0%	70.0%	70.0%
Total Split (%)	21.4	21.4	57.2	57.2	57.2
Maximum Green (s)	3.3	3.3	3.7	3.7	3.7
Yellow Time (s)	2.3	2.3	2.1	2.1	2.1
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	5.6	5.6	5.8	5.8	5.8
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	None	None	C-Max	C-Max	C-Max
Recall Mode	7.0	7.0	26.0	26.0	26.0
Walk Time (s)	12.0	12.0	6.0	6.0	6.0
Flash Dont Walk (s)	1	1	0	0	0
Pedestrian Calls (#/hr)	14.5	14.5	64.1	64.1	64.1
Act Effr Green (s)	0.16	0.16	0.71	0.71	0.71
Actuated G/C Ratio	0.62	0.50	0.49	0.11	0.38
v/c Ratio	45.2	19.6	1.6	0.2	11.3
Control Delay	0.0	0.0	0.0	0.0	0.0
Queue Delay	45.2	19.6	1.6	0.2	11.3
Total Delay	45.2	19.6	1.6	0.2	11.3
LOS	D	B	A	A	B
Approach Delay	32.9	1.4	9.5	9.5	9.5
Approach LOS	C	A	A	A	A
Queue Length 50th (m)	26.8	8.6	2.4	0.0	5.8
Queue Length 95th (m)	43.3	24.4	7.6	m0.2	19.5
Internal Link Dist (m)	185.3	236.3	236.3	303.1	303.1
Turn Bay Length (m)	40.0	40.0	45.0	125.0	125.0
Base Capacity (vph)	390	401	2363	1040	265
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.38	0.49	0.11	0.38

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 78 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 65

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 8.6
Intersection LOS: A
Intersection Capacity Utilization: 62.3%
IOU Level of Service B
Analysis Period (min): 15
m. Volume for 95th percentile queue is metered by upstream signal.

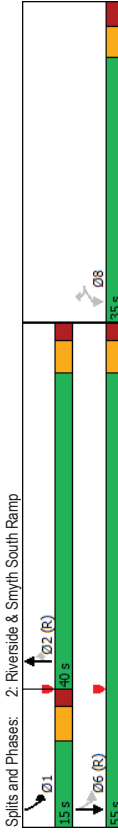


Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	56	107	1048	394	176	1358
Future Volume (vph)	56	107	1048	394	176	1358
Lane Group Flow (vph)	62	119	1164	438	196	1509
Turn Type	Perm	Perm	NA	Perm	pin+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8	2	2	2	6
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
Lead/Lag			Lag	Lead		
Lead-Lag Optimize?			Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	2.0	2.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effr Green (s)	10.5	10.5	54.0	54.0	71.0	72.1
Actuated G/C Ratio	0.12	0.12	0.60	0.60	0.79	0.80
v/c Ratio	0.33	0.43	0.59	0.42	0.49	0.57
Control Delay	41.3	12.4	9.9	2.0	10.6	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	12.4	9.9	2.0	10.6	9.2
LOS	D	B	A	A	B	A
Approach Delay	22.3		7.8		9.3	
Approach LOS	C		A		A	
Queue Length 50th (m)	10.1	0.0	30.6	0.0	13.8	66.3
Queue Length 95th (m)	21.4	14.5	41.9	16.4	m29.8	129.8
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	522	548	1971	1037	407	2631
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	0.12	0.22	0.59	0.42	0.48	0.57
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 90						

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 9.3
Intersection LOS: A
Intersection Capacity Utilization 63.6%
Analysis Period (min) 15
Volume for 95th percentile queue is metered by upstream signal.

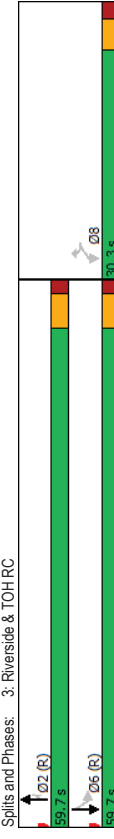


Lanes, Volumes, Timings
3: Riverside & TOH RC

Lanes, Volumes, Timings
3: Riverside & TOH RC

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	70	20	1419	73	63	1359
Future Volume (vph)	70	20	1419	73	63	1359
Lane Group Flow (vph)	78	22	1577	81	70	1510
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8	2	2	6	6
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effr Green (s)	13.3	13.3	70.2	70.2	70.2	70.2
Actuated G/C Ratio	0.15	0.15	0.78	0.78	0.78	0.78
v/c Ratio	0.34	0.10	0.62	0.07	0.40	0.59
Control Delay	36.6	12.7	8.0	3.0	11.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	12.7	8.0	3.0	11.8	4.8
LOS	D	B	A	A	B	A
Approach Delay	31.3		7.8		5.1	
Approach LOS	C		A		A	
Queue Length 50th (m)	12.8	0.0	49.3	1.2	1.1	12.3
Queue Length 95th (m)	21.1	5.4	129.8	7.9	m8.5	61.9
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)	35.0		25.0		80.0	
Base Capacity (vph)	438	381	2562	1121	175	2562
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	0.18	0.06	0.62	0.07	0.40	0.59
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 90						

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 7.2
Intersection LOS: A
Intersection Capacity Utilization: 71.3%
Analysis Period (min): 15
Volume for 95th percentile queue is metered by upstream signal.
Splits and Phases: 3: Riverside & TOH RC



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth Schlegel Villages

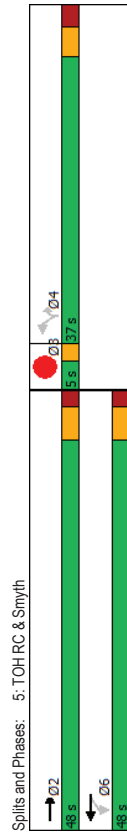
Lane Group	EBT	EBR	WBT	WBR	NBR	SBR
Lane Configurations	←←	←	←←	←	←	←
Traffic Volume (vph)	607	163	670	284	570	194
Future Volume (vph)	607	163	670	284	570	194
Lane Group Flow (vph)	674	181	744	316	633	216
Sign Control	Free					
Intersection Summary						
Control Type:	Unsignalized					
Intersection Capacity Utilization	61.6%					
Analysis Period (min)	15					
ICU Level of Service B						

Lanes, Volumes, Timings
5: TOH RC & Smyth Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	NBR	03
Lane Configurations	←←	←	←←	←	←	←
Traffic Volume (vph)	1106	73	937	17	26	
Future Volume (vph)	1106	73	937	17	26	
Lane Group Flow (vph)	1308	81	1041	19	29	
Turn Type	NA	Perm	NA	Perm	Perm	
Protected Phases	2 6 6					
Permitted Phases	2 6 6 4 4 4					
Detector Phase	2 6 6 4 4 4					
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.6	5.8	5.8	
Lead/Lag	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
Recall Mode	Max	Max	Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	24.0	0.0
Pedestrian Calls (#/hr)	9	0	0	16	16	24
Act Effr Green (s)	61.5	61.5	61.5	17.2	17.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.21	0.21	
v/c Ratio	0.37	0.34	0.29	0.06	0.10	
Control Delay	8.7	17.9	8.1	25.8	9.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.7	17.9	8.1	25.8	9.8	
LOS	A	B	A	C	A	
Approach Delay	8.7 8.8 16.1					
Approach LOS	A B					
Queue Length 50th (m)	21.2	3.5	15.8	2.6	0.0	
Queue Length 95th (m)	70.0	26.1	53.0	7.4	6.0	
Internal Link Dist (m)	59.2 422.8 186.5					
Turn Bay Length (m)	35.0 35.0					
Base Capacity (vph)	3567	241	3606	597	545	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.37	0.34	0.29	0.03	0.05	
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 81.2						
Natural Cycle: 80						
Control Type: Semi-Act-Uncoord						

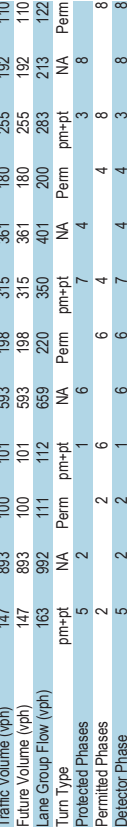
Lanes, Volumes, Timings
5: TOH RC & Smyth

Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 8.9
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15



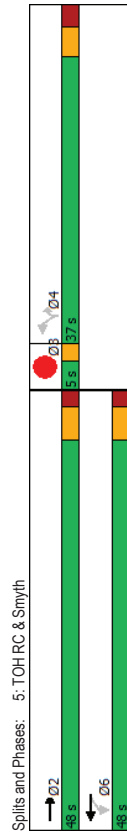
Lanes, Volumes, Timings
6: Alta Vista & Smyth

Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 8.9
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15



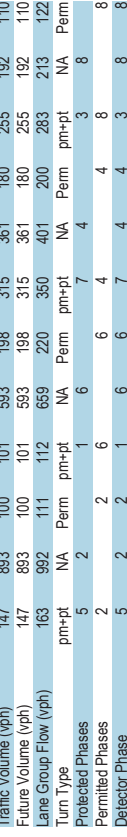
Lanes, Volumes, Timings
5: TOH RC & Smyth

Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 8.9
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15



Lanes, Volumes, Timings
6: Alta Vista & Smyth

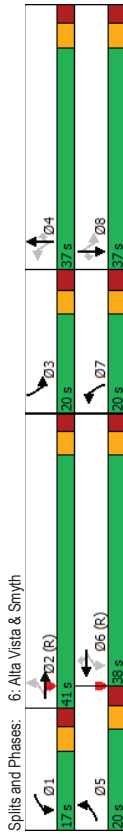
Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 8.9
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Future Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Turn Group Flow (vph)	163	892	111	112	659	220	350	401	200	283	213	122
Turn Type	pm-pt	NA	Perm	pm-pt	NA	Perm	pm-pt	NA	Perm	pm-pt	NA	Perm
Protected Phases	5	2	2	1	6	6	4	4	4	3	8	8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	20.0	41.0	41.0	17.0	38.0	38.0	20.0	37.0	37.0	20.0	37.0	37.0
Total Split (%)	17.4%	35.7%	35.7%	14.8%	33.0%	33.0%	17.4%	32.2%	32.2%	17.4%	32.2%	32.2%
Maximum Green (s)	14.0	35.2	35.2	11.0	32.2	32.2	13.9	30.9	30.9	13.9	30.9	30.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	24	24	24	31	31	31	11	11	11	11	17	17
Ad Effr Green (s)	48.3	36.6	36.6	43.7	34.4	34.4	44.8	30.9	30.9	44.8	30.9	30.9
Actuated g/C Ratio	0.42	0.32	0.32	0.38	0.30	0.30	0.39	0.27	0.27	0.39	0.27	0.27
v/c Ratio	0.55	0.95	0.21	0.58	0.67	0.45	0.80	0.87	0.41	0.94	0.47	0.25
Control Delay	26.9	57.1	3.1	34.2	39.9	15.3	40.0	60.8	13.9	63.6	39.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	57.1	3.1	34.2	39.9	15.3	40.0	60.8	13.9	63.6	39.2	5.1
LOS	C	E	A	C	D	B	D	E	B	E	D	A
Approach Delay	48.5			33.8			43.3			43.7		
Approach LOS	D			C			D			D		D
Queue Length 50th (m)	21.8	115.3	0.0	14.5	66.7	12.8	54.4	86.4	10.2	41.9	40.2	0.0
Queue Length 95th (m)	35.9	#160.7	6.9	28.7	91.2	35.7	#89.7	#139.3	30.2	#89.8	63.1	10.5
Internal Link Dist (m)	422.8			216.7			602.2			553.9		
Turn Bay Length (m)	40.0	30.0	60.0	30.0	70.0	30.0	70.0	30.0	30.0	50.0	25.0	25.0
Base Capacity (vph)	325	1045	522	212	980	491	440	460	488	302	455	486
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	0.50	0.95	0.21	0.53	0.67	0.45	0.80	0.87	0.41	0.94	0.47	0.25
Intersection Summary												
Cycle Length: 115												
Actuated Cycle Length: 115												
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 90												

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 42.6
 Intersection Capacity Utilization 89.6%
 Analysis Period (min): 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 42.6
 Intersection Capacity Utilization 89.6%
 Analysis Period (min): 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

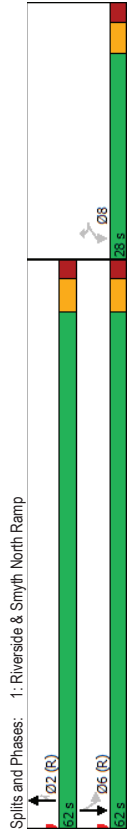
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	319	154	1390	122	181	1293
Future Volume (vph)	319	154	1390	122	181	1293
Lane Group Flow (vph)	354	171	1544	136	201	1437
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8	2	2	6	6
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	28.0	28.0	62.0	62.0	62.0	62.0
Total Split (%)	31.1%	31.1%	68.9%	68.9%	68.9%	68.9%
Maximum Green (s)	22.4	22.4	56.2	56.2	56.2	56.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effct Green (s)	21.5	21.5	57.1	57.1	57.1	57.1
Actuated g/C Ratio	0.24	0.24	0.63	0.63	0.63	0.63
v/c Ratio	0.90	0.48	0.74	0.14	1.75	0.68
Control Delay	59.7	27.2	4.7	0.5	391.9	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	27.2	4.7	0.5	391.9	13.0
LOS	E	C	A	A	F	B
Approach Delay	49.1		4.3			59.5
Approach LOS	D		A			E
Queue Length 50th (m)	58.6	19.1	11.6	0.1	~33.3	78.4
Queue Length 95th (m)	#104.9	38.0	24.0	m0.0	#75.3	101.3
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)	40.0		45.0		125.0	
Base Capacity (vph)	412	369	2083	950	115	2103
Starvation Cap Reductn	0	0	0	0	0	0
Spillover Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.46	0.74	0.14	1.75	0.68

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 160

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.75
 Intersection Signal Delay: 33.9
 Intersection Capacity Utilization 84.1%
 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.
 m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 1: Riverside & Smyth North Ramp

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

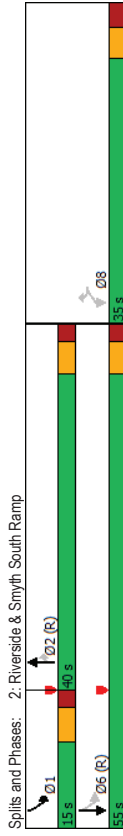
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	68	119	1398	198	80	1537
Future Volume (vph)	68	119	1398	198	80	1537
Lane Group Flow (vph)	76	132	1553	220	89	1708
Turn Type	Perm	Perm	NA	Perm	pm-pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8	2	2	6	6
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
Lead/Lag			Lag	Lag	Lead	Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effr Green (s)	11.1	11.1	56.9	56.9	67.2	67.2
Actuated g/C Ratio	0.12	0.12	0.63	0.63	0.75	0.75
v/c Ratio	0.40	0.44	0.74	0.22	0.39	0.69
Control Delay	42.5	11.6	11.8	2.8	10.5	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	11.6	11.8	2.8	10.5	10.6
LOS	D	B	B	A	B	B
Approach Delay	22.9		10.7		10.6	
Approach LOS	C		B		B	
Queue Length 50th (m)	12.5	0.0	51.8	1.5	5.4	85.0
Queue Length 95th (m)	24.6	15.0	70.9	m12.0	m10.0	115.6
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	488	565	2097	988	271	2477
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	0.15	0.23	0.74	0.22	0.33	0.69

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 11.3
 Intersection Capacity Utilization 66.2%
 Analysis Period (min) 15
 Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings
3: Riverside & TOHRC

