CAIVAN
COMMUNITIES

February 2018

3285 Borrisokane Road
Phase 1

Transportation Impact Study

PARSONS

3285 Borrisokane Road

TIA Report

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1. INTRODUCTION

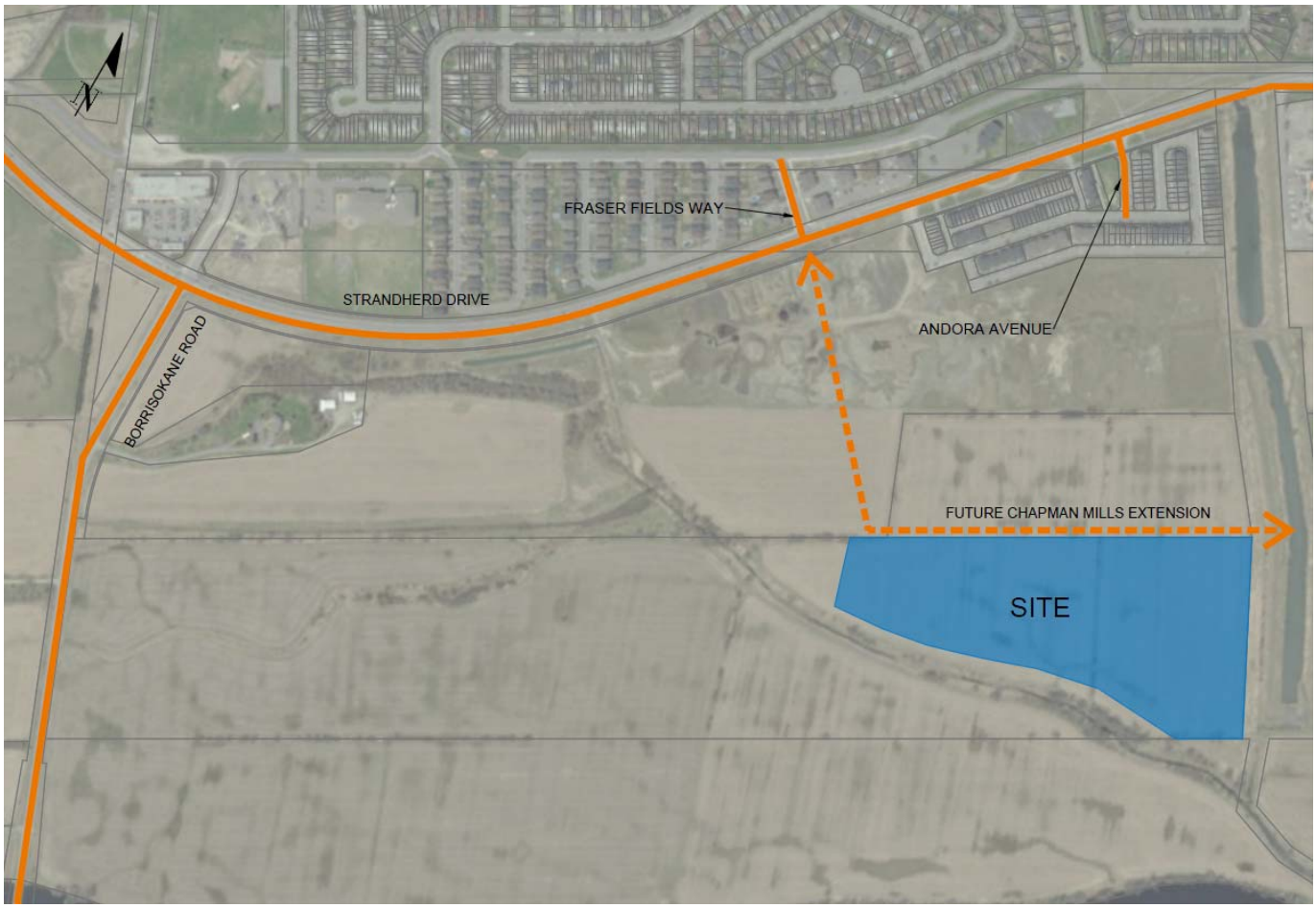
As per the 2017 guidelines, this TIA report is a compilation of Steps 1 to 4. All correspondence, including the Step 1 Screening form, has been included as Appendix A.

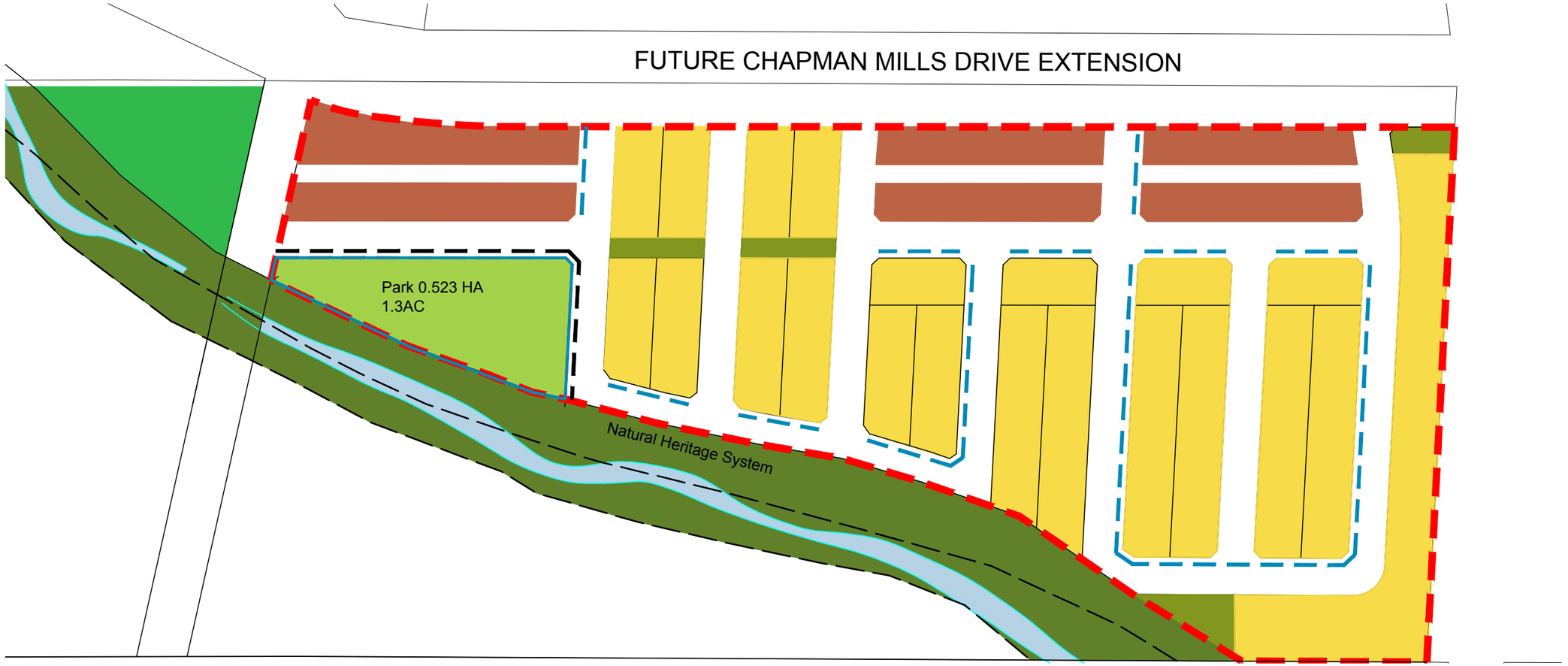
1.1. PROPOSED DEVELOPMENT

The proposed development of 3285 Borrisokane Road will develop the eastern portion of the subject property, including 200 residential units, with a mixture of single detached units and townhouse units. The site's local context is illustrated in Figure 1. The proposed site plan is illustrated in Figure 2. The estimated date of occupancy is 2020 with one phase of development. Vehicle access is proposed to be provided onto the future Chapman Mills Drive extension, connecting to the existing road network at Strandherd Drive and Fraser Fields Way.

This development is a smaller portion of the entire proposed site at 3285 Borrisokane. The western portion is not part of this development application and will be considered at a later date.

Figure 1: Local Context





NORTH

scale | 1: 2000

legend

- Single Detached
- Rear Lane Townhome
- Back to Back Townhome
- Park / Open spaces
- Natural Heritage System
- Phase 1 Boundary
- Site Boundary

summary

AREA
Single Family
3.62 ha
Rear Lane Town
1.11 ha
Park
0.52 ha
Open Spaces
0.17 ha
Road
2.96 ha
Site Area
8.38 ha

FRONTAGE
Single Family
1594.72 m
Rear Lane Town
628.52 m

ROAD
18.0m Local
184.6 m
16.5m Local
1385.3 m
8.50m Lane
323.0 m
Total Road
1892.9 m

Z:\Projects\2016\16-165 Caivan Conservancy\Design\Drawings\Concept\171115 -Caivan Conservancy_Park Fit Plan.dwg

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Cavian | Conservancy

phase 1 concept plan

version 5.2

date | 15 November 2017

2. EXISTING CONDITIONS

2.1. AREA ROAD NETWORK

Strandherd Drive is a major east-west arterial road in Barrhaven connecting to the Fallowfield Road Highway 416 interchange in the west and to the Vimy Memorial Bridge over the Rideau River in the east. Within the proposed Study Area, Strandherd Drive is a two-lane road, widening to a four-lane road near Jockvale Road and with a posted speed limit ranging between 60km/h and 80 km/h. The Transportation Master Plan (TMP) identifies the need to widen Strandherd Drive to four lanes between Fallowfield Road and Maravista Drive during Phase 1 (2014-2019) of the Affordable Road Network. This section was constructed in 2016 by developers to accommodate the early phases of the Citi-Gate commercial development. Widening between Maravista Drive and Jockvale Road is scheduled for completion during Phase 2 (2020-2025) of the Affordable Road Network. However, it is anticipated that this timeframe will be sooner if the City approves its funding in 2017. This road is identified as a trucking route.

Fraser Fields Way is a north-south local road, meeting Strandherd Drive at a T-intersection with a stop control on the minor leg (Fraser Fields Way). This road provides access to the residential subdivisions north of Strandherd Drive. This intersection is expected to add a south leg for the connection to the Chapman Mills Drive Extension. Within the Study Area the road consists of one travel lane for either direction and on-street parking is permitted. The road has an unposted speed of 50km/h

Borrisokane Road is a two-lane rural arterial road that runs north-south extending from Strandherd Drive southward to Barnsdale Road. New intersections, on Borrisokane Road, are anticipated resulting from future phases of the proposed development, but are not required to support the Phase 1 development. The 2013 TMP has not identified any upgrades to the roadway within the 2031 planning horizon. Within the Study Area the cross-section consists of one travel lane for each direction. The posted speed is 80 km/h and geoOttawa specifies this road is as a partial-trucking route.

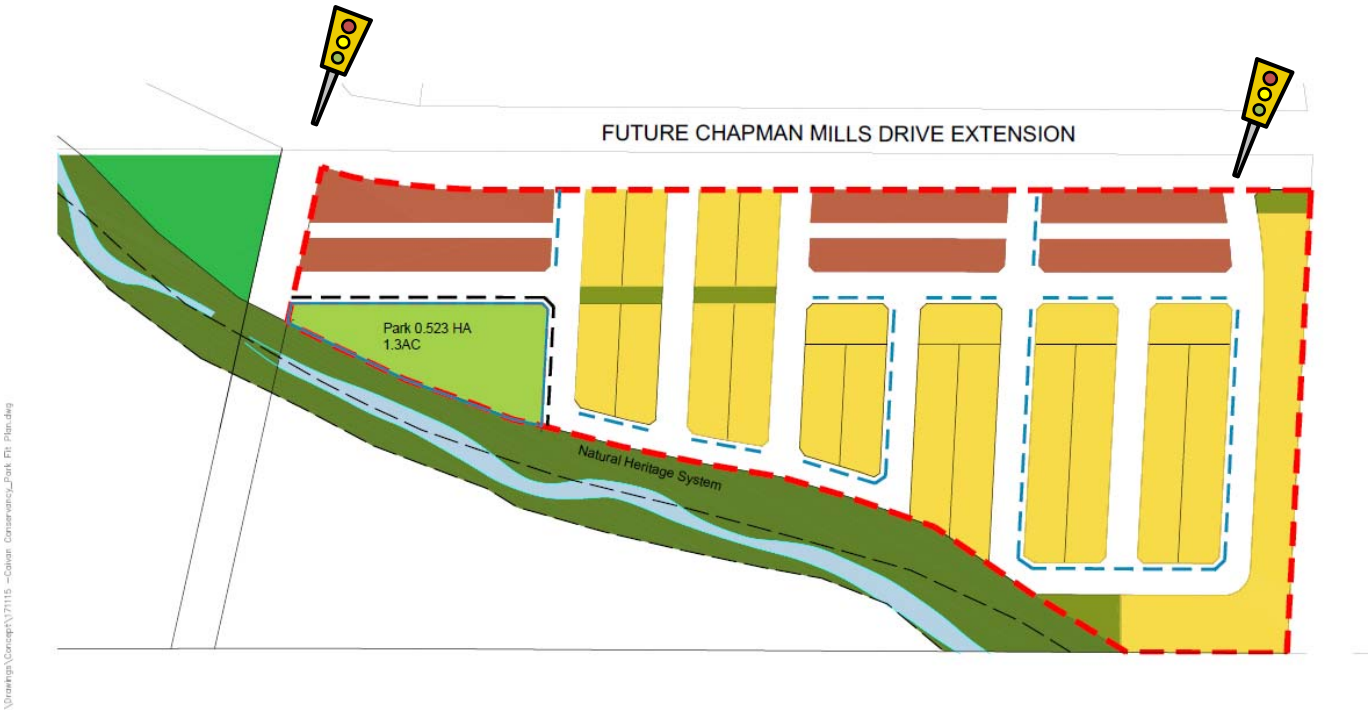
Andora Avenue is a north-south local road that extends from Strandherd Drive southward one block to Madrid Avenue. The roadway connects the Barrhaven Mews development directly to the arterial road network at Strandherd Drive. Within the Study Area the cross-section consists of one travel lane for each direction and on-street parking is permitted. The road has an unposted speed of 50km/h.

Tartan Drive is a north-south collector road that connects the subdivision to the north to Strandherd Drive. Within the Study Area the roadway consists of one-travel lane in either direction and on-street parking is permitted. The road has a posted speed of 40km/h.

2.2. EXISTING DRIVEWAYS ADJACENT TO DEVELOPMENT

The proposed development is currently land locked. The planned Chapman Mills Drive Extension will provide access to the subject site. As there is a proposed Bus Rapid Transit (BRT) corridor along Chapman Mills Drive, accesses between the signalized intersections will be limited to right-in/right-out only. The signalized intersections will be as per Chapman Mills Drive Extension Environmental Assessment. The signalized intersection locations are shown in Figure 3.

Figure 3: Signalized Intersection Location



The eastern-most signalized intersection will be shared with the development to the north, however we anticipate that any traffic that cuts through would be very minimal as there is not a straight connection to Andora and it would be a circuitous route.

2.3. PEDESTRIAN/CYCLING NETWORK

The City of Ottawa Pedestrian Plan (2013) identifies pedestrian facilities (sidewalks) along Strandherd Drive on both north and south sides of the road from Borrisokane Road to approximately Andora Avenue, where a multi-use pathway extends along the north side of the road and a sidewalk continues along the south side. On Strandherd Drive, a signalized intersection facilitates pedestrian crossings. Pedestrian facilities are also available throughout the existing community roads.

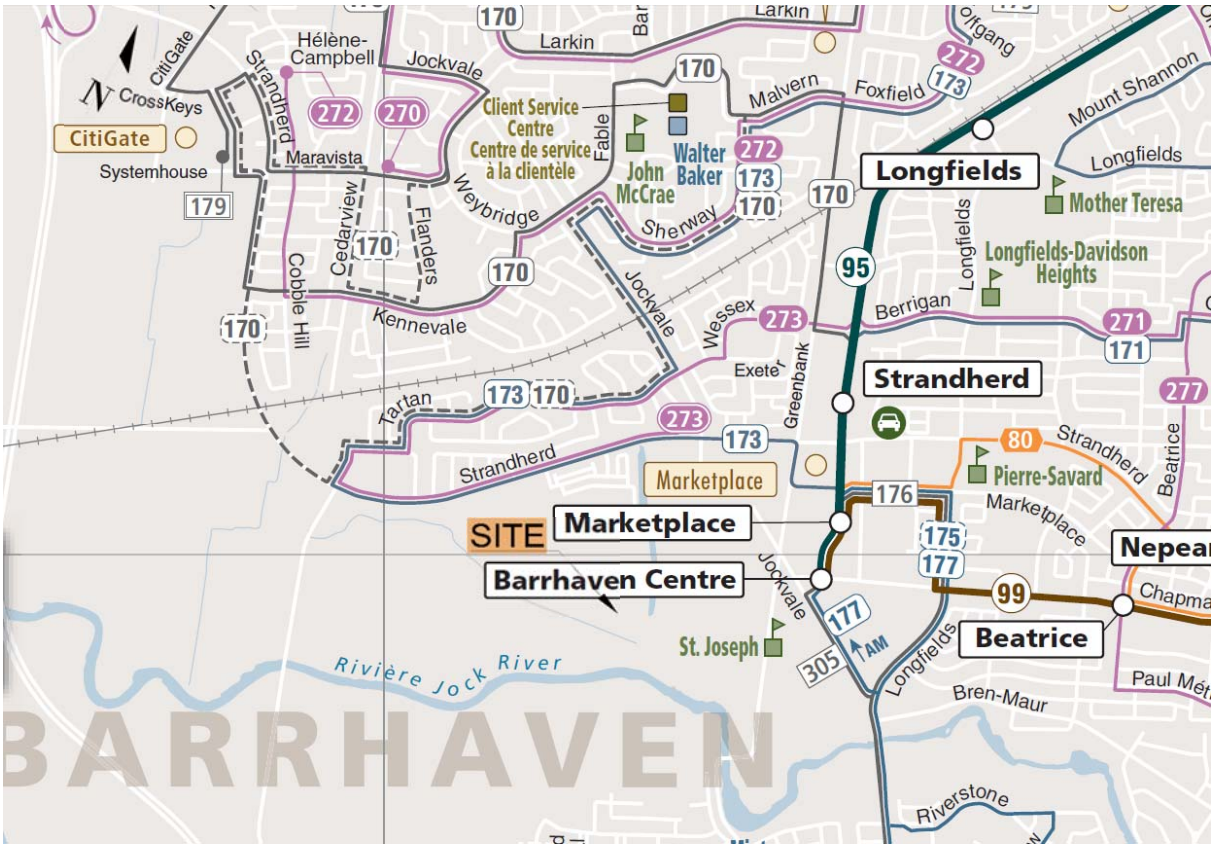
Strandherd Drive is identified in the City of Ottawa Cycling Plan (2013) as a spine or City-Wide route. Spine Routes serve to provide higher capacity routes for direct, longer distance travel and serve to connect to local routes. Existing facilities along Strandherd Drive include paved shoulders from Fallowfield Road to the east of Andora Avenue. Existing bike lanes begin east of Greenbank Road.

Chapman Mills Drive is identified as an on-road cycling route in the 2006 South Nepean Town Centre Community Design Plan between Longfields Drive and the Kennedy-Burnett Drain. However, the Chapman Mills Drive BRT Extension includes eastbound and westbound cycling tracks that merges into a MUP where the road and BRT diverge.

2.4. TRANSIT NETWORK

The closest existing OC Transpo service to the proposed site is located along Strandherd Drive. Since the roadway required to access the development has not been constructed, no bus service info is available at this time. However, it is expected that bus services are going to be provided along the Chapman Mills Drive Extension as this roadway will be classified as a BRT route. Figure 4 below shows the current system map with regards to the site location.

Figure 4: Area Transit Network

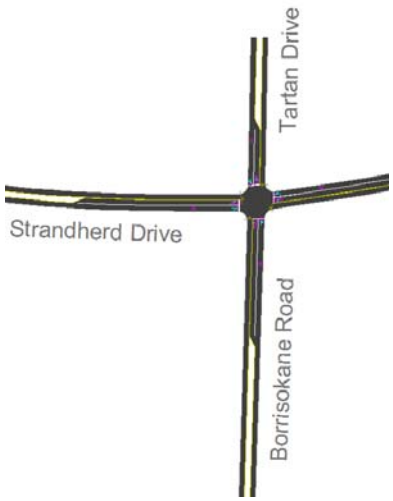


Retrieved on Oct. 26, 2017, http://www.octranspo.com/images/files/maps/system_map/systemmap.pdf

2.5. EXISTING STUDY AREA INTERSECTION

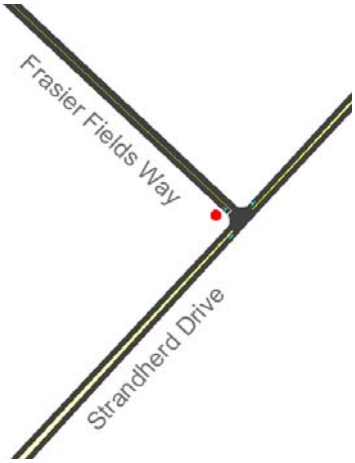
Strandherd Drive at Borrisokane Road/Tartan Drive

Strandherd Drive at Borrisokane Road/Tartan Drive is a signalized four-legged intersection. The cross-section of Strandherd drive is composed of one through/right-turn lane with an auxiliary left-turn lane for both the eastbound and westbound directions. Tartan Drive has a single through/right-turn lane and an auxiliary left-turn lane for the southbound direction. Borrisokane Road has a single through/right-turn lane and an auxiliary left-turn lane.



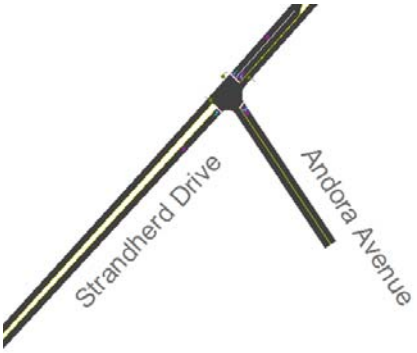
Strandherd Drive at Fraser Fields Way

Strandherd Drive at Fraser Field Way is a full movement, unsignalized three–legged intersection. The cross-section of Strandherd Drive is composed of a single through lane with an auxiliary left-turn lane heading in eastbound direction. Westbound a shared through-right turn lane is provided. Fraser Fields Way consists of one travel lane in either direction and is stop controlled. It is anticipated that once construction of the future extension of a collector road serving the proposed developments, and connecting to the Future Chapman Mills Drive extension is complete, this intersection will be signalized.



Strandherd Drive at Andora Avenue

Strandherd Drive at Andora Avenue is a signalized three – legged intersection. The cross-section of Strandherd Drive is composed of one shared through/right-turn lane heading eastbound and one through lane plus an auxiliary left-turn lane in the westbound direction. Andora Avenue consists of one travel lane in the southbound direction plus a shared right-turn/left-turn lane heading northbound.



Future Extension of Chapman Mills Drive at Greenbank Road

This future intersection has been excluded from the analysis as this development is anticipated to proceed in advance of the construction of the future extension of Chapman Mills Drive. As this development would have to function without this additional road in place, our analysis will not consider this intersection. All traffic from this development will access the arterial intersection at the intersection of the future collector road / Fraser Fields Way at Strandherd Drive.

N/A

2.6. EXISTING INTERSECTION OPERATIONS

The existing peak hour traffic volumes (illustrated in Figure 5 below) were collected from the City of Ottawa. Counts were available from the City of Ottawa for all Study Area intersections. Table 1 summarizes the count date for each Study Area intersection. The resulting peak hour and full traffic volume counts are included as Appendix B.

Table 1: Count Date

Intersection	Weekday Count Date
Strandherd Drive at Borrisokane Road/Tartan Drive	December 17, 2015
Strandherd Drive at Fraser Fields Way	May 25, 2017
Strandherd Drive at Andora Avenue	December 9, 2015

Figure 5: Existing Peak Hour Traffic Volumes

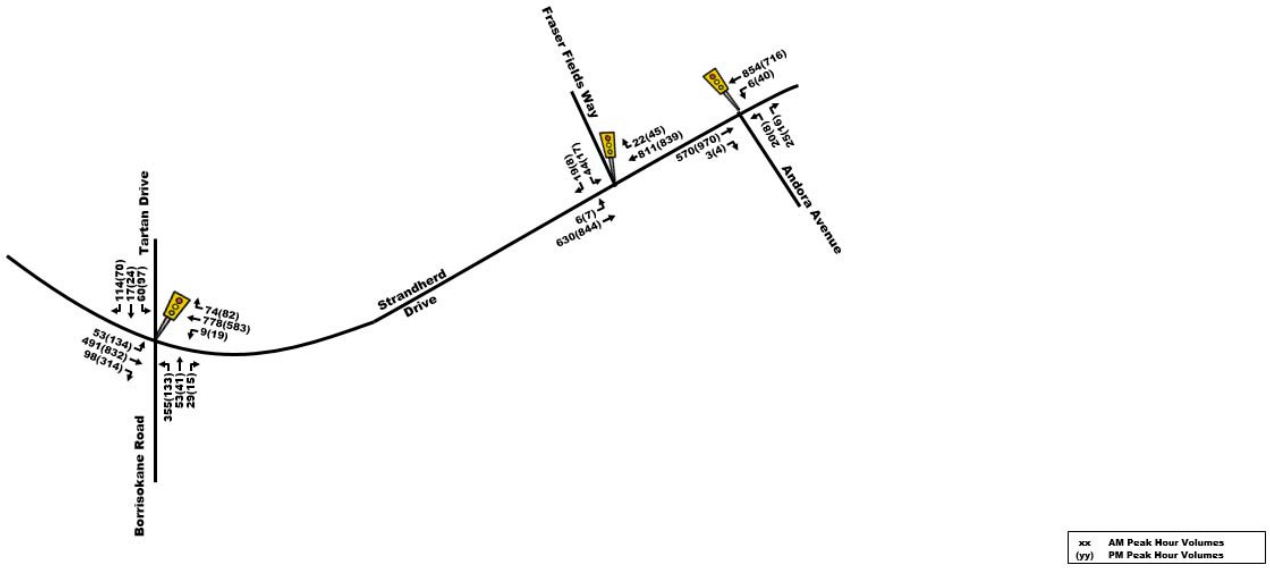


Table 2 below, summarizes the operational analysis of the existing Study Area intersections using SYNCHRO (V9) traffic analysis. The detailed model output of the existing conditions is provided within Appendix C. The Synchro model has been coded using the City of Ottawa's TIA Guidelines – Appendix C and the existing signal timing plans. Signal timing cards are included in Appendix D.

Table 2: Existing Conditions

Intersection	Approach / Movement		AM Peak Hour				PM Peak Hour			
			LOS[1]	V/C	Delay (s)	Queue (m)[2]	LOS[1]	V/C	Delay (s)	Queue (m)[2]
Strandherd Drive/Borrisokane Road/Tartan Drive (Signalized)	EB	L	A	0.35	25	11	A	0.34	14	20
		T/R	B	0.67	18	126	E	0.95	36	#435
	WB	L	A	0.03	17	5	A	0.20	15	9
		T/R	F	1.14	109	#317.8	B	0.63	22	179
	NB	L	F	1.08	108	#153.7	A	0.52	64	68
		T/R	A	0.14	28	22	A	0.13	52	28
	SB	L	A	0.17	28	21	A	0.38	59	51
		T/R	A	0.12	27	17	A	0.11	52	24
	Overall		**F**	**1.11**	**71**	-	**D**	**0.88**	**37**	-
Strandherd Drive/Fraser Fields Way (Unsignalized)	EB	L	B	0.01	10	0	A	0.00	0	0
		T	A	0.39	0	0	A	0.01	0	0
	WB	T/R	A	0.52	0	0	A	0.57	0	0
	SB	L/R	E	0.45	48	16	F	0.26	51	7
Strandherd Drive/Andora Avenue (Signalized)	EB	L/T/R	A	0.44	4	47	B	0.68	5	117
	WB	L	A	0.01	2	1	A	0.11	2	4
		T/R	B	0.63	6	97	A	0.51	3	60
	NB	L/R	A	0.25	46	15	A	0.20	49	10
	Overall		B	0.61	6	-	B	0.67	5	-

L=Left Turn Movement(s); T=Through Movement(s); R=Right Turn Movement(s)
# - 95TH Percentile volume exceeds capacity, queue may be longer
m – Volume for 95th percentile queue is metered by upstream signal
1 – Level of Service based on v/c ratio as per the City of Ottawa TIA Guidelines
2 – 95th Percentile queue

As shown in Table 1 above, the intersection of Strandherd Drive at Borrisokane Road / Tartan Drive is experiencing operational constraints due to the high westbound through volume in the AM and the high eastbound through volume in the PM. Additionally, the northbound left turn lane is constrained, due to the fact that the signal timing prioritizes the east-west traffic flow. The unsignalized intersection of Fraser Fields Way at Strandherd Drive has a poor LOS on the minor, stop controlled leg. Delays of this nature are typical, where a minor, stop controlled leg, meets a major, busy arterial road. The minor intersections of Fraser Fields Way and Andora Avenue, both with Strandherd Drive, operate with good LOS and low delays.

2.7. EXISTING ROAD SAFETY CONDITIONS

Collision history for Study Area roads (2011 to 2016, inclusive) was obtained from the City of Ottawa and had a total of thirty-one observed collisions within the Study Area. Twenty-five (81%) collisions involved property damage and the remaining six (19%) collisions involved non-fatal injuries. The type of collisions recorded indicate low impact speeds.

Over the five-year period, police cited these observed collisions types at the following intersections:

- **Strandherd Drive at Andora Avenue** – This intersection experienced 2 observed collisions consisting entirely of rear end (100%), type collisions.
- **Strandherd Drive at Borrisokane Road/Tartan Drive –** Experienced twenty-one observed collisions consisting of: 18 - rear end (80%), 2 - angle (10%), 1 - turning movement (5%), and 1 - single vehicle (3%), type collisions.
- **Strandherd Drive at Fraser Fields Way -** This intersection experienced 1 observed collision consisting of angle (100%), type collisions.
- **Mid Block: Strandherd Drive, Borrisokane Road/Tartan Drive to Madrid Avenue** - Experienced 6 observed collisions consisting of: 4 – turning movement (66%), 1 - rear end (17%), and single vehicle (17%), type collisions.

- **Mid Block: Strandherd Drive, Madrid Avenue to Andora Avenue** – Experienced 1 observed collision consisting of rear end (100%), type collisions.

Collision data provided by the City of Ottawa can be found in Appendix E.

3. PLANNED CONDITIONS

3.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

3.1.1. STRANDHERD DRIVE

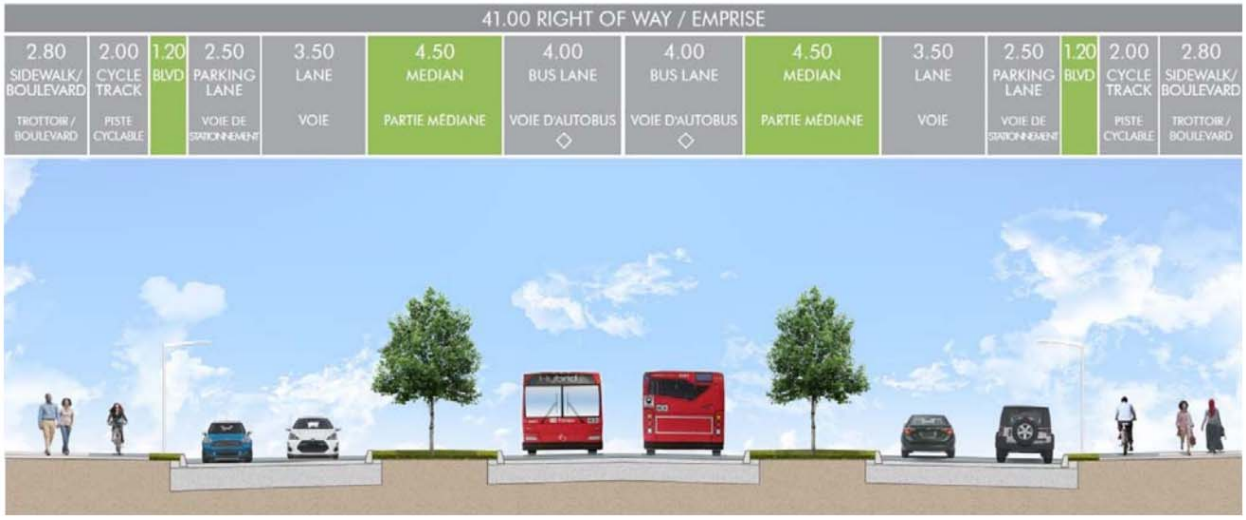
It is noted in the TMP that the network will be modified within the Study Area. As shown in the TMP Exhibit 7.2: Affordable Road Network, Strandherd Drive is planned to be widened from two to four lanes between Maravista Drive and Jockvale Road. As discussed in Section 2.1, it is anticipated that upgrade will be undertaken sooner if the City approves its funding in 2017.

3.1.2. CHAPMAN MILLS DRIVE EXTENSION EA

The Chapman Mills Drive Extension and Bus Rapid Transit Environmental Assessment study was completed in December 2016. This study identified a functional design for all modes of transportation along the proposed extension alignment including a proposed bust rapid transit alignment.

South of the Harmony Development, Chapman Mills Drive is proposed to have the following within its typical cross-section: 2.8m wide concrete sidewalk on either side of the roadway, 2.0m cycle track east/westbound, 1.2m boulevard on either side of the roadway, 2.5m parking lane both east/westbound, 3.5m east/westbound travel lane, 4.5m landscaped area or transit station both east/westbound, 8.0m wide BRT for east/westbound transit, 4.5m green lane. Figure 6, illustrates the Chapman Mills Drive Future Cross Section.

Figure 6: Chapman Mills Drive Future Cross Section



This new four-lane road, between Strandherd Drive and Longfields Drive, is anticipated to be completed as part of the TMP Phase 2 (2020-2025) and it has been indicated by City Staff that this project would like take place later in Phase 2, 2024 or later.

3.2. OTHER AREA DEVELOPMENTS

With respect to other area developments, the City of Ottawa's Development Applications website was reviewed and several active developments are planned:

3.2.1. CITI GATE DEVELOPMENT

In 2012, Novatech Engineering Consultants Ltd. completed a Community Transportation Study for the proposed Highway 416 employment lands. The project proposed an 81.56 hectare phased development (currently underway) at the Highway 416/Fallowfield Road interchange east to Strandherd Drive and south to McKenna Casey Drive by the Regional Group. The development will include Business Park, Prestige Business Park, commercial retail and car dealership land uses and will be named the Citi Gate Corporate Campus. South of these lands, an additional 53.16 hectares of land not owned by the Regional Group contains a City of Ottawa snow disposal facility and the Canadian National Railway (CNR) which have been incorporated into the Master Concept Plan for the area. A large format shopping centre and hotel are part of the proposed development of these additional lands; the snow disposal facility will remain. The site is currently under construction along the northern portion (near Highway 417) of the development and has several of the retail locations open for business.

3.2.2. 4401 FALLOWFIELD ROAD DEVELOPMENT

In 2013, IBI Group completed a Transportation Impact Study for the proposed development at 4401 Fallowfield Road for DCR/Phoenix Group. The site is approximately 10 hectares in size bounded by Fallowfield Road to the east and south, Highway 416 to the west and O'Keefe Court to the north. At the time, the TIS was completed, the proposed development consisted of primarily office uses, two hotels, and a Salvation Army recreational centre/place of worship.

3.2.3. HARMONY DEVELOPMENT (4025 STRANDHERD DRIVE)

The Harmony Development will be located within the approximate boundaries: Strandherd Drive to the north, Borrisokane Road to the west, the Kennedy-Burnett Stormwater management ponds to the east and the future alignment of Chapman Mills Drive extension and Bus Rapid Transit Corridor to the south.

Schedule E of the City of Ottawa Official Plan, last amended in 2013, identifies Strandherd Drive as an arterial road with several existing and planned developments. The Harmony Development lands are designated as Employment Area (near Borrisokane Road) and General Urban Area in the City of Ottawa Official Plan. The South Nepean Urban Area Secondary Plan for Area 8 designates the Harmony Development as Prestige Business Park (near Borrisokane Road), Residential and Local Commercial (Chapman Mills Drive and Strandherd Drive). A Secondary Plan has been developed, which provides detailed policies and a strategy to guide future development in Area 8, also commonly referred to as the Harmony Development.

Existing development in Area 8 includes the Mattamy-Andora (Barrhaven Mews) residential development in the northeast corner adjacent to the stormwater management facility and a private residence (3231 Borrisokane Road) that is approximately 5 acres in size. The Secondary Plan for Area 8 identifies the following land uses and projected land use statistics: retail (550m^2), residential units (700), population (1,700) and employment (350 min.).

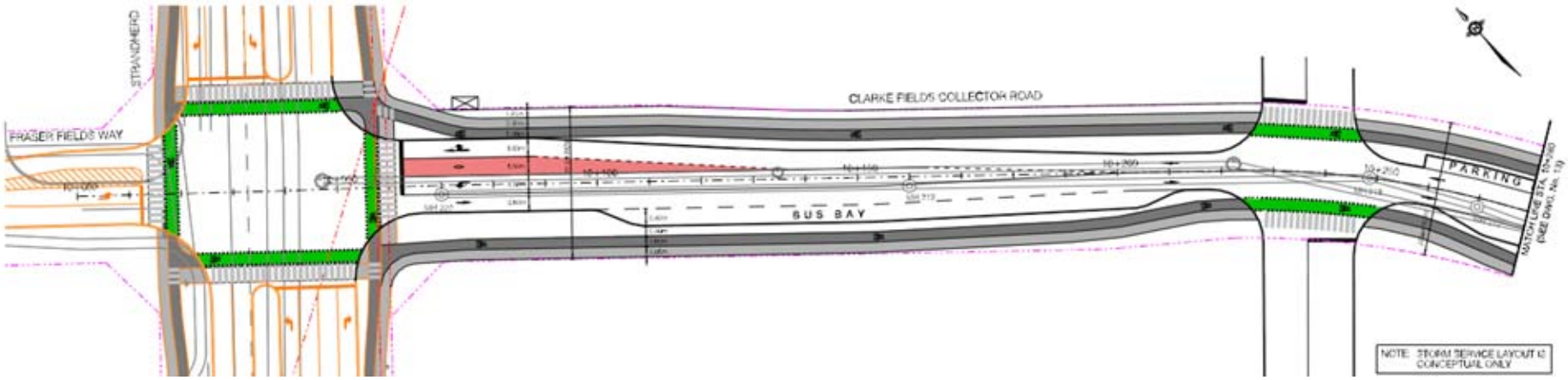
Through the Chapman Mills EA process, Minto Communities participated as a stakeholder and provided input into the design of the Chapman Mills collector. The resulting design is shown in Figure 7, an excerpt from the Chapman Mills Drive Extension Recommended Plan.