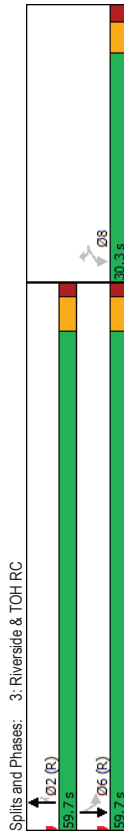
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	8	8	2	2	6	6
Traffic Volume (vph)	89	17	1584	11	8	1607
Future Volume (vph)	89	17	1584	11	8	1607
Lane Group Flow (vph)	Perm	Perm	NA	Perm	Perm	NA
Protected Phases						
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	0	0	4	4		
Act Effct Green (s)	11.7	11.7	71.9	71.9	71.9	71.9
Actuated g/C Ratio	0.13	0.13	0.80	0.80	0.80	0.80
v/c Ratio	0.46	0.09	0.66	0.01	0.06	0.67
Control Delay	43.1	15.2	7.1	2.6	3.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	15.2	7.1	2.6	3.6	4.6
LOS	D	B	A	A	A	A
Approach Delay	38.6		7.1		4.6	
Approach LOS	D		A		A	
Queue Length 50th (m)	16.3	0.0	63.8	0.3	0.3	51.0
Queue Length 95th (m)	30.0	5.9	107.2	1.6	m0.6	53.7
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)	35.0		25.0		80.0	
Base Capacity (vph)	459	410	2647	1161	142	2647
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	0.22	0.05	0.66	0.01	0.06	0.67

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
3: Riverside & TOH RC

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 6.9
 Intersection LOS: A
 Intersection Capacity Utilization 64.1%
 ICU Level of Service C
 Analysis Period (min) 15
 Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Lane Group	EBT	EBR	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑	↑↑	↑	↑	↑
Traffic Volume (vph)	577	187	727	473	278	303
Future Volume (vph)	577	187	727	473	278	303
Lane Group Flow (vph)	641	208	808	526	309	337
Sign Control	Free	Free	Free	Free	Free	Free

Intersection Summary
 Control Type: Unsignalized
 Intersection Capacity Utilization 47.7%
 ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
5: TOH RC & Smyth

	EBT	WBL	WBT	NBL	NBR	03
Lane Group	←	←	←	←	←	←
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	831	36	1112	88	103	
Future Volume (vph)	831	36	1112	88	103	
Lane Group Flow (vph)	950	40	1236	98	114	
Turn Type	NA	Perm	NA	Perm	Perm	
Protected Phases	2	6	6	4	4	3
Permitted Phases	2	6	6	4	4	4
Detector Phase	2	6	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	36.8	36.8	5.0	5.0
Total Split (s)	48.0	48.0	48.0	37.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.6	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	9	13
Act Effr Green (s)	46.8	46.8	46.8	13.7	13.7	
Actuated g/C Ratio	0.64	0.64	0.64	0.19	0.19	
v/c Ratio	0.31	0.13	0.40	0.32	0.31	
Control Delay	7.7	9.9	8.4	26.4	7.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.7	9.9	8.4	26.4	7.2	
LOS	A	A	A	C	A	
Approach Delay	7.7	8.4	16.0			
Approach LOS	A	A	B			
Queue Length 50th (m)	14.0	1.4	19.9	10.5	0.0	
Queue Length 95th (m)	48.1	10.5	66.1	22.7	10.6	
Internal Link Dist (m)	59.2		422.8	186.5		
Turn Bay Length (m)		35.0			35.0	
Base Capacity (vph)	3018	298	3060	716	694	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.31	0.13	0.40	0.14	0.16	
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 72.9						
Natural Cycle: 70						
Control Type: Semi Act-Uncoord						

Lanes, Volumes, Timings
5: TOH RC & Smyth

	EBT	WBL	WBT	NBL	NBR	03
Lane Group	←	←	←	←	←	←
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	831	36	1112	88	103	
Future Volume (vph)	831	36	1112	88	103	
Lane Group Flow (vph)	950	40	1236	98	114	
Turn Type	NA	Perm	NA	Perm	Perm	
Protected Phases	2	6	6	4	4	3
Permitted Phases	2	6	6	4	4	4
Detector Phase	2	6	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	36.8	36.8	5.0	5.0
Total Split (s)	48.0	48.0	48.0	37.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.6	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	9	13
Act Effr Green (s)	46.8	46.8	46.8	13.7	13.7	
Actuated g/C Ratio	0.64	0.64	0.64	0.19	0.19	
v/c Ratio	0.31	0.13	0.40	0.32	0.31	
Control Delay	7.7	9.9	8.4	26.4	7.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.7	9.9	8.4	26.4	7.2	
LOS	A	A	A	C	A	
Approach Delay	7.7	8.4	16.0			
Approach LOS	A	A	B			
Queue Length 50th (m)	14.0	1.4	19.9	10.5	0.0	
Queue Length 95th (m)	48.1	10.5	66.1	22.7	10.6	
Internal Link Dist (m)	59.2		422.8	186.5		
Turn Bay Length (m)		35.0			35.0	
Base Capacity (vph)	3018	298	3060	716	694	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.31	0.13	0.40	0.14	0.16	

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Existing PM Peak Hour
Schlegel Villages

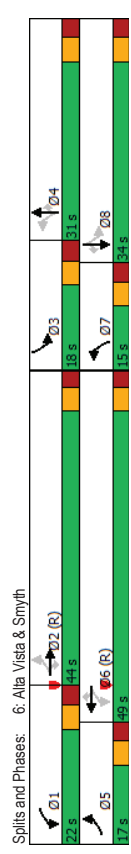
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	188	575	198	238	864	264	98	274	86	149	392	198
Traffic Volume (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Future Volume (vph)	187	639	220	264	960	293	109	304	96	166	436	220
Lane Group Flow (vph)	pm-pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	2	1	6	6	7	4	4	3	8	8
Permitted Phases	2	2	2	1	6	6	7	4	4	3	8	8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	17.0	44.0	44.0	22.0	49.0	49.0	15.0	31.0	31.0	18.0	34.0	34.0
Total Split (%)	14.8%	38.3%	38.3%	19.1%	42.6%	42.6%	13.0%	27.0%	27.0%	15.7%	29.6%	29.6%
Maximum Green (s)	11.0	38.2	38.2	16.0	43.2	43.2	8.9	24.9	24.9	11.9	27.9	27.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	9	9	9	56	56	56	8	8	8	8	10	10
Act Effr Green (s)	50.2	39.7	39.7	57.8	43.6	43.6	34.1	25.6	25.6	39.5	28.3	28.3
Actuated G/C Ratio	0.44	0.35	0.35	0.50	0.38	0.38	0.30	0.22	0.22	0.34	0.25	0.25
v/c Ratio	0.75	0.57	0.37	0.69	0.76	0.54	0.60	0.79	0.22	0.60	1.03	0.48
Control Delay	39.2	33.6	11.6	25.9	36.2	17.8	39.1	58.6	3.1	35.3	94.0	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	33.6	11.6	25.9	36.2	17.8	39.1	58.6	3.1	35.3	94.0	17.7
LOS	D	C	B	C	D	B	D	E	A	D	F	B
Approach Delay	30.0			30.9			44.0				61.7	
Approach LOS	C			C			D				E	
Queue Length 50th (m)	21.8	62.5	10.7	32.5	98.8	25.0	16.3	65.5	0.0	25.8	~106.2	14.3
Queue Length 95th (m)	#51.8	81.6	30.2	49.8	123.8	52.3	29.1	#108.3	4.7	42.6	#166.6	37.3
Internal Link Dist (m)	422.8			216.7			602.2				553.9	
Turn Bay Length (m)	40.0	30.0	60.0	30.0	70.0	30.0	70.0	30.0	30.0	50.0	25.0	25.0
Base Capacity (vph)	253	112	587	403	1255	544	188	384	428	286	425	460
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	0.74	0.57	0.37	0.66	0.76	0.54	0.58	0.79	0.22	0.58	1.03	0.48

Intersection Summary
 Cycle Length: 115
 Actuated Cycle Length: 115
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Existing PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	Intersection LOS: D
Maximum v/c Ratio: 1.03	IOU Level of Service E
Intersection Signal Delay: 38.9	Intersection Capacity Utilization 82.9%
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.	



Appendix D

Collision Data

2019-11-29	2019	8:38	ALTA VISTA DR @ SMYTH RD (0011353)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	02 - Angle	01 - Dry
2019-11-25	2019	17:03	ALTA VISTA DR @ SMYTH RD (0011353)	01 - Clear	07 - Dark	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2019-11-30	2019	12:00	ALTA VISTA DR @ SMYTH RD (0011353)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2015-05-08	2015	15:03	RIVERSIDE DR @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2015-09-22	2015	11:03	RIVERSIDE DR @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2016-02-08	2016	7:50	RIVERSIDE DR @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	07 - SMV other	01 - Dry
2016-02-23	2016	10:41	RIVERSIDE DR @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2018-01-10	2018	11:03	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	02 - Wet
2018-04-16	2018	19:25	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	04 - Freezing Rain	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	02 - Wet
2018-07-17	2018	4:25	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	01 - Clear	07 - Dark	01 - Traffic signal	03 - P.D. only	05 - Turning movement	02 - Wet
2018-09-13	2018	13:35	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2018-11-29	2018	18:34	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	01 - Clear	07 - Dark	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2019-02-19	2019	10:53	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2019-11-11	2019	23:56	RIVERSIDE DR @ RIVERSIDE HOSPITAL (0011960)	03 - Snow	07 - Dark	01 - Traffic signal	03 - P.D. only	02 - Angle	03 - Loose snow
2015-05-15	2015	11:29	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2015-06-30	2015	15:26	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2015-07-02	2015	14:00	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	07 - SMV other	01 - Dry
2016-10-19	2016	12:30	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2016-09-12	2016	15:03	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2016-03-01	2016	14:19	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2016-03-10	2016	14:55	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	02 - Wet
2016-07-18	2016	14:24	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2016-06-24	2016	16:23	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2016-07-13	2016	11:46	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2017-12-04	2017	6:52	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	03 - Dawn	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2017-11-27	2017	18:14	SMYTH RD @ RIVERSIDE HOSPITAL	01 - Clear	07 - Dark	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2018-01-22	2018	14:19	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	02 - Angle	02 - Wet
2018-07-08	2018	15:25	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2018-12-14	2018	8:12	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	04 - Sideswipe	01 - Dry
2018-12-18	2018	16:25	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	05 - Dusk	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2019-07-11	2019	7:44	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2019-08-19	2019	15:55	SMYTH RD @ RIVERSIDE HOSPITAL (0009069)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2015-06-04	2015	8:40	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2016-09-25	2016	23:15	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	01 - Clear	07 - Dark	03 - Yield sign	03 - P.D. only	02 - Angle	01 - Dry
2016-10-05	2016	15:40	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2017-05-30	2017	16:54	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2017-06-29	2017	16:37	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	02 - Rain	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	02 - Wet
2017-10-28	2017	23:56	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S	02 - Rain	07 - Dark	03 - Yield sign	03 - P.D. only	07 - SMV other	02 - Wet
2018-01-02	2018	12:40	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	03 - Snow	01 - Daylight	03 - Yield sign	03 - P.D. only	07 - SMV other	04 - Slush
2018-02-14	2018	8:24	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	02 - Non-fatal injury	03 - Rear end	01 - Dry
2018-02-14	2018	14:24	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2018-03-21	2018	9:10	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2018-04-26	2018	20:45	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	07 - Dark	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2018-06-06	2018	11:01	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	02 - Wet
2018-07-13	2018	20:54	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	05 - Dusk	03 - Yield sign	02 - Non-fatal injury	03 - Rear end	01 - Dry
2018-07-26	2018	12:00	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	02 - Angle	01 - Dry
2018-10-18	2018	8:01	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	02 - Non-fatal injury	03 - Rear end	01 - Dry
2019-03-27	2019	15:29	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	02 - Wet
2019-08-08	2019	17:30	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2019-07-26	2019	12:02	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	03 - P.D. only	03 - Rear end	01 - Dry
2019-08-30	2019	12:08	SMYTH RD @ SMYTH RD NORTH SIDE RAMP/SMYTH RD S (0006582)	01 - Clear	01 - Daylight	03 - Yield sign	02 - Non-fatal injury	03 - Rear end	01 - Dry
2015-07-12	2015	7:19	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR	01 - Clear	01 - Daylight	10 - No control	02 - Non-fatal injury	07 - SMV other	01 - Dry
2016-02-25	2016	17:50	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR	04 - Freezing Rain	07 - Dark	10 - No control	03 - P.D. only	04 - Sideswipe	06 - Ice
2017-04-20	2017	7:42	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR	01 - Clear	01 - Daylight	10 - No control	03 - P.D. only	99 - Other	01 - Dry
2017-12-29	2017	18:49	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR	01 - Clear	07 - Dark	10 - No control	03 - P.D. only	07 - SMV other	01 - Dry
2018-02-07	2018	14:50	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR (_ 3ZA1M4B)	03 - Snow	01 - Daylight	10 - No control	03 - P.D. only	03 - Rear end	05 - Packed snow
2018-07-06	2018	1:04	SMYTH RD btwn RIVERSIDE HOSPITAL & ALTA VISTA DR (_ 3ZA1M4B)	01 - Clear	07 - Dark	10 - No control	03 - P.D. only	07 - SMV other	01 - Dry
2015-06-17	2015	6:51	SMYTH RD btwn RIVERSIDE HOSPITAL & SMYTH RD SOUTH SIDE RAMP	01 - Clear	01 - Daylight	10 - No control	02 - Non-fatal injury	04 - Sideswipe	01 - Dry
2016-08-04	2016	7:17	SMYTH RD btwn RIVERSIDE HOSPITAL & SMYTH RD SOUTH SIDE RAMP	02 - Clear	01 - Daylight	10 - No control	02 - Non-fatal injury	04 - Sideswipe	01 - Dry
2016-09-23	2016	9:54	SMYTH RD btwn RIVERSIDE HOSPITAL & SMYTH RD SOUTH SIDE RAMP	01 - Clear	01 - Daylight	10 - No control	03 - P.D. only	04 - Sideswipe	01 - Dry
2018-06-06	2018	19:42	SMYTH RD btwn RIVERSIDE HOSPITAL & SMYTH RD SOUTH SIDE RAMP (_ 3ZA1M4A)	01 - Clear	01 - Daylight	10 - No control	02 - Non-fatal injury	03 - Rear end	01 - Dry
2018-11-07	2018	17:39	SMYTH RD btwn RIVERSIDE HOSPITAL & SMYTH RD SOUTH SIDE RAMP (_ 3ZA1M4A)	01 - Clear	07 - Dark	10 - No control	02 - Non-fatal injury	04 - Sideswipe	01 - Dry

Appendix E

TRANS Model Plots

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Riverside Smyth Area

2011 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: April 30, 2021
EMME Scenario: 21711



Legend

AM Peak Hour Total Traffic Volume



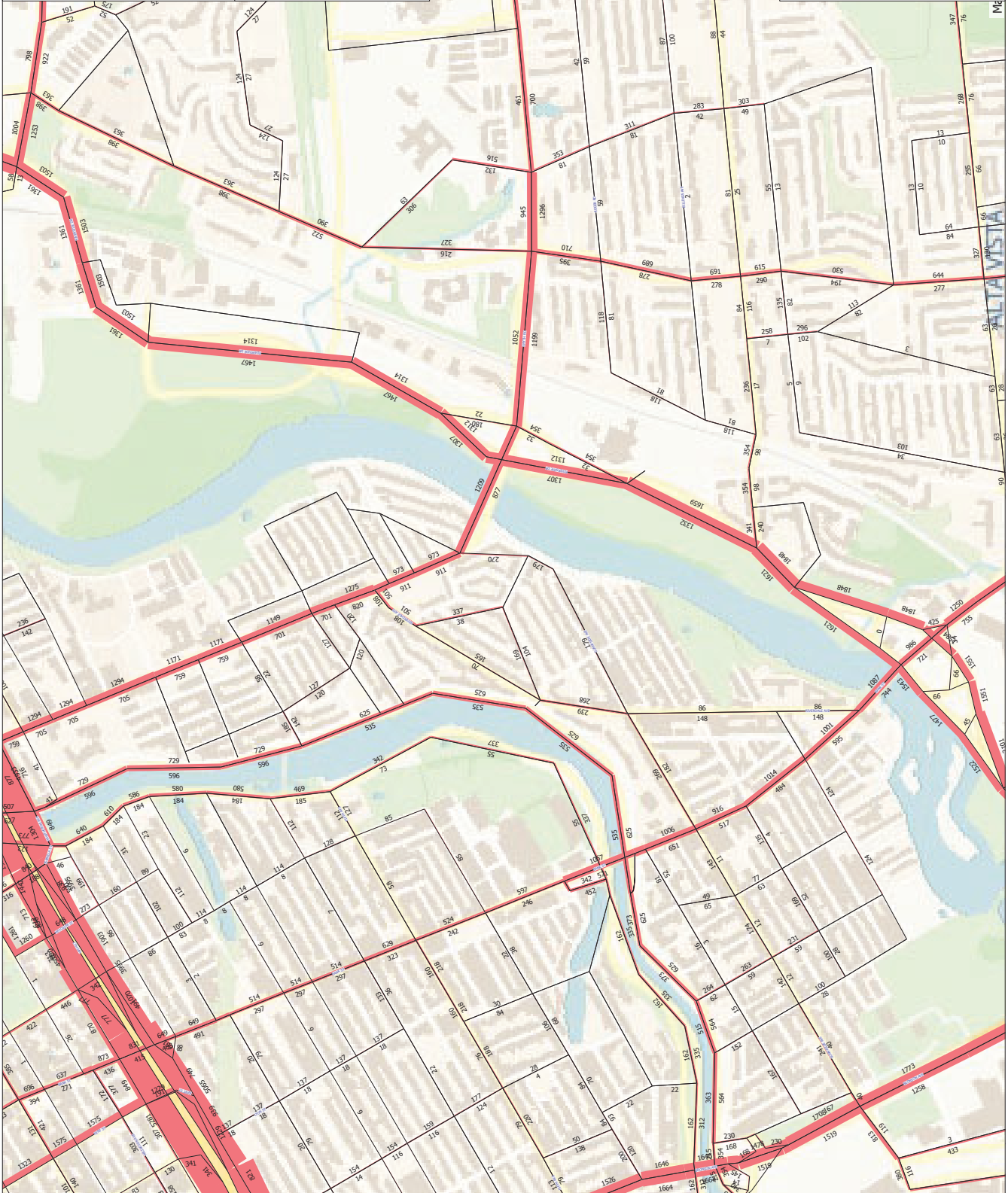
Distance (m)
100 200 300 400 500



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Riverside Smyth Area

2031 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: April 30, 2021
EMME Scenario: 21711



Legend

AM Peak Hour Total Traffic Volume



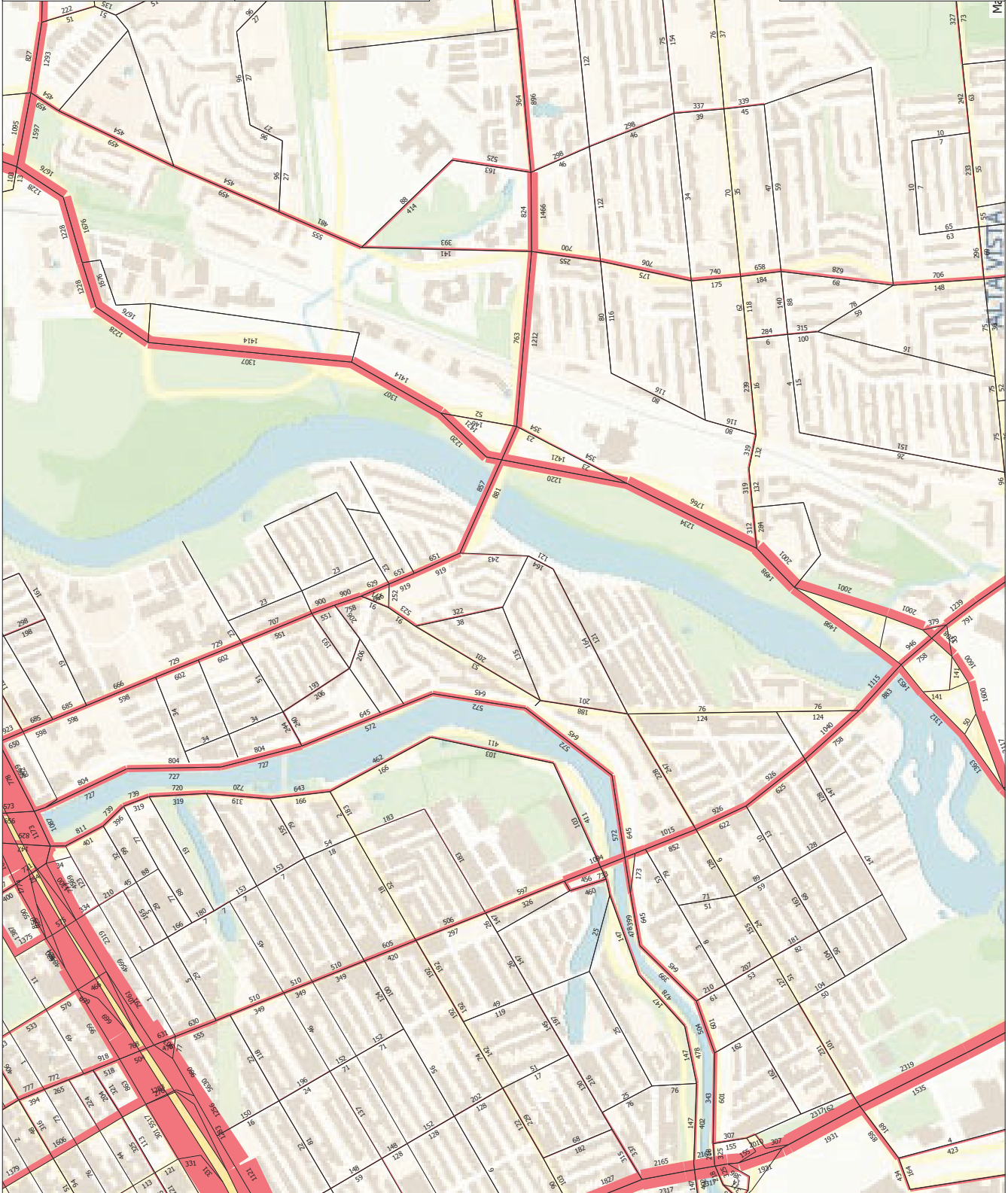
Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



Appendix F

Synchro Intersection Worksheets – 2026 Future Background Conditions

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	148	136	1185	103	91	1394
Future Volume (vph)	148	136	1185	103	91	1394
Lane Group Flow (vph)	148	136	1185	103	91	1394
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	27.0	27.0	63.0	63.0	63.0	63.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	21.4	21.4	57.2	57.2	57.2	57.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	1	1	0	0		
Act Effct Green (s)	13.8	13.8	64.8	64.8	64.8	64.8
Actuated g/C Ratio	0.15	0.15	0.72	0.72	0.72	0.72
v/c Ratio	0.59	0.47	0.50	0.10	0.35	0.59
Control Delay	44.5	18.2	1.5	0.2	10.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	18.2	1.5	0.2	10.1	7.9
LOS	D	B	A	A	B	A
Approach Delay	31.9		1.4			8.1
Approach LOS	C		A			A
Queue Length 50th (m)	24.2	6.8	2.1	0.0	4.8	50.7
Queue Length 95th (m)	40.1	21.5	6.9	m0.1	16.6	85.1
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	390	398	2386	1046	263	2363
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	0.38	0.34	0.50	0.10	0.35	0.59

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 78 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 7.5	Intersection LOS: A
Intersection Capacity Utilization 66.1%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕	↕	↘	↗
Traffic Volume (vph)	56	107	1181	394	176	1358
Future Volume (vph)	56	107	1181	394	176	1358
Lane Group Flow (vph)	56	107	1181	394	176	1358
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	10.4	10.4	55.4	55.4	71.2	72.3
Actuated g/C Ratio	0.12	0.12	0.62	0.62	0.79	0.80
v/c Ratio	0.30	0.41	0.58	0.38	0.46	0.52
Control Delay	40.9	12.7	9.2	1.9	10.4	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	12.7	9.2	1.9	10.4	7.5
LOS	D	B	A	A	B	A
Approach Delay	22.4		7.4			7.8
Approach LOS	C		A			A
Queue Length 50th (m)	9.1	0.0	23.8	0.0	10.8	44.7
Queue Length 95th (m)	19.9	14.1	43.4	16.2	29.9	108.8
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	522	539	2019	1034	394	2636
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	0.11	0.20	0.58	0.38	0.45	0.52

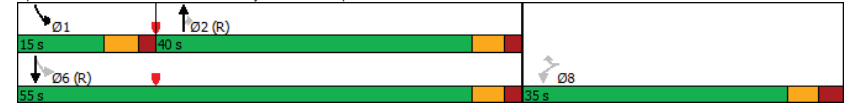
Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 8.3
 Intersection LOS: A
 Intersection Capacity Utilization 67.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Riverside & Smyth South Ramp



Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	70	20	1598	73	63	1359
Future Volume (vph)	70	20	1598	73	63	1359
Lane Group Flow (vph)	70	20	1598	73	63	1359
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effct Green (s)	13.2	13.2	70.3	70.3	70.3	70.3
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.78	0.78
v/c Ratio	0.30	0.10	0.62	0.07	0.37	0.53
Control Delay	35.9	12.9	8.1	3.0	10.8	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	12.9	8.1	3.0	10.8	3.9
LOS	D	B	A	A	B	A
Approach Delay	30.8		7.9			4.2
Approach LOS	C		A			A
Queue Length 50th (m)	11.5	0.0	50.5	1.1	1.0	10.9
Queue Length 95th (m)	19.3	5.2	133.2	7.3	m7.9	43.6
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	438	380	2565	1122	170	2565
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	0.16	0.05	0.62	0.07	0.37	0.53

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 6.9
 Intersection LOS: A
 Intersection Capacity Utilization 72.4%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Riverside & TOH RC



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑	↑	↑
Traffic Volume (vph)	607	670	284	570	194
Future Volume (vph)	607	670	284	570	194
Lane Group Flow (vph)	770	670	284	570	194
Sign Control	Free	Free			

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 67.1%	ICU Level of Service C
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↑↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1106	73	937	17	
Future Volume (vph)	1106	73	937	17	
Lane Group Flow (vph)	1177	73	937	43	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	9	0	0	16	24
Act Effct Green (s)	62.9	62.9	62.9	17.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.21	
v/c Ratio	0.47	0.27	0.26	0.14	
Control Delay	10.2	14.4	7.7	16.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	10.2	14.4	7.7	16.0	
LOS	B	B	A	B	
Approach Delay	10.2		8.2	16.0	
Approach LOS	B		A	B	
Queue Length 50th (m)	31.1	3.0	13.9	2.3	
Queue Length 95th (m)	106.1	20.1	46.4	10.2	
Internal Link Dist (m)	59.2		422.8	186.5	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2502	273	3634	573	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.47	0.27	0.26	0.08	

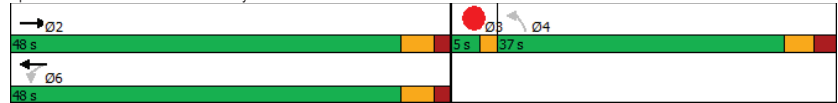
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82.5	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2026AM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.47	Intersection LOS: A
Intersection Signal Delay: 9.4	ICU Level of Service C
Intersection Capacity Utilization 69.6%	
Analysis Period (min) 15	

Splits and Phases: 5: TOH RC & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2026AM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Future Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Lane Group Flow (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	20.0	41.0	41.0	17.0	38.0	38.0	20.0	37.0	37.0	20.0	37.0	37.0
Total Split (%)	17.4%	35.7%	35.7%	14.8%	33.0%	33.0%	17.4%	32.2%	32.2%	17.4%	32.2%	32.2%
Maximum Green (s)	14.0	35.2	35.2	11.0	32.2	32.2	13.9	30.9	30.9	13.9	30.9	30.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	24	24	24	31	31	31	11	11	11	17	17	17
Act Effct Green (s)	48.0	36.9	36.9	44.0	34.9	34.9	45.1	31.3	31.3	44.5	31.0	31.0
Actuated g/C Ratio	0.42	0.32	0.32	0.38	0.30	0.30	0.39	0.27	0.27	0.39	0.27	0.27
v/c Ratio	0.47	0.85	0.19	0.50	0.60	0.40	0.69	0.78	0.37	0.77	0.42	0.23
Control Delay	24.3	45.9	2.4	28.2	37.6	12.8	32.7	51.6	11.5	39.4	38.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	45.9	2.4	28.2	37.6	12.8	32.7	51.6	11.5	39.4	38.1	3.6
LOS	C	D	A	C	D	B	C	D	B	D	D	A
Approach Delay		39.3			31.0			36.2			31.9	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	19.4	98.8	0.0	13.0	59.8	8.9	47.7	75.4	6.6	37.0	35.7	0.0
Queue Length 95th (m)	32.7	#135.3	4.6	23.5	80.7	29.3	71.2	#118.2	24.7	#58.6	57.3	7.7
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	350	1052	524	224	995	496	457	465	492	335	456	487
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	0.42	0.85	0.19	0.45	0.60	0.40	0.69	0.78	0.37	0.76	0.42	0.23

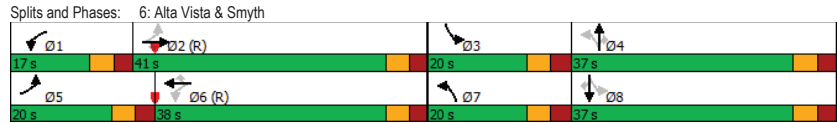
Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 89.6%	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.	



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↖	↗	↕
Traffic Volume (vph)	319	154	1390	122	181	1457
Future Volume (vph)	319	154	1390	122	181	1457
Lane Group Flow (vph)	319	154	1390	122	181	1457
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	28.0	28.0	62.0	62.0	62.0	62.0
Total Split (%)	31.1%	31.1%	68.9%	68.9%	68.9%	68.9%
Maximum Green (s)	22.4	22.4	56.2	56.2	56.2	56.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effct Green (s)	20.5	20.5	58.1	58.1	58.1	58.1
Actuated g/C Ratio	0.23	0.23	0.65	0.65	0.65	0.65
v/c Ratio	0.85	0.44	0.66	0.13	1.15	0.68
Control Delay	54.1	22.5	3.8	0.3	141.5	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	22.5	3.8	0.3	141.5	12.6
LOS	D	C	A	A	F	B
Approach Delay	43.8		3.5			26.8
Approach LOS	D		A			C
Queue Length 50th (m)	51.4	13.9	10.4	0.0	~38.1	80.3
Queue Length 95th (m)	#90.4	31.2	19.4	m0.0	#51.6	103.9
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	412	381	2119	964	157	2140
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	0.77	0.40	0.66	0.13	1.15	0.68

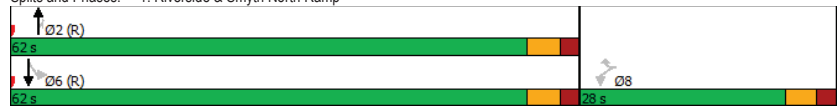
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 110	

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 19.3	Intersection LOS: B
Intersection Capacity Utilization 84.1%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	68	119	1398	198	80	1731
Future Volume (vph)	68	119	1398	198	80	1731
Lane Group Flow (vph)	68	119	1398	198	80	1731
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	10.8	10.8	57.4	57.4	67.5	67.5
Actuated g/C Ratio	0.12	0.12	0.64	0.64	0.75	0.75
v/c Ratio	0.37	0.42	0.66	0.20	0.30	0.70
Control Delay	42.0	11.9	9.6	1.6	7.7	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.9	9.6	1.6	7.7	10.6
LOS	D	B	A	A	A	B
Approach Delay	22.9		8.6			10.5
Approach LOS	C		A			B
Queue Length 50th (m)	11.1	0.0	46.6	0.3	4.8	91.0
Queue Length 95th (m)	22.8	14.4	54.3	6.4	m7.9	121.0
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	498	556	2115	995	307	2487
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	0.14	0.21	0.66	0.20	0.26	0.70