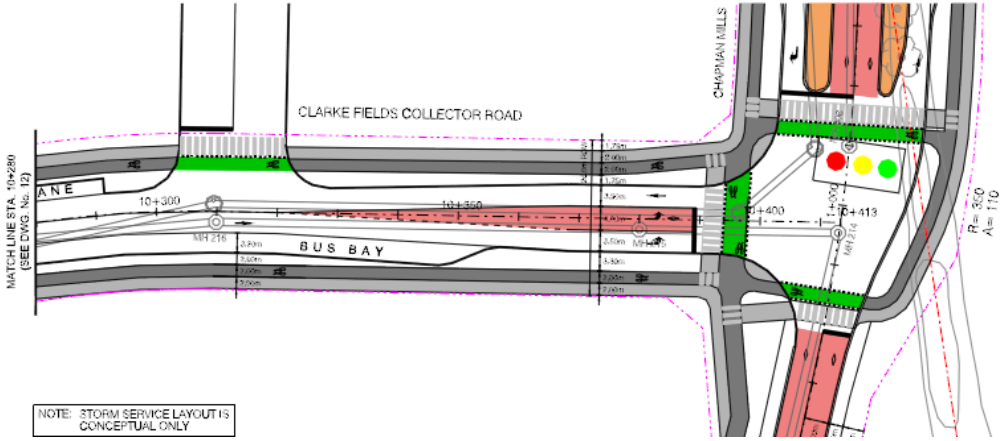
This design includes several key features that help create a street integrated with the community:

1. Active Modes – sidewalks, multi-use paths, and the cycle tracks extend the length of the collector and connect the active mode facilities on Strandherd Drive to those along Chapman Mills Drive and south of the Study Area. These facilities are important to provide access both along and across the collector such as the school site, in order to safely promote walking and cycling.

2. Laybys – following the direction of the City's Building Better and Smarter Suburbs Initiative laybys are included in the collector to provide school bus drop off / pick up to the school site.
3. All-way Stop – while not indicated on the EA's Recommended Plan an all-way stop should be considered at the school entrance and Street 5 to allow for controlled pedestrian and cycling crossings of the street.
4. Local Streets – similarly while not noted in the EA's Recommended Plan several local streets will intersect with the collector.

As part of this scoping process if additional developments should be considered as part of this TIA process, it is requested that the City of Ottawa provide TIAs for those developments.





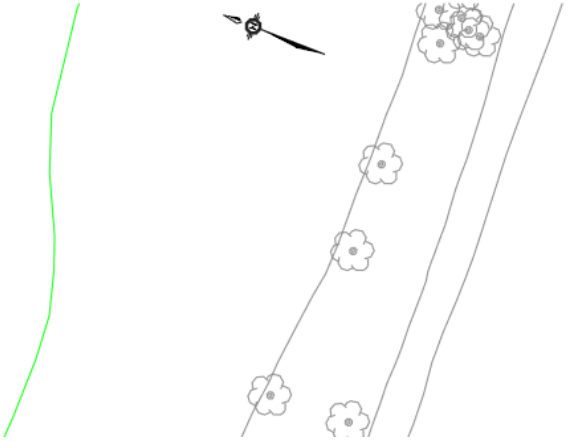


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Figure **7**: Chapman Mills Drive EA Plan Excerpt

4. STUDY AREA

4.1. INTERSECTION ANALYSIS

The TIA will examine the intersections of at: Strandherd Drive at Andora Avenue, Strandherd Drive at Fraser Fields Way and Strandherd Drive at Borrisokane Road.

5. TIME PERIODS

The weekday morning and afternoon peak hours are considered the appropriate time periods for operational analysis for this subdivision.

6. HORIZON YEARS

For the purposes of the operational analysis it is assumed that the subject development will be fully built and occupied by 2020. This will necessitate the analysis of 2020 and 2025 horizons.

7. BACKGROUND GROWTH

For this TIA it is proposed that a 2% background growth rate be applied to account for background traffic growth beyond the Study Area. This is considered an appropriate background growth rate as there is a substantial amount of traffic growth being accounted for as part of the explicit traffic growth from nearby proposed developments including Citi-Gate, 4401 Fallowfield Road, and 4025 Strandherd Drive.

8. EXEMPTIONS REVIEW

The following exemptions are anticipated:

- 4.1.2 Circulation and Access – only required for site plans, this is a draft plan of subdivision
- 4.2 Parking – this is a draft plan of subdivision
- 4.6.1 it is not anticipated that traffic will utilize the adjacent road network of the subdivision to the north of the proposed development.

9. DEVELOPMENT-GENERATED TRAVEL DEMAND

9.1. TRIP GENERATION

9.1.1. TRIP GENERATION RATES

Appropriate trip generation rates for the proposed development were obtained from the TRANS Trip Generation Study and have been summarized in Table 3.

Table 3: TRANS Trip Generation Study Vehicle Trip Generation Rates

Land Use	Data Source	Vehicle Trip Rates	
		AM Peak	PM Peak
Single – Detached	LUC 210	0.70	0.90
Townhouses	LUC 224	0.54	0.71
Reference : TRANS Trip Generation Residential Trip Rates – Table 6.3			

The above trip generation rates are used estimate the number of vehicles trips. To understand the number of person trips it is necessary to convert the above vehicle trip rates to person trip rates.

The following base mode shares for suburban areas were obtained from the TRANS Trip Generation Study and have been summarized in Table 4.

Table 4: TRANS Trip Generation Report Mode Shares - Suburban

Land Use	Data Source	Peak Hour	Suburban Mode Shares		
			Vehicle Trips	Transit Share	Non-Motorized
Single – Detached	LUC 210	AM	55%	25%	9%
		PM	64%	19%	6%
Townhouses	LUC 224	AM	55%	27%	8%
		PM	61%	22%	6%
Reference : TRANS Trip Generation Residential Trip Rates – Table 3.13					

Using the above vehicle mode share percentages person trip generation rates were developed by taking the vehicle trip rates in Table 3 and divided them by the vehicle mode share percent in Table 4. The person trip generation rates are documented in Table 5.

Table 5: TRANS Trip Generation Report Person Trip Generation Rates

Land Use	Data Source	Vehicle Trip Rates	
		AM Peak	PM Peak
Single – Detached	LUC 210	1.27	1.41
Townhouses	LUC 224	0.98	1.16

To determine the trip generation characteristics of the proposed development the rates presented in Table 5 were used with the proposed unit counts to determine the person trip generation. Table 6 summarizes the AM and PM peak hour person trips by land use.

Table 6: Modified Person Trip Generation Rates

Land Use	Units	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Single – Detached	125	46	113	159	109	67	176
Townhouses	75	27	47	74	46	41	87
Total Person Trips		**73**	**160**	**233**	**155**	**108**	**263**

9.1.2. MODE SHARES

While the TRANS Trip Generation Study presents mode shares for aggregate areas (i.e. Suburban, Urban Area, Core Area, etc.) these are broad areas. To further refine the mode share the TRANS O-D Survey has been reviewed. The mode share targets for the development have been summarized in Table 7 below.

Table 7: Mode Share Targets for the Development

Travel Mode	Mode Share Target
Auto Driver	55%
Auto Passenger	15%
Transit	15%
Walking	7.5%
Cycling	7.5%

The modes shares presented in Table 7 have been estimated using the 2011 OD Survey Data for the South Nepean traffic zone. As this is a proposed residential subdivision, in an established suburban area, the mode share is not anticipated change greatly during the study horizons. While a Bus Rapid Transit facility is proposed along the Future Chapman Mills Drive Extension, it is assumed that this development could be fully built-out prior to the completion of that transit facility. Therefore, the existing mode shares have been carried forward as the Mode Share Targets for the purposes of this analysis.

Using the mode share and total person trips, both documented above, the person trips by mode were estimated. The person trips shown in Table 6 for the proposed site were reduced by modal share values above, with the total site-generated traffic summarized in Table 8.

Table 8: Total Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	55%	41	88	129	86	60	146
Auto Passenger	15%	11	24	35	23	16	39
Transit	15%	11	24	35	23	16	39
Non-motorized	15%	10	24	34	23	16	39
Total Person Trips	100%	73	160	233	155	108	263

As shown in Table 8, the resulting number of potential 'new' two-way vehicle trips for the proposed development is approximately 129 and 146 veh/h during the weekday morning and afternoon peak hours, respectively.

9.2. TRIP DISTRIBUTION

The vehicle traffic distribution was developed using the 2011 NCR Household Origin – Destination Survey. The resultant distribution is outlined in Table 9.

Table 9: Traffic Distribution

To/From	AM Peak Hour
North	80%
South	5%
East	5%
West	10%
Total	**100%**

9.3. TRIP ASSIGNMENT

New site generated trips were assigned to the Study Area intersections using the above distribution, turning movement splits, proximity / connectivity to major transportation infrastructure (i.e. Highway 417), and the proposed access configuration. Figure 8 below displays the percentage assignment and Figure 9 shows the resulting volume assignment of the new site generated trip used in this analysis.

Figure 8: Percent Assignment

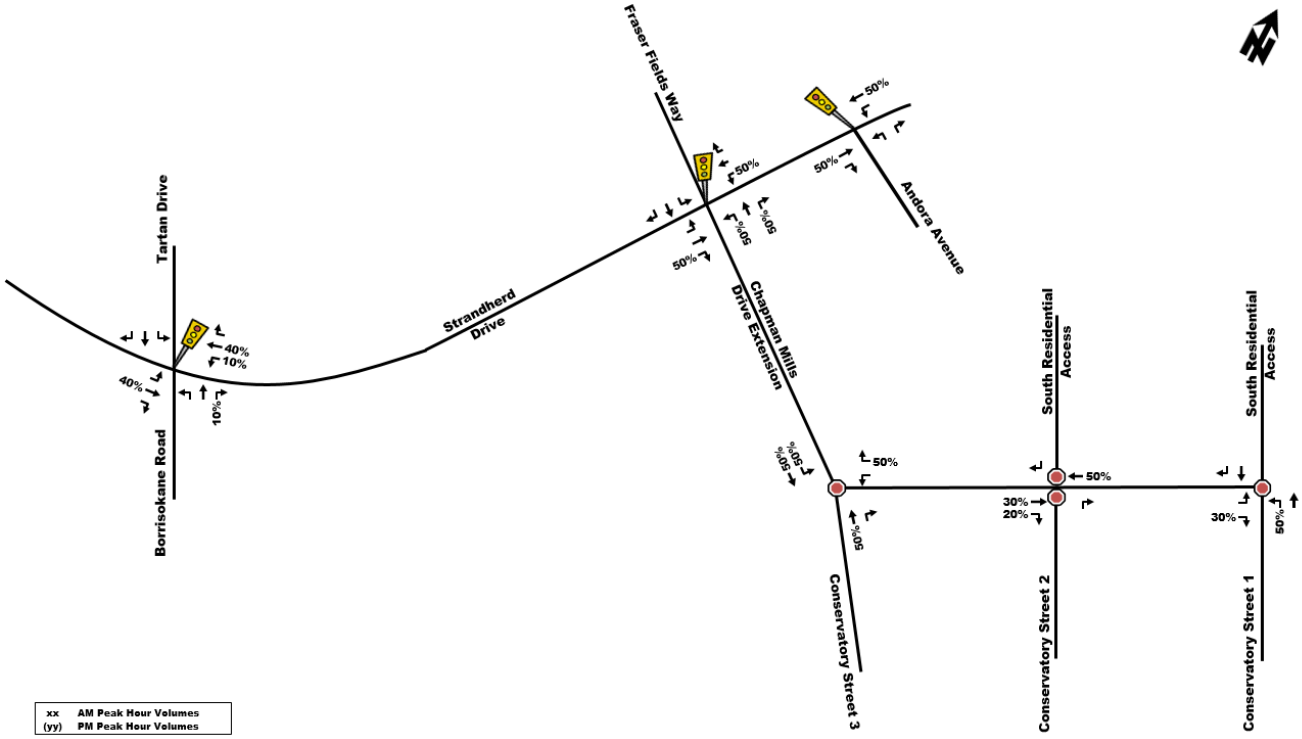
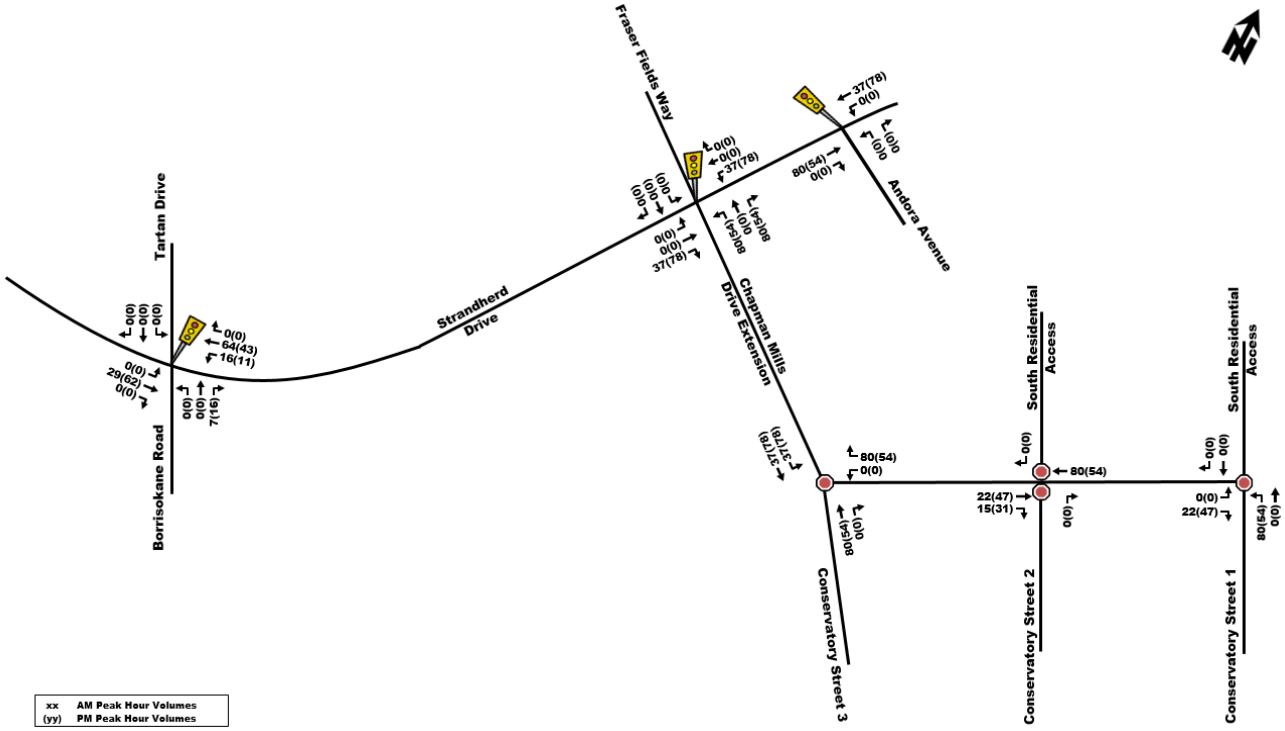


Figure 9: Site Generated Trip Volumes



10. BACKGROUND NETWORK TRAFFIC

10.1. CHANGES TO THE BACKGROUND TRANSPORTATION NETWORK

Please see Section 3.1.

10.2. OTHER AREA DEVELOPMENTS

The City of Ottawa's Development Applications webtool has been used to determine if there are proposed developments within the area of influence of the proposed development. These developments have been discussed in greater detail in Section 3.2. Figure 10, Figure 11, and Figure 12 document the traffic impact of each of the Citi-Gate Development, 4401 Fallowfield, and 4025 Strandherd Drive, on the subject development.

Figure 10: Citi-Gate Traffic Volumes

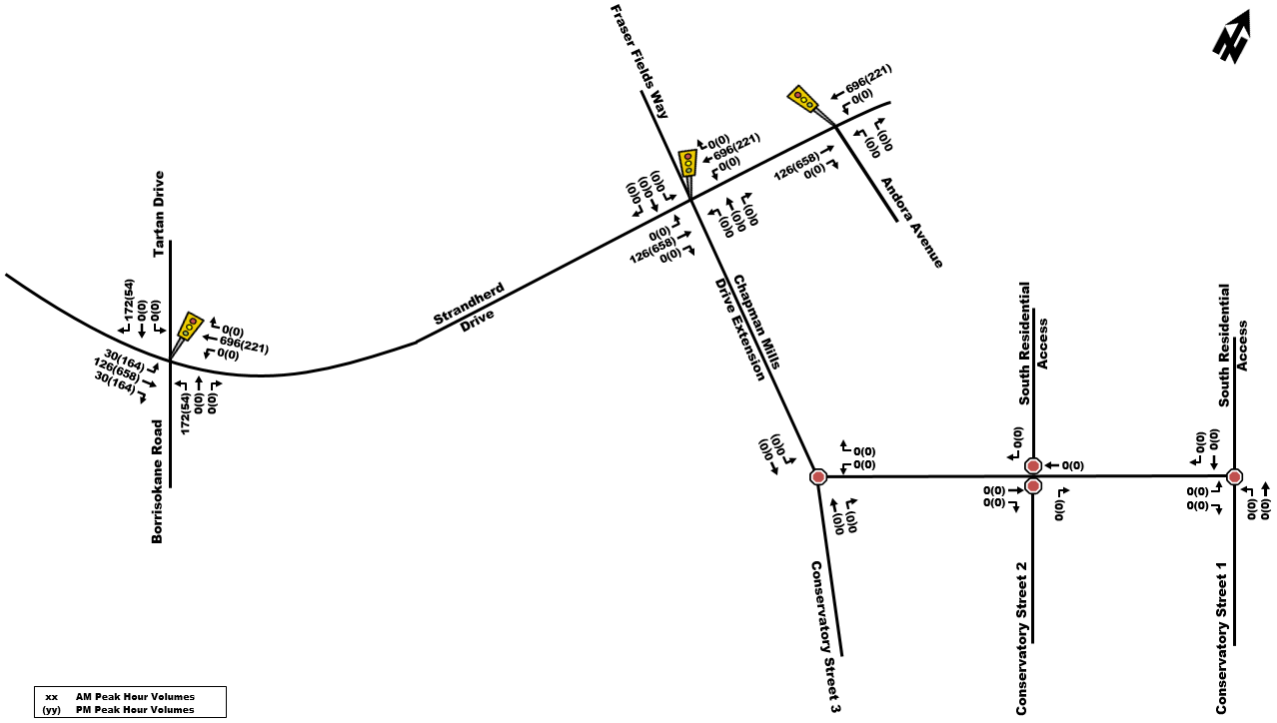


Figure 11: 4401 Fallowfield Road Traffic Volumes

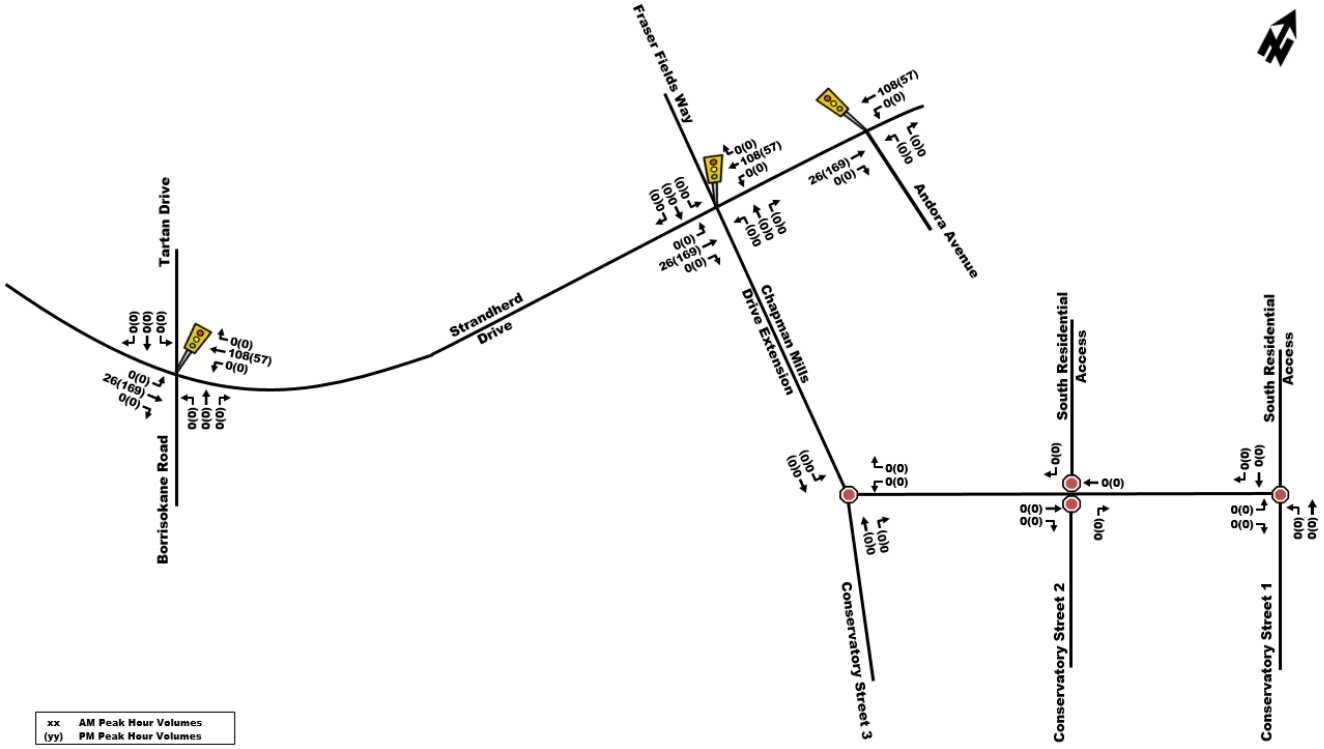
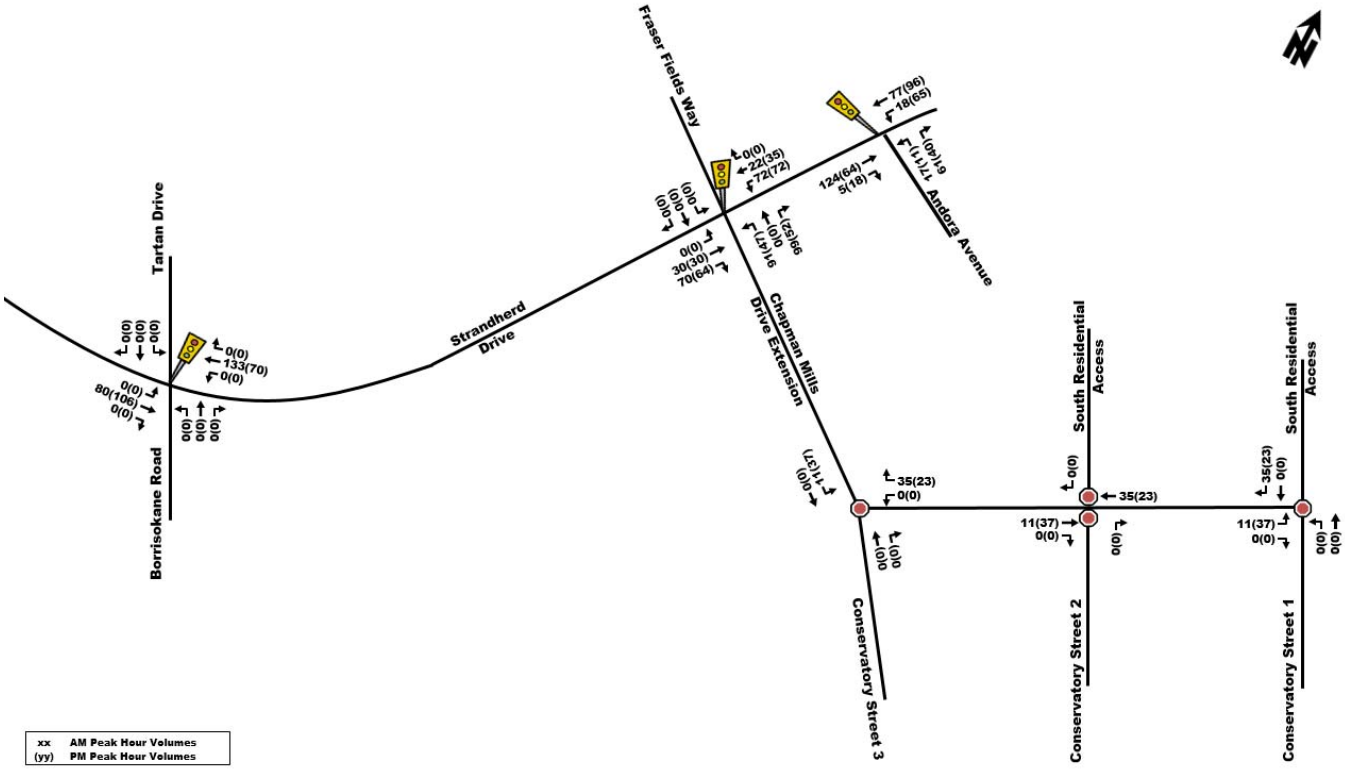


Figure 12:4025 Strandherd Drive Traffic Volumes



10.3. GENERAL BACKGROUND GROWTH RATES

To estimate traffic growth beyond the Study Area a background growth rate of 2% has been applied to volumes along Borrisokane Road and Strandherd Drive. Figure 13 and Figure 14 show the future background traffic volumes for the 2020 and 2025 future background traffic volumes, respectively.

Figure 13: 2020 Future Background Traffic Volumes

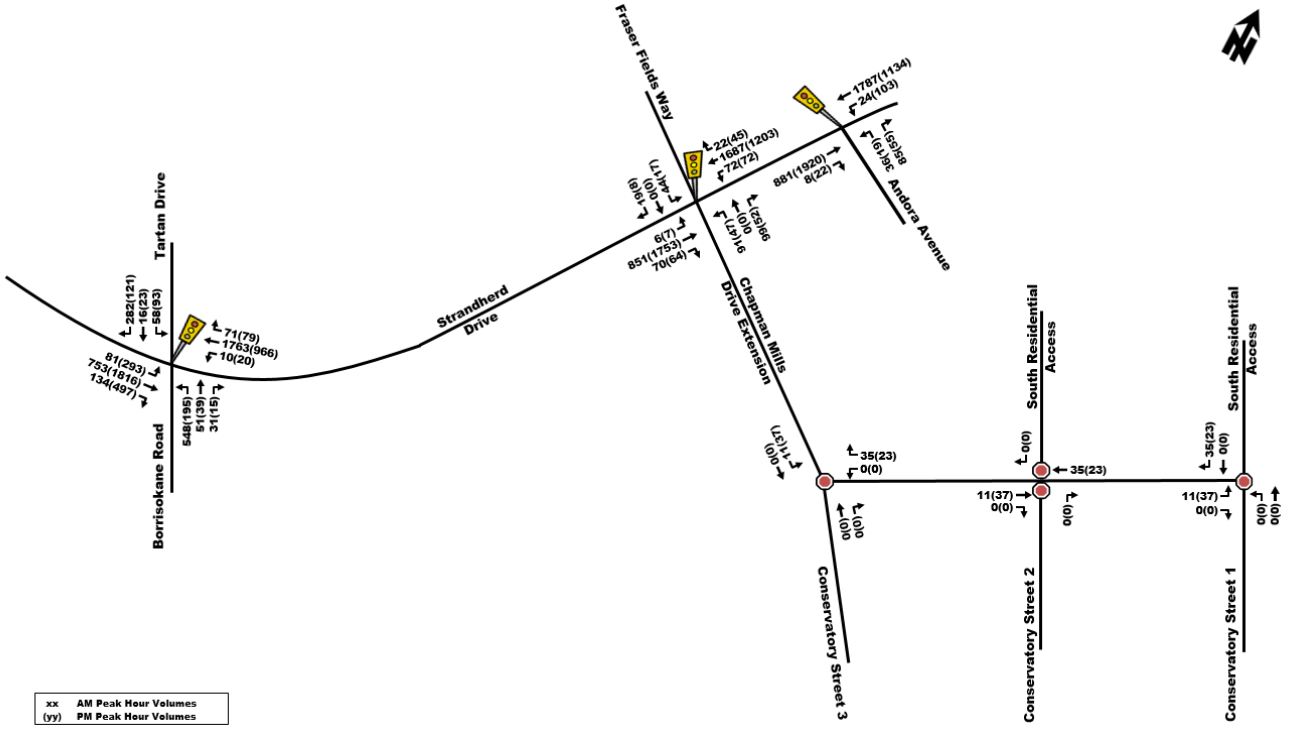


Figure 14: 2025 Future Background Traffic Volumes

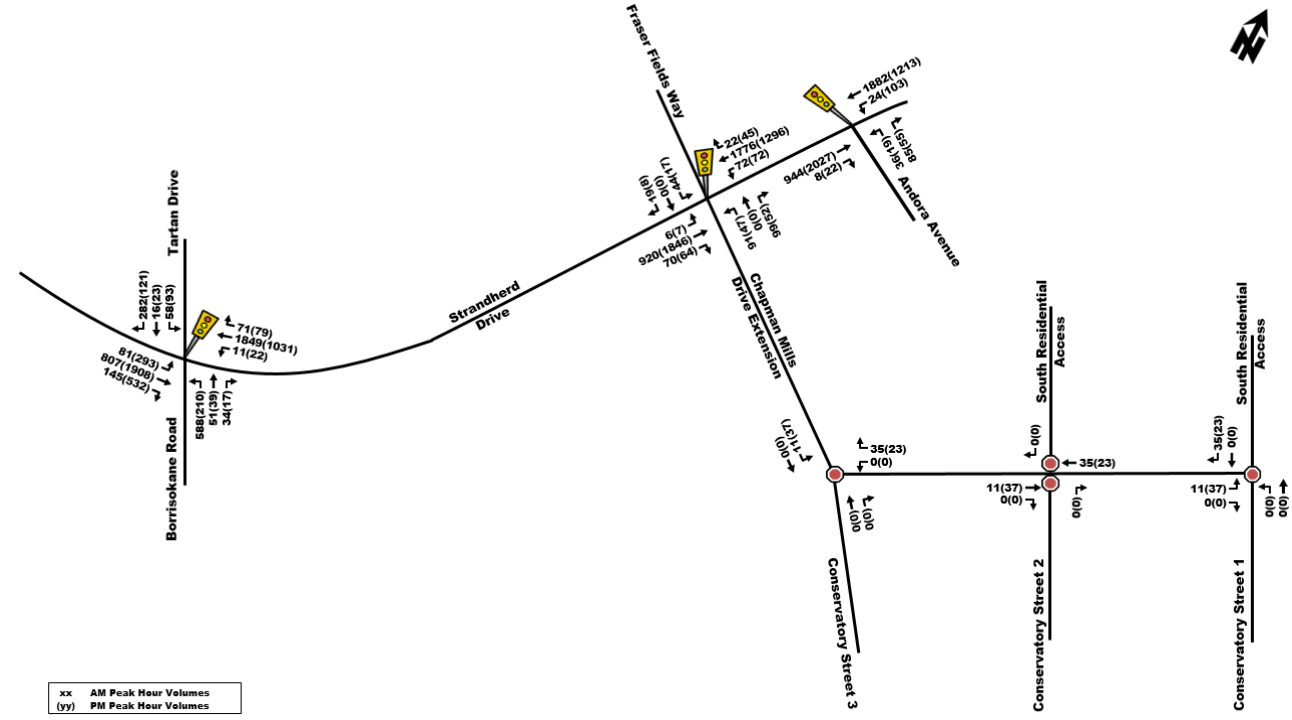


Table 10 below, summarizes the operational analysis of the existing and the anticipated Study Area intersections using SYNCHRO (V9) traffic analysis. The detailed model output of projected 2020 background conditions is provided within Appendix F. The Synchro model has been coded using the City of Ottawa's TIA Guidelines – Appendix C and the existing signal timing plans. Signal timing cards are included in Appendix D.

Table 10: 2020 Future Background Conditions

Intersection	Approach / Movement		AM Peak Hour				PM Peak Hour			
			LOS[1]	V/C	Delay (s)	Queue (m)[2]	LOS[1]	V/C	Delay (s)	Queue (m)[2]
Strandherd Drive/Borrisokane Road/Tartan Drive (Signalized)	EB	L	A	0.53	28	19	F	1.01	120	#154
		T/R	E	0.93	36	#266.9	F	1.81	392	#1282
	WB	L	A	0.07	17	5	A	0.49	33	#20
		T/R	F	2.21	581	#791.2	F	1.08	94	#488
	NB	L	F	2.56	756	#284.4	E	0.99	131	#123
		T/R	A	0.13	29	22	A	0.13	58	26
	SB	L	A	0.16	30	21	A	0.38	65	48
		T/R	A	0.26	31	30	A	0.15	59	19
	Overall		**F**	**2.28**	**401.9**	-	**F**	**1.70**	**402**	-
Strandherd Drive/Fraser Fields Way (Signalized)	EB	L	A	0.11	10	2	A	0.12	10	3
		T/R	C	0.79	18	192	F	1.47	235	#674
	WB	L	A	0.32	11	15	F	1.22	207	#37
		T/R	F	1.41	209	#626	F	1.01	47	#389
	NB	L	A	0.28	39	32	A	0.15	36	19
		T/R	A	0.07	35	0	A	0.07	36	13
	SB	L	A	0.16	37	18	A	0.06	36	9
		T/R	A	0.01	34	2	A	0.01	35	0
	Overall		**F**	**1.11**	**130**	-	**F**	**1.13**	**155**	-
Strandherd Drive/Andora Avenue (Signalized)	EB	L/T/R	B	0.68	8	3	F	1.36	176	#603
	WB	L	A	0.07	3	3	F	1.43	266	#48
		T/R	F	1.33	166	#544	C	0.80	10	210
	NB	L/R	A	0.28	42	23	A	0.46	47	23
	Overall		**F**	**1.20**	**110**	-	**F**	**1.42**	**146**	-

L=Left Turn Movement(s); T=Through Movement(s); R=Right Turn Movement(s)
# - 95TH Percentile volume exceeds capacity, queue may be longer
m – Volume for 95th percentile queue is metered by upstream signal
1 – Level of Service based on v/c ratio as per the City of Ottawa TIA Guidelines
2 – 95th Percentile queue

With the addition of the background development traffic, as well as a 2% background growth rate, the Study Area intersections are all shown to exceed permissible operational thresholds. However, this includes the full buildout of the Citi-Gate development, 4401 Fallowfield, and the Harmony Residential development, in addition to 2% background growth. This amount of growth is unlikely to be realized by 2020, and these results are a conservative estimate of the traffic. It has been assumed that with the construction of the south leg of the intersection of Strandherd Drive at Fraser Fields Way that this intersection would be signalized.

Table 11 below, summarizes the operational analysis of the existing Study Area intersections using SYNCHRO (V9) traffic analysis. The detailed model output of projected 2020 background conditions is provided within Appendix G. The Synchro model has been coded using the City of Ottawa's TIA Guidelines – Appendix C and the existing signal timing plans. Signal timing cards are included in Appendix D.

Table 11: 2025 Future Background Conditions

Intersection	Approach / Movement		AM Peak Hour				PM Peak Hour			
			LOS[1]	V/C	Delay (s)	Queue (m)[2]	LOS[1]	V/C	Delay (s)	Queue (m)[2]
Strandherd Drive/Borrisokane Road/Tartan Drive (Signalized)	EB	L	A	0.57	32	#20.4	C	0.77	23	50
		T/R	A	0.44	16	71	D	0.83	19	193
	WB	L	A	0.04	14	m1.6	A	0.35	28	m9
		T/R	F	1.19	115	#315.8	A	0.60	19	110
	NB	L	F	1.50	278	#255.5	C	0.71	57	#80
		T/R	A	0.13	28	21	A	0.11	38	19
	SB	L	A	0.22	41	23	A	0.35	43	35
		T/R	A	0.04	37	9	A	0.06	37	11
	Overall		**F**	**1.33**	**103**	-	**D**	**0.84**	**21**	-
Strandherd Drive/Fraser Fields Way/Chapman Mills Drive Extension (Signalized)	EB	L	A	0.05	4	m1	A	0.02	4	m0.7
		T/R	A	0.36	5	44	B	0.68	7	117
	WB	L	A	0.18	5	11	A	0.52	17	#27.8
		T/R	B	0.69	9	143	A	0.47	4	61
	NB	L	A	0.58	56	36	A	0.47	57	22
		T/R	A	0.07	47	12	A	0.15	53	15
	SB	L	A	0.30	50	20	A	0.07	53	11
		T/R	A	0.01	47	3	A	0.01	51	0
	Overall		**B**	**0.67**	**11**	-	**B**	**0.66**	**7**	-
Strandherd Drive/Andora Avenue (Signalized)	EB	L/T/R	A	0.37	3	38	C	0.76	7	143
	WB	L	A	0.06	2	3	F	1.03	108	#37
		T/R	C	0.72	7	123	A	0.45	4	51
	NB	L/R	A	0.33	45	23	A	0.48	47	24
	Overall		**B**	**0.68**	**7**	-	**E**	**0.97**	**10**	-

L=Left Turn Movement(s); T=Through Movement(s); R=Right Turn Movement(s)
# - 95TH Percentile volume exceeds capacity, queue may be longer
m – Volume for 95th percentile queue is metered by upstream signal
1 – Level of Service based on v/c ratio as per the City of Ottawa TIA Guidelines
2 – 95th Percentile queue

It is anticipated that by the 2025 horizon, Strandherd Drive will be widened from two to four lanes. This will significantly alleviate the previously projected operational constraints. However, this does not provide enough capacity to keep up the estimated demand associated with the full build-out of the background developments and the 2% background growth rate. The continued deficiency is due to the heavy westbound through and northbound left traffic at Strandherd Drive and Borrisokane Road.

10.4. FUTURE TOTAL DEMAND

To assess the impact that the development will have on the local network, the site generated volumes are applied to the 2020 and 2025 future background projections. Figure 15 and Figure 16 show the projected traffic volumes for the 2020 and 2025 future total future traffic volumes, respectively.

Figure 15: 2020 Total Future Traffic Volumes

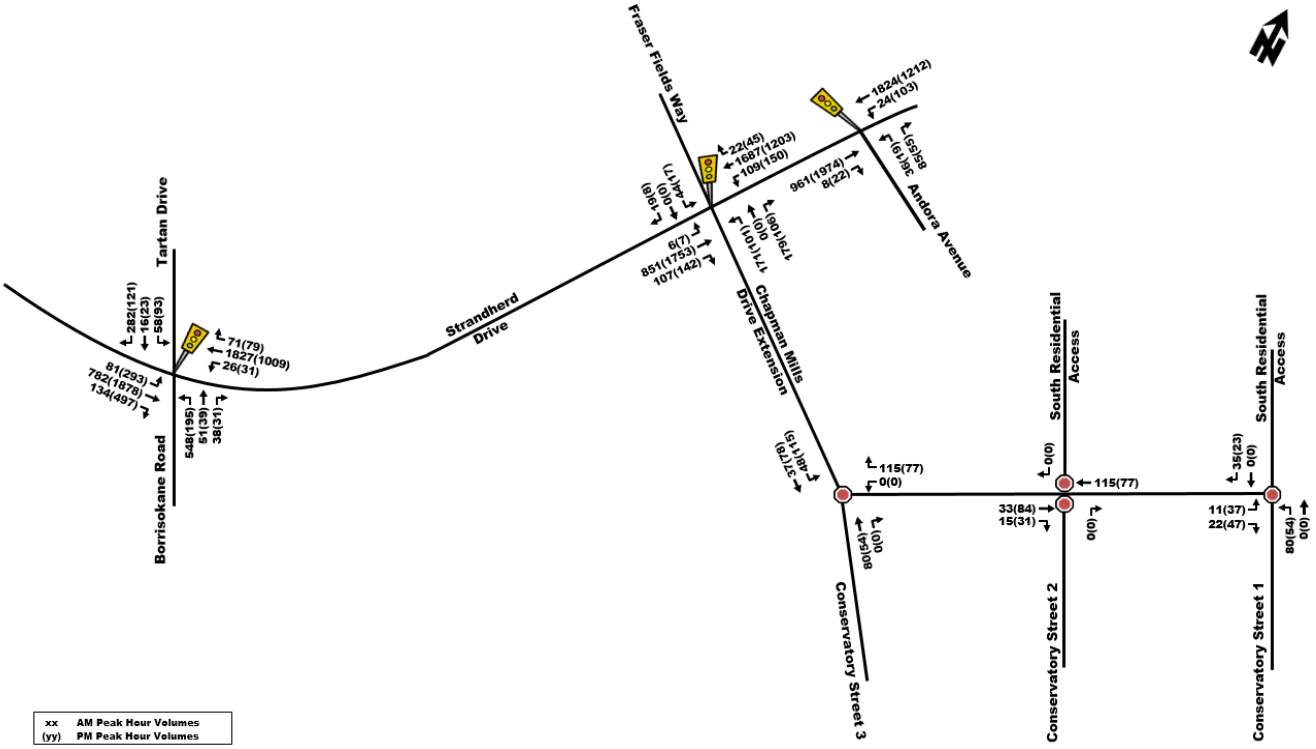
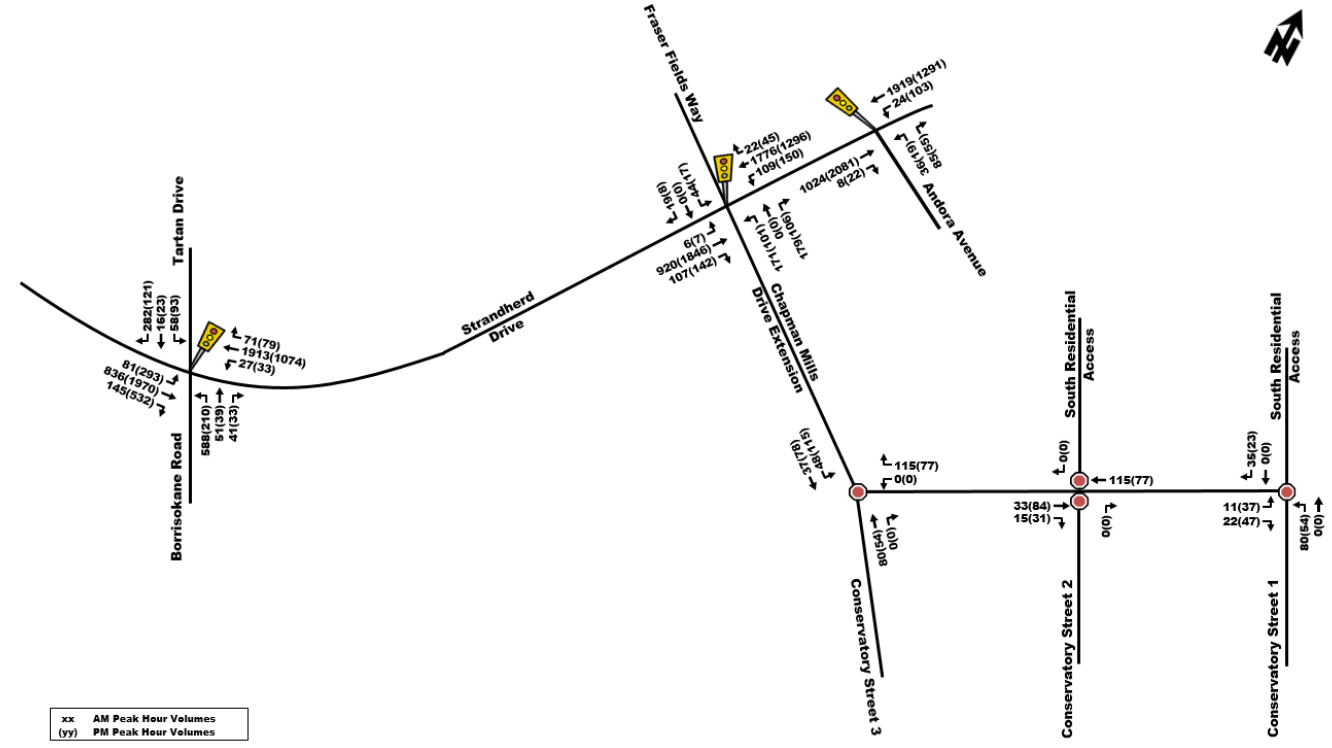


Figure 16: 2025 Total Future Traffic Volumes



10.4.1. FUTURE TOTAL 2020

Table 12 below, summarizes the operational analysis of the existing Study Area intersections using SYNCHRO (V9) traffic analysis. The detailed model output of projected 2020 future total conditions is provided within Appendix H. The Synchro

model has been coded using the City of Ottawa's TIA Guidelines – Appendix C and the existing signal timing plans. Signal timing cards are included in Appendix D.

Table 12: 2020 Future Total Conditions

Intersection	Approach / Movement		AM Peak Hour				PM Peak Hour			
			LOS[1]	V/C	Delay (s)	Queue (m)[2]	LOS[1]	V/C	Delay (s)	Queue (m)[2]
Strandherd Drive/Borrisokane Road/Tartan Drive (Signalized)	EB	L	A	0.53	29	19	F	1.01	120	#154
		T/R	E	0.95	41	#281	F	1.86	413	#1325
	WB	L	A	0.21	19	11	C	0.76	86	#33
		T/R	F	2.28	609	#823	F	1.13	111	#520
	NB	L	F	2.58	767	#285	E	0.99	131	#123
		T/R	A	0.14	30	23	A	0.16	59	30
	SB	L	A	0.16	30	21	A	0.39	65	48
		T/R	A	0.26	32	30	A	0.15	59	28
	Overall		**F**	**2.33**	**417**	-	**F**	**1.74**	**276**	-
Strandherd Drive/Fraser Fields Way/Chapman Mills Drive Extension (Signalized)	EB	L	A	0.11	11	3	A	0.12	10	3
		T/R	D	0.84	23	230	F	1.54	268	#714
	WB	L	A	0.57	23	36	F	2.54	760	#87
		T/R	F	1.45	229	#635	F	1.01	47	#389
	NB	L	A	0.58	49	60	A	0.32	38	36
		T/R	A	0.12	38	12	A	0.22	37	29
	SB	L	A	0.21	40	19	A	0.06	36	9
		T/R	A	0.01	36	3	A	0.01	35	0
	Overall		**F**	**1.23**	**136**	-	**F**	**1.95**	**195**	-
Strandherd Drive/Andora Avenue (Signalized)	EB	L/T/R	C	0.74	10	150	F	1.40	194	#626
	WB	L	A	0.08	3	3	F	1.43	266	#48
		T/R	F	1.36	178	#558	D	0.86	13	#299
	NB	L/R	A	0.28	42	23	A	0.47	47	24
	Overall		**F**	**1.23**	**116**	-	**F**	**1.33**	**128**	-
Chapman Mills Drive Extension/ Conservatory Street 1 (Unsignalized)	EB	L/R	A	0.00	7	0	A	0.00	7	0
	NB	L/T	A	0.00	8	0	A	0.00	8	0
	SB	T/R	A	0.00	7	0	A	0.00	7	0
Chapman Mills Drive Extension/ Conservatory Street 2 (Unsignalized)	EB	T/R	A	0.08	0	0	A	0.00	8	0
	WB	T/R	A	0.03	0	0	A	0.00	7	0
	NB	R	A	0.00	0	0	A	0.00	7	0
	SB	R	A	0.00	0	0	A	0.00	7	0
Chapman Mills Drive Extension/ Conservatory Street 3 (Unsignalized)	WB	L/R	A	0.00	7	0	A	0.00	7	0
	NB	T/R	A	0.00	8	0	A	0.00	8	0
	SB	L/T	A	0.00	8	0	A	0.00	9	0

L=Left Turn Movement(s); T=Through Movement(s); R=Right Turn Movement(s)
# - 95TH Percentile volume exceeds capacity, queue may be longer
m – Volume for 95th percentile queue is metered by upstream signal
1 – Level of Service based on v/c ratio as per the City of Ottawa TIA Guidelines
2 – 95th Percentile queue

With the addition of the proposed site traffic the previously noted operational constraints are further exacerbated. All the signalized intersections along Strandherd Drive are anticipated to experience operational constraints, however, the unsignalized accesses to the development will operate with minimal delays and no operational constraints. This analysis has assumed the full build out of the Citi-Gate, 4401 Fallowfield, and Harmony developments. All those developments will be constructed over a period of several years and it is unlikely that these developments will be fully built out by 2020.

10.4.2. FUTURE TOTAL 2025

Table 13 below, summarizes the operational analysis of the existing Study Area intersections using SYNCHRO (V9) traffic analysis. The detailed model output of projected 2025 total future conditions is provided within Appendix I. The Synchro model has been coded using the City of Ottawa's TIA Guidelines – Appendix C and the existing signal timing plans. Signal timing cards are included in Appendix D.

Table 13: 2025 Future Total Conditions

Intersection	Approach / Movement		AM Peak Hour				PM Peak Hour			
			LOS[1]	V/C	Delay (s)	Queue (m)[2]	LOS[1]	V/C	Delay (s)	Queue (m)[2]
Strandherd Drive/Borrisokane Road/Tartan Drive (Signalized)	EB	L	A	0.49	28	19	C	0.76	25	56
		T/R	A	0.42	13	65	D	0.85	19	208
	WB	L	A	0.09	17	m5.1	A	0.55	45	m#19
		T/R	F	1.15	98	#328.0	B	0.64	19	63
	NB	L	F	1.83	427	#272.8	C	0.72	58	#80
		T/R	A	0.16	33	23	A	0.15	39	22
	SB	L	A	0.24	42	24	A	0.36	44	35
		T/R	A	0.04	39	9	A	0.06	37	11
	Overall		**F**	**1.38**	**116**	-	**D**	**0.86**	**22**	-
Strandherd Drive/Fraser Fields Way/Chapman Mills Drive Extension (Signalized)	EB	L	A	0.06	6	m1	A	0.03	6	M1
		T/R	A	0.39	7	49	C	0.72	9	126
	WB	L	A	0.30	9	23	F	1.29	196	#63
		T/R	C	0.74	13	195	A	0.50	6	81
	NB	L	C	0.73	58	57	B	0.61	56	39
		T/R	A	0.33	44	33	A	0.39	50	31
	SB	L	A	0.26	44	19	A	0.11	47	10
		T/R	A	0.01	41	3	A	0.01	46	0
	Overall		**C**	**0.74**	**15**	-	**F**	**1.21**	**18**	-
Strandherd Drive/Andora Avenue (Signalized)	EB	L/T/R	A	0.41	4	43	C	0.78	8	154
	WB	L	A	0.06	3	3	F	1.13	144	#40
		T/R	C	0.73	7	129	A	0.48	4	57
	NB	L/R	A	0.33	45	23	A	0.48	47	24
	Overall		**B**	**0.69**	**7**	-	**F**	**1.07**	**11**	-
Chapman Mills Drive Extension/ Conservatory Street 1 (Unsignalized)	EB	L/R	A	0.00	7	0	A	0.00	7	0
	NB	L/T	A	0.00	8	0	A	0.00	8	0
	SB	T/R	A	0.00	7	0	A	0.00	7	0
Chapman Mills Drive Extension/ Conservatory Street 2 (Unsignalized)	EB	T/R	A	0.07	0	0	A	0.05	0	0
	WB	T/R	A	0.03	0	0	A	0.07	0	0
	NB	R	A	0.00	0	0	A	0.00	0	0
	SB	R	A	0.00	0	0	A	0.01	0	0
Chapman Mills Drive Extension/ Conservatory Street 3 (Unsignalized)	WB	L/R	A	0.00	7	0	A	0.00	7	0
	NB	T/R	A	0.00	8	0	A	0.00	8	0
	SB	L/T	A	0.00	8	0	A	0.00	9	0

L=Left Turn Movement(s); T=Through Movement(s); R=Right Turn Movement(s)
# - 95TH Percentile volume exceeds capacity, queue may be longer
m – Volume for 95th percentile queue is metered by upstream signal
1 – Level of Service based on v/c ratio as per the City of Ottawa TIA Guidelines
2 – 95th Percentile queue

As discussed previously, it is anticipated by 2025 that the widening of Strandherd Drive will be complete. This will alleviate several of the operational constraints along the Strandherd Drive corridor. However, it should be noted that due to the high

volume of traffic anticipated along Strandherd Drive, the signalized intersections are sensitive to fluctuations in the turning movement volumes, particularly left turn volumes. This is shown above where a small change to the left turn volumes at Chapman Mills Drive Extension leads to a high v/c and poor LOS. This left turn movement is in turn driving the overall intersection performance at this location to be poor. It is not uncommon for a left turn movement across a busy arterial road to operate poorly as the focus on an arterial corridor is the vehicles on the through movements. Additionally, this analysis has assumed that the extension of Chapman Mills Drive is not complete. This future upgrade will give this development a second access to the arterial network, redistributing some traffic away from Strandherd Drive. The Chapman Mills Drive corridor will also include a BRT down the center. This will provide further relief by promoting a shift from auto travel to bus travel. The entirety of this development will be less than 400m walking distance from the BRT corridor, promoting a high future transit share and reducing the reliance on single occupant vehicle trips.

11. DEVELOPMENT DESIGN

11.1. DESIGN FOR SUSTAINABLE MODES

The proposed development is supported by the following sustainable modes features.

Transit

The proposed development will be supported by the future Chapman Mills Drive Extension and Bus Rapid Transit Facility. As detailed in Section 3.1.2, two-way bus service will be provided in the center of the right of way, providing high quality, frequent transit service, connecting to the City's transit network right at the boundary of this site. All units will be within 400m of the future BRT. Prior to the construction of the Chapman Mills BRT local transit service will be provided to the site via the collector road connection to Strandherd Drive. The number of routes and the location of bus stops will be determined by OCTranspo.

Pedestrian Routes and Facilities

Sidewalks will be provided throughout the development on at least one side of the road on all local roads. Additionally, along the future Chapman Mills Drive sidewalks will be provided along both sides of the road, with a 3.2m buffer (including cycling track) between the sidewalk and the edge of the road. This will connect to the future transit stops for the Chapman Mills Drive BRT.

Cycling Routes and facilities

In addition to the sidewalks discussed above, a dedicated 2.00m cycle track will be provided each way on the future Chapman Mills Drive. This will provide east-west cycling connectivity and will provide cycling access to the future BRT stops along Chapman Mills Drive.

12. BOUNDARY STREET DESIGN

The boundary street adjacent to this development has been previously discussed in Section 3.1.2. The EA for this future road contemplates complete street elements including facilities for transit (BRT), pedestrians (sidewalk), and cycling (cycle track).

13. INTERSECTION DESIGN

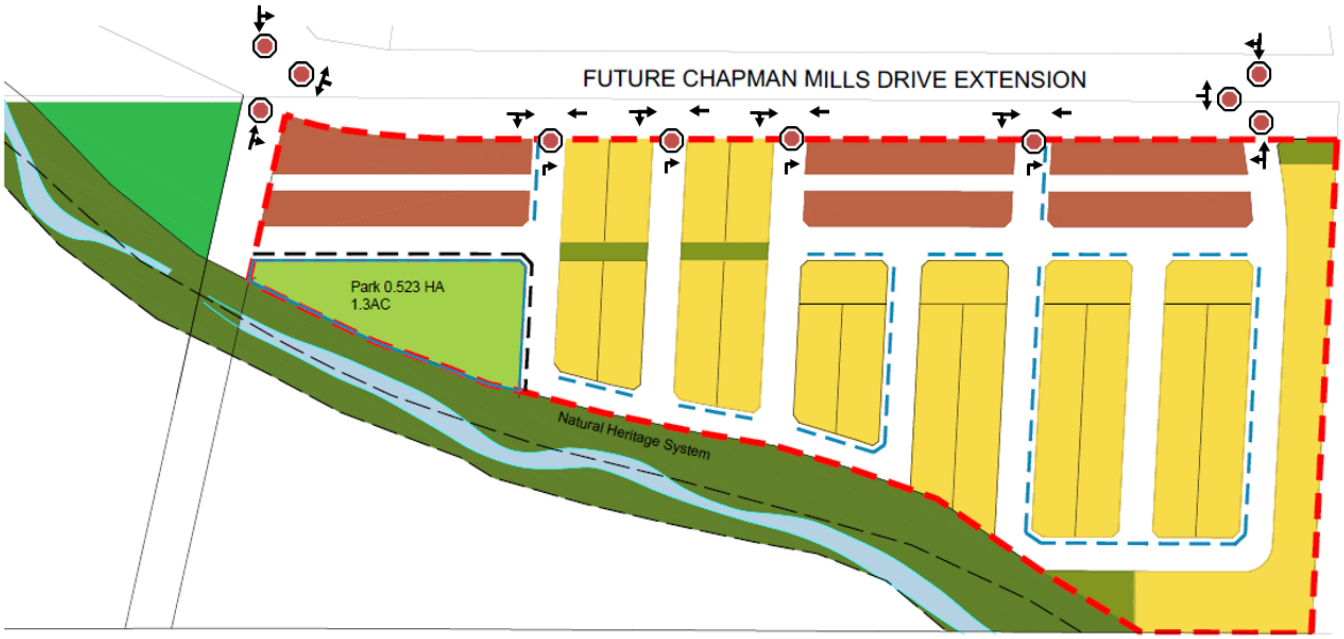
13.1. INTERSECTION CONTROL AND DESIGN

The proposed site accesses will all intersect with the future Chapman Mills Drive Extension. As documented in the EA, two signalized intersections are contemplated along the boundary of the subject development. At the time of the EA there were no plans to develop the subject site and the intersections did not include south legs into the development. As there is now

a development concept put forward, through this development application, the future detail design of the extension of Chapman Mills Drive should include the subject developments accesses. This would also include the addition of a right in right out, midblock, between the two signalized intersections, as per the development concept.

In advance of the implementation of the Chapman Mills Drive Extension BRT, the access intersections do not require signals. The following schematic, Figure 17, shows the lane configurations and traffic controls required for the construction of Phase 1 of the proposed development.

Figure 17: Intersection Control Schematic



13.2. MMLOS ANALYSIS

The subject development will tie into the proposed Chapman Mills Extension corridor, which has been designed to accommodate all travel modes. Therefore, no MMLOS analysis is required to support the subject development.

14. TRANSPORTATION DEMAND MANAGEMENT

This development is located along the Future Chapman Mills BRT corridor and all proposed units will be within 400m of the BRT. This will provide excellent transit service to the development, encouraging a high mode share. Additionally, the extension of Chapman Mills Drive will provide cycling and pedestrian facilities. These elements will complement each other to promote the use of active and transit modes, leading to a high mode share.

15. TRANSIT

As discussed previously the future extension of Chapman Mills Drive will include a BRT facility. In the interim OCTranspo will provide local transit service as needed.

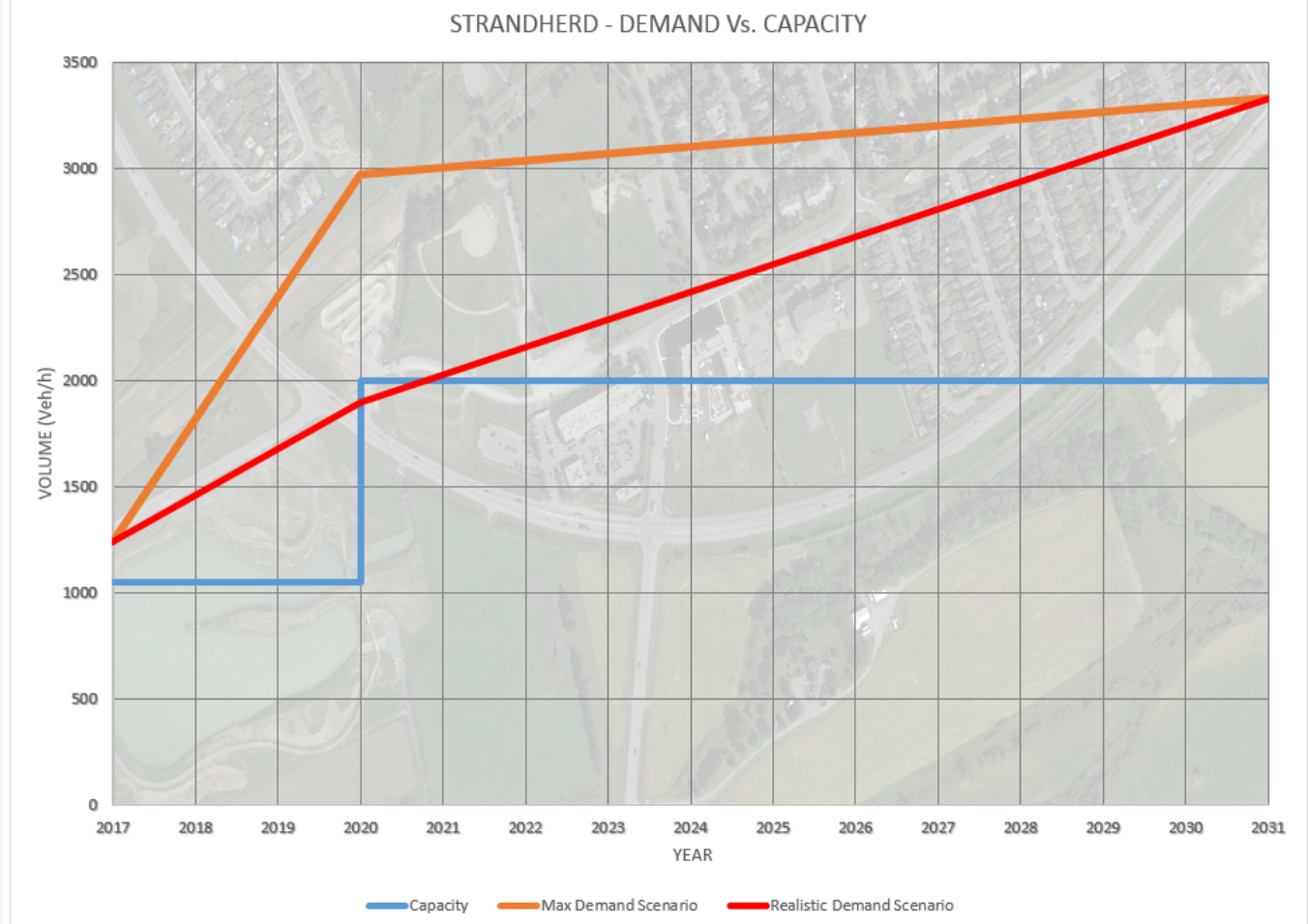
16. REVIEW OF NETWORK CONCEPT

As documented in the operational analysis the Strandherd Drive Corridor is currently experiencing demand at or greater than the capacity of the corridor. To address these constraints the City has recently contracted the detail design of the widening of Strandherd Drive from two to four lanes, between Maravista Drive and Jockvale Road. The operational analysis of 2025 Total Future Conditions indicated that if the developments along Strandherd Drive proceed to full build out by that horizon, then the increase in capacity provided by the proposed widening, would not match the anticipated demand.

The analysis of the future conditions has assumed that all approved development has been built and is fully occupied. As several of the background developments are going to be staged over time, it is unlikely that this conservative scenario will come to pass. To examine a more realistic development scenario and pace, a screenline analysis has been undertaken, particularly focusing on Strandherd Drive. A reduced background growth scenario has been created to understand the capacity constraints with a more realistic build out of the Study Area Developments. This scenario was created by reducing the largest development, Citi Gate, by 75% to account for a phased build out of this large employment development.

To document the progression from existing conditions to the 2031 projected conditions two demand scenarios have been considered on the graphic below, one consistent with the volumes considered in the body of this report and a second reflecting the reduced traffic volumes considered in this section. As shown below, the addition of the second lane each direction on Strandherd Drive would provide adequate capacity to meet the anticipated demand along this corridor for the 2020 horizon.

Figure 18: Strandherd Drive Capacity Graph



By 2020, with the build-out horizon of Phase 1 of the subject development, it is anticipated that adequate roadway capacity to support the projected growth will be available.

Further to this, with the construction of the Chapman Mills Drive Extension, a BRT corridor is planned. This will greatly improve the transit service to both the subject development and Barrhaven. By increasing the availability and quality of transit it can be anticipated that the transit mode share will increase. For the subject development it could be anticipated that the transit share would greatly increase as the proposed site would be within 400m of the BRT corridor, and sidewalk connections will be provided throughout to allow easy access to the BRT. Additionally, the BRT will increase the transit mode share for the whole area, reducing the auto demand throughout Barrhaven.

17. SUMMARY

Based on the results summarized herein the following conclusions are offered:

A. The analysis of existing conditions shows that the Study Area is currently experiencing operation constraints. These are primarily due to high westbound volumes in the AM and traffic returning to the area eastbound in the PM.
B. The subject development is proposed to be along the future Chapman Mills Drive Extension and BRT. The EA contemplates a cross-section that will accommodate all modes of traffic, including a centreline BRT, sidewalks on each side, and a separate cycle track on each side. For the purposes of analysis, it has been assumed that this corridor would not be completed within the study horizons.
C. The vehicle demand generated by the proposed development is approximately 129 and 146 veh/h during the weekday morning and afternoon peak hours, respectively.
D. The full build out of the Citi-Gate, 4401 Fallowfield, and Harmony developments are considered as part of the background traffic growth. In addition, a 2%/annum background growth rate has been assumed. This is a conservative estimate of the background growth in the Study Area and is unlikely to come to pass for the 2020 horizon.
E. The widening of Strandherd Drive from two to four lanes is currently the subject of a detail design. It is anticipated that this widening will be completed prior to the 2025 horizon.
F. The analysis of 2020 future background conditions shows that the existing operational constraints will become worse with the addition of the background traffic.
G. For the 2025 horizon it is assumed that the widening of Strandherd Drive will be complete, and the operational analysis has been completed accordingly. The widening will significantly improve the operational characteristics of the Study Area intersections. Some movements will continue to operate with poor LOS, primarily due to the heavy eastbound and westbound traffic flows during the AM and PM peak hours, respectively.
H. The analysis of 2020 traffic conditions including the site generated traffic is similar to the analysis of 2020 future background conditions, with a few movements having worse LOS due to the addition of site traffic. The accesses to the subject site operate very well, with minimal delays and good LOS.
I. As shown in the 2025 future background analysis, with the addition of the Strandherd widening the Study Area signalized intersections are greatly improved. With the addition of the site traffic, the westbound lefts at Andora Avenue and Chapman Mills Drive extension are shown to operation poorly. This is due to the high eastbound and westbound through volumes, creating a situation where the left turns are sensitive to changes in the volumes. This is not uncommon along arterial corridors as the main through volumes are the focus along major routes. The analysis has assumed that all traffic will access the site via Strandherd Drive, a conservative assumption, as the future extension of Chapman Mills Drive will give the development a secondary access to the arterial road network.
J. The proposed development will be well served by transit, cycling, and pedestrian facilities. As shown in the Chapman Mills EA cross-section, a dedicated BRT facility will be provided down the center of the road. All of the units in the proposed development will be within 400m of the BRT corridor and will therefore have easy access to a rapid transit facility. Additionally, the corridor will have a dedicated cycle track in each direction and sidewalks along each side. This will provide a street environment that encourages the use of active and transit modes. This will serve to decrease the auto mode share of the subject development over time, increasing the active and transit mode shares.
K. While the intersection operational analysis has shown some network constraints, the operational analysis has assumed a conservative buildout scenario. If a more realistic buildout scenario is assumed then the construction

of the widening of Strandherd Drive will provide adequate network capacity for the 2020 horizon. Beyond that horizon it is anticipated that the Chapman Mills Drive Extension could be in place, altering the traffic flow in this area of Barrhaven.

L. As there are no existing road connections to the subject property no RMA is required to support the proposed development.

Based on the analysis presented in this TIA, the proposed development is recommended from a Transportation perspective.

Prepared By:

Matthew Mantle, E.I.T.
Transportation Analyst

Reviewed by:

Mark Crockford, P.Eng.
Transportation Engineer

APPENDIX A

CORRESPONDENCES

PARSONS

1223 Michael Street, Suite 100, Ottawa, Ontario, K1J 7T2
P: +1 613.738.4160 l F: +1 613.739.7105 l www.parsons.com

City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	20-Oct-17
Project	Conservancy Phase 1
Project Number	476304-02000

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	No

Module 1.1 - Description of Proposed Development	
Municipal Address	Part of 3285 Borrisokane Road
Description of location	CON 3RF PT LOT 14 RP; 5R-11140 PART 1
Land Use	Residential
Development Size	8.69 ha
Number of Accesses and Locations	Two, Future Chapman Mills Drive Extension
Development Phasing	none
Buildout Year	~2022
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Single-Family Homes	
Development Size	200	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	No
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is 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) or within auxiliary lanes of an intersection;	No	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No	
The development includes a drive-thru facility	No	
Safety Trigger Met?	No	

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 licensed[1] or registered[2] 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.

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at ___Markham_____this __27__ day of _September_____, 2017.
(City)

Name: _____Mark Crockford_____
(Please Print)

Professional Title: _____Professional Engineer_____

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

Office Contact Information (Please Print)
Address: 625 Cochrane Drive, Suite 500
City / Postal Code: L3R 9R9
Telephone / Extension: 1 905.943.0406
E-Mail Address: Mark.Crockford@Parsons.com

Crockford, Mark

From: Baggs, Rosanna <Rosanna.Baggs@ottawa.ca>
Sent: Thursday, February 08, 2018 12:33 PM
To: Crockford, Mark
Cc: Frank Cairo; Gordon, Christopher
Subject: RE: 3285 Borrisokane Road - TIA Steps 1-4

Hi Mark,

Please provide 6 hard copies with a synchro cd.

Thanks

From: Crockford, Mark [mailto:Mark.Crockford@parsons.com]
Sent: Thursday, February 08, 2018 12:23 PM
To: Baggs, Rosanna <Rosanna.Baggs@ottawa.ca>
Cc: Frank Cairo <frank.cairo@caivan.com>; Gordon, Christopher <Christopher.Gordon@parsons.com>
Subject: 3285 Borrisokane Road - TIA Steps 1-4

Hi Rosanna,

Attached is our updated TIA for 3285 Borrisokane Road. I have included responses to the comments below in blue.

Thanks,
Mark

Mark Crockford, P. Eng.
Transportation Engineer
625 Cochrane Drive, Suite 500, Markham, ON L3R 9R9
Mark.Crockford@parsons.com +1 647.457.5866

PARSONS – Envision More
www.parsons.com | LinkedIn[linkedin.com] | Twitter [twitter.com]| Facebook [facebook.com]

From: Baggs, Rosanna [mailto:Rosanna.Baggs@ottawa.ca]
Sent: Wednesday, January 17, 2018 3:31 PM
To: Crockford, Mark <Mark.Crockford@parsons.com>
Cc: Gordon, Christopher <Christopher.Gordon@parsons.com>; Mantle, Matthew <Matthew.Mantle@parsons.com>
Subject: RE: 3285 Borrisokane Step 4

Hi Mark,

Our comments for the 3285 Borrisokane Traffic Impact Assessment (Reports 1-4) dated 21 December 2017 are as follows:

Development Review – Transportation Engineering Services

1) The section 4 from the original submission of reports 1 and 2 is missing 4. Study area, 5. Time Period, 6. Horizon Years, 7. Background Growth, 8. Exemption Review
   These were removed / combined into other sections to improve readability and reduce redundancy. These have been added back in.
2) Section 6 - Element 4.1.3 – New Street Networks was not included in the report. Please include
   This is an isolated section of subdivision, due to the creek to the south. There will therefore not be cut-through traffic, that would necessitate traffic calming measures. Additionally, this section requires the methodology prescribed in the *Traffic Calming Manual for Greenfield Neighbourhoods*, unfortunately this document is not yet available.
3) Section 7
   Assess the potential impact of the subject development on the design;
   See Section 13.1
   If changes to the design are required, develop an interim design concept for the boundary street.
   The subject lands will not proceed until the lands around it are built.
   a. What TDM measure will be required if the Development is constructed prior to the Chapman Mills Extension (ie through Blackburn Mews)?
      The subject lands will not proceed until the lands around it are built.

4) Section 8
   a. What are the appropriate intersection configurations (i.e. lane geometry, medians, cycling lanes) to serve future background and total travel demands?
      The new Strandherd intersection approach was designed considering all of the Harmony and future traffic along the Chapman Mills collector, and the Strandherd Drive intersection (mainline approaches) will be designed as part of the ongoing Strandherd Detail Design Process.
   b. Are there any control strategies required to meet other complete street-based performance objectives including transit priority or pedestrian phasing?
      The future Chapman Mills Drive Extension will require unique signal timing to accommodate the centerline BRT. When that is implemented pedestrian and transit phasing will be determined by the City.
5) Section 10 - What is meant by the statement "In the interim OCTranspo will provide local transit service as needed." Has an agreement been made with OC? Are you relying on the service running on Strandherd? How far away is the service and stops on Strandherd? Over 400m can not be considered and option.
   Noted. Discussions with OC Transpo are underway to plan service for the new school on Chapman Mills, Minto's Harmony Development, and Caivan's Conservancy Development. These discussions will be documented as part of the overall strategy for these developments and the Strandherd Drive reconstruction.
6) Module 4.9 was not included in the report. Please include.
   See Section 13. Additionally, as we are not proposing any signalized accesses that are not considered as part of the CM EA, the Draft Plan of Subdivision will show the right in / right out accesses and the proposed design.
7) Section 12
   a. Please break out the bullets into their respective headings; finding, recommendations, or conclusions.
   b. Is an RMA required? Subdivision accesses will be designed as part of the Draft Plan of Subdivision. As no new turning lanes are proposed on Chapman Mills Drive, no RMA will be required.
   c. Subdivision accesses will be designed as part of the Draft Plan of Subdivision. As no new turning lanes are proposed on Chapman Mills Drive, no RMA will be required.
   d. Are changes necessary to the Chapman Mills EA to provide access to this development? No. An EA addendum is not required. The approval process for the access configurations is part of the Draft Plan of Subdivision Application.
   e. What lane configurations are needed at the accesses? See Section 13.1

f. Area any changes required to any of the network intersections to accommodate this development? Before/after the construction of Chapman Mills? No.
g. What is the plan for traffic if this development is built before the Chapman Mills Extension? See comment 3a.

8) What internal management will be required? Stop signs, intersection narrowing, PXO, etc?traffic
This information will be provided once the application is deemed complete and other technical submissions have been reviewed, given that the road network may change based on the outcome of those other studies and requirements.

Traffic Signals

1) No comments to initial TIA Report for this circulation.
2) Traffic Signal Design and Specification reserves the right to make future comments based on subsequent submissions.
3) Future considerations:
    a. If there are any future proposed changes in the existing roadway geometry for the purpose of construction of new TCS(s), pg 29, Figure 7, City of Ottawa Traffic Signal Design and Specification Unit is required to complete a review/assessment for traffic signal plant design.
    b. If the proposed traffic signals are warranted/approved for installation and RMA approved please forward an approved geometry detail design drawings (dwg digital format in NAD 83 coordinates) including base mapping, existing and new underground utilities/sewers, new/existing catch basins locations, Turn-Roads Modeling and approved pavement markings drawings in separate files for detail traffic plant design lay out.
    c. Please send all digital (CADD) design files to Peter.Grajcar@ottawa.ca 613-580-2424 extension 23035.