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	



Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↕
Traffic Volume (vph)	89	17	1584	11	8	1810
Future Volume (vph)	89	17	1584	11	8	1810
Lane Group Flow (vph)	89	17	1584	11	8	1810
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	0	0	4	4		
Act Effct Green (s)	11.2	11.2	72.3	72.3	72.3	72.3
Actuated g/C Ratio	0.12	0.12	0.80	0.80	0.80	0.80
v/c Ratio	0.43	0.09	0.59	0.01	0.04	0.68
Control Delay	42.8	16.3	5.9	2.4	3.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	16.3	5.9	2.4	3.0	4.7
LOS	D	B	A	A	A	A
Approach Delay	38.6		5.8			4.7
Approach LOS	D		A			A
Queue Length 50th (m)	14.7	0.0	49.7	0.2	0.2	51.1
Queue Length 95th (m)	27.5	5.6	82.6	1.4	m0.5	53.6
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	459	408	2663	1168	184	2663
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	0.19	0.04	0.59	0.01	0.04	0.68

Intersection Summary

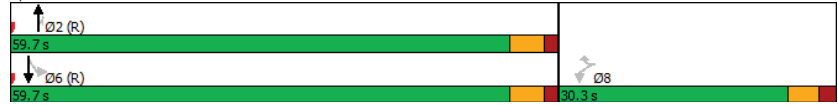
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 6.2 Intersection LOS: A
 Intersection Capacity Utilization 70.0% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Riverside & TOH RC



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↕↕	↕↕	↗↗	↖↖	↖↖
Traffic Volume (vph)	577	727	473	278	303
Future Volume (vph)	577	727	473	278	303
Lane Group Flow (vph)	764	727	473	278	303
Sign Control	Free	Free			

Intersection Summary
 Control Type: Unsignalized
 Intersection Capacity Utilization 48.0% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↕↕	↕	↕↕↕	↕↕	
Traffic Volume (vph)	831	36	1112	88	
Future Volume (vph)	831	36	1112	88	
Lane Group Flow (vph)	855	36	1112	191	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	13
Act Effct Green (s)	46.8	46.8	46.8	14.2	
Actuated g/C Ratio	0.64	0.64	0.64	0.19	
v/c Ratio	0.41	0.11	0.37	0.53	
Control Delay	9.0	9.8	8.3	20.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	9.0	9.8	8.3	20.5	
LOS	A	A	A	C	
Approach Delay	9.0		8.3	20.5	
Approach LOS	A		A	C	
Queue Length 50th (m)	20.2	1.3	17.7	13.1	
Queue Length 95th (m)	70.2	9.4	58.0	30.8	
Internal Link Dist (m)	59.2		422.8	186.5	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2084	318	3035	711	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.41	0.11	0.37	0.27	

Intersection Summary

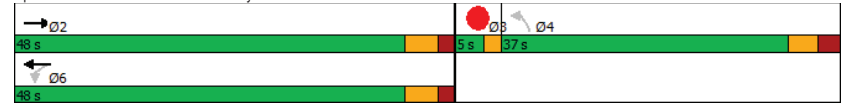
Cycle Length: 90
Actuated Cycle Length: 73.4
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2026PM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.53	Intersection LOS: A
Intersection Signal Delay: 9.7	ICU Level of Service A
Intersection Capacity Utilization 54.8%	
Analysis Period (min) 15	

Splits and Phases: 5: TOH RC & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2026PM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Future Volume (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Lane Group Flow (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	17.0	44.0	44.0	22.0	49.0	49.0	15.0	31.0	31.0	18.0	34.0	34.0
Total Split (%)	14.8%	38.3%	38.3%	19.1%	42.6%	42.6%	13.0%	27.0%	27.0%	15.7%	29.6%	29.6%
Maximum Green (s)	11.0	38.2	38.2	16.0	43.2	43.2	8.9	24.9	24.9	11.9	27.9	27.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	9	9	9	56	56	56	8	8	8	10	10	10
Act Effct Green (s)	50.4	40.3	40.3	57.6	44.0	44.0	34.2	25.9	25.9	39.4	28.4	28.4
Actuated g/C Ratio	0.44	0.35	0.35	0.50	0.38	0.38	0.30	0.23	0.23	0.34	0.25	0.25
v/c Ratio	0.62	0.51	0.33	0.59	0.68	0.48	0.48	0.71	0.20	0.50	0.92	0.43
Control Delay	26.4	31.9	9.6	22.0	33.2	15.2	32.9	52.6	2.0	31.3	70.5	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	31.9	9.6	22.0	33.2	15.2	32.9	52.6	2.0	31.3	70.5	14.9
LOS	C	C	A	C	C	B	C	D	A	C	E	B
Approach Delay		26.2			27.8			38.9			47.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.4	54.1	7.0	28.8	85.4	19.0	14.5	57.8	0.0	22.9	86.9	10.2
Queue Length 95th (m)	31.6	72.4	24.6	44.6	108.0	43.5	26.4	#91.9	2.3	38.3	#144.1	31.0
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	282	1129	593	431	1267	548	211	388	431	311	427	462
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	0.60	0.51	0.33	0.55	0.68	0.48	0.46	0.71	0.20	0.48	0.92	0.43

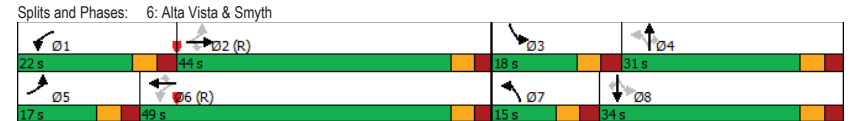
Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 115
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.0
 Intersection LOS: C
 Intersection Capacity Utilization 82.9%
 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.



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

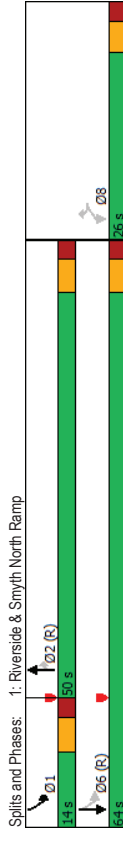
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	319	154	1390	122	181	1457
Future Volume (vph)	319	154	1390	122	181	1457
Lane Group Flow (vph)	319	154	1390	122	181	1457
Turn Type	Perm	Perm	NA	Perm	pin-pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8	2	2	6	6
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	10.8	15.8
Total Split (s)	26.0	26.0	50.0	50.0	14.0	64.0
Total Split (%)	28.9%	28.9%	55.6%	55.6%	15.6%	71.1%
Maximum Green (s)	20.4	20.4	44.2	44.2	8.2	58.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effr Green (s)	19.6	19.6	45.1	45.1	59.0	59.0
Actuated G/C Ratio	0.22	0.22	0.50	0.50	0.66	0.66
v/c Ratio	0.89	0.37	0.84	0.16	0.80	0.67
Control Delay	61.2	7.8	16.6	3.5	43.0	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	7.8	16.6	3.5	43.0	11.6
LOS	E	A	B	A	D	B
Approach Delay	43.8		15.5		15.1	
Approach LOS	D		B		B	
Queue Length 50th (m)	53.0	0.0	29.6	0.8	16.2	74.7
Queue Length 95th (m)	#97.0	14.7	55.1	#5.7	#49.6	96.5
Internal Link Dist (m)	185.3		236.3		303.1	
Turn Bay Length (m)	40.0	428	1645	760	228	2174
Base Capacity (vph)	375	428	1645	760	228	2174
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	0.85	0.36	0.84	0.16	0.79	0.67

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 19.0
Intersection LOS: B
Intersection Capacity Utilization 84.1%
IOU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 1: Riverside & Smyth North Ramp

Appendix G

Synchro Intersection Worksheets – 2031 Future Background Conditions

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	148	136	1277	103	91	1394
Future Volume (vph)	148	136	1277	103	91	1394
Lane Group Flow (vph)	148	136	1277	103	91	1394
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	27.0	27.0	63.0	63.0	63.0	63.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	21.4	21.4	57.2	57.2	57.2	57.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	1	1	0	0		
Act Effct Green (s)	13.8	13.8	64.8	64.8	64.8	64.8
Actuated g/C Ratio	0.15	0.15	0.72	0.72	0.72	0.72
v/c Ratio	0.59	0.49	0.54	0.10	0.39	0.59
Control Delay	44.5	22.6	1.5	0.2	12.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	22.6	1.5	0.2	12.0	7.9
LOS	D	C	A	A	B	A
Approach Delay	34.0		1.4			8.2
Approach LOS	C		A			A
Queue Length 50th (m)	24.2	9.5	2.1	0.0	5.0	50.7
Queue Length 95th (m)	40.1	24.6	6.9	m0.0	18.7	85.1
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	390	385	2386	1046	233	2363
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	0.38	0.35	0.54	0.10	0.39	0.59

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 78 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 7.6
 Intersection LOS: A
 Intersection Capacity Utilization 68.8%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕	↕	↘	↗
Traffic Volume (vph)	56	107	1272	394	176	1358
Future Volume (vph)	56	107	1272	394	176	1358
Lane Group Flow (vph)	56	107	1272	394	176	1358
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	10.4	10.4	55.4	55.4	71.2	72.3
Actuated g/C Ratio	0.12	0.12	0.62	0.62	0.79	0.80
v/c Ratio	0.30	0.41	0.63	0.38	0.50	0.52
Control Delay	40.9	12.7	9.8	2.0	12.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	12.7	9.8	2.0	12.0	7.5
LOS	D	B	A	A	B	A
Approach Delay	22.4		8.0			8.0
Approach LOS	C		A			A
Queue Length 50th (m)	9.1	0.0	25.6	0.0	12.1	44.7
Queue Length 95th (m)	19.9	14.1	49.4	18.6	30.8	108.8
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	522	539	2019	1034	369	2636
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	0.11	0.20	0.63	0.38	0.48	0.52

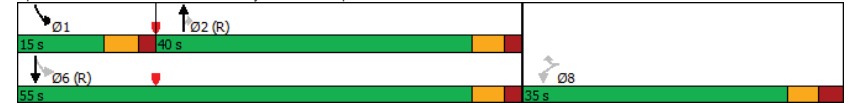
Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 8.7
 Intersection LOS: A
 Intersection Capacity Utilization 70.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Riverside & Smyth South Ramp



Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	70	20	1722	73	63	1359
Future Volume (vph)	70	20	1722	73	63	1359
Lane Group Flow (vph)	70	20	1722	73	63	1359
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effct Green (s)	13.2	13.2	70.3	70.3	70.3	70.3
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.78	0.78
v/c Ratio	0.30	0.10	0.67	0.07	0.45	0.53
Control Delay	35.9	12.9	9.1	3.2	17.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	12.9	9.1	3.2	17.9	3.9
LOS	D	B	A	A	B	A
Approach Delay	30.8		8.9			4.5
Approach LOS	C		A			A
Queue Length 50th (m)	11.5	0.0	58.8	1.2	1.0	10.9
Queue Length 95th (m)	19.3	5.2	155.8	7.5	m#24.5	43.6
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	438	380	2565	1121	141	2565
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	0.16	0.05	0.67	0.07	0.45	0.53

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 7.6
 Intersection LOS: A
 Intersection Capacity Utilization 72.4%
 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.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Riverside & TOH RC



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑	↑	↑
Traffic Volume (vph)	607	670	284	570	194
Future Volume (vph)	607	670	284	570	194
Lane Group Flow (vph)	770	670	284	570	194
Sign Control	Free	Free			

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 67.1%	ICU Level of Service C
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↑↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1106	73	937	17	
Future Volume (vph)	1106	73	937	17	
Lane Group Flow (vph)	1177	73	937	43	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	9	0	0	16	24
Act Effct Green (s)	62.9	62.9	62.9	17.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.21	
v/c Ratio	0.47	0.27	0.26	0.14	
Control Delay	10.2	14.4	7.7	16.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	10.2	14.4	7.7	16.0	
LOS	B	B	A	B	
Approach Delay	10.2		8.2	16.0	
Approach LOS	B		A	B	
Queue Length 50th (m)	31.1	3.0	13.9	2.3	
Queue Length 95th (m)	106.1	20.1	46.4	10.2	
Internal Link Dist (m)	59.2		422.8	186.5	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2502	273	3634	573	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.47	0.27	0.26	0.08	

Intersection Summary

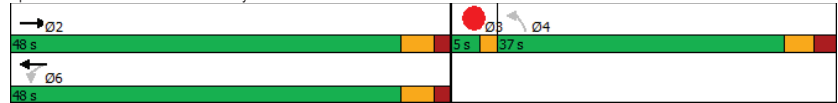
Cycle Length: 90
Actuated Cycle Length: 82.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2031AM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.47	Intersection LOS: A
Intersection Signal Delay: 9.4	ICU Level of Service C
Intersection Capacity Utilization 69.6%	
Analysis Period (min) 15	

Splits and Phases: 5: TOH RC & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2031AM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Future Volume (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Lane Group Flow (vph)	147	893	100	101	593	198	315	361	180	255	192	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	20.0	41.0	41.0	17.0	38.0	38.0	20.0	37.0	37.0	20.0	37.0	37.0
Total Split (%)	17.4%	35.7%	35.7%	14.8%	33.0%	33.0%	17.4%	32.2%	32.2%	17.4%	32.2%	32.2%
Maximum Green (s)	14.0	35.2	35.2	11.0	32.2	32.2	13.9	30.9	30.9	13.9	30.9	30.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	24	24	24	31	31	31	11	11	11	17	17	17
Act Effct Green (s)	48.0	36.9	36.9	44.0	34.9	34.9	45.1	31.3	31.3	44.5	31.0	31.0
Actuated g/C Ratio	0.42	0.32	0.32	0.38	0.30	0.30	0.39	0.27	0.27	0.39	0.27	0.27
v/c Ratio	0.47	0.85	0.19	0.50	0.60	0.40	0.69	0.78	0.37	0.77	0.42	0.23
Control Delay	24.3	45.9	2.4	28.2	37.6	12.8	32.7	51.6	11.5	39.4	38.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	45.9	2.4	28.2	37.6	12.8	32.7	51.6	11.5	39.4	38.1	3.6
LOS	C	D	A	C	D	B	C	D	B	D	D	A
Approach Delay		39.3			31.0			36.2			31.9	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	19.4	98.8	0.0	13.0	59.8	8.9	47.7	75.4	6.6	37.0	35.7	0.0
Queue Length 95th (m)	32.7	#135.3	4.6	23.5	80.7	29.3	71.2	#118.2	24.7	#58.6	57.3	7.7
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	350	1052	524	224	995	496	457	465	492	335	456	487
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	0.42	0.85	0.19	0.45	0.60	0.40	0.69	0.78	0.37	0.76	0.42	0.23

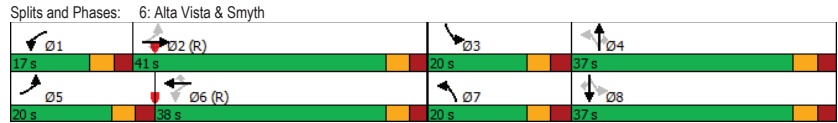
Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 89.6%	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.	