Traffic Engineering

1) Synchro revisions
    a. AM existing cycle length @ Borrisokane should be 120 seconds. FDW is incorrect for 2/6 and 4/8.
    b. FDW is incorrect @ Andora for 4/8.
    c. Errors are carried through following models.

    Models have been corrected as per above.

Street Lighting

1) No comments with initial TIA for this circulation. Street Lighting reserves the right to make future comments based on subsequent submissions.
2) Future considerations are as follows:
    a. If there are any proposed changes to the existing roadway geometry, the City of Ottawa Street Light Asset Management Group is required to provide a full street light design. Upon completion of proposed roadway geometry design changes, please submit digital Micro Station drawings with proposed roadway geometry changes to the Street Lighting Department, so that we may proceed with the detailed street light design and coordination with the Street Light maintenance provider and all necessary parties. Be advised that the applicant will be 100% responsible for all costs associated with any Street Light design as a result of the roadway geometry change.
    b. Alterations and/or repairs are required where the existing street light plant is directly, indirectly or adversely affected by the scope of work under this circulation, due to the proposed road reconstruction

process. All street light plant alterations and/or repairs must be performed by the City of Ottawa's Street Light maintenance provider.

c. Be advised that the applicant will be 100% responsible for all costs associated with any relocations/modifications to the existing street light plant.

Transportation Engineering Services

1) Signalization of the intersections along Chapman Mills Drive will be dependant on their inclusion in the City development charge repayment schedule. As per the report, this portion of the subdivision future volumes does not indicate a requirement for signals on the Conservatory Streets. Also, any changes to the approved Chapman Mills Drive EA will require an RMA report.
Subdivision accesses will be designed as part of the Draft Plan of Subdivision. As no new turning lanes are proposed on Chapman Mills Drive, no RMA will be required.

Please let me know if you have any questions or concerns.

Regards,

Rosanna Baggs, C.E.T.
Project Manager, Infrastructure Approvals | GPRJ Approbation demandes infrastructure
Development Review West Branch | Dir Services d'exam des dem d'amgt
Tel |Tél. : 613-580- 2424 ext. | poste 26388

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APPENDIX B

TRAFFIC DATA

Public Works - Traffic Services

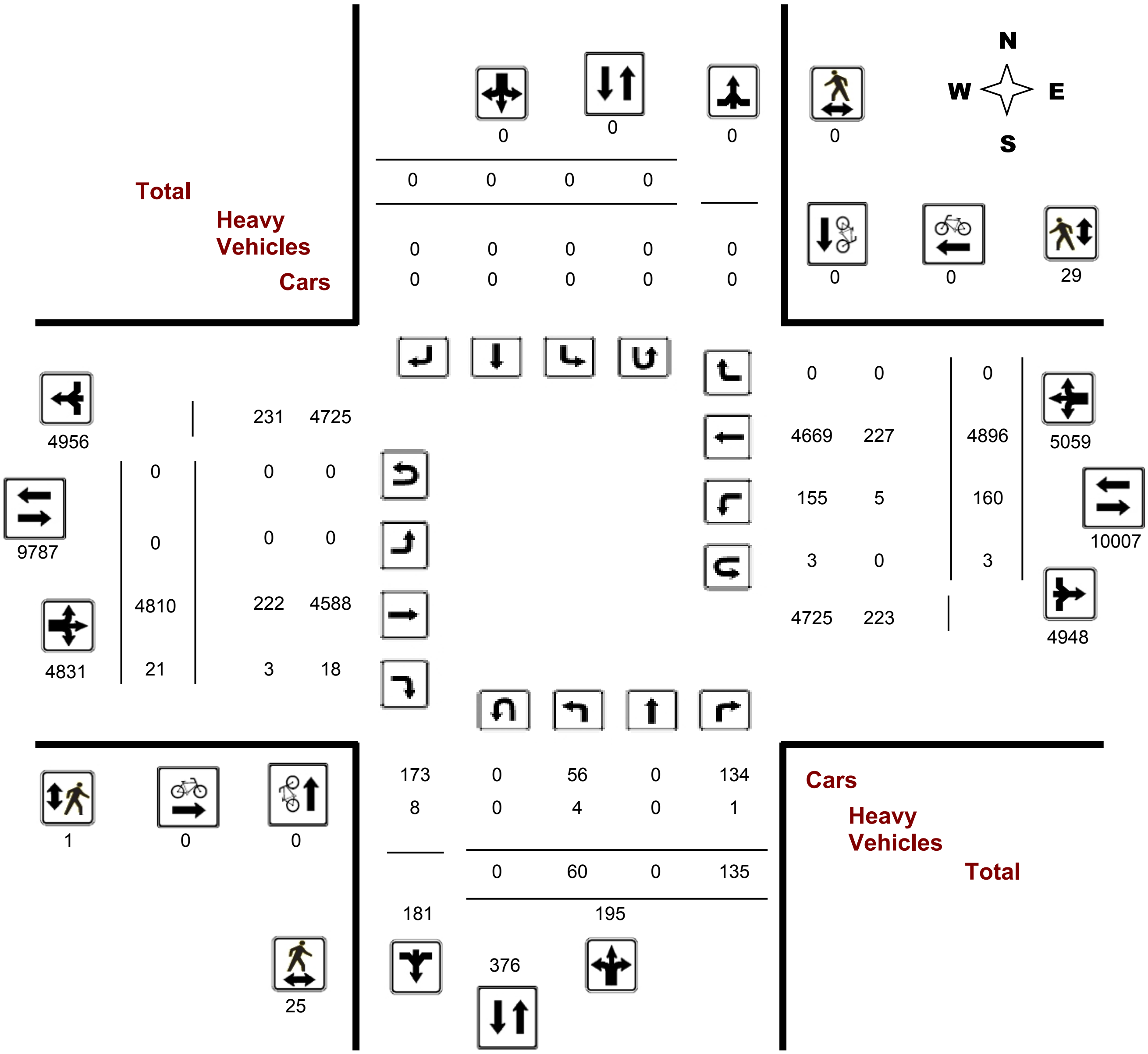
Turning Movement Count - Full Study Diagram

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015

WO#: 35555

Device: Miovision



Comments

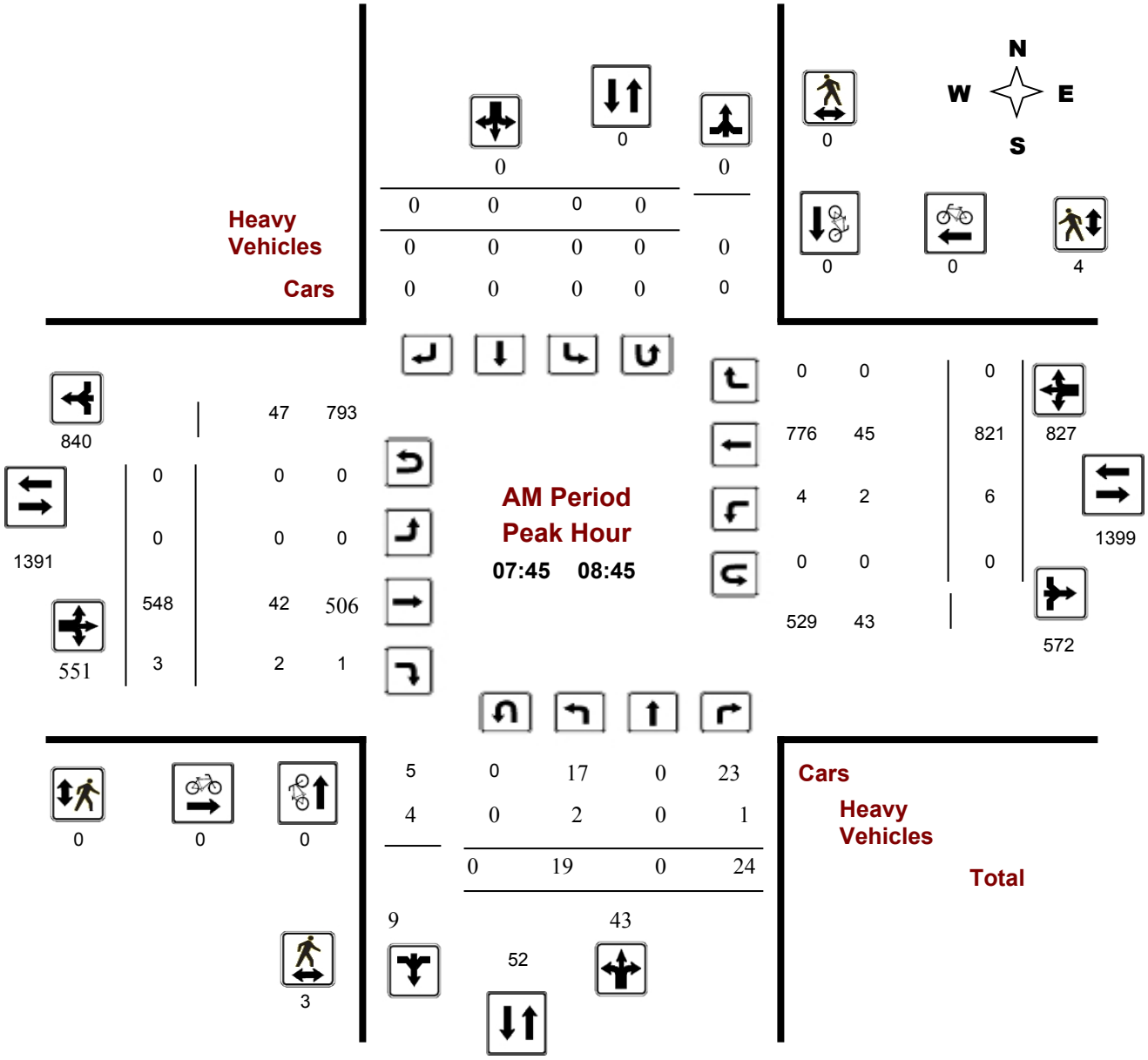
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015 **WO No:** 35555

Start Time: 07:00 **Device:** Miovision



Comments

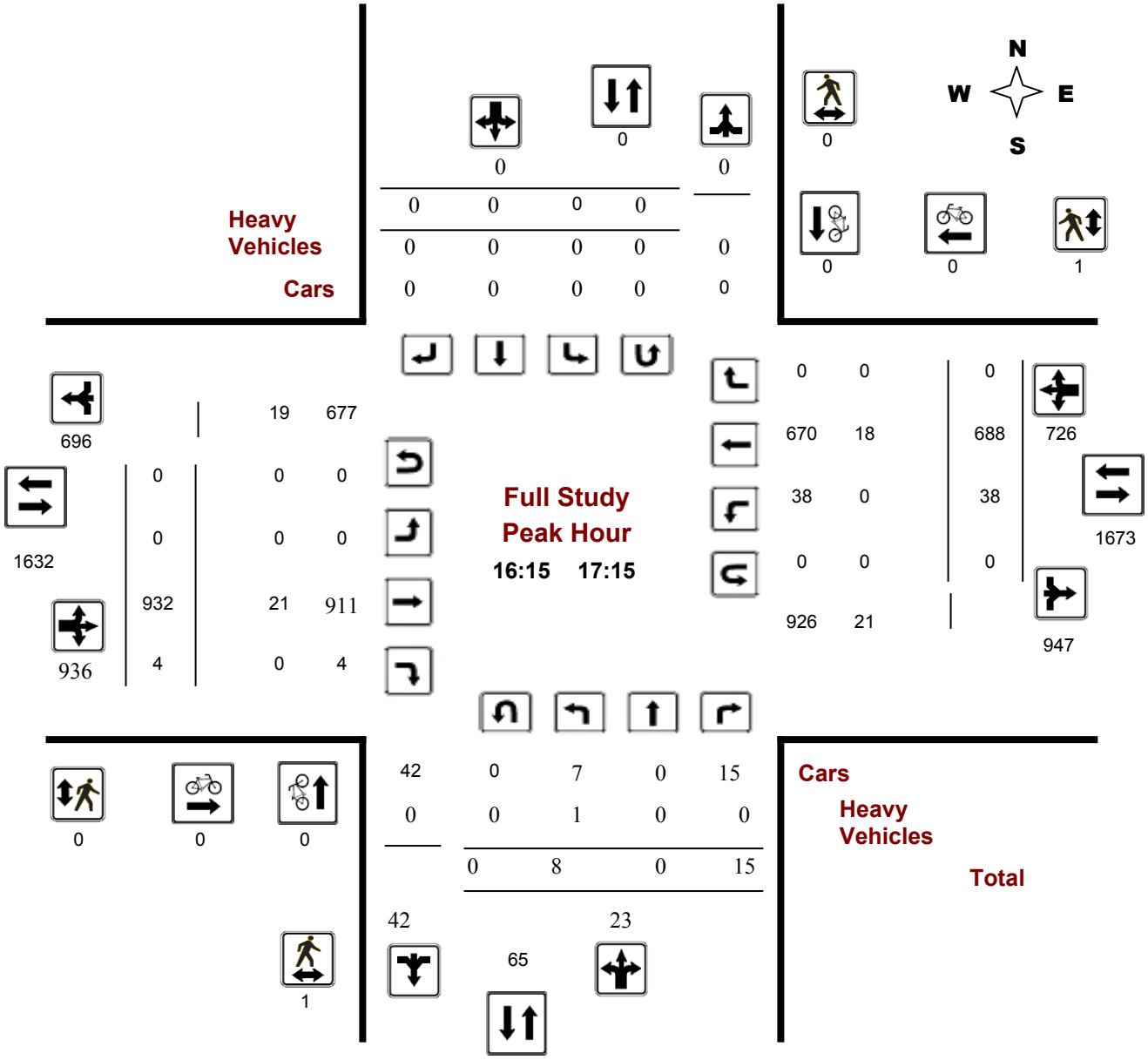
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015 **WO No:** 35555

Start Time: 07:00 **Device:** Miovision



Comments

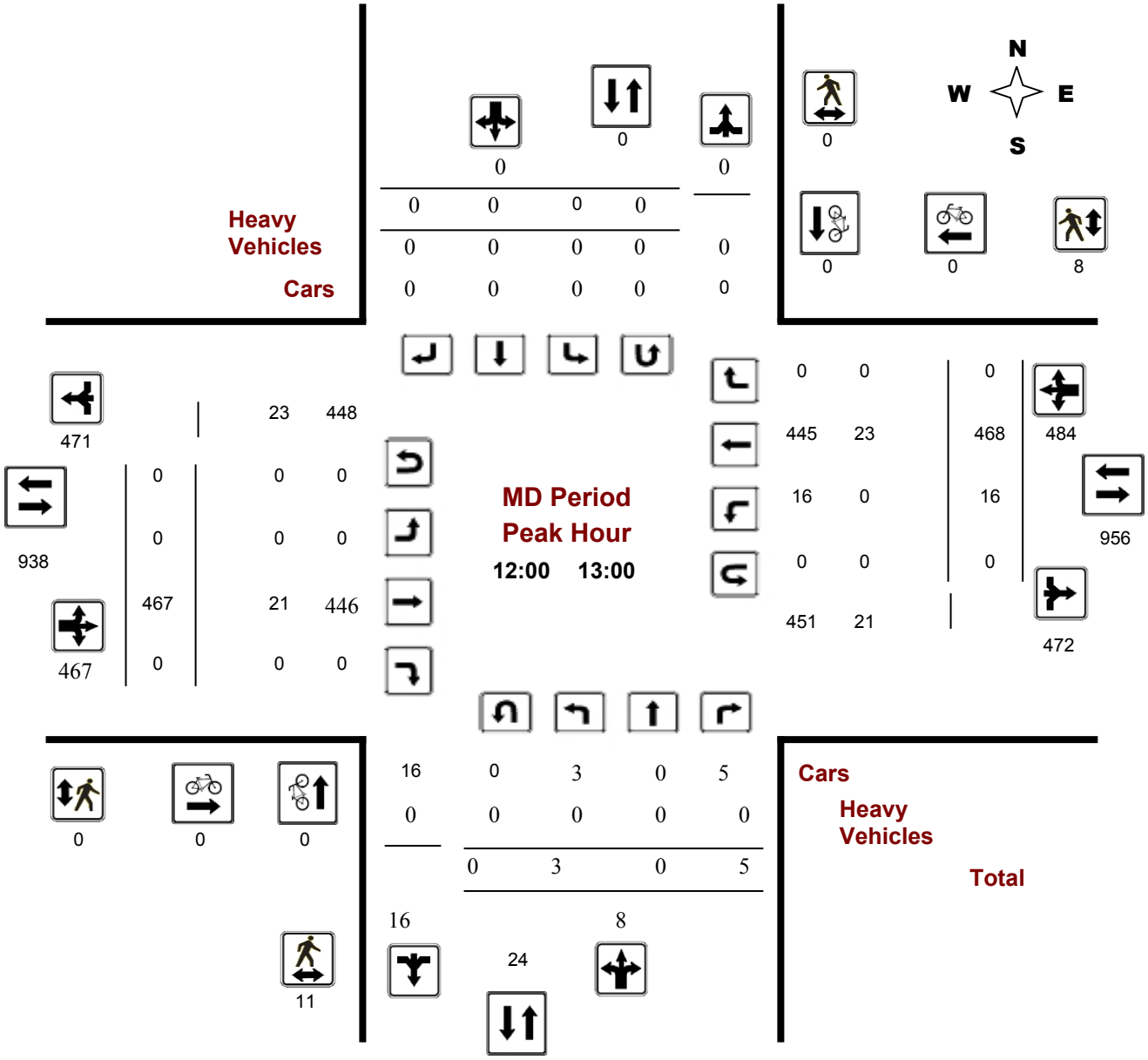
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015 **WO No:** 35555

Start Time: 07:00 **Device:** Miovision



Comments

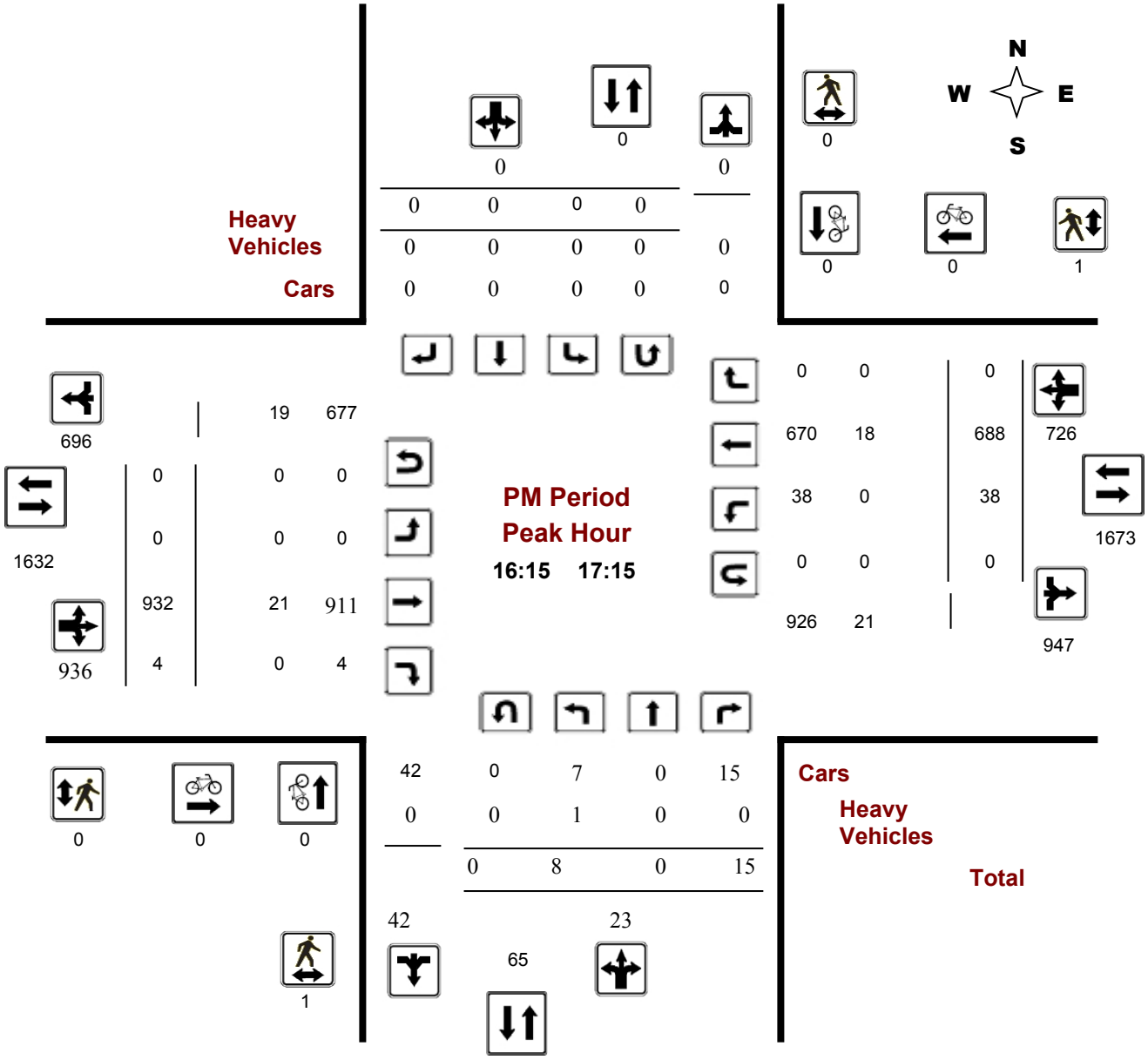
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015 **WO No:** 35555

Start Time: 07:00 **Device:** Miovision



Comments

Public Works - Traffic Services

W.O. 35555

Turning Movement Count - Heavy Vehicle Report

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015

Time Period		Northbound				Southbound					Eastbound				Westbound					
		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	1	0	0	**1**	0	0	0	**0**	**1**	0	39	0	**39**	2	33	0	**35**	**74**	**75**
08:00	09:00	2	0	1	**3**	0	0	0	**0**	**3**	0	47	2	**49**	1	46	0	**47**	**96**	**99**
09:00	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	30	1	**31**	0	39	0	**39**	**70**	**70**
11:30	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	25	0	**25**	0	27	0	**27**	**52**	**52**
12:30	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	23	0	**23**	0	21	0	**21**	**44**	**44**
15:00	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	28	0	**28**	2	33	0	**35**	**63**	**63**
16:00	17:00	1	0	0	**1**	0	0	0	**0**	**1**	0	20	0	**20**	0	21	0	**21**	**41**	**42**
17:00	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	10	0	**10**	0	7	0	**7**	**17**	**17**
Sub Total		4	0	1	**5**	0	0	0	**0**	**5**	0	222	3	**225**	5	227	0	**232**	**457**	**462**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		4	0	1	**0**	0	0	0	**0**	**5**	0	222	3	**225**	5	227	0	**232**	**457**	**462**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

W.O. 35555

Turning Movement Count - 15 Minute Summary Report

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 3

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	07:15	7	0	10	**17**	0	0	0	**0**	**17**	0	99	0	**99**	0	109	0	**109**	**208**	**225**
07:15	07:30	4	0	12	**16**	0	0	0	**0**	**16**	0	130	1	**131**	2	178	0	**180**	**311**	**327**
07:30	07:45	3	0	7	**10**	0	0	0	**0**	**10**	0	147	0	**147**	5	173	0	**178**	**325**	**335**
07:45	08:00	8	0	5	**13**	0	0	0	**0**	**13**	0	148	0	**148**	3	194	0	**197**	**345**	**358**
08:00	08:15	2	0	7	**9**	0	0	0	**0**	**9**	0	137	1	**138**	1	183	0	**184**	**322**	**331**
08:15	08:30	6	0	6	**12**	0	0	0	**0**	**12**	0	131	1	**132**	1	213	0	**214**	**346**	**358**
08:30	08:45	3	0	6	**9**	0	0	0	**0**	**9**	0	132	1	**133**	1	231	0	**232**	**365**	**374**
08:45	09:00	3	0	6	**9**	0	0	0	**0**	**9**	0	113	0	**113**	5	197	0	**202**	**315**	**324**
09:00	09:15	1	0	7	**8**	0	0	0	**0**	**8**	0	109	1	**110**	0	144	0	**144**	**254**	**262**
09:15	09:30	1	0	2	**3**	0	0	0	**0**	**3**	0	125	0	**125**	5	145	0	**150**	**275**	**278**
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09:45	10:00	2	0	2	**4**	0	0	0	**0**	**4**	0	105	0	**105**	1	112	0	**113**	**218**	**222**
11:30	11:45	0	0	5	**5**	0	0	0	**0**	**5**	0	101	0	**101**	2	118	0	**121**	**222**	**227**
11:45	12:00	2	0	1	**3**	0	0	0	**0**	**3**	0	116	1	**117**	1	119	0	**121**	**238**	**241**
12:00	12:15	1	0	0	**1**	0	0	0	**0**	**1**	0	123	0	**123**	0	117	0	**117**	**240**	**241**
12:15	12:30	0	0	2	**2**	0	0	0	**0**	**2**	0	114	0	**114**	4	118	0	**122**	**236**	**238**
12:30	12:45	1	0	3	**4**	0	0	0	**0**	**4**	0	108	0	**108**	5	113	0	**118**	**226**	**230**
12:45	13:00	1	0	0	**1**	0	0	0	**0**	**1**	0	122	0	**122**	7	120	0	**127**	**249**	**250**
13:00	13:15	0	0	4	**4**	0	0	0	**0**	**4**	0	117	3	**120**	6	105	0	**111**	**231**	**235**
13:15	13:30	3	0	2	**5**	0	0	0	**0**	**5**	0	98	0	**98**	4	97	0	**101**	**199**	**204**
15:00	15:15	0	0	1	**1**	0	0	0	**0**	**1**	0	137	1	**138**	6	156	0	**162**	**300**	**301**
15:15	15:30	1	0	3	**4**	0	0	0	**0**	**4**	0	169	2	**171**	8	165	0	**173**	**344**	**348**
15:30	15:45	0	0	7	**7**	0	0	0	**0**	**7**	0	176	2	**178**	9	184	0	**193**	**371**	**378**
15:45	16:00	0	0	1	**1**	0	0	0	**0**	**1**	0	192	0	**192**	10	176	0	**186**	**378**	**379**
16:00	16:15	0	0	1	**1**	0	0	0	**0**	**1**	0	189	0	**189**	8	155	0	**164**	**353**	**354**
16:15	16:30	2	0	5	**7**	0	0	0	**0**	**7**	0	235	2	**237**	10	156	0	**166**	**403**	**410**
16:30	16:45	1	0	3	**4**	0	0	0	**0**	**4**	0	234	0	**234**	16	178	0	**194**	**428**	**432**
16:45	17:00	3	0	5	**8**	0	0	0	**0**	**8**	0	235	1	**236**	6	199	0	**205**	**441**	**449**
17:00	17:15	2	0	2	**4**	0	0	0	**0**	**4**	0	228	1	**229**	6	155	0	**161**	**390**	**394**
17:15	17:30	0	0	6	**6**	0	0	0	**0**	**6**	0	213	1	**214**	7	149	0	**156**	**370**	**376**
17:30	17:45	0	0	7	**7**	0	0	0	**0**	**7**	0	220	2	**222**	8	147	0	**155**	**377**	**384**
17:45	18:00	2	0	6	**8**	0	0	0	**0**	**8**	0	198	0	**198**	12	160	0	**172**	**370**	**378**
TOTAL:		60	0	135	**195**	0	0	0	**0**	**195**	0	4810	21	**4831**	160	4896	0	**5059**	**9890**	**10085**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Work Order
35555

Turning Movement Count - Pedestrian Volume Report

STRANDHERD DR @ ANDORA AVE

Count Date: Wednesday, December 09, 2015 **Start Time:** 07:00

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	0	**0**	0	2	**2**	**2**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
07:00 08:00	0	0	**0**	0	3	**3**	**3**
08:00 08:15	0	0	**0**	0	0	**0**	**0**
08:15 08:30	0	0	**0**	0	3	**3**	**3**
08:30 08:45	3	0	**3**	0	1	**1**	**4**
08:45 09:00	1	0	**1**	1	1	**2**	**3**
08:00 09:00	4	0	**4**	1	5	**6**	**10**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
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**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 11:45	0	0	**0**	0	0	**0**	**0**
11:45 12:00	4	0	**4**	0	0	**0**	**4**
12:00 12:15	0	0	**0**	0	1	**1**	**1**
12:15 12:30	7	0	**7**	0	4	**4**	**11**
11:30 12:30	11	0	**11**	0	5	**5**	**16**
12:30 12:45	1	0	**1**	0	0	**0**	**1**
12:45 13:00	3	0	**3**	0	3	**3**	**6**
13:00 13:15	0	0	**0**	0	0	**0**	**0**
13:15 13:30	3	0	**3**	0	2	**2**	**5**
12:30 13:30	7	0	**7**	0	5	**5**	**12**
15:00 15:15	0	0	**0**	0	1	**1**	**1**
15:15 15:30	0	0	**0**	0	1	**1**	**1**
15:30 15:45	0	0	**0**	0	1	**1**	**1**
15:45 16:00	0	0	**0**	0	2	**2**	**2**
15:00 16:00	0	0	**0**	0	5	**5**	**5**
16:00 16:15	2	0	**2**	0	5	**5**	**7**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	1	0	**1**	0	1	**1**	**2**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	3	0	**3**	0	6	**6**	**9**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	25	0	**25**	1	29	**30**	**55**

Comment:

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35555

STRANDHERD DR @ ANDORA AVE

Count Date: Wednesday, December 09, 2015 **Start Time:** 07:00

Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	0	**0**	0	0	**0**	**0**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Public Works - Traffic Services

Work Order
35555

Turning Movement Count - Full Study Summary Report

STRANDHERD DR @ ANDORA AVE

Survey Date: Wednesday, December 09, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 3

AADT Factor
1.00

Full Study

	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	22	0	34	**56**	0	0	0	**0**	**56**	0	524	1	**525**	10	654	0	**664**	**1189**	**1245**
08:00 09:00	14	0	25	**39**	0	0	0	**0**	**39**	0	513	3	**516**	8	824	0	**832**	**1348**	**1387**
09:00 10:00	5	0	12	**17**	0	0	0	**0**	**17**	0	448	1	**449**	7	531	0	**538**	**987**	**1004**
11:30 12:30	3	0	8	**11**	0	0	0	**0**	**11**	0	454	1	**455**	7	472	0	**479**	**934**	**945**
12:30 13:30	5	0	9	**14**	0	0	0	**0**	**14**	0	445	3	**448**	22	435	0	**457**	**905**	**919**
15:00 16:00	1	0	12	**13**	0	0	0	**0**	**13**	0	674	5	**679**	33	681	0	**714**	**1393**	**1406**
16:00 17:00	6	0	14	**20**	0	0	0	**0**	**20**	0	893	3	**896**	40	688	0	**728**	**1624**	**1644**
17:00 18:00	4	0	21	**25**	0	0	0	**0**	**25**	0	859	4	**863**	33	611	0	**644**	**1507**	**1532**
Sub Total	60	0	135	**195**	0	0	0	**0**	**195**	0	4810	21	**4831**	160	4896	0	**5056**	**9887**	**10082**
U Turns				**0**				**0**	**0**				**0**				**3**	**3**	**3**
Total	60	0	135	**195**	0	0	0	**0**	**195**	0	4810	21	**4831**	160	4896	0	**5059**	**9890**	**10085**
EQ 12Hr	83	0	188	**271**	0	0	0	**0**	**271**	0	6686	29	**6715**	222	6805	0	**7032**	**13747**	**14018**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	83	0	188	**271**	0	0	0	**0**	**271**	0	6686	29	**6715**	222	6805	0	**7032**	**13747**	**14018**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	109	0	246	**355**	0	0	0	**0**	**355**	0	8759	38	**8797**	291	8915	0	**9212**	**18009**	**18364**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 37055

Turning Movement Count - 15 Minute Summary Report

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

		FRASER FIELDS WAY									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	11	0	6	**17**	**17**	0	131	0	**131**	0	134	3	**137**	**268**	**285**
07:15	07:30	0	0	0	**0**	8	0	8	**16**	**16**	0	152	0	**152**	0	184	4	**188**	**340**	**356**
07:30	07:45	0	0	0	**0**	13	0	6	**19**	**19**	0	178	0	**178**	0	198	5	**203**	**381**	**400**
07:45	08:00	0	0	0	**0**	9	0	4	**13**	**13**	0	153	0	**153**	0	194	7	**201**	**354**	**367**
08:00	08:15	0	0	0	**0**	15	0	7	**22**	**22**	3	136	0	**139**	0	214	4	**218**	**357**	**379**
08:15	08:30	0	0	0	**0**	7	0	2	**9**	**9**	3	163	0	**166**	0	205	6	**211**	**377**	**386**
08:30	08:45	0	0	0	**0**	9	0	4	**13**	**13**	0	137	0	**137**	0	195	4	**199**	**336**	**349**
08:45	09:00	0	0	0	**0**	6	0	2	**8**	**8**	2	115	0	**117**	0	209	6	**215**	**332**	**340**
09:00	09:15	0	0	0	**0**	6	0	2	**8**	**8**	1	122	0	**123**	0	152	8	**160**	**283**	**291**
09:15	09:30	0	0	0	**0**	5	0	1	**6**	**6**	0	142	0	**142**	0	163	5	**168**	**310**	**316**
09:30	09:45	0	0	0	**0**	7	0	5	**12**	**12**	1	131	0	**132**	0	165	5	**170**	**302**	**314**
09:45	10:00	0	0	0	**0**	6	0	3	**9**	**9**	2	132	0	**134**	0	152	2	**154**	**288**	**297**
11:30	11:45	0	0	0	**0**	3	0	1	**4**	**4**	2	171	0	**173**	0	173	4	**177**	**350**	**354**
11:45	12:00	0	0	0	**0**	2	0	1	**3**	**3**	2	184	0	**186**	0	192	5	**197**	**383**	**386**
12:00	12:15	0	0	0	**0**	5	0	4	**9**	**9**	0	181	0	**181**	0	173	8	**181**	**362**	**371**
12:15	12:30	0	0	0	**0**	9	0	4	**13**	**13**	1	201	0	**202**	0	157	6	**163**	**365**	**378**
12:30	12:45	0	0	0	**0**	4	0	0	**4**	**4**	1	185	0	**186**	0	183	6	**189**	**375**	**379**
12:45	13:00	0	0	0	**0**	4	0	0	**4**	**4**	2	186	0	**188**	0	156	6	**162**	**350**	**354**
13:00	13:15	0	0	0	**0**	6	0	1	**7**	**7**	0	149	0	**149**	0	177	6	**184**	**333**	**340**
13:15	13:30	0	0	0	**0**	1	0	4	**5**	**5**	3	159	0	**162**	0	169	6	**175**	**337**	**342**
15:00	15:15	0	0	0	**0**	1	0	4	**5**	**5**	2	192	0	**194**	0	195	5	**200**	**394**	**399**
15:15	15:30	0	0	0	**0**	3	0	2	**5**	**5**	1	225	0	**226**	0	211	12	**223**	**449**	**454**
15:30	15:45	0	0	0	**0**	4	0	1	**5**	**5**	2	220	0	**222**	0	230	11	**241**	**463**	**468**
15:45	16:00	0	0	0	**0**	5	0	1	**6**	**6**	2	204	0	**206**	0	194	9	**203**	**409**	**415**
16:00	16:15	0	0	0	**0**	5	0	4	**9**	**9**	2	195	0	**197**	0	204	13	**217**	**414**	**423**
16:15	16:30	0	1	0	**1**	5	0	2	**7**	**8**	4	200	0	**204**	0	189	8	**197**	**401**	**409**
16:30	16:45	0	0	0	**0**	4	0	6	**10**	**10**	6	204	0	**210**	0	190	19	**209**	**419**	**429**
16:45	17:00	0	0	0	**0**	4	0	1	**5**	**5**	2	230	0	**232**	0	185	13	**198**	**430**	**435**
17:00	17:15	0	0	0	**0**	7	0	3	**10**	**10**	7	226	0	**233**	0	205	21	**226**	**459**	**469**
17:15	17:30	0	0	0	**0**	7	0	1	**8**	**8**	7	200	0	**207**	0	186	14	**200**	**407**	**415**
17:30	17:45	0	0	0	**0**	4	0	4	**8**	**8**	4	208	0	**212**	0	180	16	**196**	**408**	**416**
17:45	18:00	0	0	0	**0**	3	0	3	**6**	**6**	2	190	0	**192**	0	175	5	**180**	**372**	**378**
TOTAL:		0	1	0	**1**	188	0	97	**285**	**286**	64	5602	0	**5666**	0	5889	252	**6142**	**11808**	**12094**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
37055

FRASER FIELDS WAY @ STRANDHERD DR

Count Date: Thursday, May 25, 2017 **Start Time:** 07:00

	FRASER FIELDS WAY			STRANDHERD DR			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	1	**1**	**1**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	0	**0**	0	1	**1**	**1**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

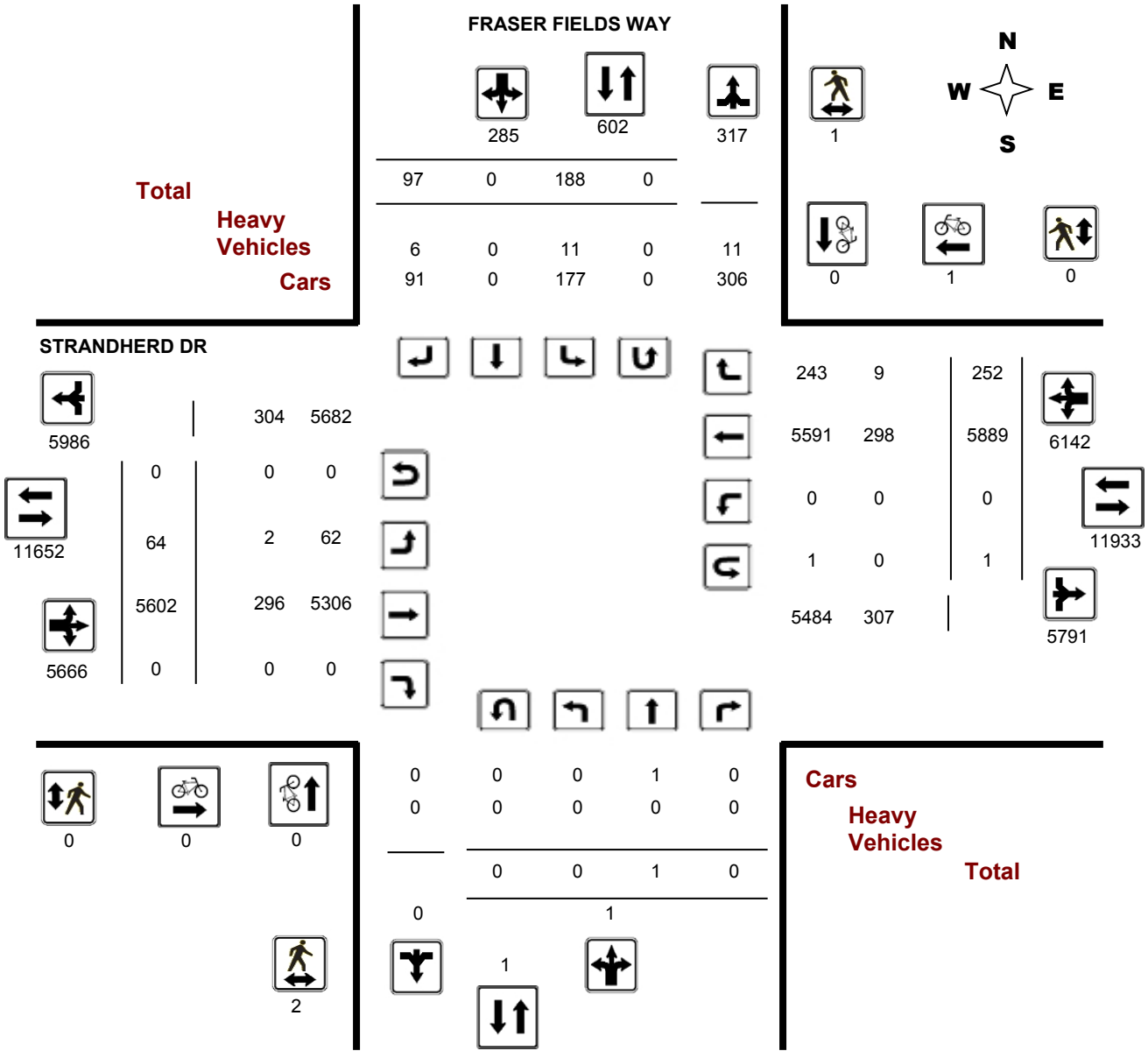
Turning Movement Count - Full Study Diagram

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017

WO#: 37055

Device: Miovision



Comments

Transportation Services - Traffic Services

W.O. 37055

Turning Movement Count - Heavy Vehicle Report

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017

		FRASER FIELDS WAY									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	0	0	0	**0**	1	0	1	**2**	**2**	0	50	0	**50**	0	38	1	**39**	**89**	**91**
08:00	09:00	0	0	0	**0**	2	0	0	**2**	**2**	1	49	0	**50**	0	49	4	**53**	**103**	**105**
09:00	10:00	0	0	0	**0**	0	0	1	**1**	**1**	0	34	0	**34**	0	46	1	**47**	**81**	**82**
11:30	12:30	0	0	0	**0**	1	0	0	**1**	**1**	0	49	0	**49**	0	35	1	**36**	**85**	**86**
12:30	13:30	0	0	0	**0**	1	0	2	**3**	**3**	0	42	0	**42**	0	44	1	**45**	**87**	**90**
15:00	16:00	0	0	0	**0**	2	0	1	**3**	**3**	0	30	0	**30**	0	43	1	**44**	**74**	**77**
16:00	17:00	0	0	0	**0**	4	0	1	**5**	**5**	0	27	0	**27**	0	31	0	**31**	**58**	**63**
17:00	18:00	0	0	0	**0**	0	0	0	**0**	**0**	1	15	0	**16**	0	12	0	**12**	**28**	**28**
Sub Total		0	0	0	**0**	11	0	6	**17**	**17**	2	296	0	**298**	0	298	9	**307**	**605**	**622**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	0	0	**0**	11	0	6	**17**	**17**	2	296	0	**298**	0	298	9	**307**	**605**	**622**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
37055

Turning Movement Count - Pedestrian Volume Report

FRASER FIELDS WAY @ STRANDHERD DR

Count Date: Thursday, May 25, 2017 **Start Time:** 07:00

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	0	**0**	0	0	**0**	**0**
07:15 07:30	0	1	**1**	0	0	**0**	**1**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	2	0	**2**	0	0	**0**	**2**
07:00 08:00	2	1	**3**	0	0	**0**	**3**
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**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
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**
09:00 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**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 12:45	0	0	**0**	0	0	**0**	**0**
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	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 15:15	0	0	**0**	0	0	**0**	**0**
15:15 15:30	0	0	**0**	0	0	**0**	**0**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	0	**0**	0	0	**0**	**0**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	2	1	**3**	0	0	**0**	**3**

Comment:

Transportation Services - Traffic Services

Work Order 37055

Turning Movement Count - Full Study Summary Report

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

AADT Factor .90

Full Study

	FRASER FIELDS WAY									STRANDHERD DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	0	0	**0**	41	0	24	**65**	**65**	0	614	0	**614**	0	710	19	**729**	**1343**	**1408**
08:00 09:00	0	0	0	**0**	37	0	15	**52**	**52**	8	551	0	**559**	0	823	20	**843**	**1402**	**1454**
09:00 10:00	0	0	0	**0**	24	0	11	**35**	**35**	4	527	0	**531**	0	632	20	**652**	**1183**	**1218**
11:30 12:30	0	0	0	**0**	19	0	10	**29**	**29**	5	737	0	**742**	0	695	23	**718**	**1460**	**1489**
12:30 13:30	0	0	0	**0**	15	0	5	**20**	**20**	6	679	0	**685**	0	685	24	**709**	**1394**	**1414**
15:00 16:00	0	0	0	**0**	13	0	8	**21**	**21**	7	841	0	**848**	0	830	37	**867**	**1715**	**1736**
16:00 17:00	0	1	0	**1**	18	0	13	**31**	**32**	14	829	0	**843**	0	768	53	**821**	**1664**	**1696**
17:00 18:00	0	0	0	**0**	21	0	11	**32**	**32**	20	824	0	**844**	0	746	56	**802**	**1646**	**1678**
Sub Total	0	1	0	**1**	188	0	97	**285**	**286**	64	5602	0	**5666**	0	5889	252	**6141**	**11807**	**12093**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	0	1	0	**1**	188	0	97	**285**	**286**	64	5602	0	**5666**	0	5889	252	**6142**	**11808**	**12094**
EQ 12Hr	0	1	0	**1**	261	0	135	**396**	**397**	89	7787	0	**7876**	0	8186	350	**8537**	**16413**	**16810**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	1	0	**1**	235	0	121	**357**	**358**	80	7008	0	**7088**	0	7367	315	**7684**	**14772**	**15130**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	0	2	0	**2**	308	0	159	**467**	**469**	105	9181	0	**9285**	0	9651	413	**10066**	**19351**	**19820**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

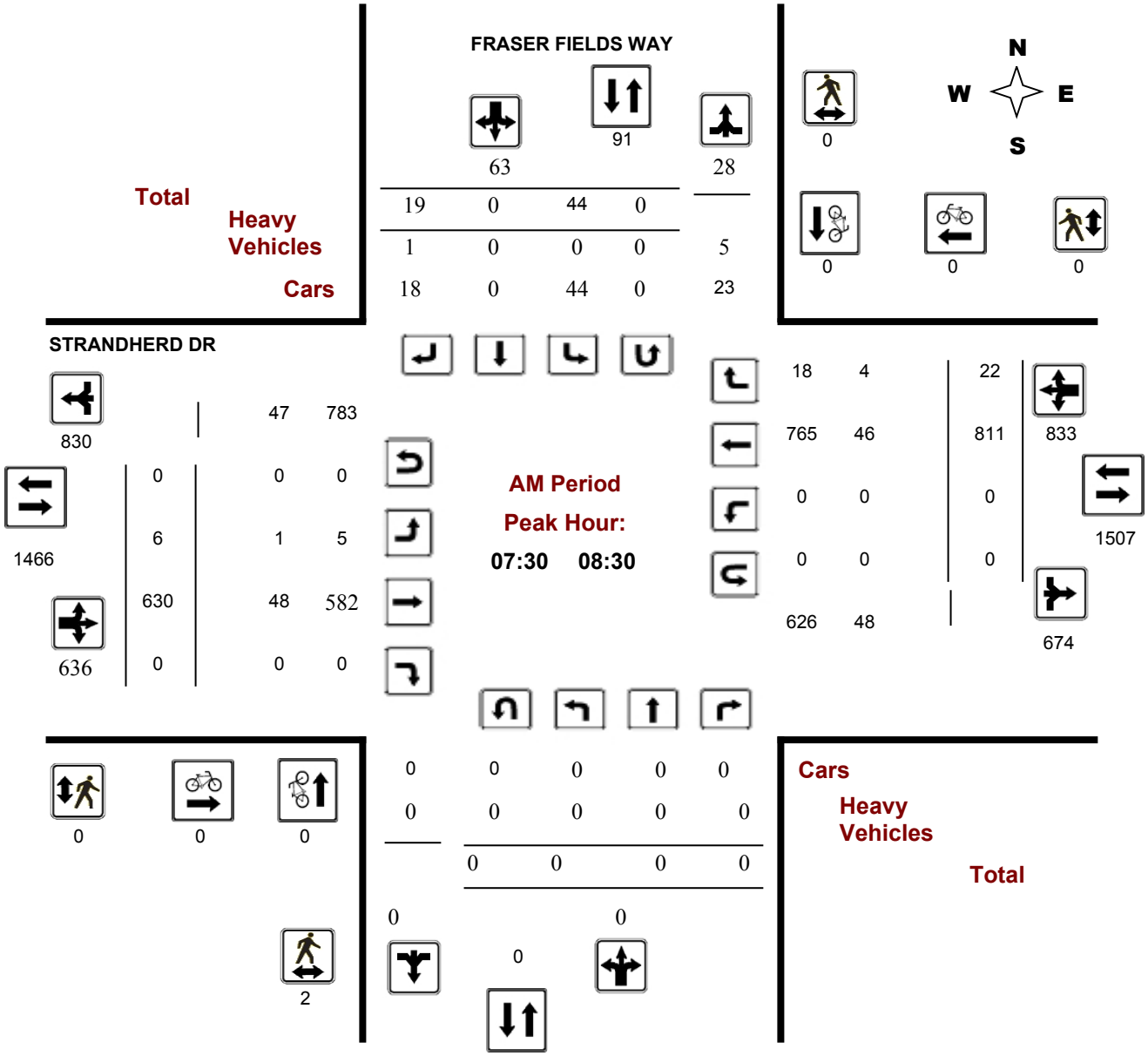
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017
Start Time: 07:00

WO No: 37055
Device: Miovision



Comments

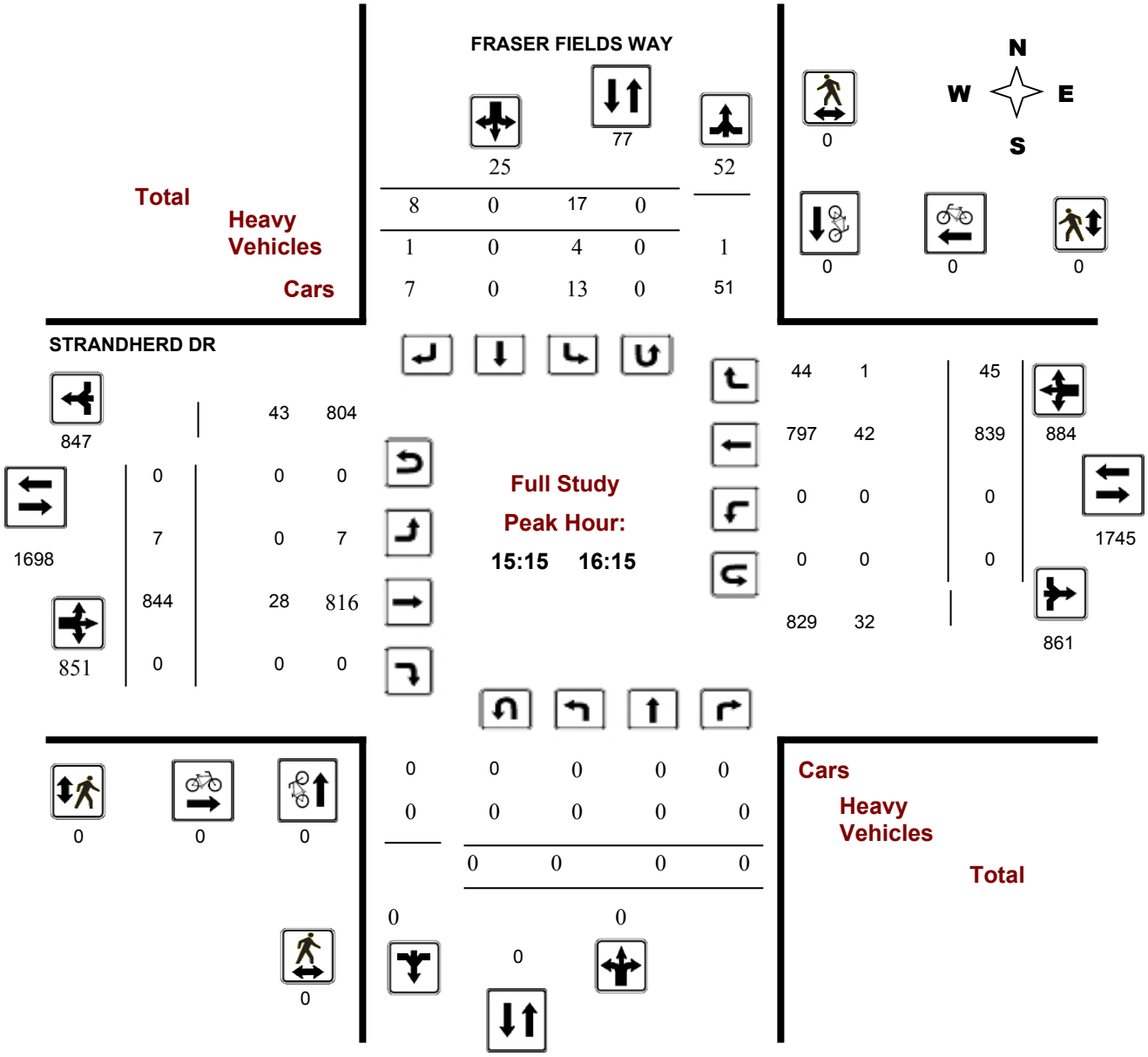
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017 **WO No:** 37055

Start Time: 07:00 **Device:** Miovision



Comments

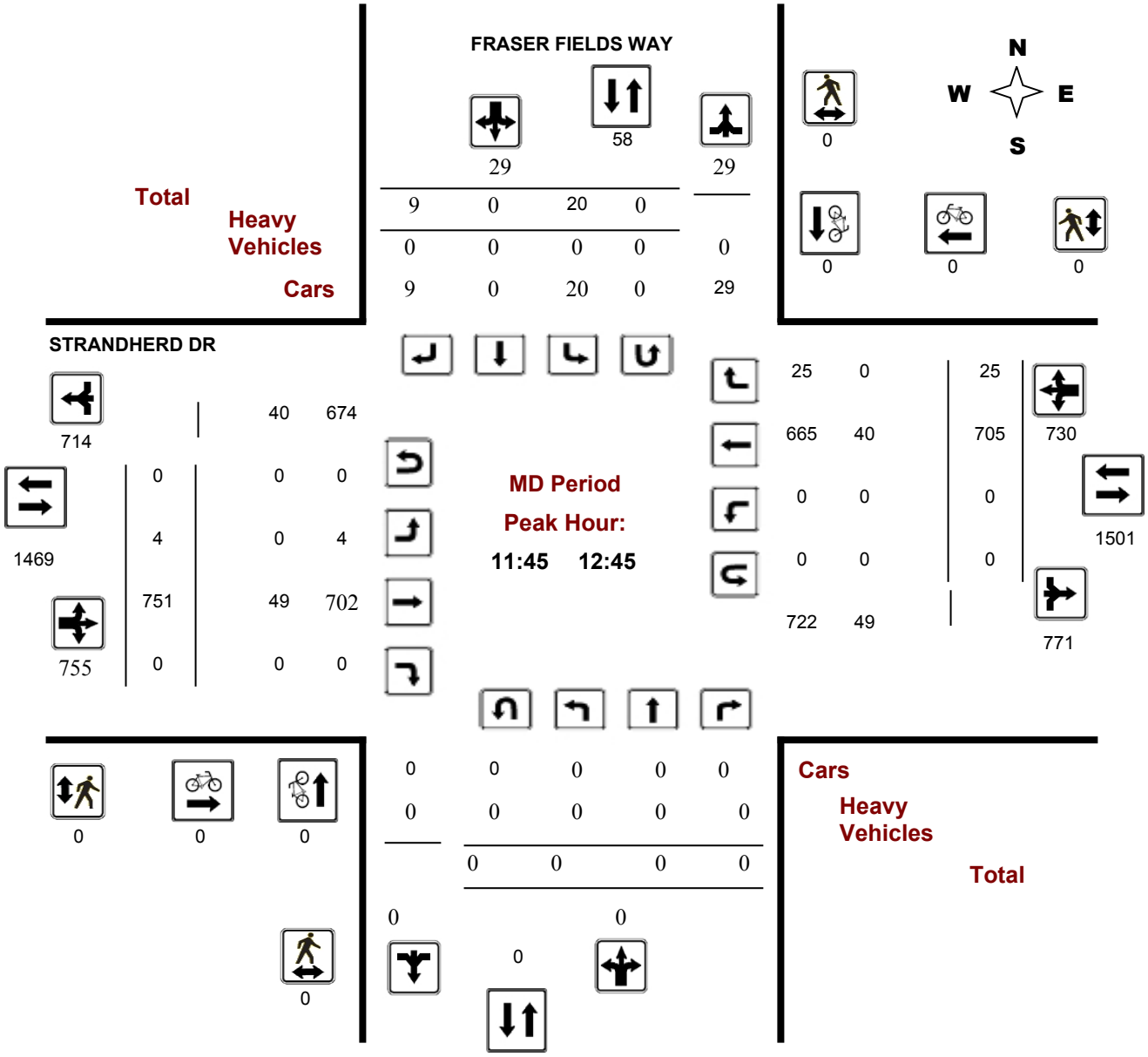
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017
Start Time: 07:00

WO No: 37055
Device: Miovision



Comments

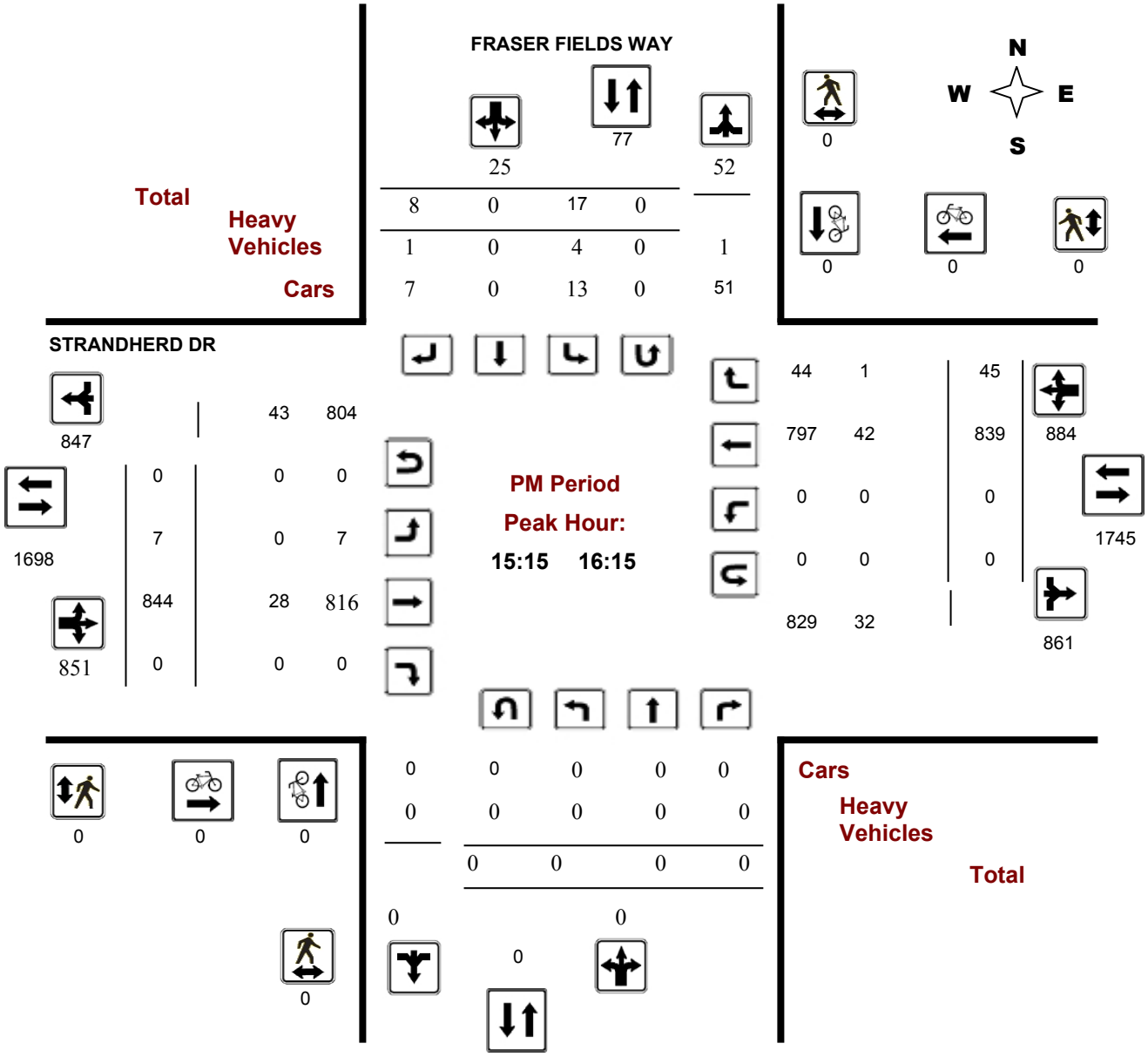
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017 **WO No:** 37055

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Work Order
37055

Turning Movement Count - 15 Min U-Turn Total Report

FRASER FIELDS WAY @ STRANDHERD DR

Survey Date: Thursday, May 25, 2017

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

Public Works - Traffic Services

W.O. 29808

Turning Movement Count - 15 Minute Summary Report

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 1 Westbound: 29

		GREENBANK RD									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	27	134	5	**166**	31	36	9	**76**	**242**	27	107	29	**163**	13	88	26	**127**	**290**	**532**
07:15	07:30	36	151	11	**198**	33	36	12	**81**	**279**	30	138	25	**193**	17	141	54	**213**	**406**	**685**
07:30	07:45	54	129	16	**199**	32	54	23	**109**	**308**	25	157	62	**244**	20	175	48	**243**	**487**	**795**
07:45	08:00	67	133	30	**230**	55	45	10	**110**	**340**	39	153	40	**232**	14	165	51	**231**	**463**	**803**
08:00	08:15	63	115	12	**190**	40	48	28	**116**	**306**	52	136	26	**214**	18	191	47	**257**	**471**	**777**
08:15	08:30	82	104	11	**197**	43	35	38	**116**	**313**	46	148	35	**229**	20	184	67	**272**	**501**	**814**
08:30	08:45	68	83	5	**156**	43	53	30	**126**	**282**	32	146	30	**208**	23	170	58	**251**	**459**	**741**
08:45	09:00	55	123	2	**180**	44	55	32	**131**	**311**	41	130	36	**207**	16	144	74	**234**	**441**	**752**
09:00	09:15	53	87	21	**161**	47	67	37	**151**	**312**	38	140	35	**213**	25	130	36	**191**	**404**	**716**
09:15	09:30	44	72	12	**128**	66	65	30	**161**	**289**	37	121	27	**185**	21	105	35	**161**	**346**	**635**
09:30	09:45	42	75	12	**129**	44	48	23	**115**	**244**	26	128	35	**189**	20	97	44	**162**	**351**	**595**
09:45	10:00	44	63	11	**118**	70	55	29	**154**	**272**	37	124	38	**199**	31	95	39	**166**	**365**	**637**
11:30	11:45	43	74	15	**132**	61	70	41	**172**	**304**	46	109	28	**183**	23	105	50	**179**	**362**	**666**
11:45	12:00	49	79	14	**142**	59	73	44	**176**	**318**	32	128	28	**188**	29	101	40	**171**	**359**	**677**
12:00	12:15	32	67	16	**115**	77	83	45	**205**	**320**	40	119	41	**201**	34	122	37	**195**	**396**	**716**
12:15	12:30	29	69	8	**106**	62	83	39	**184**	**290**	40	90	46	**176**	27	94	57	**178**	**354**	**644**
12:30	12:45	35	70	13	**118**	65	67	31	**163**	**281**	48	124	30	**202**	21	96	50	**167**	**369**	**650**
12:45	13:00	38	83	12	**133**	57	68	31	**156**	**289**	46	133	33	**212**	23	102	48	**173**	**385**	**674**
13:00	13:15	37	50	10	**98**	64	58	48	**170**	**268**	45	108	29	**182**	19	77	52	**149**	**331**	**599**
13:15	13:30	41	55	8	**104**	47	57	28	**132**	**236**	28	129	37	**194**	27	96	42	**167**	**361**	**597**
15:00	15:15	63	71	14	**148**	79	92	47	**218**	**366**	45	136	30	**211**	41	137	26	**205**	**416**	**782**
15:15	15:30	59	88	17	**164**	78	97	40	**215**	**379**	38	154	49	**241**	32	151	64	**248**	**489**	**868**
15:30	15:45	57	94	15	**166**	64	118	38	**220**	**386**	39	146	44	**229**	35	123	52	**210**	**439**	**825**
15:45	16:00	56	72	8	**136**	81	125	44	**250**	**386**	48	162	51	**261**	41	150	38	**230**	**491**	**877**
16:00	16:15	67	85	15	**167**	85	112	42	**239**	**406**	41	197	55	**293**	46	169	46	**261**	**554**	**960**
16:15	16:30	52	83	12	**147**	83	135	47	**265**	**412**	40	197	61	**298**	35	188	52	**276**	**574**	**986**
16:30	16:45	55	92	18	**165**	81	132	49	**262**	**427**	47	199	51	**297**	48	190	61	**301**	**598**	**1025**
16:45	17:00	52	105	14	**171**	69	128	46	**243**	**414**	53	211	61	**325**	55	172	56	**285**	**610**	**1024**
17:00	17:15	73	81	23	**177**	86	142	36	**264**	**441**	39	214	61	**314**	50	202	57	**310**	**624**	**1065**
17:15	17:30	60	90	26	**176**	70	139	42	**251**	**427**	50	215	50	**315**	47	184	58	**290**	**605**	**1032**
17:30	17:45	56	95	12	**163**	75	132	29	**236**	**399**	56	211	48	**315**	57	155	60	**274**	**589**	**988**
17:45	18:00	52	90	20	**162**	75	109	41	**225**	**387**	45	221	73	**339**	52	143	63	**262**	**601**	**988**
TOTAL:		1641	2862	438	**4942**	1966	2617	1109	**5692**	**10634**	1296	4831	1324	**7452**	980	4442	1588	**7039**	**14491**	**25125**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
29808

GREENBANK RD @ STRANDHERD DR

Count Date: Wednesday, October 01, 2014 **Start Time:** 07:00

	GREENBANK RD			STRANDHERD DR			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	1	0	**1**	1	1	**2**	**3**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	1	0	**1**	1	0	**1**	**2**
15:00 16:00	1	1	**2**	1	0	**1**	**3**
16:00 17:00	0	0	**0**	0	1	**1**	**1**
17:00 18:00	2	0	**2**	0	0	**0**	**2**
Total	5	1	**6**	3	2	**5**	**11**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Public Works - Traffic Services

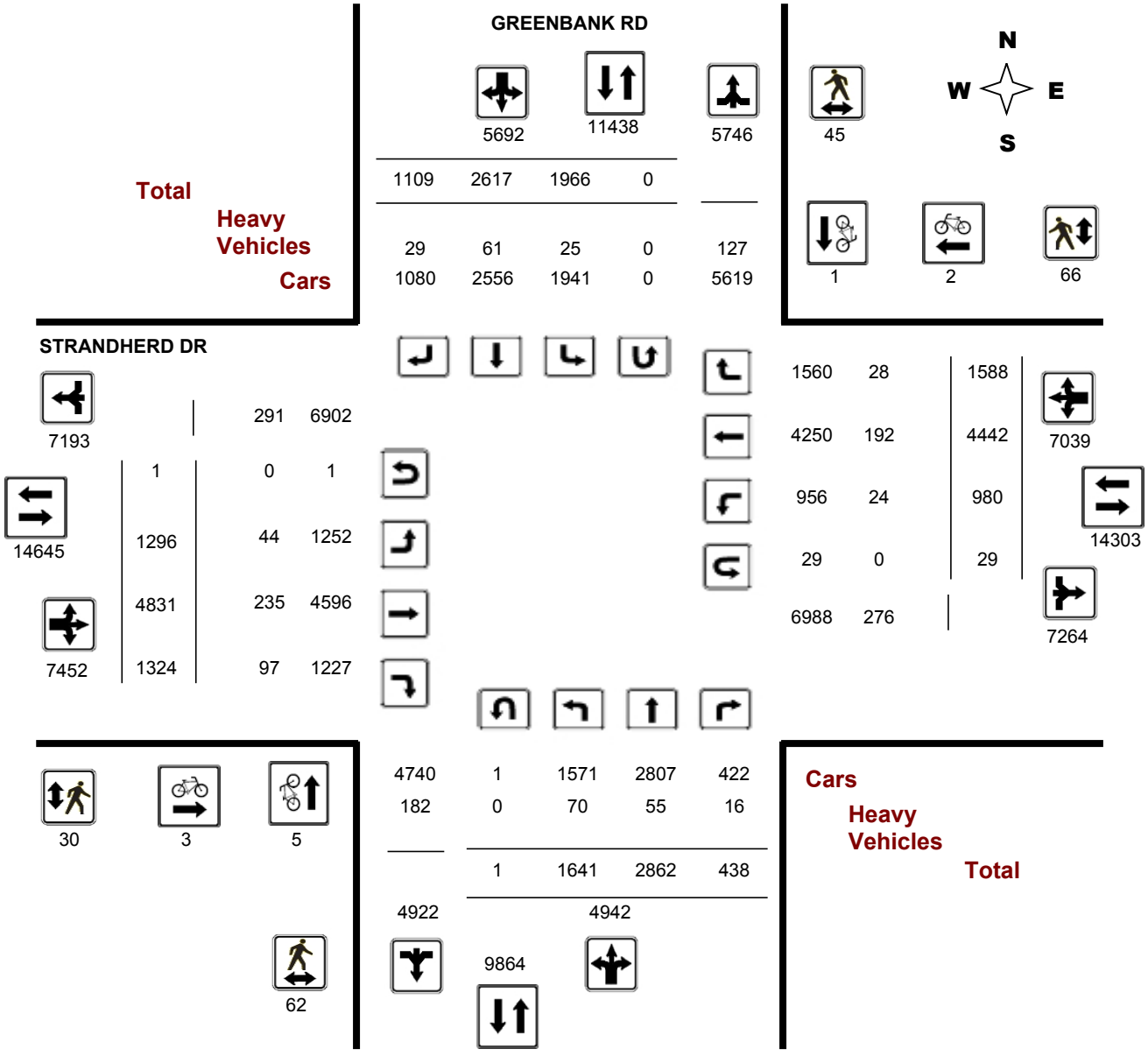
Turning Movement Count - Full Study Diagram

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014

WO#: 29808

Device: Miovision



Comments

Public Works - Traffic Services

W.O. 29808

Turning Movement Count - Heavy Vehicle Report

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014

		GREENBANK RD									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	7	11	7	**25**	0	7	3	**10**	**35**	4	36	24	**64**	4	19	7	**30**	**94**	**129**
08:00	09:00	22	13	1	**36**	2	12	9	**23**	**59**	6	38	11	**55**	5	29	3	**37**	**92**	**151**
09:00	10:00	7	2	2	**11**	5	7	2	**14**	**25**	5	34	8	**47**	5	28	1	**34**	**81**	**106**
11:30	12:30	6	3	2	**11**	2	6	5	**13**	**24**	12	21	5	**38**	5	22	3	**30**	**68**	**92**
12:30	13:30	10	9	1	**20**	3	7	6	**16**	**36**	3	25	12	**40**	3	21	8	**32**	**72**	**108**
15:00	16:00	8	6	1	**15**	4	13	2	**19**	**34**	4	30	16	**50**	0	29	1	**30**	**80**	**114**
16:00	17:00	8	7	2	**17**	8	8	2	**18**	**35**	5	31	15	**51**	1	37	3	**41**	**92**	**127**
17:00	18:00	2	4	0	**6**	1	1	0	**2**	**8**	5	20	6	**31**	1	7	2	**10**	**41**	**49**
Sub Total		70	55	16	**141**	25	61	29	**115**	**256**	44	235	97	**376**	24	192	28	**244**	**620**	**876**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		70	55	16	**0**	25	61	29	**115**	**256**	44	235	97	**376**	24	192	28	**244**	**620**	**876**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Work Order
29808

Turning Movement Count - Pedestrian Volume Report

GREENBANK RD @ STRANDHERD DR

Count Date: Wednesday, October 01, 2014 **Start Time:** 07:00

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	2	0	**2**	1	3	**4**	**6**
07:15 07:30	0	3	**3**	0	1	**1**	**4**
07:30 07:45	1	3	**4**	1	2	**3**	**7**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
07:00 08:00	3	6	**9**	2	6	**8**	**17**
08:00 08:15	1	3	**4**	1	1	**2**	**6**
08:15 08:30	1	1	**2**	0	2	**2**	**4**
08:30 08:45	0	0	**0**	0	0	**0**	**0**
08:45 09:00	0	1	**1**	0	2	**2**	**3**
08:00 09:00	2	5	**7**	1	5	**6**	**13**
09:00 09:15	2	0	**2**	2	1	**3**	**5**
09:15 09:30	3	0	**3**	1	1	**2**	**5**
09:30 09:45	2	0	**2**	0	3	**3**	**5**
09:45 10:00	3	0	**3**	1	4	**5**	**8**
09:00 10:00	10	0	**10**	4	9	**13**	**23**
11:30 11:45	2	1	**3**	0	3	**3**	**6**
11:45 12:00	2	2	**4**	1	3	**4**	**8**
12:00 12:15	2	1	**3**	0	2	**2**	**5**
12:15 12:30	0	5	**5**	0	2	**2**	**7**
11:30 12:30	6	9	**15**	1	10	**11**	**26**
12:30 12:45	1	4	**5**	0	1	**1**	**6**
12:45 13:00	3	2	**5**	0	1	**1**	**6**
13:00 13:15	4	3	**7**	2	3	**5**	**12**
13:15 13:30	5	3	**8**	1	4	**5**	**13**
12:30 13:30	13	12	**25**	3	9	**12**	**37**
15:00 15:15	3	0	**3**	2	7	**9**	**12**
15:15 15:30	3	0	**3**	3	2	**5**	**8**
15:30 15:45	1	0	**1**	5	1	**6**	**7**
15:45 16:00	3	0	**3**	1	3	**4**	**7**
15:00 16:00	10	0	**10**	11	13	**24**	**34**
16:00 16:15	4	3	**7**	0	3	**3**	**10**
16:15 16:30	0	2	**2**	1	2	**3**	**5**
16:30 16:45	4	1	**5**	4	1	**5**	**10**
16:45 17:00	1	0	**1**	1	4	**5**	**6**
16:00 17:00	9	6	**15**	6	10	**16**	**31**
17:00 17:15	3	0	**3**	0	0	**0**	**3**
17:15 17:30	2	7	**9**	1	4	**5**	**14**
17:30 17:45	1	0	**1**	1	0	**1**	**2**
17:45 18:00	3	0	**3**	0	0	**0**	**3**
17:00 18:00	9	7	**16**	2	4	**6**	**22**
Total	62	45	**107**	30	66	**96**	**203**

Comment:

Public Works - Traffic Services

Work Order
29808

Turning Movement Count - Full Study Summary Report

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014

Total Observed U-Turns

Northbound: 1 Southbound: 0
Eastbound: 1 Westbound: 29

AADT Factor

.90

Full Study

	GREENBANK RD									STRANDHERD DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	184	547	62	**793**	151	171	54	**376**	**1169**	121	555	156	**832**	64	569	179	**812**	**1644**	**2813**
08:00 09:00	268	425	30	**723**	170	191	128	**489**	**1212**	171	560	127	**858**	77	689	246	**1012**	**1870**	**3082**
09:00 10:00	183	297	56	**536**	227	235	119	**581**	**1117**	138	513	135	**786**	97	427	154	**678**	**1464**	**2581**
11:30 12:30	153	289	53	**495**	259	309	169	**737**	**1232**	158	446	143	**747**	113	422	184	**719**	**1466**	**2698**
12:30 13:30	151	258	43	**452**	233	250	138	**621**	**1073**	167	494	129	**790**	90	371	192	**653**	**1443**	**2516**
15:00 16:00	235	325	54	**614**	302	432	169	**903**	**1517**	170	598	174	**942**	149	561	180	**890**	**1832**	**3349**
16:00 17:00	226	365	59	**650**	318	507	184	**1009**	**1659**	181	804	228	**1213**	184	719	215	**1118**	**2331**	**3990**
17:00 18:00	241	356	81	**678**	306	522	148	**976**	**1654**	190	861	232	**1283**	206	684	238	**1128**	**2411**	**4065**
Sub Total	1641	2862	438	**4941**	1966	2617	1109	**5692**	**10633**	1296	4831	1324	**7451**	980	4442	1588	**7010**	**14461**	**25094**
U Turns				**1**				**0**	**1**				**1**				**29**	**30**	**31**
Total	1641	2862	438	**4942**	1966	2617	1109	**5692**	**10634**	1296	4831	1324	**7452**	980	4442	1588	**7039**	**14491**	**25125**
EQ 12Hr	2281	3978	609	**6869**	2733	3638	1542	**7912**	**14781**	1801	6715	1840	**10358**	1362	6174	2207	**9784**	**20142**	**34923**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2053	3580	548	**6182**	2459	3274	1387	**7121**	**13303**	1621	6044	1656	**9322**	1226	5557	1987	**8806**	**18128**	**31431**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	2689	4690	718	**8099**	3222	4289	1817	**9328**	**17427**	2124	7917	2170	**12212**	1606	7280	2602	**11536**	**23748**	**41175**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