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2031PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↖	↗	↕
Traffic Volume (vph)	319	154	1390	122	181	1569
Future Volume (vph)	319	154	1390	122	181	1569
Lane Group Flow (vph)	319	154	1390	122	181	1569
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	28.0	28.0	62.0	62.0	62.0	62.0
Total Split (%)	31.1%	31.1%	68.9%	68.9%	68.9%	68.9%
Maximum Green (s)	22.4	22.4	56.2	56.2	56.2	56.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effct Green (s)	20.5	20.5	58.1	58.1	58.1	58.1
Actuated g/C Ratio	0.23	0.23	0.65	0.65	0.65	0.65
v/c Ratio	0.85	0.44	0.66	0.13	1.15	0.73
Control Delay	54.1	22.5	3.8	0.3	141.5	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	22.5	3.8	0.3	141.5	13.8
LOS	D	C	A	A	F	B
Approach Delay	43.8		3.5			27.0
Approach LOS	D		A			C
Queue Length 50th (m)	51.4	13.9	10.4	0.0	~38.1	91.9
Queue Length 95th (m)	#90.4	31.2	19.4	m0.0	#51.6	119.3
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	412	381	2119	964	157	2140
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	0.77	0.40	0.66	0.13	1.15	0.73

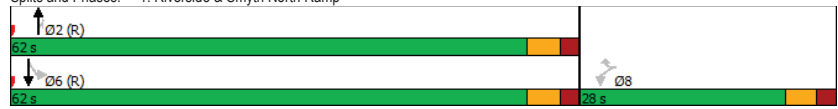
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 110						

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Background 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 19.6 Intersection LOS: B
 Intersection Capacity Utilization 84.1% 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.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2031PM Peak Hour
Schlegel Villages

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	68	119	1398	198	80	1865
Future Volume (vph)	68	119	1398	198	80	1865
Lane Group Flow (vph)	68	119	1398	198	80	1865
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	10.8	10.8	57.4	57.4	67.5	67.5
Actuated g/C Ratio	0.12	0.12	0.64	0.64	0.75	0.75
v/c Ratio	0.37	0.42	0.66	0.20	0.30	0.75
Control Delay	42.0	11.9	9.6	1.6	7.3	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.9	9.6	1.6	7.3	12.1
LOS	D	B	A	A	A	B
Approach Delay	22.9		8.6			11.9
Approach LOS	C		A			B
Queue Length 50th (m)	11.1	0.0	46.6	0.3	5.0	108.0
Queue Length 95th (m)	22.8	14.4	54.3	6.4	m7.0	143.0
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	498	556	2115	995	307	2487
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	0.14	0.21	0.66	0.20	0.26	0.75

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Background 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 72.5%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	



Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2031PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↖	↗	↕
Traffic Volume (vph)	89	17	1584	11	8	1950
Future Volume (vph)	89	17	1584	11	8	1950
Lane Group Flow (vph)	89	17	1584	11	8	1950
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	0	0	4	4		
Act Effct Green (s)	11.2	11.2	72.3	72.3	72.3	72.3
Actuated g/C Ratio	0.12	0.12	0.80	0.80	0.80	0.80
v/c Ratio	0.43	0.09	0.59	0.01	0.04	0.73
Control Delay	42.8	16.3	5.9	2.4	3.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	16.3	5.9	2.4	3.2	5.1
LOS	D	B	A	A	A	A
Approach Delay	38.6		5.8			5.1
Approach LOS	D		A			A
Queue Length 50th (m)	14.7	0.0	49.7	0.2	0.2	52.9
Queue Length 95th (m)	27.5	5.6	82.6	1.4	m0.5	62.2
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	459	408	2663	1168	184	2663
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	0.19	0.04	0.59	0.01	0.04	0.73

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
3: Riverside & TOH RC

Future Background 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Riverside & TOH RC



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Background 2031PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↕↕	↕↕	↗↘	↗↘	↗↘
Traffic Volume (vph)	577	727	473	278	303
Future Volume (vph)	577	727	473	278	303
Lane Group Flow (vph)	764	727	473	278	303
Sign Control	Free	Free			

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 48.0%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2031PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↕↕	↕	↕↕↕	↕↕	
Traffic Volume (vph)	831	36	1112	88	
Future Volume (vph)	831	36	1112	88	
Lane Group Flow (vph)	855	36	1112	191	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	13
Act Effct Green (s)	46.8	46.8	46.8	14.2	
Actuated g/C Ratio	0.64	0.64	0.64	0.19	
v/c Ratio	0.41	0.11	0.37	0.53	
Control Delay	9.0	9.8	8.3	20.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	9.0	9.8	8.3	20.5	
LOS	A	A	A	C	
Approach Delay	9.0		8.3	20.5	
Approach LOS	A		A	C	
Queue Length 50th (m)	20.2	1.3	17.7	13.1	
Queue Length 95th (m)	70.2	9.4	58.0	30.8	
Internal Link Dist (m)	59.2		422.8	186.5	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2084	318	3035	711	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.41	0.11	0.37	0.27	

Intersection Summary

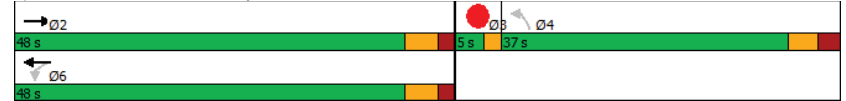
Cycle Length: 90
Actuated Cycle Length: 73.4
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: TOH RC & Smyth

Future Background 2031PM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.53	Intersection LOS: A
Intersection Signal Delay: 9.7	ICU Level of Service A
Intersection Capacity Utilization 54.8%	
Analysis Period (min) 15	

Splits and Phases: 5: TOH RC & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2031PM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Future Volume (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Lane Group Flow (vph)	168	575	198	238	864	264	98	274	86	149	392	198
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	17.0	44.0	44.0	22.0	49.0	49.0	15.0	31.0	31.0	18.0	34.0	34.0
Total Split (%)	14.8%	38.3%	38.3%	19.1%	42.6%	42.6%	13.0%	27.0%	27.0%	15.7%	29.6%	29.6%
Maximum Green (s)	11.0	38.2	38.2	16.0	43.2	43.2	8.9	24.9	24.9	11.9	27.9	27.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	9	9	9	56	56	56	8	8	8	10	10	10
Act Effct Green (s)	50.4	40.3	40.3	57.6	44.0	44.0	34.2	25.9	25.9	39.4	28.4	28.4
Actuated g/C Ratio	0.44	0.35	0.35	0.50	0.38	0.38	0.30	0.23	0.23	0.34	0.25	0.25
v/c Ratio	0.62	0.51	0.33	0.59	0.68	0.48	0.48	0.71	0.20	0.50	0.92	0.43
Control Delay	26.4	31.9	9.6	22.0	33.2	15.2	32.9	52.6	2.0	31.3	70.5	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	31.9	9.6	22.0	33.2	15.2	32.9	52.6	2.0	31.3	70.5	14.9
LOS	C	C	A	C	C	B	C	D	A	C	E	B
Approach Delay		26.2			27.8			38.9			47.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.4	54.1	7.0	28.8	85.4	19.0	14.5	57.8	0.0	22.9	86.9	10.2
Queue Length 95th (m)	31.6	72.4	24.6	44.6	108.0	43.5	26.4	#91.9	2.3	38.3	#144.1	31.0
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	282	1129	593	431	1267	548	211	388	431	311	427	462
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	0.60	0.51	0.33	0.55	0.68	0.48	0.46	0.71	0.20	0.48	0.92	0.43

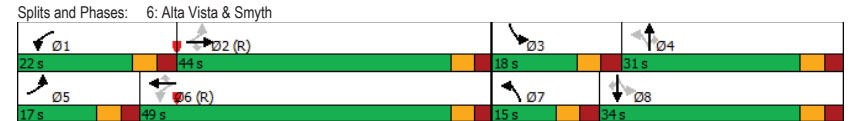
Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 115
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Background 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 33.0	Intersection LOS: C
Intersection Capacity Utilization 82.9%	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.	

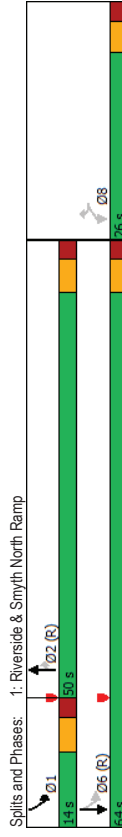


Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	319	154	1390	122	181	1569
Future Volume (vph)	319	154	1390	122	181	1569
Lane Group Flow (vph)	319	154	1390	122	181	1569
Turn Type	Perm	Perm	NA	Perm	pin-pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8	2	2	6	6
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	10.8	15.8
Total Split (s)	26.0	26.0	50.0	50.0	14.0	64.0
Total Split (%)	28.9%	28.9%	55.6%	55.6%	15.6%	71.1%
Maximum Green (s)	20.4	20.4	44.2	44.2	8.2	58.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag			Lag	Lag	Lead	Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effr Green (s)	19.6	19.6	45.1	45.1	59.0	59.0
Actuated G/C Ratio	0.22	0.22	0.50	0.50	0.66	0.66
v/c Ratio	0.89	0.37	0.84	0.16	0.80	0.72
Control Delay	61.2	7.8	16.6	3.5	43.0	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	7.8	16.6	3.5	43.0	12.8
LOS	E	A	B	A	D	B
Approach Delay	43.8		15.5		15.9	
Approach LOS	D		B		B	
Queue Length 50th (m)	53.0	0.0	29.6	0.8	16.2	86.3
Queue Length 95th (m)	#97.0	14.7	55.1	#49.6	110.6	110.6
Internal Link Dist (m)	185.3		236.3		303.1	
Turn Bay Length (m)	40.0	428	1645	760	228	2174
Base Capacity (vph)	375	428	1645	760	228	2174
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	0.85	0.36	0.84	0.16	0.79	0.72

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 19.3
Intersection LOS: B
Intersection Capacity Utilization 64.1%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 1: Riverside & Smyth North Ramp

Appendix H

MMLOS Analysis

Multi-Modal Level of Service - Segments Form

Consultant	CGH Transportation Inc.	Project	2021-045 – 1919 Riverside
Scenario	Existing/Future	Date	2022-12-14
Comments			

SEGMENTS			Smyth Road			
			Ex.	Fut.		
Pedestrian	Sidewalk Width	-	1.8 m	≥ 2 m		
	Boulevard Width		< 0.5 m	0.5 - 2 m		
	Avg Daily Curb Lane Traffic Volume		≤ 3000	> 3000		
	Operating Speed		> 50 to 60 km/h	> 50 to 60 km/h		
	On-Street Parking		no	no		
	Exposure to Traffic PLoS			C	D	
	Effective Sidewalk Width					
Pedestrian Volume						
Crowding PLoS		-	-			
Level of Service		C	D			
Bicycle	Type of Cycling Facility	-	Mixed Traffic	Curbside Bike Lane		
	Number of Travel Lanes		≥ 6 lanes total	2 ea. dir. (w median)		
	Operating Speed		≥ 60 km/h	>50 to 70 km/h		
	# of Lanes & Operating Speed LoS		F	C		
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m		
	Bike Lane Width LoS		-	A		
	Bike Lane Blockages			Rare		
	Blockage LoS		-	A		
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge		
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes		
Sidestreet Operating Speed	>50 to 60 km/h	≤ 40 km/h				
Unsignalized Crossing - Lowest LoS	C	A				
Level of Service	F	C				
Transit	Facility Type	-	Mixed Traffic	Mixed Traffic		
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8		
Level of Service	D	D				
Truck	Truck Lane Width	-	≤ 3.5 m	≤ 3.5 m		
	Travel Lanes per Direction		> 1	> 1		
Level of Service	A	A				

Multi-Modal Level of Service - Intersections Form

Consultant
Scenario
Comments

CGH Transportation Inc.
Existing/Future

Project
Date

2021-045 – 1919 Riverside
2022-12-14

INTERSECTIONS													
Crossing Side	Smyth Road North Ramp at Riverside Drive				Smyth Road South Ramp at Riverside Drive				Smyth Road at Alta Vista Drive				
	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
Pedestrian	Lanes	6	6	5		7	8	5		5	5	6	6
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	No left turn / Prohib.	Permissive	Permissive		No left turn / Prohib.	Permissive	Protected/ Permissive		Protected/ Permissive	Protected/ Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RTor) ?	RTOR prohibited	RTOR prohibited	RTOR prohibited		RTOR prohibited	RTOR allowed	RTOR prohibited		RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No		No	No	No		No	No	No	No
	Right Turn Channel	Conventional with Receiving Lane	No Right Turn	Conv'tl without Receiving Lane		Conventional with Receiving Lane	No Right Turn	No Channel		Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane
	Corner Radius	>25m	No Right Turn	15-25m		15-25m	No Right Turn	15-25m		10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
	PETSI Score	29	38	42		14	3	38		47	45	30	28
Ped. Exposure to Traffic LoS	F	E	E	-	F	F	E	-	D	D	E	F	
Cycle Length													
Effective Walk Time													
Average Pedestrian Delay													
Pedestrian Delay LoS	-	-	-	-	-	-	-	-	-	-	-	-	
Level of Service	F	E	E	-	F	F	E	-	D	D	E	F	
	F				F				F				
Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic		Mixed Traffic	Mixed Traffic	Mixed Traffic		Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration						> 50 m			≤ 50 m Introduced right turn lane	≤ 50 m Introduced right turn lane	≤ 50 m	≤ 50 m
	Right Turning Speed						>25 km/h			>25 to 30 km/h	>25 to 30 km/h	>25 km/h	>25 km/h
	Cyclist relative to RT motorists	-	-	-	-	-	F	-	-	C	C	E	E
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	-	Mixed Traffic	Mixed Traffic	Mixed Traffic	-	Separated	Separated	Mixed Traffic	Mixed Traffic
	Left Turn Approach	One lane crossed		No lane crossed		One lane crossed		No lane crossed		1 lane crossed	1 lane crossed	One lane crossed	One lane crossed
	Operating Speed	≥ 60 km/h		≥ 60 km/h		≥ 60 km/h		≥ 60 km/h		≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
Left Turning Cyclist	F	-	C	-	F	-	C	-	E	E	F	F	
Level of Service	-	-	-	-	-	-	-	-	E	E	F	F	
	-				-				F				
Transit	Average Signal Delay									> 40 sec	> 40 sec	≤ 40 sec	> 40 sec
	Level of Service	-	-	-	-	-	-	-	-	F	F	E	F
	-				-				F				
Truck	Effective Corner Radius		> 15 m	> 15 m			> 15 m	> 15 m					
	Number of Receiving Lanes on Departure from Intersection		1	≥ 2			1	≥ 2					
Level of Service	-	C	A	-	-	C	A	-	-	-	-	-	
	C				C				-				
Auto	Volume to Capacity Ratio		0.91 - 1.00				0.71 - 0.80				0.71 - 0.80		
	Level of Service		E				C				C		

The Ottawa Hospital RC at Riverside Drive				Smyth Road at The Ottawa Hospital RC				Smyth Road at The Ottawa Hospital RC (Future)			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
6	7	3			5	8	8		5	7	7
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m			No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
No left turn / Prohib.	Permissive	Permissive			Permissive	No left turn / Prohib.	Permissive		Permissive	No left turn / Prohib.	Permissive
Permissive or yield control	No right turn	Permissive or yield control			Permissive or yield control	Permissive or yield control	No right turn		Permissive or yield control	Permissive or yield control	No right turn
RTOR prohibited	RTOR allowed	RTOR prohibited			RTOR allowed	RTOR prohibited	RTOR allowed		RTOR prohibited	RTOR prohibited	RTOR allowed
No	No	No			No	Yes	Yes		No	Yes	Yes
Conventional with Receiving Lane	No Right Turn	No Channel			No Channel	No Channel	No Right Turn		No Channel	No Channel	No Right Turn
15-25m	No Right Turn	5-10m			5-10m	10-15m	No Right Turn		5-10m	3-5m	No Right Turn
Std transverse markings	Std transverse markings	Std transverse markings			Std transverse markings	Std transverse markings	Std transverse markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
30	19	74			38	1	5		44	22	24
E	F	C	-	-	E	F	F	-	E	F	F
E	F	C	-	-	E	F	F	-	E	F	F
F				F				F			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Mixed Traffic			Mixed Traffic		Mixed Traffic		Mixed Traffic		Curb Bike Lane, Cycletrack or MUP
		≤ 50 m									Not Applicable
		≤ 25 km/h									Not Applicable
-	#N/A	D	-	-	-	-	-	-	-	-	Not Applicable
Mixed Traffic	Mixed Traffic	Mixed Traffic	-	-	Mixed Traffic	-	Mixed Traffic	-	Mixed Traffic	-	Separated
One lane crossed		No lane crossed			No lane crossed	One lane crossed			No lane crossed	One lane crossed	2-stage, LT box
≥ 60 km/h		> 50 to < 60 km/h			> 40 to ≤ 50 km/h	≥ 60 km/h			> 40 to ≤ 50 km/h	≥ 60 km/h	≤ 40 km/h
F	-	C	-	-	B	F	-	-	B	F	A
-	#N/A	D	-	-	B	F	-	-	B	F	A
F				F				F			
						≤ 10 sec	≤ 10 sec			≤ 10 sec	≤ 10 sec
-	-	-	-	-	-	B	B	-	-	B	B
						B				B	
	< 10 m						10 - 15 m				
	1						1				
-	F	-	-	-	-	-	E	-	-	-	-
F				E				-			
	0.81 - 0.90				0.0 - 0.60				0.0 - 0.60		
D				A				A			

Appendix I

Synchro Intersection Worksheets – 2026 Future Total Conditions

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	224	138	1191	122	91	1408
Future Volume (vph)	224	138	1191	122	91	1408
Lane Group Flow (vph)	224	138	1191	122	91	1408
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	27.0	27.0	63.0	63.0	63.0	63.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	21.4	21.4	57.2	57.2	57.2	57.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	1	1	0	0		
Act Effct Green (s)	16.9	16.9	61.7	61.7	61.7	61.7
Actuated g/C Ratio	0.19	0.19	0.69	0.69	0.69	0.69
v/c Ratio	0.73	0.41	0.52	0.12	0.38	0.63
Control Delay	47.8	15.9	1.4	0.2	12.9	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	15.9	1.4	0.2	12.9	10.0
LOS	D	B	A	A	B	B
Approach Delay	35.6		1.3			10.2
Approach LOS	D		A			B
Queue Length 50th (m)	36.5	6.8	2.9	0.0	5.9	62.6
Queue Length 95th (m)	57.2	21.4	7.6	m0.0	18.9	95.0
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	390	397	2272	1007	240	2249
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	0.57	0.35	0.52	0.12	0.38	0.63

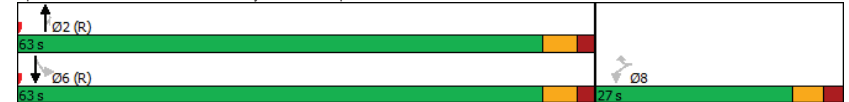
Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 78 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 9.4
 Intersection LOS: A
 Intersection Capacity Utilization 70.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↕	↕	↘	↕
Traffic Volume (vph)	130	107	1189	423	179	1445
Future Volume (vph)	130	107	1189	423	179	1445
Lane Group Flow (vph)	130	107	1189	423	179	1445
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	13.0	13.0	49.1	49.1	65.3	65.3
Actuated g/C Ratio	0.14	0.14	0.55	0.55	0.73	0.73
v/c Ratio	0.56	0.36	0.66	0.43	0.52	0.61
Control Delay	44.4	10.2	13.9	2.2	13.9	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	10.2	13.9	2.2	13.9	12.1
LOS	D	B	B	A	B	B
Approach Delay	29.0		10.8			12.3
Approach LOS	C		B			B
Queue Length 50th (m)	21.4	0.0	51.8	0.0	14.5	72.7
Queue Length 95th (m)	36.4	13.0	77.0	16.1	34.3	123.3
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	522	539	1791	975	358	2381
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	0.25	0.20	0.66	0.43	0.50	0.61

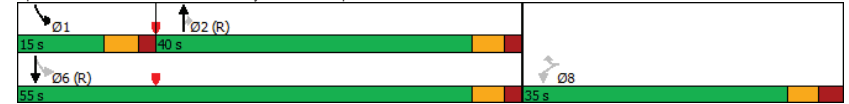
Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 12.8
 Intersection Capacity Utilization 67.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 2: Riverside & Smyth South Ramp



Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↕
Traffic Volume (vph)	73	72	1600	79	223	1360
Future Volume (vph)	73	72	1600	79	223	1360
Lane Group Flow (vph)	73	72	1600	79	223	1360
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effct Green (s)	13.2	13.2	70.3	70.3	70.3	70.3
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.78	0.78
v/c Ratio	0.32	0.33	0.62	0.07	1.31	0.53
Control Delay	36.1	24.7	8.1	3.0	192.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	24.7	8.1	3.0	192.1	5.2
LOS	D	C	A	A	F	A
Approach Delay	30.5		7.9			31.5
Approach LOS	C		A			C
Queue Length 50th (m)	12.0	6.8	50.5	1.2	~52.3	15.7
Queue Length 95th (m)	20.1	15.6	133.3	7.7	#99.5	71.7
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	438	387	2564	1122	170	2564
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	0.17	0.19	0.62	0.07	1.31	0.53
Intersection Summary						
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 150						

Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 81.3%	ICU Level of Service D
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.	



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑	↑	↑
Traffic Volume (vph)	538	671	362	602	213
Future Volume (vph)	538	671	362	602	213
Lane Group Flow (vph)	775	671	362	602	213
Sign Control	Free	Free			

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↑↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1062	3	1012	3	
Future Volume (vph)	1062	3	1012	3	
Lane Group Flow (vph)	1068	3	1012	5	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	9	0	0	16	24
Act Effct Green (s)	63.9	63.9	63.9	13.5	
Actuated g/C Ratio	0.85	0.85	0.85	0.18	
v/c Ratio	0.38	0.01	0.25	0.02	
Control Delay	6.3	7.7	5.0	24.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	6.3	7.7	5.0	24.0	
LOS	A	A	A	C	
Approach Delay	6.3		5.0	24.0	
Approach LOS	A		A	C	
Queue Length 50th (m)	0.0	0.0	0.0	0.3	
Queue Length 95th (m)	91.7	1.6	50.6	3.2	
Internal Link Dist (m)	59.2		422.8	177.3	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2804	366	4033	618	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.38	0.01	0.25	0.01	

Intersection Summary

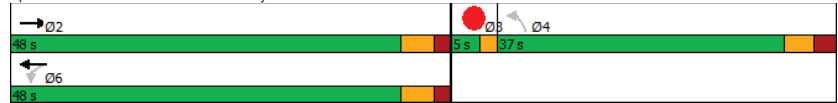
Cycle Length: 90
Actuated Cycle Length: 75.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2026AM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.38	Intersection LOS: A
Intersection Signal Delay: 5.7	ICU Level of Service A
Intersection Capacity Utilization 53.1%	
Analysis Period (min) 15	

Splits and Phases: 5: Site Access & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2026AM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↕	↔	↔
Traffic Volume (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Future Volume (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Lane Group Flow (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	20.0	41.0	41.0	17.0	38.0	38.0	20.0	37.0	37.0	20.0	37.0	37.0
Total Split (%)	17.4%	35.7%	35.7%	14.8%	33.0%	33.0%	17.4%	32.2%	32.2%	17.4%	32.2%	32.2%
Maximum Green (s)	14.0	35.2	35.2	11.0	32.2	32.2	13.9	30.9	30.9	13.9	30.9	30.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	24	24	24	31	31	31	11	11	11	17	17	17
Act Effct Green (s)	48.0	36.9	36.9	44.0	34.8	34.8	45.1	31.3	31.3	44.5	30.9	30.9
Actuated g/C Ratio	0.42	0.32	0.32	0.38	0.30	0.30	0.39	0.27	0.27	0.39	0.27	0.27
v/c Ratio	0.47	0.85	0.19	0.50	0.60	0.40	0.70	0.78	0.37	0.77	0.42	0.23
Control Delay	24.5	45.9	2.4	28.3	37.6	12.8	33.1	51.6	11.5	39.4	38.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	45.9	2.4	28.3	37.6	12.8	33.1	51.6	11.5	39.4	38.1	3.9
LOS	C	D	A	C	D	B	C	D	B	D	D	A
Approach Delay		39.3			31.1			36.4			31.9	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	19.6	99.0	0.0	13.0	60.0	8.9	48.2	75.4	6.6	37.0	35.7	0.0
Queue Length 95th (m)	32.8	#135.6	4.8	23.5	81.3	29.3	72.0	#118.2	24.7	#58.4	57.3	8.0
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	349	1052	524	224	994	495	455	465	492	335	456	487
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	0.42	0.85	0.19	0.45	0.60	0.40	0.70	0.78	0.37	0.76	0.42	0.23

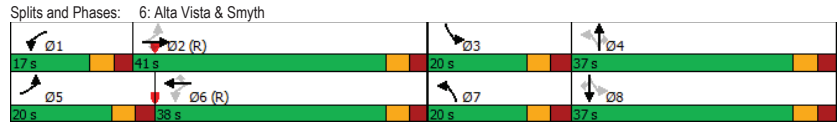
Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2026AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 35.2 Intersection LOS: D
 Intersection Capacity Utilization 89.7% 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.



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2026PM Peak Hour
Schlegel Villages

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↗	↖	↕
Traffic Volume (vph)	358	158	1405	214	181	1469
Future Volume (vph)	358	158	1405	214	181	1469
Lane Group Flow (vph)	358	158	1405	214	181	1469
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	10.8	15.8
Total Split (s)	26.0	26.0	50.0	50.0	14.0	64.0
Total Split (%)	28.9%	28.9%	55.6%	55.6%	15.6%	71.1%
Maximum Green (s)	20.4	20.4	44.2	44.2	8.2	58.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effct Green (s)	20.4	20.4	44.2	44.2	58.2	58.2
Actuated g/C Ratio	0.23	0.23	0.49	0.49	0.65	0.65
v/c Ratio	0.95	0.38	0.87	0.27	0.80	0.69
Control Delay	72.8	9.5	20.6	4.6	42.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.8	9.5	20.6	4.6	42.7	12.2
LOS	E	A	C	A	D	B
Approach Delay	53.4		18.4			15.5
Approach LOS	D		B			B
Queue Length 50th (m)	61.3	2.0	83.5	5.2	15.9	75.6
Queue Length 95th (m)	#113.4	17.2	#59.3	m10.3	#49.2	97.7
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	375	420	1613	782	228	2144
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	0.95	0.38	0.87	0.27	0.79	0.69

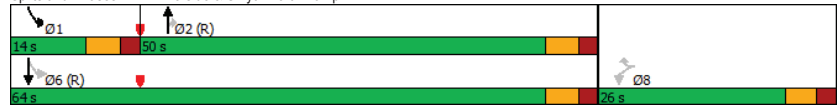
Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 21.9	Intersection LOS: C
Intersection Capacity Utilization 86.8%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2026PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑↑	↗	↘	↑↑
Traffic Volume (vph)	95	119	1417	304	83	1780
Future Volume (vph)	95	119	1417	304	83	1780
Lane Group Flow (vph)	95	119	1417	304	83	1780
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	11.8	11.8	56.3	56.3	66.5	66.5
Actuated g/C Ratio	0.13	0.13	0.63	0.63	0.74	0.74
v/c Ratio	0.47	0.40	0.68	0.30	0.33	0.73
Control Delay	43.5	10.9	12.5	3.2	7.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	10.9	12.5	3.2	7.3	6.8
LOS	D	B	B	A	A	A
Approach Delay	25.4		10.9			6.8
Approach LOS	C		B			A
Queue Length 50th (m)	15.6	0.0	51.5	0.0	2.5	46.6
Queue Length 95th (m)	28.8	13.9	94.9	m20.1	m6.2	m83.3
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	498	556	2075	1016	296	2450
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	0.19	0.21	0.68	0.30	0.28	0.73

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	



Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2026PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↖	↗	↕
Traffic Volume (vph)	97	229	1585	16	82	1812
Future Volume (vph)	97	229	1585	16	82	1812
Lane Group Flow (vph)	97	229	1585	16	82	1812
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	0	0	4	4		
Act Effct Green (s)	17.8	17.8	61.6	61.6	61.6	61.6
Actuated g/C Ratio	0.20	0.20	0.68	0.68	0.68	0.68
v/c Ratio	0.30	0.75	0.70	0.02	0.63	0.80
Control Delay	31.2	43.6	11.8	4.7	33.5	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	43.6	11.8	4.7	33.5	15.8
LOS	C	D	B	A	C	B
Approach Delay	39.9		11.8			16.6
Approach LOS	D		B			B
Queue Length 50th (m)	14.4	32.4	76.3	0.4	6.7	125.8
Queue Length 95th (m)	25.0	51.5	129.4	2.9	m#18.8	#186.1
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	459	418	2269	997	130	2269
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	0.21	0.55	0.70	0.02	0.63	0.80

Intersection Summary

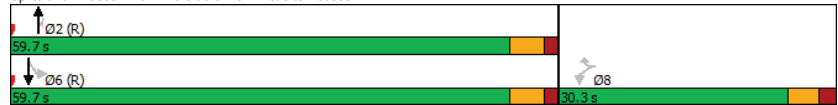
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
 3: Riverside & TOH RC/Site Access

Future Total 2026PM Peak Hour
 Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 76.2%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Riverside & TOH RC/Site Access



Lanes, Volumes, Timings
 4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Total 2026PM Peak Hour
 Schlegel Villages

	→	←	↘	↙	↘
Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑
Traffic Volume (vph)	554	729	516	387	395
Future Volume (vph)	554	729	516	387	395
Lane Group Flow (vph)	768	729	516	387	395
Sign Control	Free	Free			

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 55.3%	ICU Level of Service B
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2026PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↕↕	↕	↕↕↕	↕↕	↕↕
Traffic Volume (vph)	912	3	1149	8	
Future Volume (vph)	912	3	1149	8	
Lane Group Flow (vph)	917	3	1149	12	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	13
Act Effct Green (s)	63.7	63.7	63.7	13.4	
Actuated g/C Ratio	0.86	0.86	0.86	0.18	
v/c Ratio	0.33	0.01	0.28	0.04	
Control Delay	5.4	7.3	4.8	23.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	5.4	7.3	4.8	23.1	
LOS	A	A	A	C	
Approach Delay	5.4		4.8	23.1	
Approach LOS	A		A	C	
Queue Length 50th (m)	0.0	0.0	0.0	0.8	
Queue Length 95th (m)	74.9	1.6	59.0	5.4	
Internal Link Dist (m)	59.2		422.8	177.3	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2805	425	4074	695	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.33	0.01	0.28	0.02	

Intersection Summary

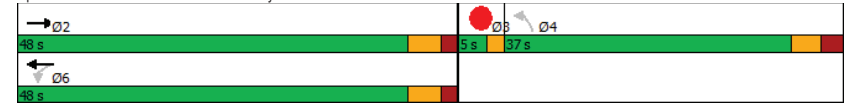
Cycle Length: 90
Actuated Cycle Length: 74.5
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2026PM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.33	Intersection LOS: A
Intersection Signal Delay: 5.2	ICU Level of Service A
Intersection Capacity Utilization 46.8%	
Analysis Period (min) 15	

Splits and Phases: 5: Site Access & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2026PM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Future Volume (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Lane Group Flow (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	17.0	44.0	44.0	22.0	49.0	49.0	15.0	31.0	31.0	18.0	34.0	34.0
Total Split (%)	14.8%	38.3%	38.3%	19.1%	42.6%	42.6%	13.0%	27.0%	27.0%	15.7%	29.6%	29.6%
Maximum Green (s)	11.0	38.2	38.2	16.0	43.2	43.2	8.9	24.9	24.9	11.9	27.9	27.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	9	9	9	56	56	56	8	8	8	10	10	10
Act Effct Green (s)	50.4	40.3	40.3	57.6	43.9	43.9	34.3	25.9	25.9	39.3	28.4	28.4
Actuated g/C Ratio	0.44	0.35	0.35	0.50	0.38	0.38	0.30	0.23	0.23	0.34	0.25	0.25
v/c Ratio	0.63	0.51	0.34	0.59	0.68	0.48	0.49	0.71	0.20	0.50	0.92	0.43
Control Delay	26.8	31.9	9.6	22.0	33.3	15.2	33.0	52.6	2.0	31.3	70.6	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	31.9	9.6	22.0	33.3	15.2	33.0	52.6	2.0	31.3	70.6	15.1
LOS	C	C	A	C	C	B	C	D	A	C	E	B
Approach Delay		26.3			27.8			38.9			47.8	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.6	54.2	7.2	28.8	85.5	19.0	14.7	57.8	0.0	22.9	86.9	10.4
Queue Length 95th (m)	32.0	72.7	24.8	44.6	108.0	43.5	26.8	#91.9	2.3	38.3	#144.1	31.2
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	280	1129	594	430	1266	548	211	388	431	311	426	462
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	0.61	0.51	0.34	0.55	0.68	0.48	0.47	0.71	0.20	0.48	0.92	0.43

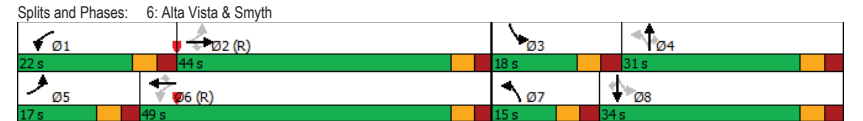
Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 115
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2026PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.1
 Intersection LOS: C
 Intersection Capacity Utilization 83.1%
 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.