Comments:

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

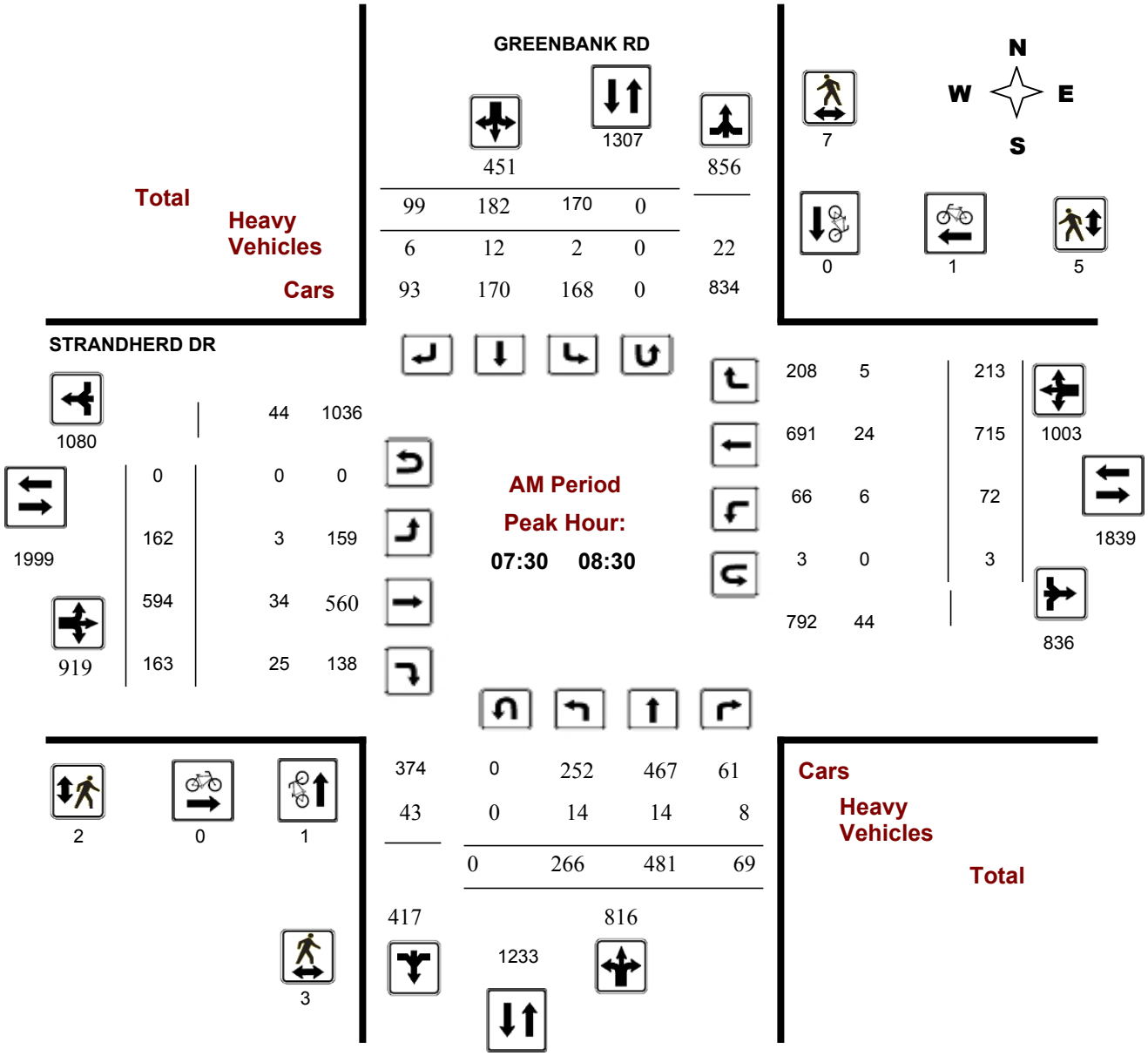
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014 **WO No:** 29808

Start Time: 07:00 **Device:** Miovision



Comments

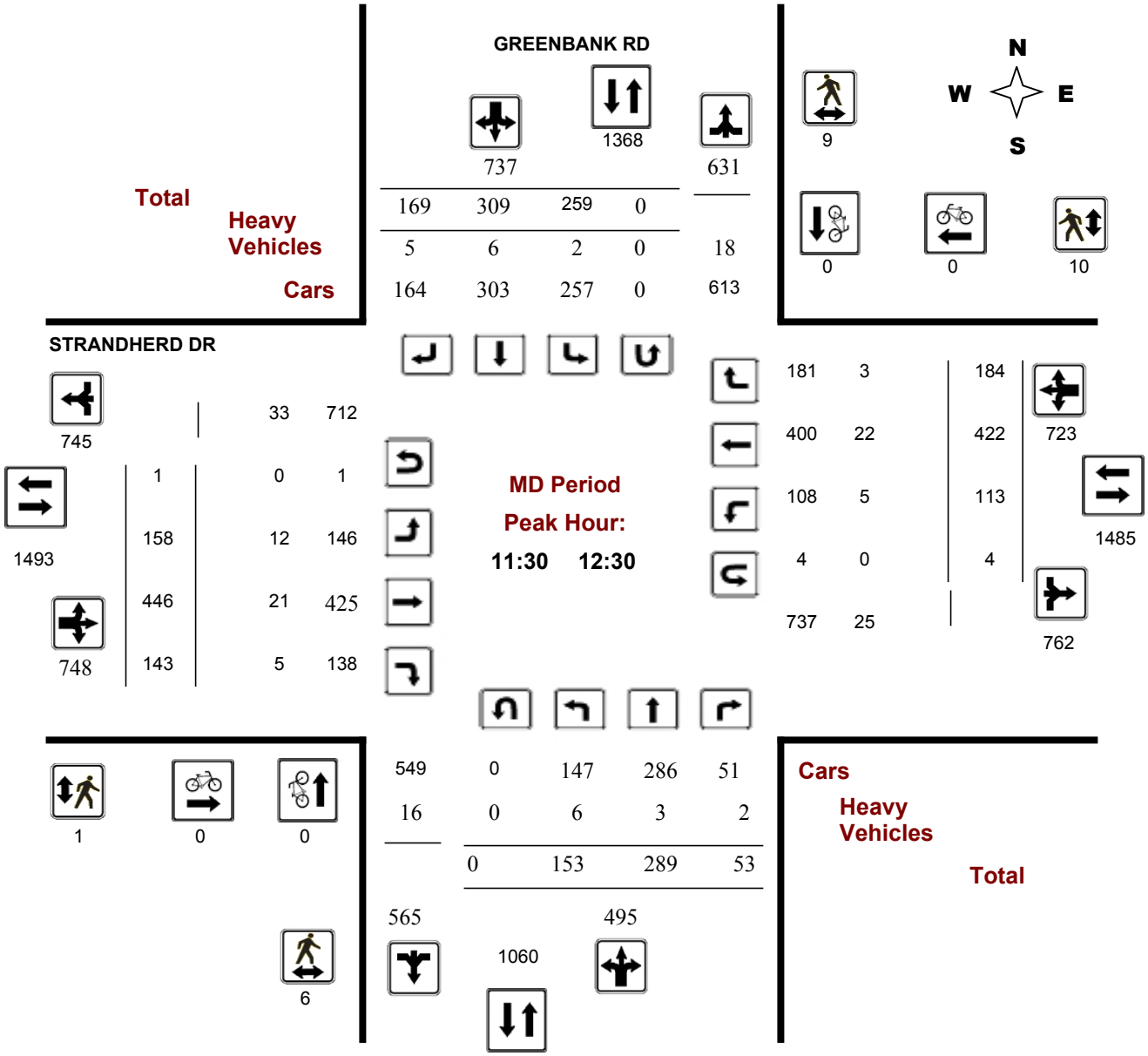
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014 **WO No:** 29808

Start Time: 07:00 **Device:** Miovision



Comments

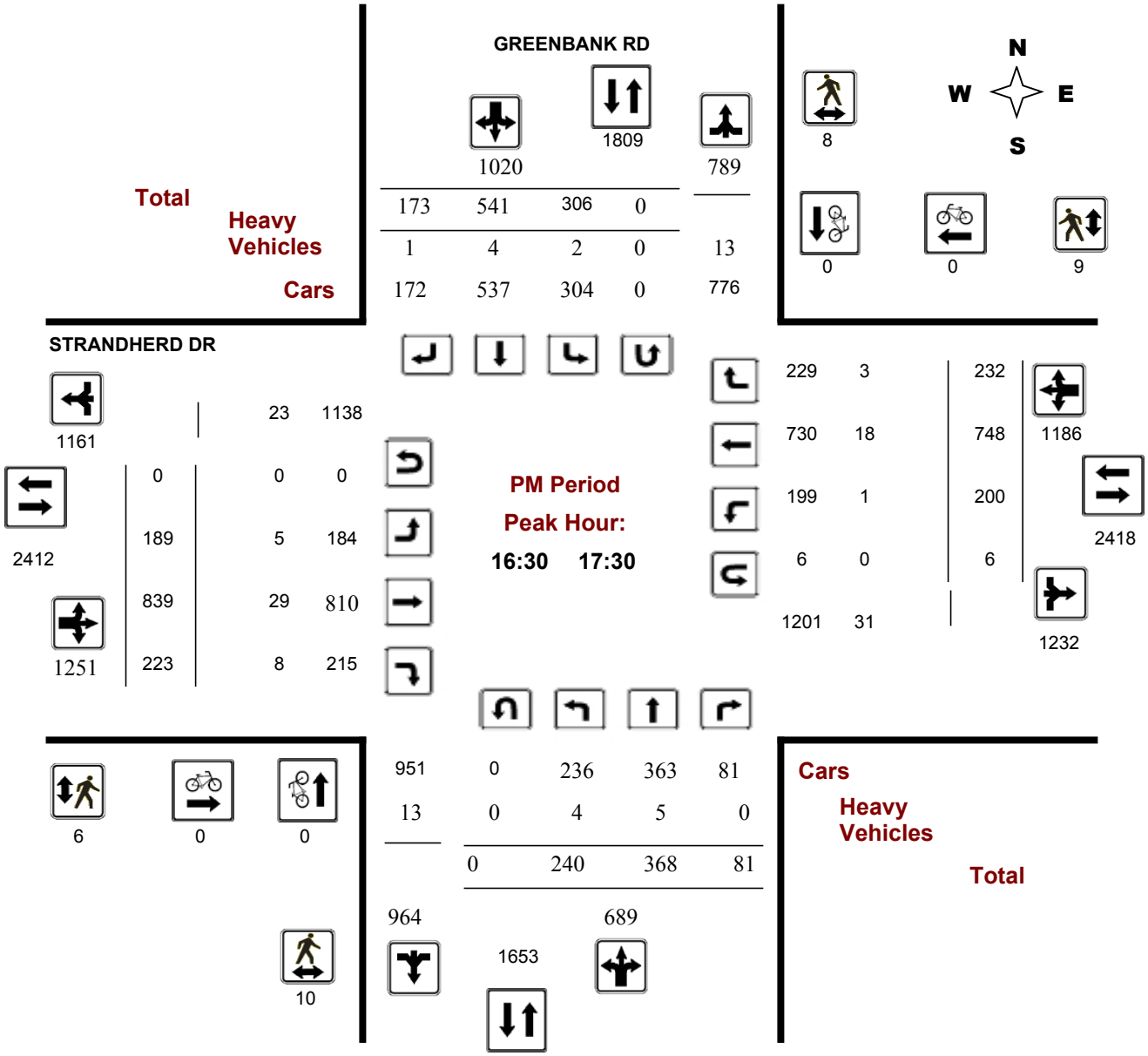
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014 **WO No:** 29808

Start Time: 07:00 **Device:** Miovision



Comments

Public Works - Traffic Services

Work Order
29808

Turning Movement Count - 15 Min U-Turn Total Report

GREENBANK RD @ STRANDHERD DR

Survey Date: Wednesday, October 01, 2014

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	1	1
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	1	1
08:00	08:15	0	0	0	1	1
08:15	08:30	0	0	0	1	1
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	1	1
09:45	10:00	0	0	0	1	1
11:30	11:45	0	0	0	1	1
11:45	12:00	0	0	0	1	1
12:00	12:15	0	0	1	2	3
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	1	0	0	1	2
13:15	13:30	0	0	0	2	2
15:00	15:15	0	0	0	1	1
15:15	15:30	0	0	0	1	1
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	1	1
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	1	1
16:30	16:45	0	0	0	2	2
16:45	17:00	0	0	0	2	2
17:00	17:15	0	0	0	1	1
17:15	17:30	0	0	0	1	1
17:30	17:45	0	0	0	2	2
17:45	18:00	0	0	0	4	4
Total		1	0	1	29	31

Public Works - Traffic Services

W.O. 34812

Turning Movement Count - 15 Minute Summary Report

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 2 Westbound: 0

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	4	5	4	**13**	66	11	2	**79**	**92**	4	61	3	**68**	16	98	45	**159**	**227**	**319**
07:15	07:30	9	5	5	**19**	64	12	1	**77**	**96**	6	84	5	**95**	21	102	53	**176**	**271**	**367**
07:30	07:45	7	8	17	**32**	72	14	2	**88**	**120**	7	91	4	**102**	20	97	46	**163**	**265**	**385**
07:45	08:00	8	10	11	**29**	81	16	1	**98**	**127**	10	95	7	**112**	19	105	38	**162**	**274**	**401**
08:00	08:15	15	6	17	**38**	52	21	4	**77**	**115**	11	115	7	**133**	24	132	57	**213**	**346**	**461**
08:15	08:30	18	23	5	**46**	83	20	3	**106**	**152**	11	113	6	**130**	17	133	82	**232**	**362**	**514**
08:30	08:45	18	16	15	**49**	75	15	1	**91**	**140**	5	97	2	**104**	23	158	56	**237**	**341**	**481**
08:45	09:00	20	14	17	**51**	77	22	12	**111**	**162**	3	104	6	**113**	22	112	59	**193**	**306**	**468**
09:00	09:15	17	12	13	**42**	67	24	2	**93**	**135**	7	107	6	**120**	25	115	55	**195**	**315**	**450**
09:15	09:30	20	12	24	**56**	66	20	2	**88**	**144**	2	108	6	**116**	22	104	51	**177**	**293**	**437**
09:30	09:45	12	23	23	**58**	72	26	4	**102**	**160**	3	87	7	**97**	39	131	49	**219**	**316**	**476**
09:45	10:00	10	13	20	**43**	83	25	4	**112**	**155**	13	136	12	**161**	35	115	45	**195**	**356**	**511**
11:30	11:45	10	37	21	**68**	60	23	7	**90**	**158**	10	129	3	**143**	52	103	59	**214**	**357**	**515**
11:45	12:00	18	23	32	**73**	61	28	6	**95**	**168**	1	130	11	**142**	42	160	66	**268**	**410**	**578**
12:00	12:15	15	27	35	**77**	75	24	6	**105**	**182**	8	118	11	**137**	46	115	74	**235**	**372**	**554**
12:15	12:30	19	27	34	**80**	72	17	6	**95**	**175**	7	119	12	**138**	47	126	52	**225**	**363**	**538**
12:30	12:45	14	28	26	**68**	64	28	6	**98**	**166**	8	115	13	**136**	36	133	73	**242**	**378**	**544**
12:45	13:00	17	31	38	**86**	63	23	7	**93**	**179**	7	128	14	**149**	47	133	66	**246**	**395**	**574**
13:00	13:15	17	24	29	**70**	64	25	4	**93**	**163**	3	147	13	**163**	45	94	59	**198**	**361**	**524**
13:15	13:30	23	22	29	**74**	51	22	8	**81**	**155**	9	123	13	**145**	22	102	59	**183**	**328**	**483**
15:00	15:15	23	26	27	**76**	65	32	6	**103**	**179**	8	123	14	**145**	33	102	70	**205**	**350**	**529**
15:15	15:30	14	29	20	**63**	62	23	2	**87**	**150**	8	149	7	**164**	48	137	83	**268**	**432**	**582**
15:30	15:45	25	34	32	**91**	80	26	9	**115**	**206**	11	158	14	**183**	39	148	105	**292**	**475**	**681**
15:45	16:00	22	37	23	**82**	90	41	11	**142**	**224**	10	169	8	**187**	31	135	101	**267**	**454**	**678**
16:00	16:15	24	39	31	**94**	88	39	4	**131**	**225**	4	138	6	**149**	41	129	97	**267**	**416**	**641**
16:15	16:30	22	29	25	**76**	86	53	5	**144**	**220**	11	182	15	**208**	44	148	108	**300**	**508**	**728**
16:30	16:45	23	41	30	**94**	82	48	12	**142**	**236**	9	180	13	**202**	46	137	96	**279**	**481**	**717**
16:45	17:00	23	33	37	**93**	79	39	12	**130**	**223**	10	187	19	**216**	48	174	103	**325**	**541**	**764**
17:00	17:15	21	45	26	**92**	80	36	10	**126**	**218**	14	176	10	**200**	46	170	92	**308**	**508**	**726**
17:15	17:30	22	30	31	**83**	93	38	11	**142**	**225**	9	199	21	**229**	38	152	111	**301**	**530**	**755**
17:30	17:45	20	51	17	**88**	87	44	12	**143**	**231**	9	156	15	**180**	33	149	116	**298**	**478**	**709**
17:45	18:00	17	31	27	**75**	81	28	11	**120**	**195**	19	156	10	**185**	32	132	89	**253**	**438**	**633**
TOTAL:		547	791	741	**2079**	2341	863	193	**3397**	**5476**	257	4180	313	**4752**	1099	4081	2315	**7495**	**12247**	**17723**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
34812

JOCKVALE RD @ STRANDHERD DR

Count Date: Thursday, July 02, 2015 **Start Time:** 07:00

Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	3	0	**3**	1	0	**1**	**4**
08:00 09:00	3	1	**4**	3	4	**7**	**11**
09:00 10:00	5	2	**7**	5	4	**9**	**16**
11:30 12:30	2	3	**5**	3	1	**4**	**9**
12:30 13:30	4	5	**9**	3	3	**6**	**15**
15:00 16:00	7	6	**13**	6	0	**6**	**19**
16:00 17:00	5	7	**12**	9	5	**14**	**26**
17:00 18:00	10	7	**17**	4	4	**8**	**25**
Total	39	31	**70**	34	21	**55**	**125**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Public Works - Traffic Services

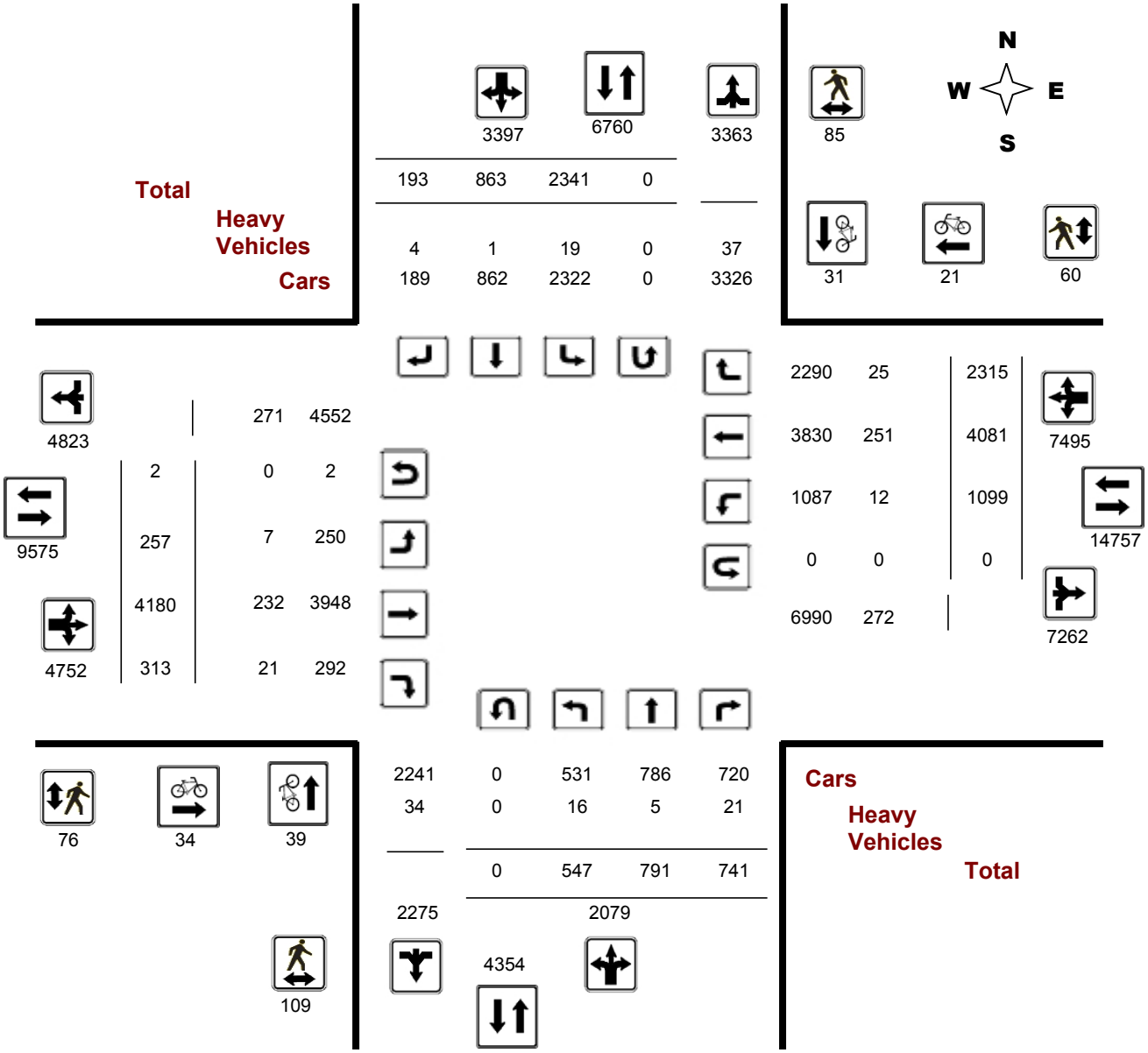
Turning Movement Count - Full Study Diagram

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015

WO#: 34812

Device: Jamar Technologies, Inc



Comments

Public Works - Traffic Services

W.O. 34812

Turning Movement Count - Heavy Vehicle Report

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015

Time Period		Northbound				Southbound					Eastbound				Westbound					
		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	2	0	2	**4**	0	0	0	**0**	**4**	0	30	2	**32**	1	39	4	**44**	**76**	**80**
08:00	09:00	2	2	6	**10**	0	0	1	**1**	**11**	2	34	3	**39**	2	40	6	**48**	**87**	**98**
09:00	10:00	5	0	3	**8**	4	0	1	**5**	**13**	0	31	5	**36**	1	34	4	**39**	**75**	**88**
11:30	12:30	3	0	3	**6**	5	1	1	**7**	**13**	1	33	7	**41**	2	39	2	**43**	**84**	**97**
12:30	13:30	3	2	2	**7**	4	0	1	**5**	**12**	0	49	3	**52**	3	25	1	**29**	**81**	**93**
15:00	16:00	1	0	2	**3**	0	0	0	**0**	**3**	2	21	1	**24**	2	30	4	**36**	**60**	**63**
16:00	17:00	0	0	1	**1**	4	0	0	**4**	**5**	1	24	0	**25**	1	26	2	**29**	**54**	**59**
17:00	18:00	0	1	2	**3**	2	0	0	**2**	**5**	1	10	0	**11**	0	18	2	**20**	**31**	**36**
Sub Total		16	5	21	**42**	19	1	4	**24**	**66**	7	232	21	**260**	12	251	25	**288**	**548**	**614**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		16	5	21	**0**	19	1	4	**24**	**66**	7	232	21	**260**	12	251	25	**288**	**548**	**614**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Work Order
34812

Turning Movement Count - Pedestrian Volume Report

JOCKVALE RD @ STRANDHERD DR

Count Date: Thursday, July 02, 2015 **Start Time:** 07:00

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	2	1	3	4
07:15 07:30	1	0	1	3	0	3	4
07:30 07:45	0	2	2	0	1	1	3
07:45 08:00	2	0	2	3	0	3	5
07:00 08:00	3	3	6	8	2	10	16
08:00 08:15	0	1	1	1	1	2	3
08:15 08:30	4	4	8	1	1	2	10
08:30 08:45	0	1	1	0	1	1	2
08:45 09:00	3	3	6	2	1	3	9
08:00 09:00	7	9	16	4	4	8	24
09:00 09:15	4	0	4	0	1	1	5
09:15 09:30	3	2	5	0	2	2	7
09:30 09:45	7	0	7	0	1	1	8
09:45 10:00	3	3	6	1	0	1	7
09:00 10:00	17	5	22	1	4	5	27
11:30 11:45	1	2	3	5	1	6	9
11:45 12:00	4	2	6	1	4	5	11
12:00 12:15	7	0	7	0	0	0	7
12:15 12:30	2	6	8	0	2	2	10
11:30 12:30	14	10	24	6	7	13	37
12:30 12:45	5	3	8	3	0	3	11
12:45 13:00	10	8	18	10	6	16	34
13:00 13:15	6	2	8	2	4	6	14
13:15 13:30	7	3	10	1	2	3	13
12:30 13:30	28	16	44	16	12	28	72
15:00 15:15	3	0	3	2	0	2	5
15:15 15:30	2	4	6	3	1	4	10
15:30 15:45	3	11	14	8	3	11	25
15:45 16:00	5	3	8	3	5	8	16
15:00 16:00	13	18	31	16	9	25	56
16:00 16:15	3	2	5	2	7	9	14
16:15 16:30	8	2	10	3	3	6	16
16:30 16:45	4	3	7	1	0	1	8
16:45 17:00	2	3	5	3	3	6	11
16:00 17:00	17	10	27	9	13	22	49
17:00 17:15	1	5	6	8	4	12	18
17:15 17:30	3	6	9	4	0	4	13
17:30 17:45	3	3	6	3	4	7	13
17:45 18:00	3	0	3	1	1	2	5
17:00 18:00	10	14	24	16	9	25	49
Total	109	85	194	76	60	136	330

Comment:

Public Works - Traffic Services

Work Order
34812

Turning Movement Count - Full Study Summary Report

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 2 Westbound: 0

AADT Factor
.90

Full Study

	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	28	28	37	**93**	283	53	6	**342**	**435**	27	331	19	**377**	76	402	182	**660**	**1037**	**1472**
08:00 09:00	71	59	54	**184**	287	78	20	**385**	**569**	30	429	21	**480**	86	535	254	**875**	**1355**	**1924**
09:00 10:00	59	60	80	**199**	288	95	12	**395**	**594**	25	438	31	**494**	121	465	200	**786**	**1280**	**1874**
11:30 12:30	62	114	122	**298**	268	92	25	**385**	**683**	26	496	37	**559**	187	504	251	**942**	**1501**	**2184**
12:30 13:30	71	105	122	**298**	242	98	25	**365**	**663**	27	513	53	**593**	150	462	257	**869**	**1462**	**2125**
15:00 16:00	84	126	102	**312**	297	122	28	**447**	**759**	37	599	43	**679**	151	522	359	**1032**	**1711**	**2470**
16:00 17:00	92	142	123	**357**	335	179	33	**547**	**904**	34	687	53	**774**	179	588	404	**1171**	**1945**	**2849**
17:00 18:00	80	157	101	**338**	341	146	44	**531**	**869**	51	687	56	**794**	149	603	408	**1160**	**1954**	**2823**
Sub Total	547	791	741	**2079**	2341	863	193	**3397**	**5476**	257	4180	313	**4750**	1099	4081	2315	**7495**	**12245**	**17721**
U Turns				**0**				**0**	**0**				**2**				**0**	**2**	**2**
Total	547	791	741	**2079**	2341	863	193	**3397**	**5476**	257	4180	313	**4752**	1099	4081	2315	**7495**	**12247**	**17723**
EQ 12Hr	760	1099	1030	**2890**	3254	1200	268	**4722**	**7612**	357	5810	435	**6605**	1528	5673	3218	**10418**	**17023**	**24635**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	684	990	927	**2601**	2929	1080	241	**4250**	**6851**	322	5229	392	**5945**	1375	5105	2896	**9376**	**15321**	**22172**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	896	1296	1214	**3407**	3836	1414	316	**5567**	**8974**	421	6850	513	**7788**	1801	6688	3794	**12283**	**20071**	**29045**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

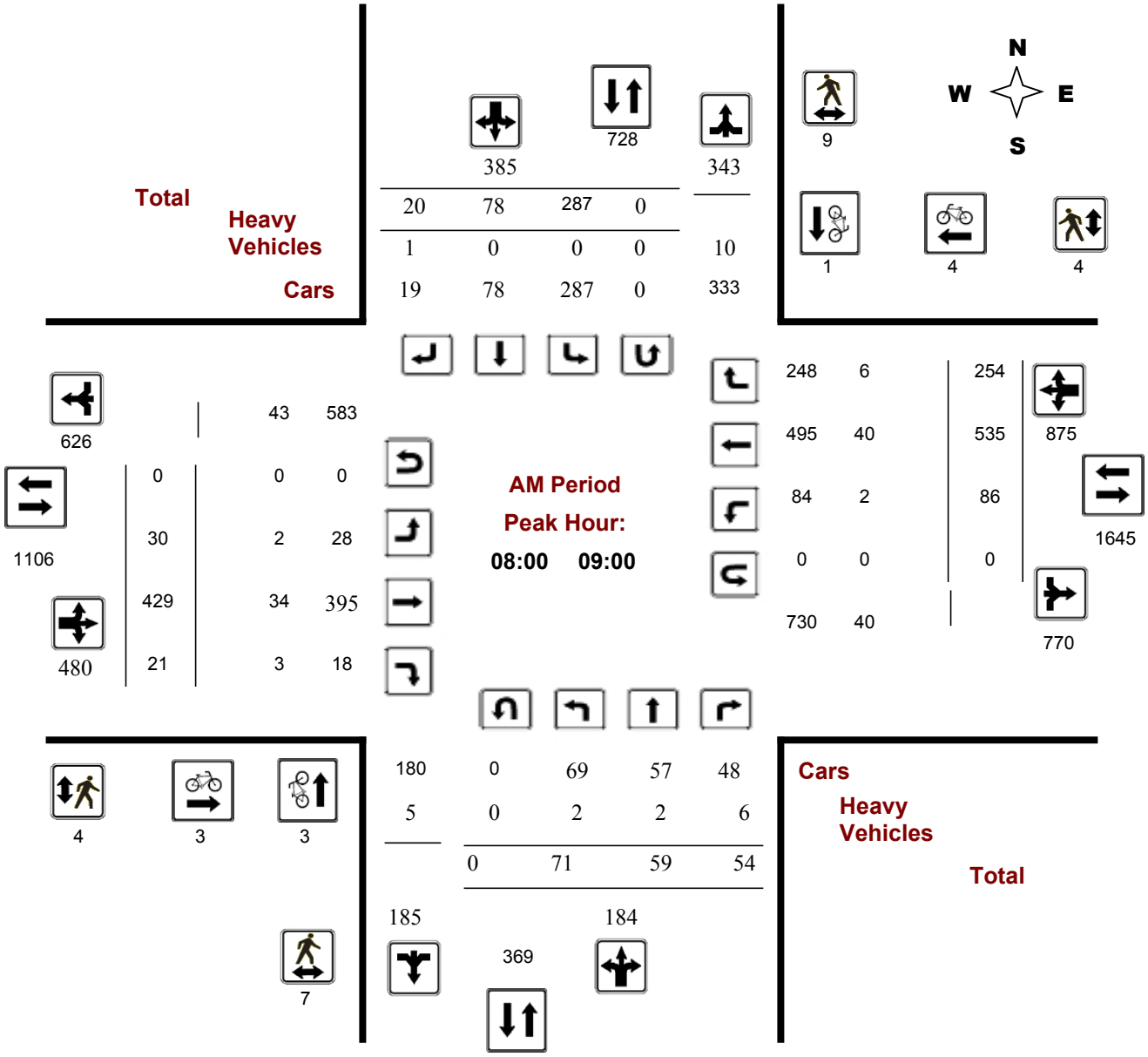
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015
Start Time: 07:00

WO No: 34812
Device: Jamar Technologies, Inc



Comments

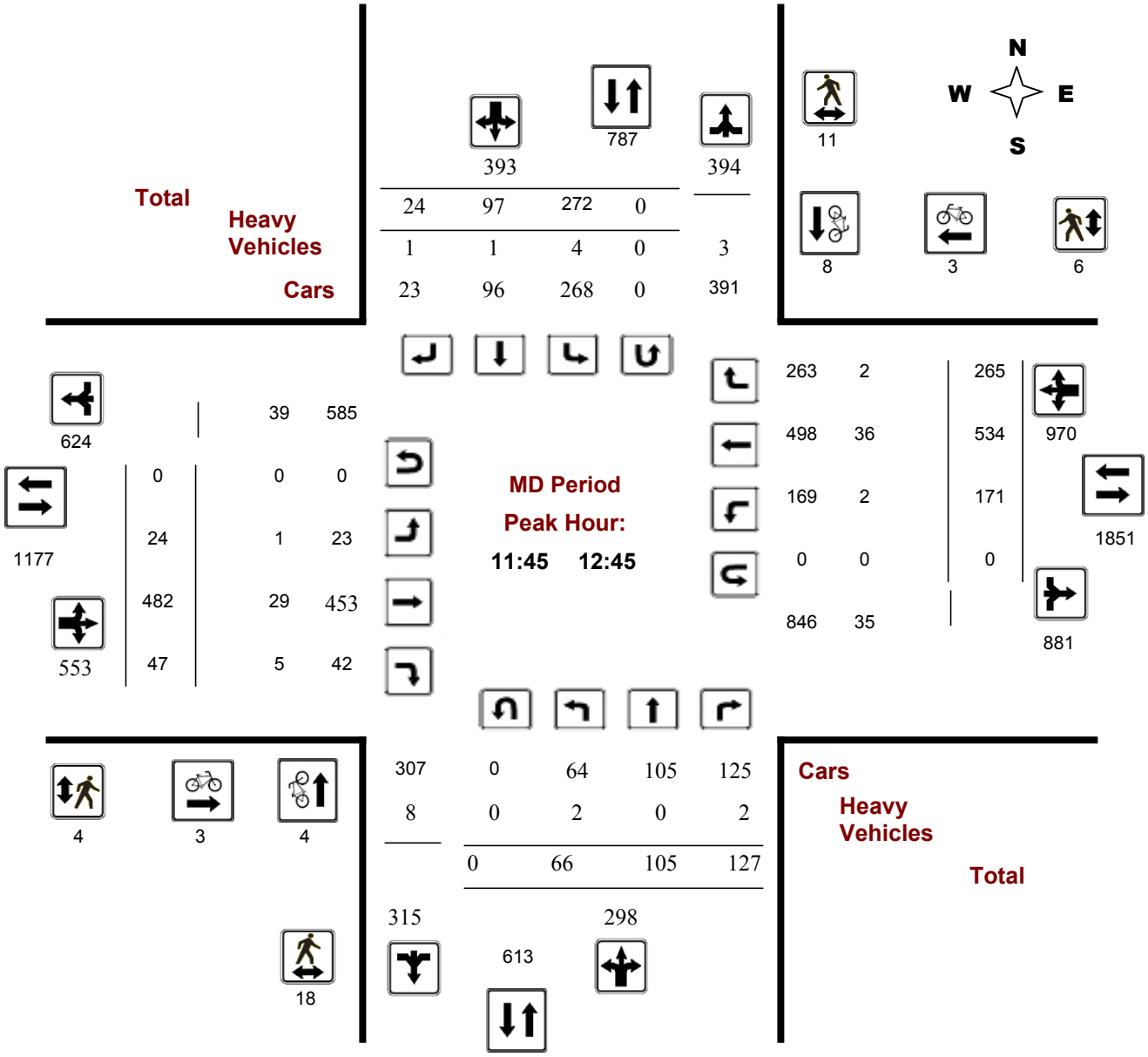
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015
Start Time: 07:00