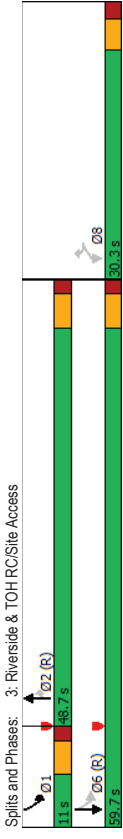
Lanes, Volumes, Timings
3: Riverside & TOH RC/Service Access

Lanes, Volumes, Timings
3: Riverside & TOH RC/Service Access

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	72	1600	79	223	1360
Future Volume (vph)	73	72	1600	79	223	1360
Lane Group Flow (vph)	73	72	1600	79	223	1360
Turn Type	Perm	Perm	NA	Perm	pin+pt	NA
Protected Phases	8	8	2	2	2	6
Permitted Phases	8	8	2	2	1	6
Detector Phase						
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	10.3	15.3
Total Split (s)	30.3	30.3	48.7	48.7	11.0	59.7
Total Split (%)	33.7%	33.7%	54.1%	54.1%	12.2%	66.3%
Maximum Green (s)	25.0	25.0	43.4	43.4	5.7	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag			Lag	Lead		
Lead-Lag Optimize?			Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effr Green (s)	13.2	13.2	48.0	48.0	69.2	70.3
Actuated G/C Ratio	0.15	0.15	0.53	0.53	0.77	0.78
v/c Ratio	0.32	0.28	0.91	0.10	0.60	0.53
Control Delay	36.1	10.3	30.3	8.3	28.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.3	30.3	8.3	28.8	7.5
LOS	D	B	C	A	C	A
Approach Delay	23.3	29.2			10.5	
Approach LOS	C	C			B	
Queue Length 50th (m)	12.0	0.0	127.5	3.9	23.1	23.5
Queue Length 95th (m)	20.1	9.5	#195.5	11.6	#77.6	101.6
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)	35.0		25.0		80.0	
Base Capacity (vph)	438	417	1749	774	373	2564
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	0.17	0.17	0.91	0.10	0.60	0.53

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 100

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 20.3
Intersection LOS: C
IOU Level of Service D
Intersection Capacity Utilization 81.3%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Appendix J

Synchro and SimTraffic Intersection Worksheets – 2031 Future Total Conditions

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2031AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	224	138	1283	122	91	1408
Future Volume (vph)	224	138	1283	122	91	1408
Lane Group Flow (vph)	224	138	1283	122	91	1408
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	15.8	15.8
Total Split (s)	27.0	27.0	63.0	63.0	63.0	63.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	21.4	21.4	57.2	57.2	57.2	57.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	1	1	0	0		
Act Effct Green (s)	16.9	16.9	61.7	61.7	61.7	61.7
Actuated g/C Ratio	0.19	0.19	0.69	0.69	0.69	0.69
v/c Ratio	0.73	0.43	0.56	0.12	0.43	0.63
Control Delay	47.8	19.5	1.5	0.2	15.6	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	19.5	1.5	0.2	15.6	10.0
LOS	D	B	A	A	B	B
Approach Delay	37.0		1.4			10.3
Approach LOS	D		A			B
Queue Length 50th (m)	36.5	9.4	3.0	0.0	6.2	62.6
Queue Length 95th (m)	57.2	24.3	7.6	m0.0	21.7	95.0
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	390	385	2272	1007	212	2249
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	0.57	0.36	0.56	0.12	0.43	0.63

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 78 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 9.4
 Intersection LOS: A
 Intersection Capacity Utilization 73.3%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2031AM Peak Hour
Schlegel Villages

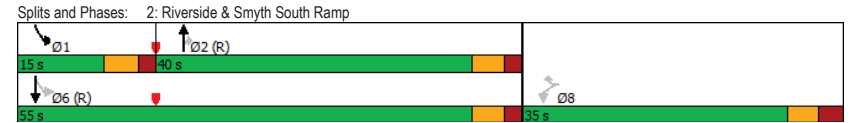
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖ ↗	↖ ↗	↕	↖ ↗	↖ ↗	↕
Traffic Volume (vph)	130	107	1280	423	179	1445
Future Volume (vph)	130	107	1280	423	179	1445
Lane Group Flow (vph)	130	107	1280	423	179	1445
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	13.0	13.0	49.1	49.1	65.3	65.3
Actuated g/C Ratio	0.14	0.14	0.55	0.55	0.73	0.73
v/c Ratio	0.56	0.36	0.71	0.43	0.56	0.61
Control Delay	44.4	10.2	8.1	1.0	15.7	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	10.2	8.1	1.0	15.7	12.1
LOS	D	B	A	A	B	B
Approach Delay	29.0		6.3			12.5
Approach LOS	C		A			B
Queue Length 50th (m)	21.4	0.0	20.2	1.0	15.5	72.7
Queue Length 95th (m)	36.4	13.0	m23.8	m1.3	35.0	123.3
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	522	539	1791	975	334	2381
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	0.25	0.20	0.71	0.43	0.54	0.61

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 76 (84%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 10.6
 Intersection LOS: B
 Intersection Capacity Utilization 70.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2031AM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↕
Traffic Volume (vph)	73	72	1724	79	223	1360
Future Volume (vph)	73	72	1724	79	223	1360
Lane Group Flow (vph)	73	72	1724	79	223	1360
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	10.3	15.3
Total Split (s)	30.3	30.3	48.7	48.7	11.0	59.7
Total Split (%)	33.7%	33.7%	54.1%	54.1%	12.2%	66.3%
Maximum Green (s)	25.0	25.0	43.4	43.4	5.7	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	2	2	0	0		
Act Effct Green (s)	13.2	13.2	48.0	48.0	69.2	70.3
Actuated g/C Ratio	0.15	0.15	0.53	0.53	0.77	0.78
v/c Ratio	0.32	0.28	0.99	0.10	0.60	0.53
Control Delay	36.1	10.3	41.4	8.5	28.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.3	41.4	8.5	28.8	7.5
LOS	D	B	D	A	C	A
Approach Delay	23.3		39.9			10.5
Approach LOS	C		D			B
Queue Length 50th (m)	12.0	0.0	~149.1	4.0	23.1	23.5
Queue Length 95th (m)	20.1	9.5	#219.6	11.7	#77.6	101.6
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	438	417	1749	773	373	2564
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	0.17	0.17	0.99	0.10	0.60	0.53

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 49 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 110

Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 26.1
 Intersection LOS: C
 Intersection Capacity Utilization 84.9%
 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.



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Total 2031AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑	↑	↑
Traffic Volume (vph)	538	671	362	602	213
Future Volume (vph)	538	671	362	602	213
Lane Group Flow (vph)	775	671	362	602	213
Sign Control	Free	Free			

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2031AM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↑↑	↑	↑↑↑	↑↑	↑
Traffic Volume (vph)	1062	3	1012	3	
Future Volume (vph)	1062	3	1012	3	
Lane Group Flow (vph)	1068	3	1012	5	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	9	0	0	16	24
Act Effct Green (s)	63.9	63.9	63.9	13.5	
Actuated g/C Ratio	0.85	0.85	0.85	0.18	
v/c Ratio	0.38	0.01	0.25	0.02	
Control Delay	6.3	7.7	5.0	24.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	6.3	7.7	5.0	24.0	
LOS	A	A	A	C	
Approach Delay	6.3		5.0	24.0	
Approach LOS	A		A	C	
Queue Length 50th (m)	0.0	0.0	0.0	0.3	
Queue Length 95th (m)	91.7	1.6	50.6	3.2	
Internal Link Dist (m)	59.2		422.8	177.3	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2804	366	4033	618	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.38	0.01	0.25	0.01	

Intersection Summary

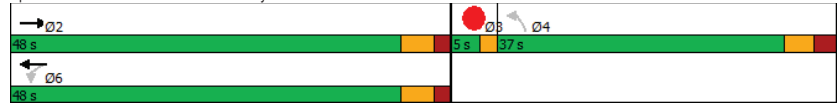
Cycle Length: 90
Actuated Cycle Length: 75.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2031AM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.38	Intersection LOS: A
Intersection Signal Delay: 5.7	ICU Level of Service A
Intersection Capacity Utilization 53.1%	
Analysis Period (min) 15	

Splits and Phases: 5: Site Access & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2031AM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Future Volume (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Lane Group Flow (vph)	148	894	101	101	595	198	317	361	180	255	192	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	20.0	41.0	41.0	17.0	38.0	38.0	20.0	37.0	37.0	20.0	37.0	37.0
Total Split (%)	17.4%	35.7%	35.7%	14.8%	33.0%	33.0%	17.4%	32.2%	32.2%	17.4%	32.2%	32.2%
Maximum Green (s)	14.0	35.2	35.2	11.0	32.2	32.2	13.9	30.9	30.9	13.9	30.9	30.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	24	24	24	31	31	31	11	11	11	17	17	17
Act Effct Green (s)	48.0	36.9	36.9	44.0	34.8	34.8	45.1	31.3	31.3	44.5	30.9	30.9
Actuated g/C Ratio	0.42	0.32	0.32	0.38	0.30	0.30	0.39	0.27	0.27	0.39	0.27	0.27
v/c Ratio	0.47	0.85	0.19	0.50	0.60	0.40	0.70	0.78	0.37	0.77	0.42	0.23
Control Delay	24.5	45.9	2.4	28.3	37.6	12.8	33.1	51.6	11.5	39.4	38.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	45.9	2.4	28.3	37.6	12.8	33.1	51.6	11.5	39.4	38.1	3.9
LOS	C	D	A	C	D	B	C	D	B	D	D	A
Approach Delay		39.3			31.1			36.4			31.9	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	19.6	99.0	0.0	13.0	60.0	8.9	48.2	75.4	6.6	37.0	35.7	0.0
Queue Length 95th (m)	32.8	#135.6	4.8	23.5	81.3	29.3	72.0	#118.2	24.7	#58.4	57.3	8.0
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	349	1052	524	224	994	495	455	465	492	335	456	487
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	0.42	0.85	0.19	0.45	0.60	0.40	0.70	0.78	0.37	0.76	0.42	0.23

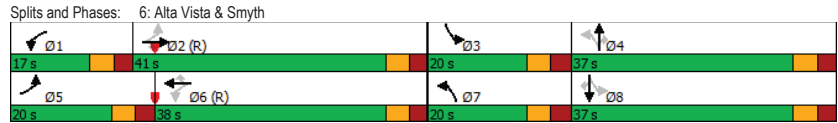
Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2031AM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 35.2 Intersection LOS: D
 Intersection Capacity Utilization 89.7% 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.



Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2031PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	↑	→	←	→
Traffic Volume (vph)	358	158	1405	214	181	1581
Future Volume (vph)	358	158	1405	214	181	1581
Lane Group Flow (vph)	358	158	1405	214	181	1581
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	37.8	37.8	10.8	15.8
Total Split (s)	26.0	26.0	50.0	50.0	14.0	64.0
Total Split (%)	28.9%	28.9%	55.6%	55.6%	15.6%	71.1%
Maximum Green (s)	20.4	20.4	44.2	44.2	8.2	58.2
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.8	5.8	5.8	5.8
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	26.0	26.0		
Flash Dont Walk (s)	12.0	12.0	6.0	6.0		
Pedestrian Calls (#/hr)	9	9	0	0		
Act Effct Green (s)	20.4	20.4	44.2	44.2	58.2	58.2
Actuated g/C Ratio	0.23	0.23	0.49	0.49	0.65	0.65
v/c Ratio	0.95	0.38	0.87	0.27	0.80	0.74
Control Delay	72.8	9.5	20.6	4.6	42.7	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.8	9.5	20.6	4.6	42.7	13.4
LOS	E	A	C	A	D	B
Approach Delay	53.4		18.4			16.4
Approach LOS	D		B			B
Queue Length 50th (m)	61.3	2.0	83.5	5.2	15.9	86.6
Queue Length 95th (m)	#113.4	17.2	#59.3	m10.3	#49.2	112.2
Internal Link Dist (m)	185.3		236.3			303.1
Turn Bay Length (m)		40.0		45.0	125.0	
Base Capacity (vph)	375	420	1613	782	228	2144
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	0.95	0.38	0.87	0.27	0.79	0.74

Intersection Summary
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
1: Riverside & Smyth North Ramp

Future Total 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 86.8%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Riverside & Smyth North Ramp



Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2031PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑↑	↗	↘	↑↑
Traffic Volume (vph)	95	119	1417	304	83	1914
Future Volume (vph)	95	119	1417	304	83	1914
Lane Group Flow (vph)	95	119	1417	304	83	1914
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	34.1	34.1	26.6	26.6	10.6	15.6
Total Split (s)	35.0	35.0	40.0	40.0	15.0	55.0
Total Split (%)	38.9%	38.9%	44.4%	44.4%	16.7%	61.1%
Maximum Green (s)	28.9	28.9	34.4	34.4	9.4	49.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.6	5.6	5.6	5.6
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
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	21.0	21.0	14.0	14.0		
Pedestrian Calls (#/hr)	0	0	1	1		
Act Effct Green (s)	11.8	11.8	56.3	56.3	66.5	66.5
Actuated g/C Ratio	0.13	0.13	0.63	0.63	0.74	0.74
v/c Ratio	0.47	0.40	0.68	0.30	0.33	0.78
Control Delay	43.5	10.9	12.5	3.2	7.3	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	10.9	12.5	3.2	7.3	8.3
LOS	D	B	B	A	A	A
Approach Delay	25.4		10.9			8.2
Approach LOS	C		B			A
Queue Length 50th (m)	15.6	0.0	51.5	0.0	2.8	58.8
Queue Length 95th (m)	28.8	13.9	94.9	m20.1	m6.6	m108.7
Internal Link Dist (m)	167.2		164.4			91.2
Turn Bay Length (m)		45.0			50.0	
Base Capacity (vph)	498	556	2075	1016	296	2450
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	0.19	0.21	0.68	0.30	0.28	0.78

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
2: Riverside & Smyth South Ramp

Future Total 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	



Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2031PM Peak Hour
Schlegel Villages

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Traffic Volume (vph)	97	229	1585	16	82	1952
Future Volume (vph)	97	229	1585	16	82	1952
Lane Group Flow (vph)	97	229	1585	16	82	1952
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.3	30.3	23.3	23.3	15.3	15.3
Total Split (s)	30.3	30.3	59.7	59.7	59.7	59.7
Total Split (%)	33.7%	33.7%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	25.0	25.0	54.4	54.4	54.4	54.4
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	13.0	13.0		
Flash Dont Walk (s)	18.0	18.0	5.0	5.0		
Pedestrian Calls (#/hr)	0	0	4	4		
Act Effct Green (s)	17.8	17.8	61.6	61.6	61.6	61.6
Actuated g/C Ratio	0.20	0.20	0.68	0.68	0.68	0.68
v/c Ratio	0.30	0.75	0.70	0.02	0.63	0.86
Control Delay	31.2	43.6	11.8	4.7	31.3	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	43.6	11.8	4.7	31.3	17.4
LOS	C	D	B	A	C	B
Approach Delay	39.9		11.8			17.9
Approach LOS	D		B			B
Queue Length 50th (m)	14.4	32.4	76.3	0.4	6.5	147.2
Queue Length 95th (m)	25.0	51.5	129.4	2.9	m7.4	#221.3
Internal Link Dist (m)	151.9		223.4			100.0
Turn Bay Length (m)		35.0		25.0	80.0	
Base Capacity (vph)	459	418	2269	997	130	2269
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	0.21	0.55	0.70	0.02	0.63	0.86

Intersection Summary

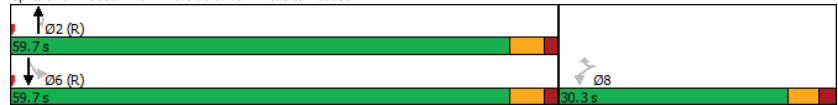
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
3: Riverside & TOH RC/Site Access

Future Total 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 17.2	Intersection LOS: B
Intersection Capacity Utilization 76.2%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Riverside & TOH RC/Site Access



Lanes, Volumes, Timings
4: Smyth South Ramp/Smyth North Ramp & Smyth

Future Total 2031PM Peak Hour
Schlegel Villages

	→	←	↘	↙	↘
Lane Group	EBT	WBT	WBR	NBR	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑
Traffic Volume (vph)	554	729	516	387	395
Future Volume (vph)	554	729	516	387	395
Lane Group Flow (vph)	768	729	516	387	395
Sign Control	Free	Free			