WO No: 34812
Device: Jamar Technologies, Inc



Comments

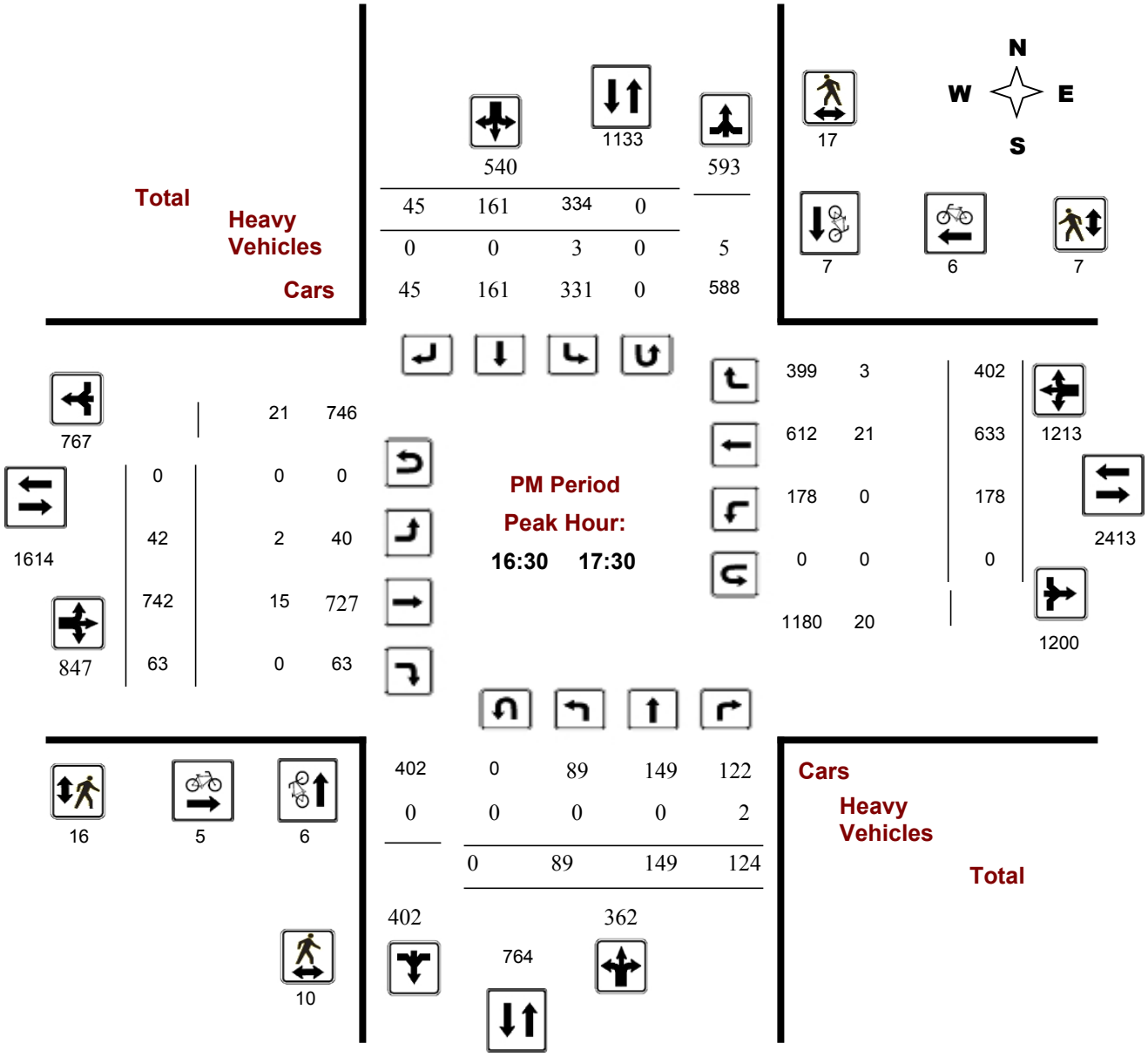
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015
Start Time: 07:00

WO No: 34812
Device: Jamar Technologies, Inc



Comments

Turning Movement Count - 15 Min U-Turn Total Report

JOCKVALE RD @ STRANDHERD DR

Survey Date: Thursday, July 02, 2015

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

Public Works - Traffic Services

W.O. 35623

Turning Movement Count - 15 Minute Summary Report

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

		CEDARVIEW RD/TARTAN DR									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	80	1	2	**83**	5	0	25	**30**	**113**	16	85	25	**126**	4	106	1	**111**	**237**	**350**
07:15	07:30	62	6	4	**72**	6	0	24	**30**	**102**	14	112	21	**147**	2	139	6	**147**	**294**	**396**
07:30	07:45	81	6	8	**95**	13	0	32	**45**	**140**	13	117	27	**157**	6	171	6	**183**	**340**	**480**
07:45	08:00	96	7	5	**108**	8	1	27	**36**	**144**	7	132	15	**154**	2	176	12	**190**	**344**	**488**
08:00	08:15	85	13	7	**105**	12	3	22	**37**	**142**	12	122	21	**155**	1	187	15	**203**	**358**	**500**
08:15	08:30	76	24	8	**108**	24	9	37	**70**	**178**	15	100	33	**148**	2	189	28	**219**	**367**	**545**
08:30	08:45	84	7	8	**99**	14	3	24	**41**	**140**	17	118	25	**160**	4	196	16	**216**	**376**	**516**
08:45	09:00	55	4	6	**65**	8	6	17	**31**	**96**	19	116	31	**166**	2	173	13	**189**	**355**	**451**
09:00	09:15	94	6	4	**104**	14	1	16	**31**	**135**	14	79	27	**120**	0	151	14	**165**	**285**	**420**
09:15	09:30	56	3	4	**63**	5	0	16	**21**	**84**	15	101	26	**142**	1	119	14	**134**	**276**	**360**
09:30	09:45	43	1	5	**49**	9	2	10	**21**	**70**	13	106	35	**154**	3	120	7	**130**	**284**	**354**
09:45	10:00	41	3	4	**48**	5	1	9	**15**	**63**	19	60	22	**101**	4	106	22	**132**	**233**	**296**
11:30	11:45	49	1	5	**55**	25	4	15	**44**	**99**	9	112	26	**147**	9	108	19	**136**	**283**	**382**
11:45	12:00	27	2	4	**33**	24	2	6	**32**	**65**	18	103	32	**153**	1	92	25	**118**	**271**	**336**
12:00	12:15	38	2	4	**44**	11	0	11	**22**	**66**	11	98	25	**134**	5	104	12	**121**	**255**	**321**
12:15	12:30	35	2	7	**44**	9	0	19	**28**	**72**	12	113	30	**155**	2	103	21	**126**	**281**	**353**
12:30	12:45	27	3	8	**38**	23	0	10	**33**	**71**	16	112	37	**165**	1	121	13	**135**	**300**	**371**
12:45	13:00	30	3	2	**35**	16	0	9	**25**	**60**	19	96	38	**153**	2	100	18	**120**	**273**	**333**
13:00	13:15	40	2	6	**48**	14	2	19	**35**	**83**	11	98	32	**141**	11	112	15	**138**	**279**	**362**
13:15	13:30	35	0	5	**40**	18	4	13	**35**	**75**	20	118	40	**178**	3	113	15	**131**	**309**	**384**
15:00	15:15	37	13	1	**51**	16	6	15	**37**	**88**	29	144	36	**209**	7	129	22	**158**	**367**	**455**
15:15	15:30	38	8	4	**50**	20	8	22	**50**	**100**	24	152	48	**224**	5	111	28	**144**	**368**	**468**
15:30	15:45	25	0	5	**30**	29	10	21	**60**	**90**	27	176	62	**265**	4	196	14	**214**	**479**	**569**
15:45	16:00	45	5	7	**57**	25	4	22	**51**	**108**	29	158	68	**255**	4	143	15	**162**	**417**	**525**
16:00	16:15	38	5	4	**47**	18	10	9	**37**	**84**	31	189	62	**282**	3	157	21	**181**	**463**	**547**
16:15	16:30	35	6	4	**45**	19	10	11	**40**	**85**	33	201	74	**308**	4	145	13	**162**	**470**	**555**
16:30	16:45	30	10	5	**45**	19	5	23	**47**	**92**	31	207	68	**306**	7	149	20	**176**	**482**	**574**
16:45	17:00	36	10	1	**47**	28	8	20	**56**	**103**	31	200	75	**306**	5	140	21	**166**	**472**	**575**
17:00	17:15	24	12	4	**40**	24	3	9	**36**	**76**	31	203	67	**301**	1	142	24	**167**	**468**	**544**
17:15	17:30	38	7	4	**49**	22	7	15	**44**	**93**	36	190	92	**318**	5	129	14	**148**	**466**	**559**
17:30	17:45	49	5	7	**61**	26	5	9	**40**	**101**	31	205	72	**308**	5	131	18	**154**	**462**	**563**
17:45	18:00	30	6	3	**39**	20	3	14	**37**	**76**	32	174	45	**251**	4	127	25	**156**	**407**	**483**
TOTAL:		1559	183	155	**1897**	529	117	551	**1197**	**3094**	655	4297	1337	**6289**	119	4385	527	**5032**	**11321**	**14415**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35623

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Count Date: Thursday, December 17, 2015 **Start Time:** 07:00

	CEDARVIEW RD/TARTAN DR			STRANDHERD DR			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	0	**0**	0	0	**0**	**0**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Public Works - Traffic Services

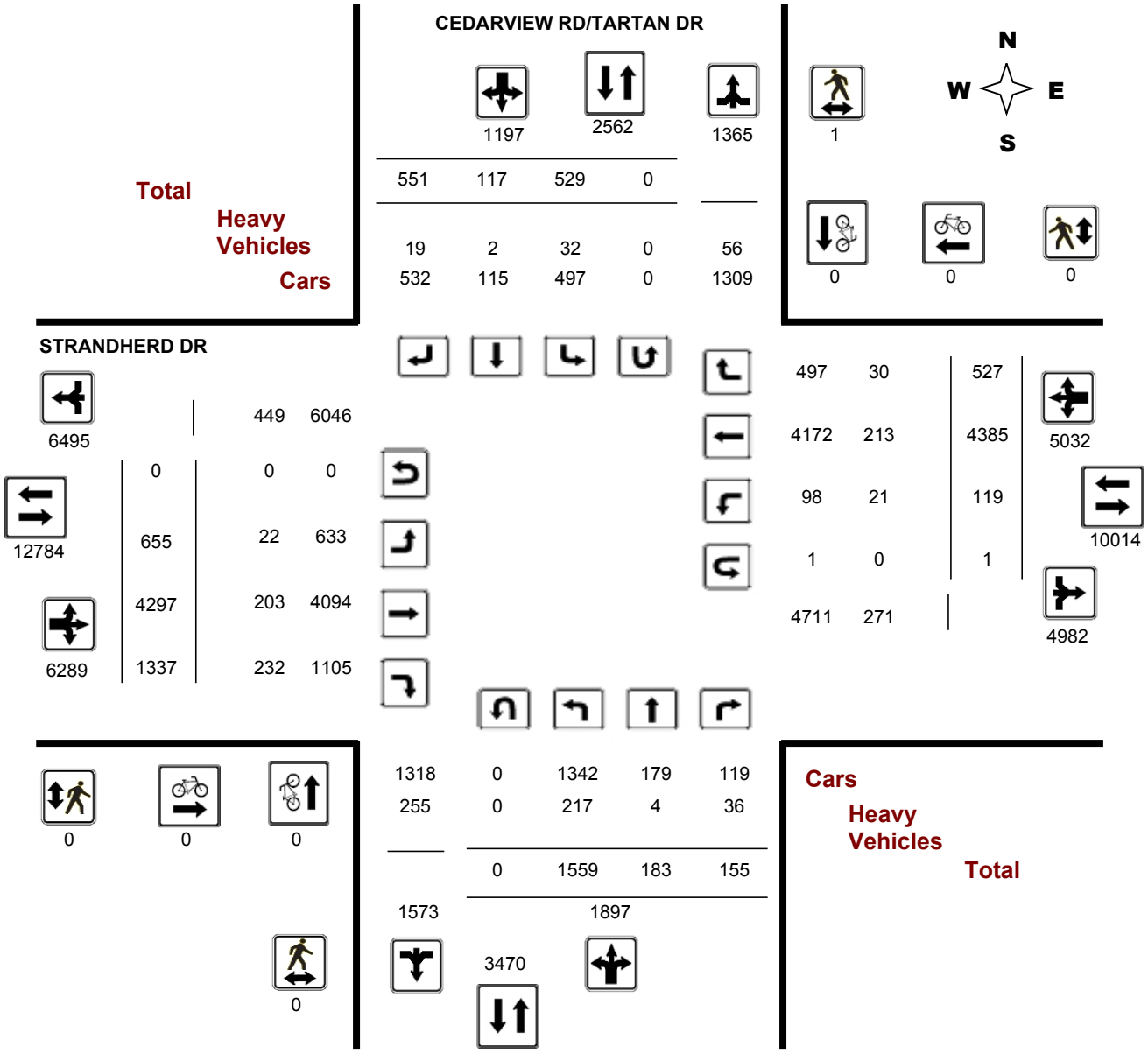
Turning Movement Count - Full Study Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015

WO#: 35623

Device: Miovision



Comments

Public Works - Traffic Services

W.O. 35623

Turning Movement Count - Heavy Vehicle Report

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015

		CEDARVIEW RD/TARTAN DR									STRANDHERD DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	24	1	4	**29**	3	0	1	**4**	**33**	6	34	30	**70**	3	20	6	**29**	**99**	**132**
08:00	09:00	29	1	7	**37**	3	0	6	**9**	**46**	2	33	35	**70**	4	26	5	**35**	**105**	**151**
09:00	10:00	29	0	7	**36**	2	0	2	**4**	**40**	3	33	35	**71**	2	42	4	**48**	**119**	**159**
11:30	12:30	42	0	3	**45**	3	0	1	**4**	**49**	3	27	40	**70**	5	37	3	**45**	**115**	**164**
12:30	13:30	39	1	9	**49**	3	1	3	**7**	**56**	2	44	44	**90**	6	31	4	**41**	**131**	**187**
15:00	16:00	35	0	4	**39**	4	1	2	**7**	**46**	3	18	36	**57**	1	33	3	**37**	**94**	**140**
16:00	17:00	15	1	2	**18**	8	0	4	**12**	**30**	3	6	11	**20**	0	20	2	**22**	**42**	**72**
17:00	18:00	4	0	0	**4**	6	0	0	**6**	**10**	0	8	1	**9**	0	4	3	**7**	**16**	**26**
Sub Total		217	4	36	**257**	32	2	19	**53**	**310**	22	203	232	**457**	21	213	30	**264**	**721**	**1031**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		217	4	36	**0**	32	2	19	**53**	**310**	22	203	232	**457**	21	213	30	**264**	**721**	**1031**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Work Order
35623

Turning Movement Count - Pedestrian Volume Report

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Count Date: Thursday, December 17, 2015 **Start Time:** 07:00

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	0	**0**	0	0	**0**	**0**
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	0	**0**	0	0	**0**	**0**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
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**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
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**
09:00 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	1	**1**	0	0	**0**	**1**
12:15 12:30	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	1	**1**	0	0	**0**	**1**
12:30 12:45	0	0	**0**	0	0	**0**	**0**
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	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 15:15	0	0	**0**	0	0	**0**	**0**
15:15 15:30	0	0	**0**	0	0	**0**	**0**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	0	**0**	0	0	**0**	**0**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	1	**1**	0	0	**0**	**1**

Comment:

Public Works - Traffic Services

Work Order
35623

Turning Movement Count - Full Study Summary Report

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 1

AADT Factor
1.00

Full Study

	CEDARVIEW RD/TARTAN DR									STRANDHERD DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	319	20	19	**358**	32	1	108	**141**	**499**	50	446	88	**584**	14	592	25	**631**	**1215**	**1714**
08:00 09:00	300	48	29	**377**	58	21	100	**179**	**556**	63	456	110	**629**	9	745	72	**826**	**1455**	**2011**
09:00 10:00	234	13	17	**264**	33	4	51	**88**	**352**	61	346	110	**517**	8	496	57	**561**	**1078**	**1430**
11:30 12:30	149	7	20	**176**	69	6	51	**126**	**302**	50	426	113	**589**	17	407	77	**501**	**1090**	**1392**
12:30 13:30	132	8	21	**161**	71	6	51	**128**	**289**	66	424	147	**637**	17	446	61	**524**	**1161**	**1450**
15:00 16:00	145	26	17	**188**	90	28	80	**198**	**386**	109	630	214	**953**	20	579	79	**678**	**1631**	**2017**
16:00 17:00	139	31	14	**184**	84	33	63	**180**	**364**	126	797	279	**1202**	19	591	75	**685**	**1887**	**2251**
17:00 18:00	141	30	18	**189**	92	18	47	**157**	**346**	130	772	276	**1178**	15	529	81	**625**	**1803**	**2149**
Sub Total	1559	183	155	**1897**	529	117	551	**1197**	**3094**	655	4297	1337	**6289**	119	4385	527	**5031**	**11320**	**14414**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	1559	183	155	**1897**	529	117	551	**1197**	**3094**	655	4297	1337	**6289**	119	4385	527	**5032**	**11321**	**14415**
EQ 12Hr	2167	254	215	**2637**	735	163	766	**1664**	**4301**	910	5973	1858	**8742**	165	6095	733	**6994**	**15736**	**20037**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	2167	254	215	**2637**	735	163	766	**1664**	**4301**	910	5973	1858	**8742**	165	6095	733	**6994**	**15736**	**20037**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	2839	333	282	**3454**	963	213	1003	**2180**	**5634**	1193	7824	2435	**11452**	217	7985	960	**9163**	**20615**	**26249**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

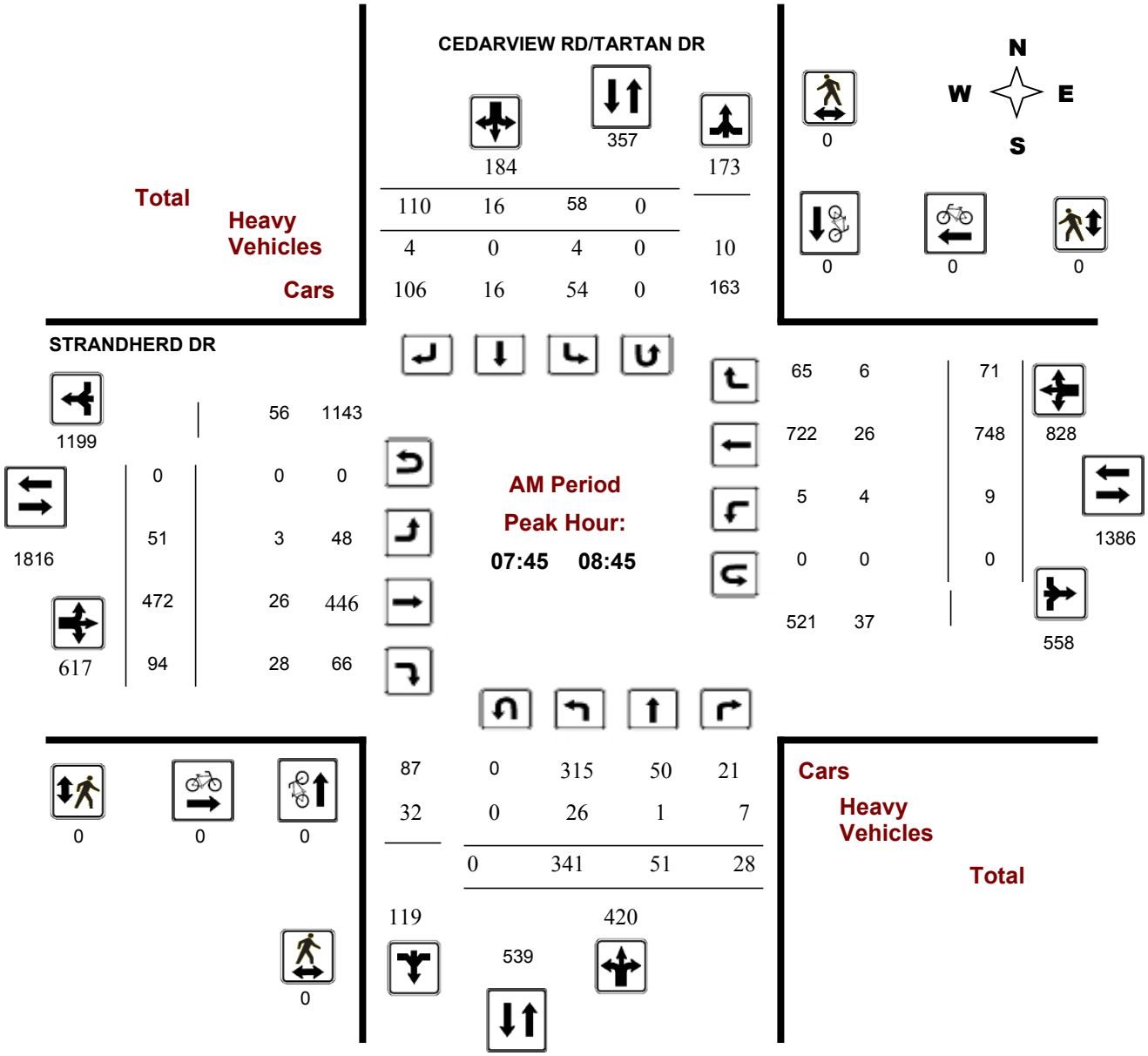
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

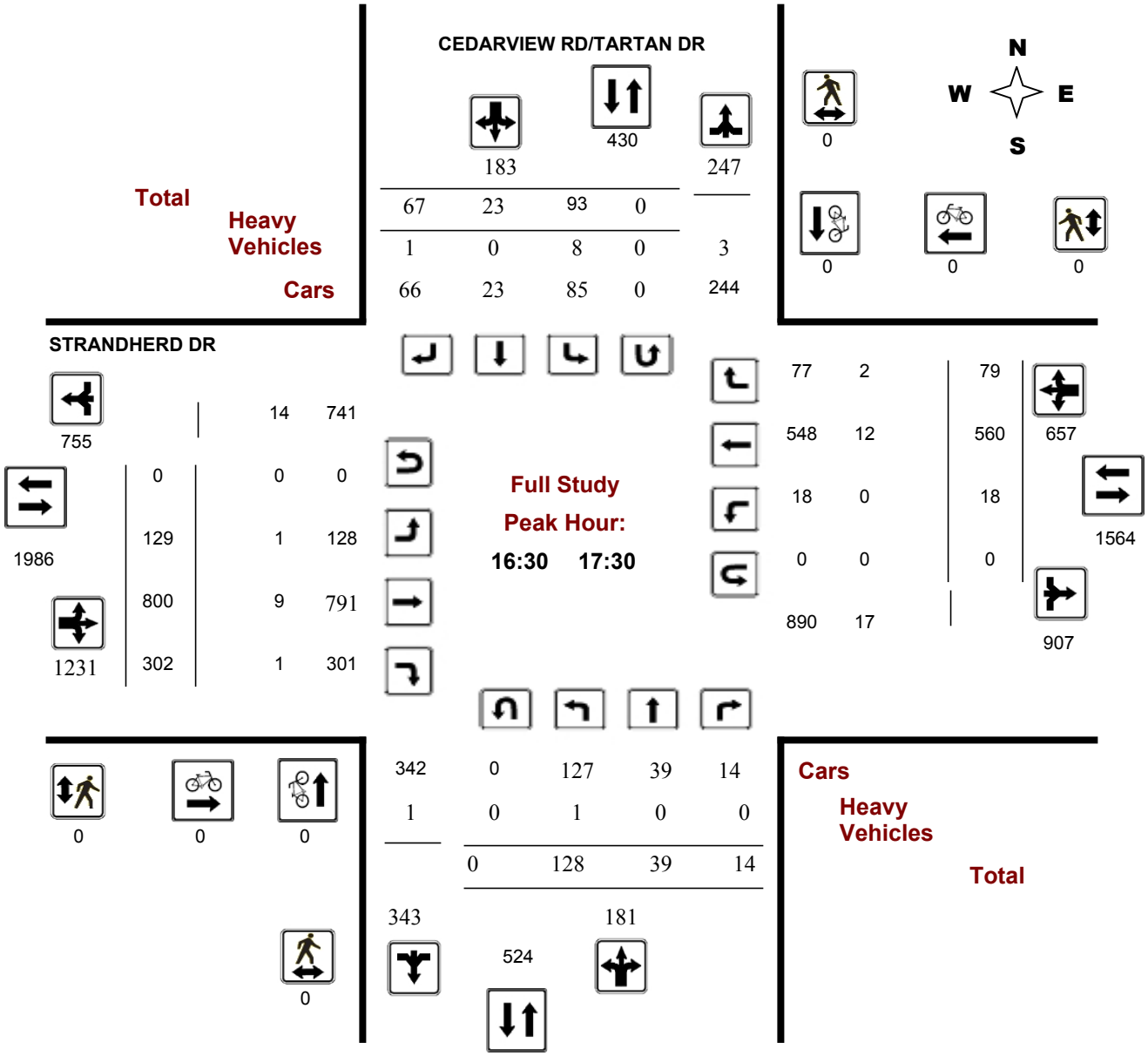
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

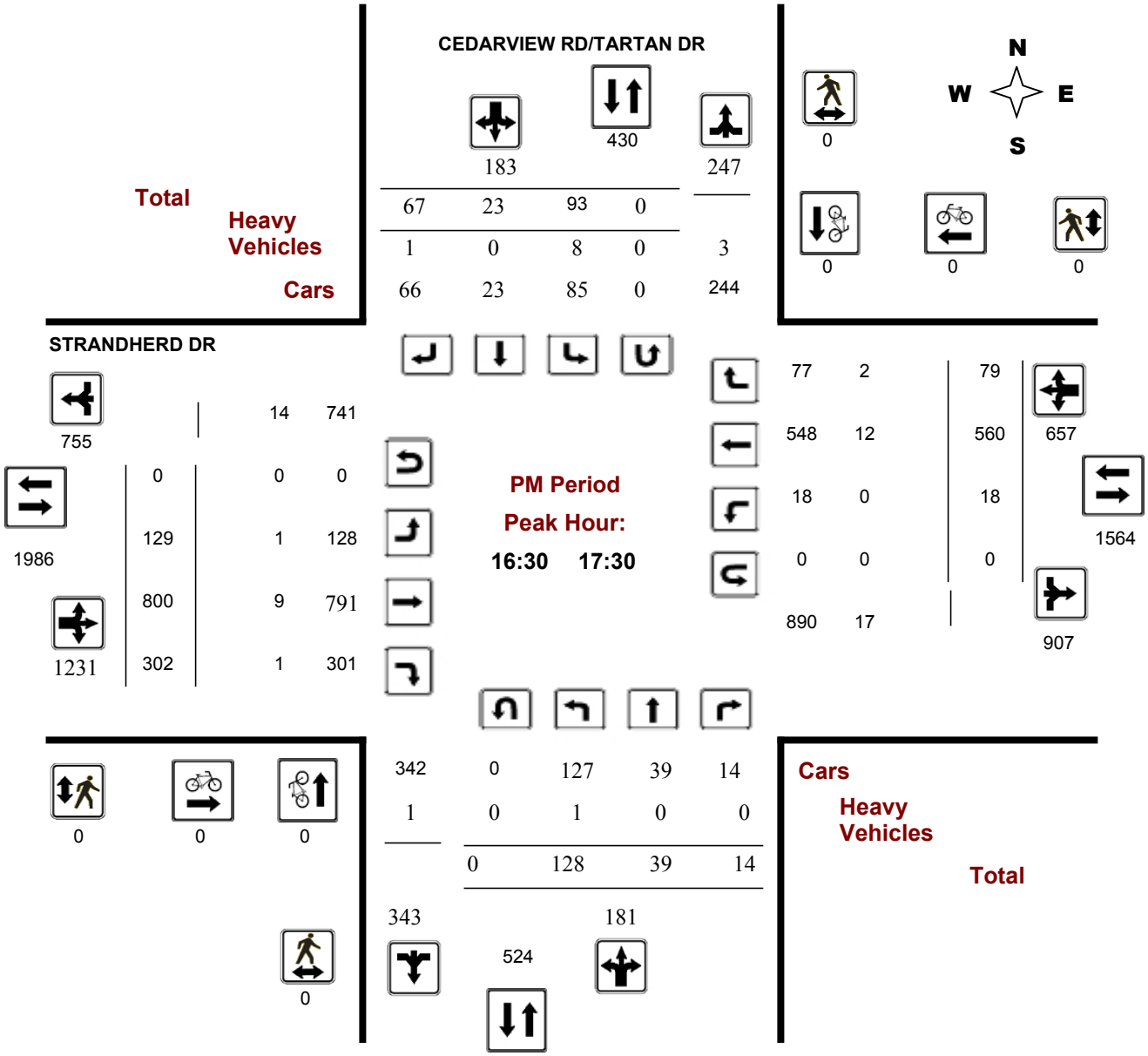
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

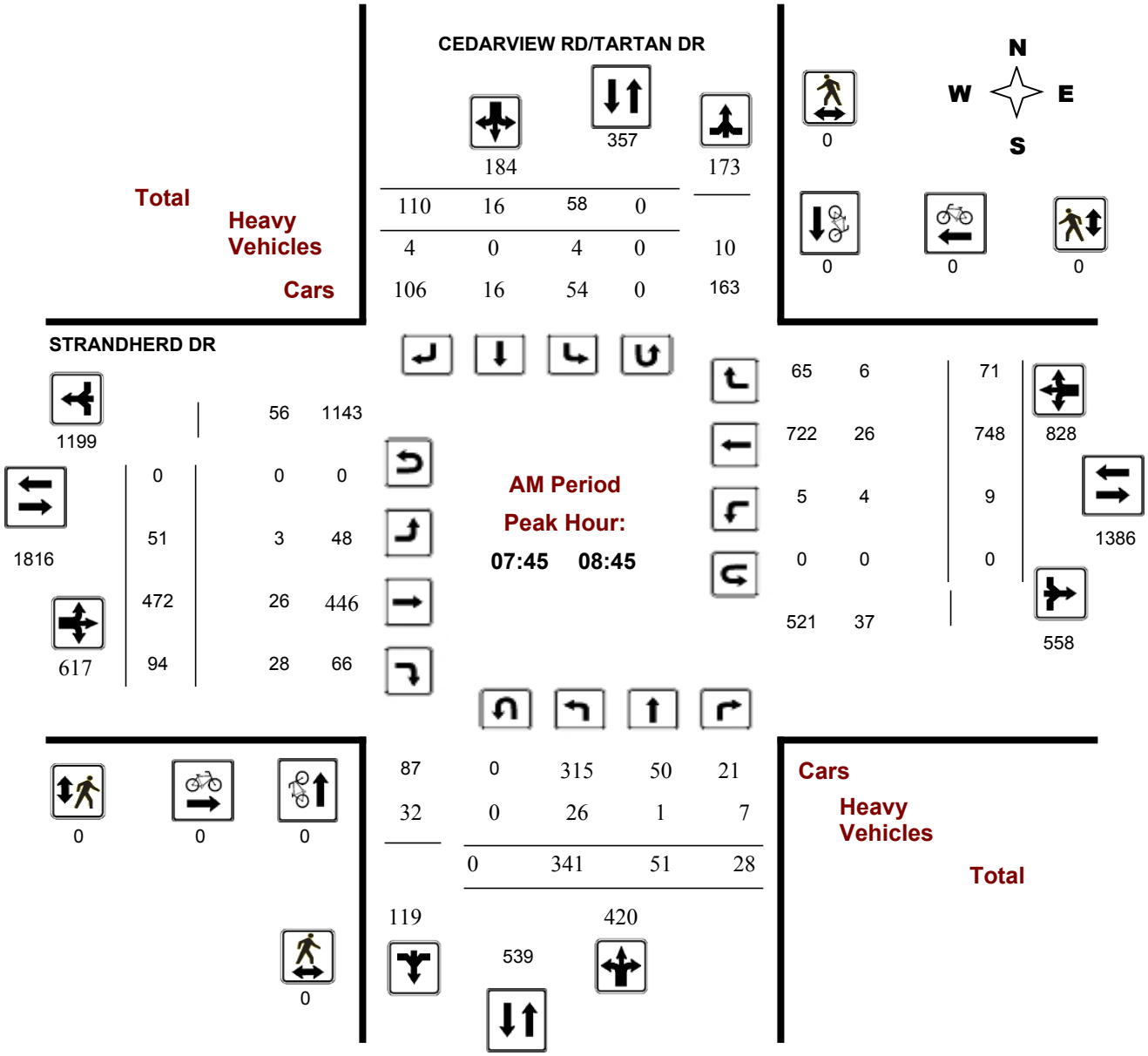
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

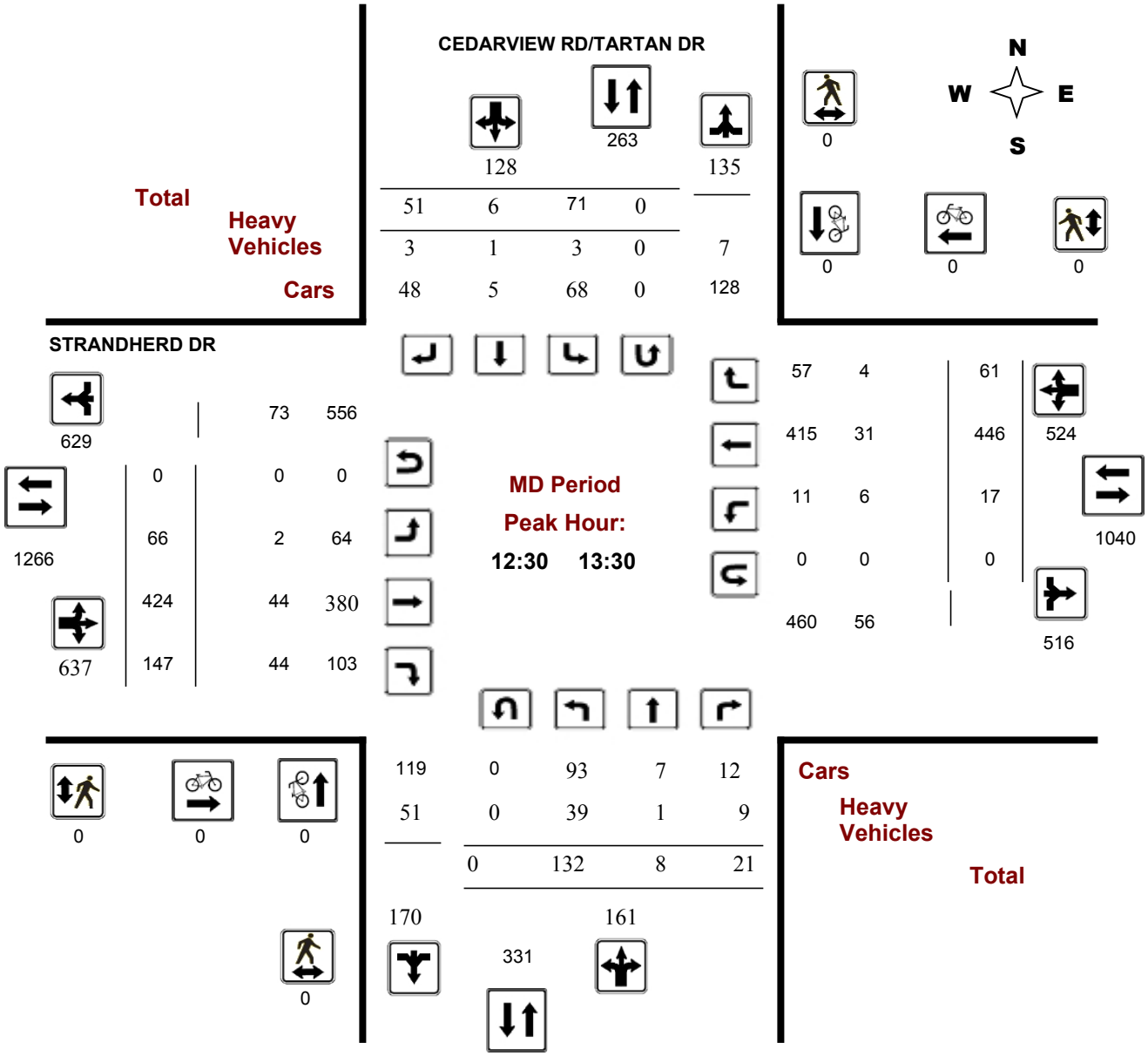
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

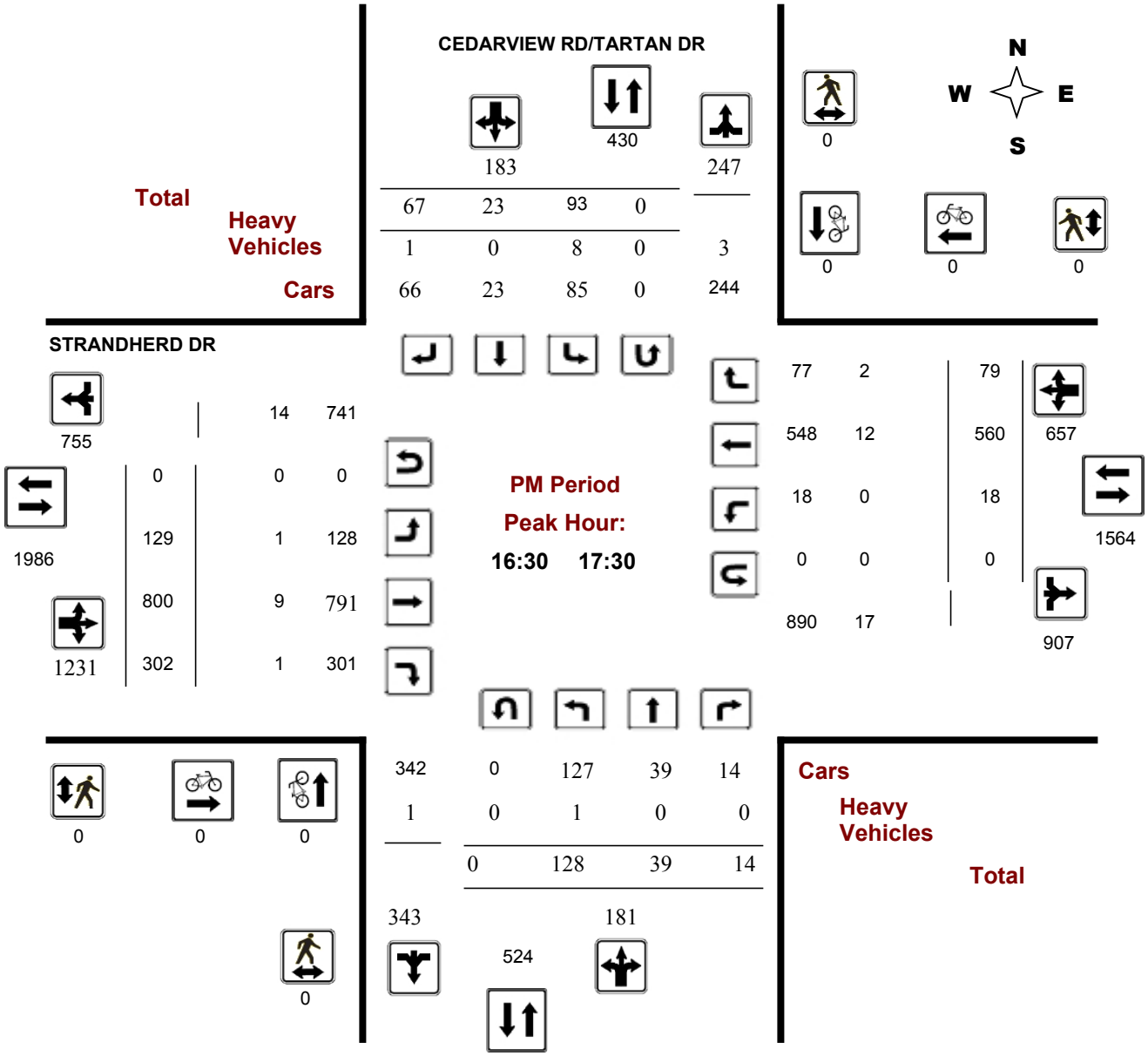
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015 **WO No:** 35623