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 55.3%	ICU Level of Service B
Analysis Period (min) 15	

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2031PM Peak Hour
Schlegel Villages

Lane Group	EBT	WBL	WBT	NBL	Ø3
Lane Configurations	↕↕	↕	↕↕↕	↕↕	
Traffic Volume (vph)	912	3	1149	8	
Future Volume (vph)	912	3	1149	8	
Lane Group Flow (vph)	917	3	1149	12	
Turn Type	NA	Perm	NA	Perm	
Protected Phases	2		6		3
Permitted Phases		6		4	
Detector Phase	2	6	6	4	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	24.6	24.6	24.6	36.8	5.0
Total Split (s)	48.0	48.0	48.0	37.0	5.0
Total Split (%)	53.3%	53.3%	53.3%	41.1%	6%
Maximum Green (s)	42.4	42.4	42.4	31.2	3.0
Yellow Time (s)	3.7	3.7	3.7	3.3	2.0
All-Red Time (s)	1.9	1.9	1.9	2.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6	5.8	
Lead/Lag				Lag	Lead
Lead-Lag Optimize?				Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	24.0	0.0
Pedestrian Calls (#/hr)	5	0	0	9	13
Act Effct Green (s)	63.7	63.7	63.7	13.4	
Actuated g/C Ratio	0.86	0.86	0.86	0.18	
v/c Ratio	0.33	0.01	0.28	0.04	
Control Delay	5.4	7.3	4.8	23.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	5.4	7.3	4.8	23.1	
LOS	A	A	A	C	
Approach Delay	5.4		4.8	23.1	
Approach LOS	A		A	C	
Queue Length 50th (m)	0.0	0.0	0.0	0.8	
Queue Length 95th (m)	74.9	1.6	59.0	5.4	
Internal Link Dist (m)	59.2		422.8	177.3	
Turn Bay Length (m)		35.0		35.0	
Base Capacity (vph)	2805	425	4074	695	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.33	0.01	0.28	0.02	

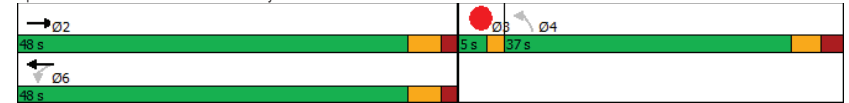
Intersection Summary	
Cycle Length:	90
Actuated Cycle Length:	74.5
Natural Cycle:	70
Control Type:	Semi Act-Uncoord

Lanes, Volumes, Timings
5: Site Access & Smyth

Future Total 2031PM Peak Hour
Schlegel Villages

Maximum v/c Ratio: 0.33	Intersection LOS: A
Intersection Signal Delay: 5.2	ICU Level of Service A
Intersection Capacity Utilization 46.8%	
Analysis Period (min) 15	

Splits and Phases: 5: Site Access & Smyth



Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2031PM Peak Hour
Schlegel Villages

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Future Volume (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Lane Group Flow (vph)	170	577	200	238	865	264	99	274	86	149	392	199
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.8	24.8	11.0	24.8	24.8	11.1	29.1	29.1	11.1	29.1	29.1
Total Split (s)	17.0	44.0	44.0	22.0	49.0	49.0	15.0	31.0	31.0	18.0	34.0	34.0
Total Split (%)	14.8%	38.3%	38.3%	19.1%	42.6%	42.6%	13.0%	27.0%	27.0%	15.7%	29.6%	29.6%
Maximum Green (s)	11.0	38.2	38.2	16.0	43.2	43.2	8.9	24.9	24.9	11.9	27.9	27.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.5	2.5	2.7	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.8	5.8	6.0	5.8	5.8	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	9	9	9	56	56	56	8	8	8	10	10	10
Act Effct Green (s)	50.4	40.3	40.3	57.6	43.9	43.9	34.3	25.9	25.9	39.3	28.4	28.4
Actuated g/C Ratio	0.44	0.35	0.35	0.50	0.38	0.38	0.30	0.23	0.23	0.34	0.25	0.25
v/c Ratio	0.63	0.51	0.34	0.59	0.68	0.48	0.49	0.71	0.20	0.50	0.92	0.43
Control Delay	26.8	31.9	9.6	22.0	33.3	15.2	33.0	52.6	2.0	31.3	70.6	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	31.9	9.6	22.0	33.3	15.2	33.0	52.6	2.0	31.3	70.6	15.1
LOS	C	C	A	C	C	B	C	D	A	C	E	B
Approach Delay		26.3			27.8			38.9			47.8	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	19.6	54.2	7.2	28.8	85.5	19.0	14.7	57.8	0.0	22.9	86.9	10.4
Queue Length 95th (m)	32.0	72.7	24.8	44.6	108.0	43.5	26.8	#91.9	2.3	38.3	#144.1	31.2
Internal Link Dist (m)		422.8			216.7			602.2			553.9	
Turn Bay Length (m)	40.0		30.0	60.0		30.0	70.0		30.0	50.0		25.0
Base Capacity (vph)	280	1129	594	430	1266	548	211	388	431	311	426	462
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	0.61	0.51	0.34	0.55	0.68	0.48	0.47	0.71	0.20	0.48	0.92	0.43

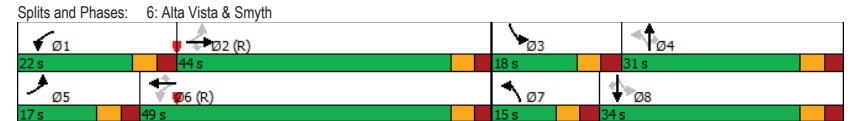
Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 115
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80

Lanes, Volumes, Timings
6: Alta Vista & Smyth

Future Total 2031PM Peak Hour
Schlegel Villages

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.1
 Intersection LOS: C
 Intersection Capacity Utilization 83.1%
 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.



SimTraffic Simulation Summary
Future Total 2031

06-17-2022

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	7:45	7:45	7:45	7:45	7:45	7:45
Total Time (min)	60	60	60	60	60	60
Time Recorded (min)	30	30	30	30	30	30
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3439	3349	3307	3207	3209	3304
Vehs Exited	3428	3412	3288	3251	3290	3334
Starting Vehs	274	304	267	319	293	290
Ending Vehs	285	241	286	275	212	269
Travel Distance (km)	4502	4387	4307	4236	4223	4331
Travel Time (hr)	146.5	143.9	135.7	131.8	128.9	137.3
Total Delay (hr)	56.0	55.5	48.7	46.4	43.5	50.0
Total Stops	4202	4328	3956	3674	3555	3944
Fuel Used (l)	398.8	388.8	376.7	366.9	363.2	378.9

Interval #0 Information Seeding

Start Time	6:45
End Time	7:15
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:15
End Time	7:45
Total Time (min)	30
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	3439	3349	3307	3207	3209	3304
Vehs Exited	3428	3412	3288	3251	3290	3334
Starting Vehs	274	304	267	319	293	290
Ending Vehs	285	241	286	275	212	269
Travel Distance (km)	4502	4387	4307	4236	4223	4331
Travel Time (hr)	146.5	143.9	135.7	131.8	128.9	137.3
Total Delay (hr)	56.0	55.5	48.7	46.4	43.5	50.0
Total Stops	4202	4328	3956	3674	3555	3944
Fuel Used (l)	398.8	388.8	376.7	366.9	363.2	378.9

Queuing and Blocking Report
Future Total 2031

06-17-2022

Intersection: 3: Riverside & TOH RC/Site Access

Movement	WB	NB	NB	NB	SB	SB	SB	SB
	L	T	T	R	L	T	T	T
Directions Served								
Maximum Queue (m)	32.0	173.6	189.7	39.9	61.2	73.6	80.6	
Average Queue (m)	14.3	100.0	111.7	13.1	33.6	27.3	34.6	
95th Queue (m)	29.0	184.8	201.1	38.6	56.3	64.7	70.8	
Link Distance (m)	160.5	239.6	239.6			113.5	113.5	
Upstream Blk Time (%)		0	1					
Queuing Penalty (veh)		0	0					
Storage Bay Dist (m)				25.0	80.0			
Storage Blk Time (%)				33	0		0	
Queuing Penalty (veh)		0	26	0	1			

Appendix K

TDM Checklist

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER The measure could maximize support for users of sustainable modes, and optimize development performance

★ The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances	<input checked="" type="checkbox"/>
2.2 Bicycle skills training		
<i>Commuter travel</i>		
BETTER ★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	<input type="checkbox"/>
2.3 Valet bike parking		
<i>Visitor travel</i>		
BETTER	2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	<input type="checkbox"/>

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	<input checked="" type="checkbox"/>
BASIC	3.1.2 Provide online links to OC Transpo and STO information	<input checked="" type="checkbox"/>
BETTER	3.1.3 Provide real-time arrival information display at entrances	<input type="checkbox"/>
3.2 Transit fare incentives		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	<input type="checkbox"/>
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	<input type="checkbox"/>
3.3 Enhanced public transit service		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	<input type="checkbox"/>
3.4 Private transit service		
<i>Commuter travel</i>		
BETTER	3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	<input type="checkbox"/>

TDM measures: Non-residential developments		Check if proposed & add descriptions
4. RIDESHARING		
<i>Commuter travel</i>		
4.1	Ridematching service	<input type="checkbox"/>
BASIC	4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com	<input type="checkbox"/>
4.2 Carpool parking price incentives		
<i>Commuter travel</i>		
BETTER	4.2.1 Provide discounts on parking costs for registered carpools	<input type="checkbox"/>
4.3 Vanpool service		
<i>Commuter travel</i>		
BETTER	4.3.1 Provide a vanpooling service for long-distance commuters	<input type="checkbox"/>
5. CARSHARING & BIKESHARING		
5.1 Bikeshare stations & memberships		
BETTER	5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors	<input type="checkbox"/>
<i>Commuter travel</i>		
BETTER	5.1.2 Provide employees with bikeshare memberships for local business travel	<input type="checkbox"/>
5.2 Carshare vehicles & memberships		
<i>Commuter travel</i>		
BETTER	5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants	<input type="checkbox"/>
BETTER	5.2.2 Provide employees with carshare memberships for local business travel	<input type="checkbox"/>
6. PARKING		
<i>Commuter travel</i>		
BASIC	6.1.1 Charge for long-term parking (daily, weekly, monthly)	<input type="checkbox"/>
BASIC	6.1.2 Unbundle parking cost from lease rates at multi-tenant sites	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	6.1.3 Charge for short-term parking (hourly)	<input type="checkbox"/>

TDM measures: Non-residential developments		Check if proposed & add descriptions
7. TDM MARKETING & COMMUNICATIONS		
7.1 Multimodal travel information		
<i>Commuter travel</i>		
BASIC	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	<input checked="" type="checkbox"/>
<i>Visitor travel</i>		
BETTER	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	<input type="checkbox"/>
7.2 Personalized trip planning		
<i>Commuter travel</i>		
BETTER	7.2.1 Offer personalized trip planning to new/relocating employees	<input type="checkbox"/>
7.3 Promotions		
<i>Commuter travel</i>		
BETTER	7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	<input type="checkbox"/>
8. OTHER INCENTIVES & AMENITIES		
8.1 Emergency ride home		
<i>Commuter travel</i>		
BETTER	8.1.1 Provide emergency ride home service to non-driving commuters	<input type="checkbox"/>
8.2 Alternative work arrangements		
<i>Commuter travel</i>		
BASIC	8.2.1 Encourage flexible work hours	<input type="checkbox"/>
BETTER	8.2.2 Encourage compressed workweeks	<input type="checkbox"/>
BETTER	8.2.3 Encourage telework	<input type="checkbox"/>
8.3 Local business travel options		
<i>Commuter travel</i>		
BASIC	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	<input type="checkbox"/>
8.4 Commuter incentives		
<i>Commuter travel</i>		
BETTER	8.4.1 Offer employees a taxable, mode-neutral commuting allowance	<input type="checkbox"/>
8.5 On-site amenities		
<i>Commuter travel</i>		
BETTER	8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	<input type="checkbox"/>

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER The measure could maximize support for users of sustainable modes, and optimize development performance

★ The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: Residential developments		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances (multi-family, condominium)	<input checked="" type="checkbox"/>
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: Residential developments		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (multi-family, condominium)	<input checked="" type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances (multi-family, condominium)	<input type="checkbox"/>
3.2 Transit fare incentives		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input checked="" type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
3.3 Enhanced public transit service		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels (subdivision)	<input type="checkbox"/>
3.4 Private transit service		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input checked="" type="checkbox"/>
4. CARSHARING & BIKESHARING		
4.1 Bikeshare stations & memberships		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station (multi-family)	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (multi-family)	<input type="checkbox"/>
4.2 Carshare vehicles & memberships		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
5. PARKING		
5.1 Priced parking		
BASIC ★	5.1.1 Unbundle parking cost from purchase price (condominium)	<input type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (multi-family)	<input type="checkbox"/>

TDM measures: Residential developments		Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS		
6.1 Multimodal travel information		
BASIC ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
6.2 Personalized trip planning		
BETTER ★	6.2.1 Offer personalized trip planning to new residents	<input checked="" type="checkbox"/>

**TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)**

Legend	
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: Non-residential developments		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
1.2 Facilities for walking & cycling		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see <i>Official Plan policy 4.3.3</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see <i>Official Plan policy 4.3.12</i>)	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: Non-residential developments		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (see <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (see <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (see <i>Official Plan policy 4.3.11</i>)	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
1.3 Amenities for walking & cycling		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: Non-residential developments		Check if completed & add descriptions, explanations or plan/drawing references
2. WALKING & CYCLING: END-OF-TRIP FACILITIES		
2.1 Bicycle parking		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions, that no more than 50% of spaces are vertical spaces, and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	<input type="checkbox"/>
BETTER	2.1.5 Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	<input type="checkbox"/>
2.2 Secure bicycle parking		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	<input type="checkbox"/>
2.3 Shower & change facilities		
BASIC	2.3.1 Provide shower and change facilities for the use of active commuters	<input type="checkbox"/>
BETTER	2.3.2 In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	<input type="checkbox"/>
2.4 Bicycle repair station		
BETTER	2.4.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: Non-residential developments		Check if completed & add descriptions, explanations or plan/drawing references
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
4.2 Carpool parking		
BASIC	4.2.1 Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	<input type="checkbox"/>
BETTER	4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	<input type="checkbox"/>
5. CARSHARING & BIKESHARING		
5.1 Carshare parking spaces		
BETTER	5.1.1 Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces (see <i>Zoning By-law Section 94</i>)	<input type="checkbox"/>
5.2 Bikeshare station location		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: Non-residential developments		Check if completed & add descriptions, explanations or plan/drawing references
6. PARKING		
6.1 Number of parking spaces		
REQUIRED	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
BASIC	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 704</i>)	<input type="checkbox"/>
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
6.2 Separate long-term & short-term parking areas		
BETTER	6.2.1 Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	<input type="checkbox"/>
7. OTHER		
7.1 On-site amenities to minimize off-site trips		
BETTER	7.1.1 Provide on-site amenities to minimize mid-day or mid-continue errands	<input checked="" type="checkbox"/>

**TDM-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)**

Legend

REQUIRED The Official Plan or Zoning By-law provides related guidance that must be followed

BASIC The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: Residential developments		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
1.2 Facilities for walking & cycling		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see <i>Official Plan policy 4.3.3</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings; between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see <i>Official Plan policy 4.3.12</i>)	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (see <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (see <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (see <i>Official Plan policy 4.3.11</i>)	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
1.3 Amenities for walking & cycling		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
2. WALKING & CYCLING: END-OF-TRIP FACILITIES		
2.1 Bicycle parking		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions, that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	<input type="checkbox"/>
2.2 Secure bicycle parking		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
2.3 Bicycle repair station		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
5. CARSHARING & BIKESHARING		
5.1 Carshare parking spaces		
BETTER	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or RS Zone for specified residential uses (see <i>Zoning By-law Section 94</i>)	<input type="checkbox"/>
5.2 Bikeshare station location		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>
6. PARKING		
6.1 Number of parking spaces		
REQUIRED	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
BASIC	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 104</i>)	<input type="checkbox"/>
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
6.2 Separate long-term & short-term parking areas		
BETTER	6.2.1 Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	<input type="checkbox"/>