Start Time: 07:00 **Device:** Miovision



Comments

Public Works - Traffic Services

Work Order
35623

Turning Movement Count - 15 Min U-Turn Total Report

STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Survey Date: Thursday, December 17, 2015

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

Public Works - Traffic Services

W.O. 35100

Turning Movement Count - 15 Minute Summary Report

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	07:15	1	129	9	**139**	2	63	2	**67**	**206**	0	1	0	**1**	26	0	10	**36**	**37**	**243**
07:15	07:30	0	101	16	**117**	12	89	0	**101**	**218**	0	0	0	**0**	14	1	33	**48**	**48**	**266**
07:30	07:45	0	117	10	**127**	8	89	2	**99**	**226**	0	1	0	**1**	24	1	34	**59**	**60**	**286**
07:45	08:00	0	150	21	**171**	10	112	2	**124**	**295**	0	1	1	**2**	18	0	23	**41**	**43**	**338**
08:00	08:15	0	109	21	**130**	10	80	1	**91**	**221**	0	0	0	**0**	25	3	19	**47**	**47**	**268**
08:15	08:30	0	64	10	**74**	16	88	1	**105**	**179**	0	0	0	**0**	31	1	20	**53**	**53**	**232**
08:30	08:45	0	50	6	**56**	18	69	2	**89**	**145**	0	0	0	**0**	24	0	23	**47**	**47**	**192**
08:45	09:00	0	63	8	**71**	19	83	0	**102**	**173**	0	0	1	**1**	25	2	21	**48**	**49**	**222**
09:00	09:15	2	110	24	**136**	8	75	2	**85**	**221**	0	0	0	**0**	25	1	29	**55**	**55**	**276**
09:15	09:30	0	70	8	**78**	8	83	1	**92**	**170**	1	0	0	**1**	18	0	18	**36**	**37**	**207**
09:30	09:45	0	54	12	**66**	16	77	3	**96**	**162**	0	0	1	**1**	22	1	25	**48**	**49**	**211**
09:45	10:00	1	75	15	**91**	12	87	0	**99**	**190**	0	0	0	**0**	16	1	18	**35**	**35**	**225**
11:30	11:45	2	77	14	**93**	20	65	0	**85**	**178**	0	0	0	**0**	6	0	6	**12**	**12**	**190**
11:45	12:00	0	63	13	**76**	16	116	2	**134**	**210**	1	0	0	**1**	25	0	9	**34**	**35**	**245**
12:00	12:15	0	64	5	**69**	16	85	1	**102**	**171**	0	0	0	**0**	18	2	21	**41**	**41**	**212**
12:15	12:30	0	87	11	**98**	22	116	0	**138**	**236**	0	1	0	**1**	13	0	20	**33**	**34**	**270**
12:30	12:45	0	39	7	**46**	25	126	0	**151**	**197**	0	0	0	**0**	19	1	17	**37**	**37**	**234**
12:45	13:00	0	72	11	**83**	12	106	1	**119**	**202**	0	0	0	**0**	23	2	15	**40**	**40**	**242**
13:00	13:15	0	74	9	**83**	15	96	0	**111**	**194**	0	1	1	**2**	25	1	14	**40**	**42**	**236**
13:15	13:30	0	73	23	**96**	14	96	2	**112**	**208**	1	0	2	**3**	31	1	17	**49**	**52**	**260**
15:00	15:15	0	95	16	**111**	27	108	0	**135**	**246**	0	0	0	**0**	20	0	21	**41**	**41**	**287**
15:15	15:30	0	120	15	**135**	30	157	0	**187**	**322**	2	2	0	**4**	19	2	12	**33**	**37**	**359**
15:30	15:45	0	94	17	**111**	28	160	0	**188**	**299**	3	0	1	**4**	22	2	27	**51**	**55**	**354**
15:45	16:00	0	55	12	**67**	38	152	0	**190**	**257**	0	0	0	**0**	33	0	17	**50**	**50**	**307**
16:00	16:15	0	94	25	**119**	48	180	1	**229**	**348**	0	0	0	**0**	39	0	14	**53**	**53**	**401**
16:15	16:30	1	102	12	**115**	43	214	1	**258**	**373**	0	0	0	**0**	40	0	18	**58**	**58**	**431**
16:30	16:45	0	88	16	**104**	40	204	0	**244**	**348**	0	0	0	**0**	32	0	20	**52**	**52**	**400**
16:45	17:00	0	71	13	**84**	25	158	0	**183**	**267**	0	1	0	**1**	35	0	7	**42**	**43**	**310**
17:00	17:15	0	76	17	**93**	36	190	0	**226**	**319**	0	0	0	**0**	51	1	18	**70**	**70**	**389**
17:15	17:30	0	68	16	**84**	41	224	0	**265**	**349**	0	0	1	**1**	53	0	13	**66**	**67**	**416**
17:30	17:45	0	66	21	**87**	37	241	0	**278**	**365**	0	0	0	**0**	42	1	17	**60**	**60**	**425**
17:45	18:00	0	54	11	**65**	44	182	0	**226**	**291**	0	0	0	**0**	23	1	18	**42**	**42**	**333**
TOTAL:		7	2624	444	**3075**	716	3971	24	**4711**	**7786**	8	8	8	**24**	837	25	594	**1457**	**1481**	**9267**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35100

STRANDHERD @ KENNEVALE DR

Count Date: Wednesday, August 05, 2015 **Start Time:** 07:00

Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	1	**1**	**1**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	2	**2**	0	0	**0**	**2**
12:30 13:30	0	1	**1**	0	0	**0**	**1**
15:00 16:00	0	1	**1**	0	0	**0**	**1**
16:00 17:00	0	0	**0**	0	1	**1**	**1**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	4	**4**	0	2	**2**	**6**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Public Works - Traffic Services

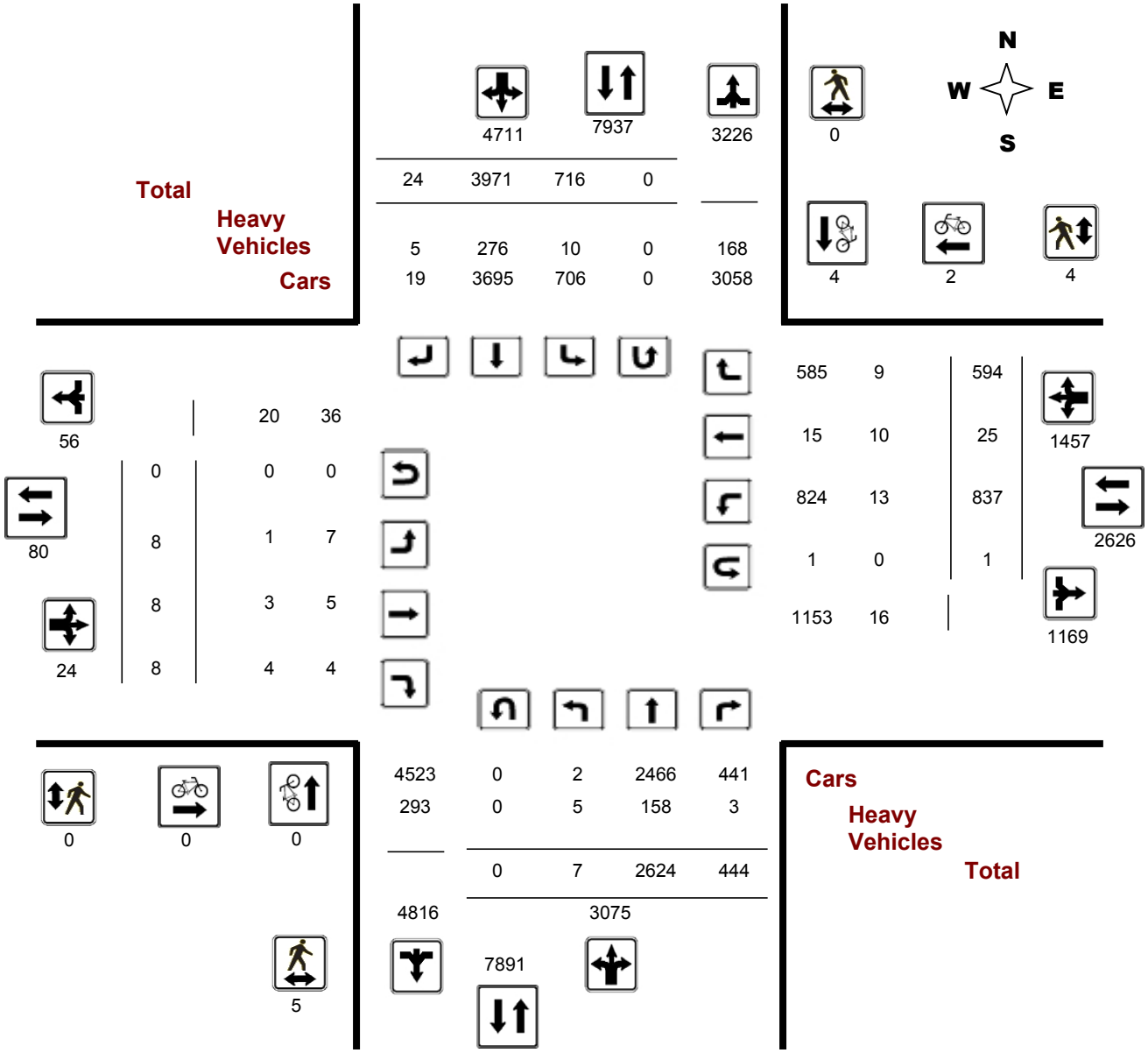
Turning Movement Count - Full Study Diagram

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015

WO#: 35100

Device: Jamar Technologies, Inc



Comments

Public Works - Traffic Services

W.O. 35100

Turning Movement Count - Heavy Vehicle Report

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015

Time Period		Northbound				Southbound					Eastbound				Westbound					
		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	0	11	1	**12**	3	55	3	**61**	**73**	0	1	1	**2**	0	2	1	**3**	**5**	**78**
08:00	09:00	0	14	0	**14**	4	32	1	**37**	**51**	0	0	0	**0**	1	2	1	**4**	**4**	**55**
09:00	10:00	2	17	1	**20**	0	42	1	**43**	**63**	0	0	1	**1**	1	2	1	**4**	**5**	**68**
11:30	12:30	2	24	0	**26**	0	32	0	**32**	**58**	1	0	0	**1**	2	1	1	**4**	**5**	**63**
12:30	13:30	0	17	1	**18**	0	43	0	**43**	**61**	0	1	2	**3**	1	1	1	**3**	**6**	**67**
15:00	16:00	0	23	0	**23**	2	40	0	**42**	**65**	0	1	0	**1**	3	1	1	**5**	**6**	**71**
16:00	17:00	1	25	0	**26**	1	23	0	**24**	**50**	0	0	0	**0**	2	0	2	**4**	**4**	**54**
17:00	18:00	0	27	0	**27**	0	9	0	**9**	**36**	0	0	0	**0**	3	1	1	**5**	**5**	**41**
Sub Total		5	158	3	**166**	10	276	5	**291**	**457**	1	3	4	**8**	13	10	9	**32**	**40**	**497**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		5	158	3	**0**	10	276	5	**291**	**457**	1	3	4	**8**	13	10	9	**32**	**40**	**497**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Work Order
35100

Turning Movement Count - Pedestrian Volume Report

STRANDHERD @ KENNEVALE DR

Count Date: Wednesday, August 05, 2015 **Start Time:** 07:00

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	0	**0**	0	0	**0**	**0**
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	0	**0**	0	0	**0**	**0**
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 08:15	3	0	**3**	0	0	**0**	**3**
08:15 08:30	2	0	**2**	0	0	**0**	**2**
08:30 08:45	0	0	**0**	0	0	**0**	**0**
08:45 09:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	5	0	**5**	0	0	**0**	**5**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	0	0	**0**	0	0	**0**	**0**
09:30 09:45	0	0	**0**	0	1	**1**	**1**
09:45 10:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	0	1	**1**	**1**
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**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 12:45	0	0	**0**	0	1	**1**	**1**
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	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	1	**1**	**1**
15:00 15:15	0	0	**0**	0	0	**0**	**0**
15:15 15:30	0	0	**0**	0	0	**0**	**0**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	0	**0**	0	0	**0**	**0**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	2	**2**	**2**
17:00 18:00	0	0	**0**	0	2	**2**	**2**
Total	5	0	**5**	0	4	**4**	**9**

Comment:

Public Works - Traffic Services

Work Order
35100

Turning Movement Count - Full Study Summary Report

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 1

AADT Factor
.90

Full Study

	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	1	497	56	**554**	32	353	6	**391**	**945**	0	3	1	**4**	82	2	100	**184**	**188**	**1133**
08:00 09:00	0	286	45	**331**	63	320	4	**387**	**718**	0	0	1	**1**	105	6	83	**194**	**195**	**913**
09:00 10:00	3	309	59	**371**	44	322	6	**372**	**743**	1	0	1	**2**	81	3	90	**174**	**176**	**919**
11:30 12:30	2	291	43	**336**	74	382	3	**459**	**795**	1	1	0	**2**	62	2	56	**120**	**122**	**917**
12:30 13:30	0	258	50	**308**	66	424	3	**493**	**801**	1	1	3	**5**	98	5	63	**166**	**171**	**972**
15:00 16:00	0	364	60	**424**	123	577	0	**700**	**1124**	5	2	1	**8**	94	4	77	**175**	**183**	**1307**
16:00 17:00	1	355	66	**422**	156	756	2	**914**	**1336**	0	1	0	**1**	146	0	59	**205**	**206**	**1542**
17:00 18:00	0	264	65	**329**	158	837	0	**995**	**1324**	0	0	1	**1**	169	3	66	**238**	**239**	**1563**
Sub Total	7	2624	444	**3075**	716	3971	24	**4711**	**7786**	8	8	8	**24**	837	25	594	**1456**	**1480**	**9266**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	7	2624	444	**3075**	716	3971	24	**4711**	**7786**	8	8	8	**24**	837	25	594	**1457**	**1481**	**9267**
EQ 12Hr	10	3647	617	**4274**	995	5520	33	**6548**	**10822**	11	11	11	**33**	1163	35	826	**2025**	**2058**	**12880**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	9	3283	555	**3847**	896	4968	30	**5893**	**9740**	10	10	10	**30**	1047	31	743	**1823**	**1853**	**11593**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	11	4300	728	**5039**	1173	6508	39	**7720**	**12759**	13	13	13	**39**	1372	41	973	**2388**	**2427**	**15186**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

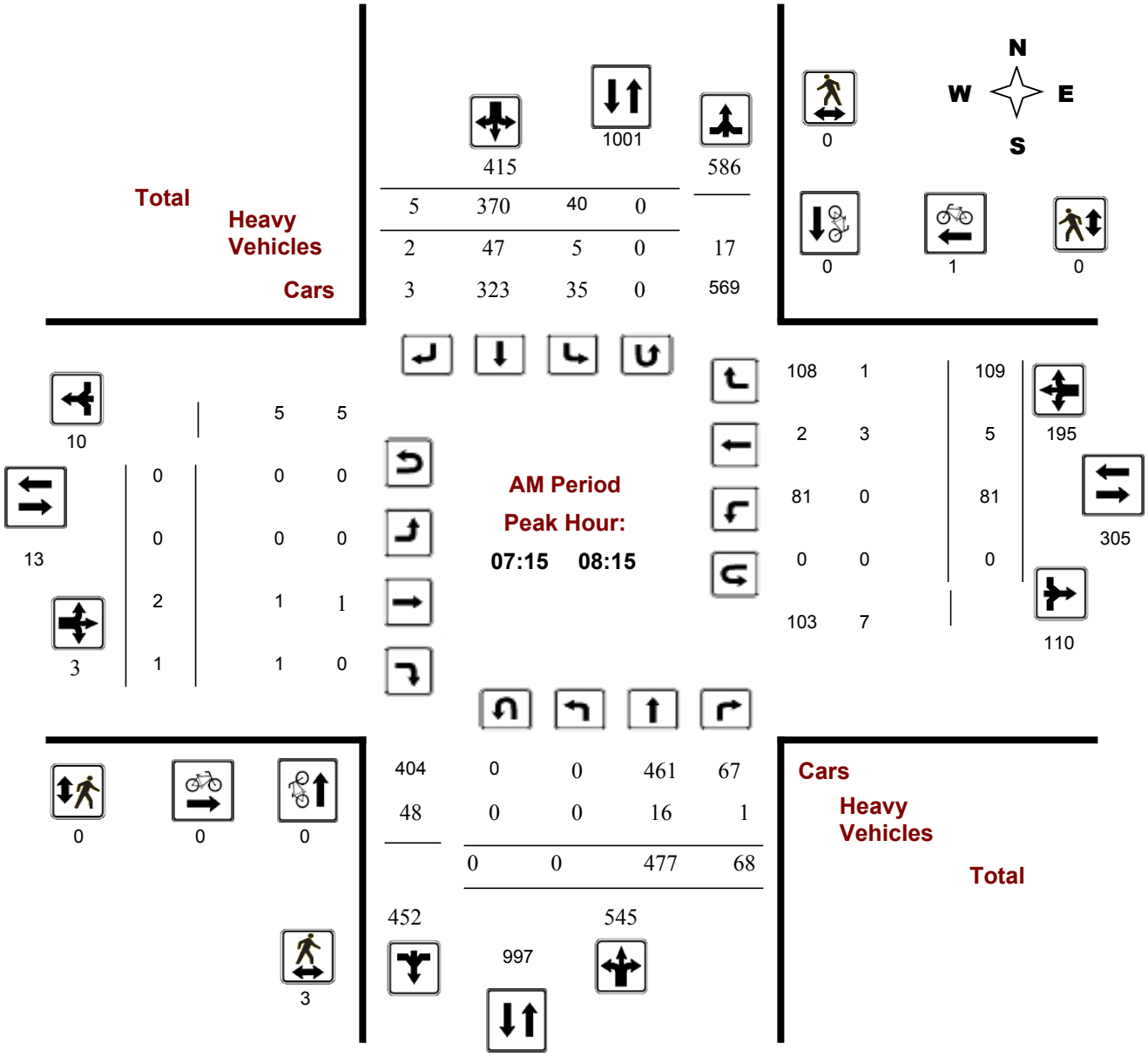
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015
Start Time: 07:00

WO No: 35100
Device: Jamar Technologies, Inc



Comments

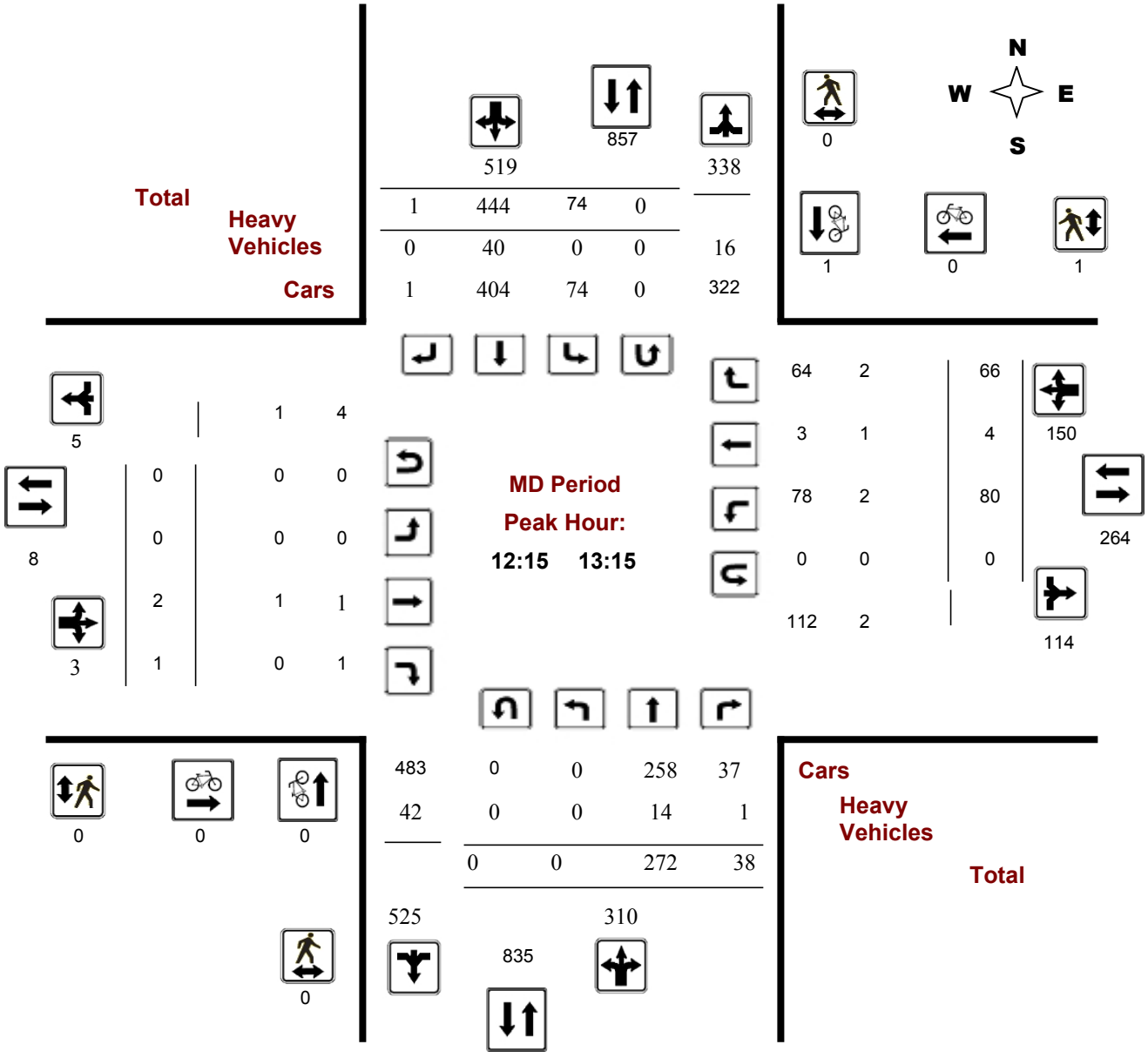
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015
Start Time: 07:00

WO No: 35100
Device: Jamar Technologies, Inc



Comments

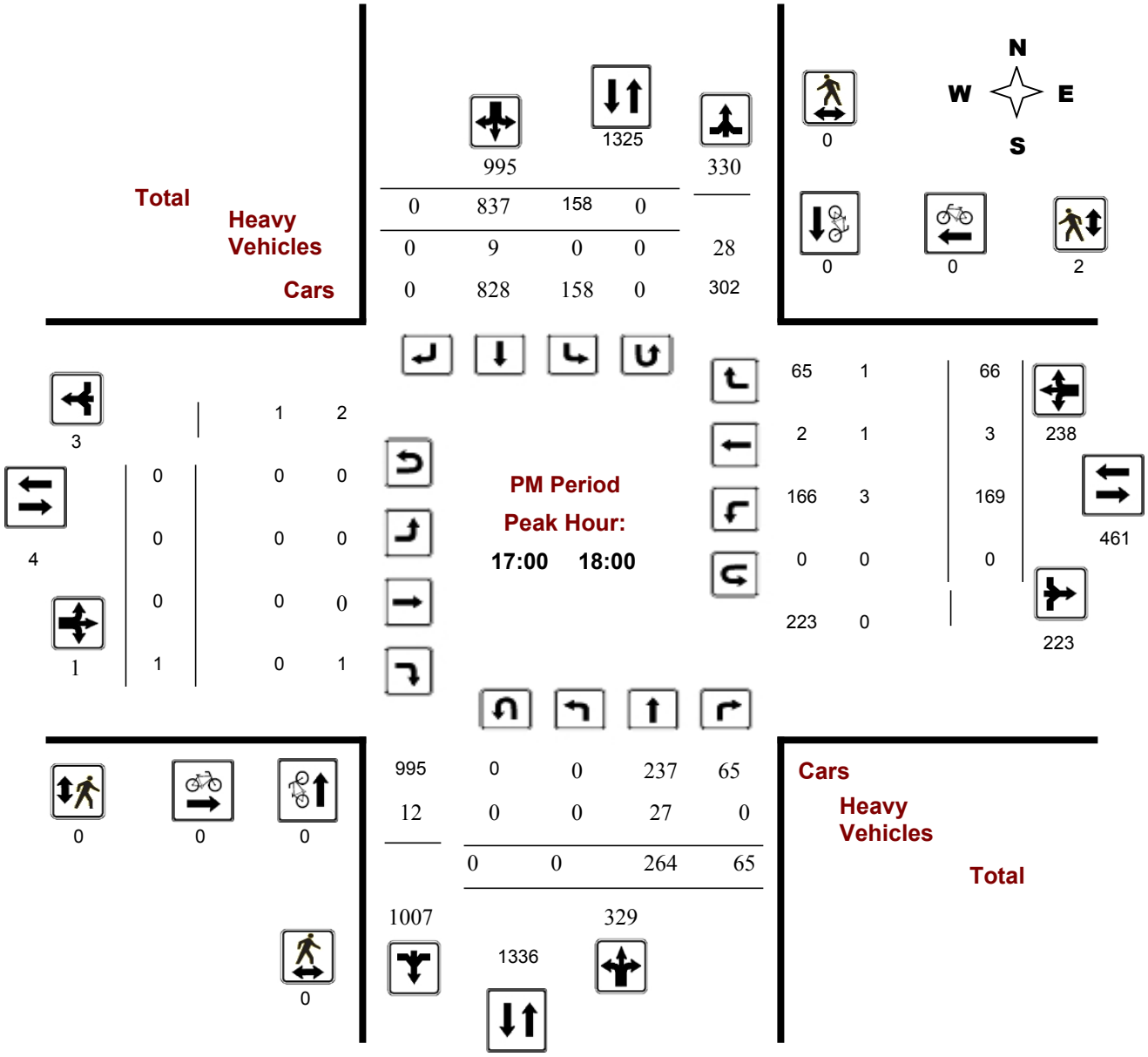
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015
Start Time: 07:00

WO No: 35100
Device: Jamar Technologies, Inc



Comments

Public Works - Traffic Services

Work Order
35100

Turning Movement Count - 15 Min U-Turn Total Report

STRANDHERD @ KENNEVALE DR

Survey Date: Wednesday, August 05, 2015

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

APPENDIX C

SYNCHRO (V9) EXISTING ANALYSIS REPORTS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	56	626	10	907	378	87	64	139
v/c Ratio	0.32	0.68	0.03	1.13	1.06	0.17	0.17	0.24
Control Delay	15.2	20.6	18.3	102.6	103.1	22.0	30.0	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	20.6	18.3	102.6	103.1	22.0	30.0	8.3
Queue Length 50th (m)	5.1	87.1	1.2	~236.4	~93.7	9.9	10.2	2.7
Queue Length 95th (m)	10.6	126.2	4.5	#317.8	#153.7	22.2	21.3	16.8
Internal Link Dist (m)		362.8		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	283	1074	310	805	356	518	383	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.58	0.03	1.13	1.06	0.17	0.17	0.24

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	491	98	9	778	74	355	53	29	60	17	114
Future Volume (vph)	53	491	98	9	778	74	355	53	29	60	17	114
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.95		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1631	1614		1695	1737		1601	1563		1616	1529	
Flt Permitted	0.07	1.00		0.38	1.00		0.66	1.00		0.70	1.00	
Satd. Flow (perm)	120	1614		674	1737		1108	1563		1192	1529	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	56	522	104	10	828	79	378	56	31	64	18	121
RTOR Reduction (vph)	0	6	0	0	3	0	0	16	0	0	83	0
Lane Group Flow (vph)	56	620	0	10	904	0	378	71	0	64	56	0
Heavy Vehicles (%)	6%	6%	30%	2%	3%	8%	8%	2%	25%	7%	0%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.8	63.8		50.8	50.8		35.3	35.3		35.3	35.3	
Effective Green, g (s)	63.8	63.8		50.8	50.8		35.3	35.3		35.3	35.3	
Actuated g/C Ratio	0.57	0.57		0.46	0.46		0.32	0.32		0.32	0.32	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	158	925		307	792		351	495		378	484	
v/s Ratio Prot	0.02	c0.38			c0.52			0.05			0.04	
v/s Ratio Perm	0.18			0.01			c0.34			0.05		
v/c Ratio	0.35	0.67		0.03	1.14		1.08	0.14		0.17	0.12	
Uniform Delay, d1	23.6	16.5		16.7	30.2		38.0	27.2		27.4	26.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.9		0.0	78.6		70.1	0.6		1.0	0.5	
Delay (s)	25.0	18.3		16.7	108.9		108.1	27.8		28.4	27.4	
Level of Service	C	B		B	F		F	C		C	C	
Approach Delay (s)		18.9			107.9			93.1			27.7	
Approach LOS		B			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	70.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	111.3	Sum of lost time (s)	18.6
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	630	811	22	44	19
Future Volume (Veh/h)	6	630	811	22	44	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	670	863	23	47	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	886				1556	874
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	886				1556	874
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	99				61	94
cM capacity (veh/h)	748				120	346

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	6	670	886	67
Volume Left	6	0	0	47
Volume Right	0	0	23	20
cSH	748	1700	1700	149
Volume to Capacity	0.01	0.39	0.52	0.45
Queue Length 95th (m)	0.2	0.0	0.0	15.6
Control Delay (s)	9.9	0.0	0.0	47.6
Lane LOS	A			E
Approach Delay (s)	0.1		0.0	47.6
Approach LOS				E

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	603	6	899	47
v/c Ratio	0.41	0.01	0.60	0.27
Control Delay	3.7	2.5	5.7	27.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.7	2.5	5.7	27.8
Queue Length 50th (m)	31.4	0.2	62.3	3.8
Queue Length 95th (m)	47.3	1.0	96.7	14.5
Internal Link Dist (m)	400.0		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1462	649	1505	385
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	0.01	0.60	0.12

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	570	3	6	854	20	25
Future Volume (vph)	570	3	6	854	20	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.93	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	1684		1690	1733	1511	
Flt Permitted	1.00		0.42	1.00	0.98	
Satd. Flow (perm)	1684		748	1733	1511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	600	3	6	899	21	26
RTOR Reduction (vph)	0	0	0	0	24	0
Lane Group Flow (vph)	603	0	6	899	23	0
Confl. Peds. (#/hr)		3	3			4
Heavy Vehicles (%)	8%	2%	2%	5%	11%	4%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	82.1		82.1	82.1	6.1	
Effective Green, g (s)	82.1		82.1	82.1	6.1	
Actuated g/C Ratio	0.82		0.82	0.82	0.06	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1382		614	1422	92	
v/s Ratio Prot	0.36			c0.52	c0.01	
v/s Ratio Perm			0.01			
v/c Ratio	0.44		0.01	0.63	0.25	
Uniform Delay, d1	2.5		1.6	3.3	44.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		0.0	2.1	1.4	
Delay (s)	3.5		1.6	5.5	46.2	
Level of Service	A		A	A	D	
Approach Delay (s)	3.5			5.5	46.2	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	137	1169	19	679	136	57	99	95
v/c Ratio	0.34	0.95	0.20	0.64	0.52	0.15	0.38	0.23
Control Delay	9.6	36.7	19.8	23.1	69.1	50.3	64.4	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	36.7	19.8	23.1	69.1	50.3	64.4	20.5
Queue Length 50th (m)	13.0	305.5	2.6	133.3	43.3	14.0	30.5	6.9
Queue Length 95th (m)	20.0	#435.0	8.5	178.6	68.1	27.8	50.6	24.0
Internal Link Dist (m)		367.1		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	527	1363	104	1160	262	388	261	405
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.86	0.18	0.59	0.52	0.15	0.38	0.23

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	832	314	19	583	82	133	41	15	97	24	70
Future Volume (vph)	134	832	314	19	583	82	133	41	15	97	24	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1712	1733		1729	1749		1712	1748		1586	1604	
Flt Permitted	0.26	1.00		0.09	1.00		0.67	1.00		0.72	1.00	
Satd. Flow (perm)	466	1733		156	1749		1206	1748		1202	1604	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	137	849	320	19	595	84	136	42	15	99	24	71
RTOR Reduction (vph)	0	8	0	0	2	0	0	7	0	0	55	0
Lane Group Flow (vph)	137	1161	0	19	677	0	136	50	0	99	40	0
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	1%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	116.3	116.3		100.3	100.3		35.9	35.9		35.9	35.9	
Effective Green, g (s)	116.3	116.3		100.3	100.3		35.9	35.9		35.9	35.9	
Actuated g/C Ratio	0.71	0.71		0.61	0.61		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	1225		95	1067		263	381		262	350	
v/s Ratio Prot	0.02	c0.67			0.39			0.03			0.02	
v/s Ratio Perm	0.22			0.12			c0.11			0.08		
v/c Ratio	0.34	0.95		0.20	0.63		0.52	0.13		0.38	0.11	
Uniform Delay, d1	13.3	21.3		14.2	20.4		56.6	51.7		54.7	51.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	14.7		1.0	1.2		7.1	0.7		4.1	0.7	
Delay (s)	13.8	36.1		15.3	21.6		63.7	52.4		58.8	52.1	
Level of Service	B	D		B	C		E	D		E	D	
Approach Delay (s)		33.7			21.5			60.4			55.6	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	164.4	Sum of lost time (s)	18.6
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	844	839	45	17	8
Future Volume (Veh/h)	7	844	839	45	17	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	917	912	49	18	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	961				1870	936
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	961				1870	936
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				77	97
cM capacity (veh/h)	716				79	321

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	925	961	27
Volume Left	8	0	18
Volume Right	0	49	9
cSH	716	1700	105
Volume to Capacity	0.01	0.57	0.26
Queue Length 95th (m)	0.3	0.0	7.2
Control Delay (s)	0.3	0.0	50.8
Lane LOS	A		F
Approach Delay (s)	0.3	0.0	50.8
Approach LOS			F

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1036	43	762	26
v/c Ratio	0.63	0.11	0.47	0.22
Control Delay	4.7	2.2	2.9	29.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.7	2.2	2.9	29.2
Queue Length 50th (m)	0.0	0.0	0.0	1.7
Queue Length 95th (m)	117.0	3.8	59.7	9.5
Internal Link Dist (m)	398.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1642	407	1629	394
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	0.63	0.11	0.47	0.07

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	970	4	40	716	8	16
Future Volume (vph)	970	4	40	716	8	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	1783		1728	1767	1575	
Flt Permitted	1.00		0.24	1.00	0.98	
Satd. Flow (perm)	1783		441	1767	1575	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1032	4	43	762	9	17
RTOR Reduction (vph)	0	0	0	0	16	0
Lane Group Flow (vph)	1036	0	43	762	10	0
Confl. Peds. (#/hr)		1	1		1	1
Heavy Vehicles (%)	2%	2%	0%	3%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	85.1		85.1	85.1	3.1	
Effective Green, g (s)	85.1		85.1	85.1	3.1	
Actuated g/C Ratio	0.85		0.85	0.85	0.03	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1517		375	1503	48	
v/s Ratio Prot	c0.58			0.43	c0.01	
v/s Ratio Perm			0.10			
v/c Ratio	0.68		0.11	0.51	0.20	
Uniform Delay, d1	2.7		1.2	2.0	47.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.5		0.6	1.2	2.0	
Delay (s)	5.2		1.9	3.2	49.3	
Level of Service	A		A	A	D	
Approach Delay (s)	5.2			3.1	49.3	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX D

SIGNAL TIMING

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Operations Unit

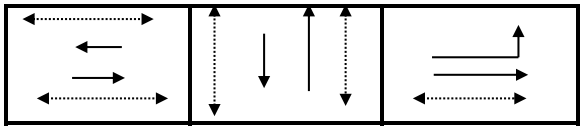
Intersection:	**Main:**	Strandherd	**Side:**	Borrisokane / Tartan	
Controller:	**ATC-3**			**TSD:**	**6509**
Author:	Amadou Top			**Date:**	30-Oct-2017

Existing Timing Plans†

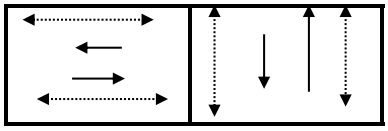
	Plan							**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	**AM Heavy** 12	**PM** 13	***Walk***	***DW***	***A+R***
Cycle	120	105	145	70	95	125	175			
Offset	X	X	145	X	X	X	175			
EB Thru	57	52	104	43	42	62	134	15	17	4.6+1.8
WB Thru	57	52	82	43	42	62	102	15	17	4.6+1.8
NB Thru	41	36	41	27	36	41	41	7	14	3.3+2.5
SB Thru	41	36	41	27	36	41	41	7	14	3.3+2.5
EB Left	22	17	22	-	17	22	32	-	-	4.6+1.8

Phasing Sequence‡

Plan: **1,2,3,5,12,13**



Plan: **4**



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
15:30	13
18:30	3
19:00	12
20:00	2
21:30	4

Weekend

Time	Plan
0:15	4
8:00	5
9:00	12
11:00	3
17:00	12
19:00	5
22:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $56.50 ($50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Operations Unit

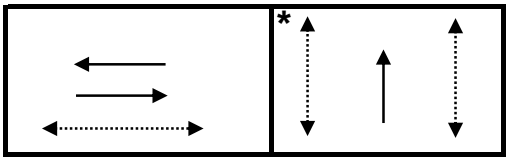
Intersection:	**Main:**	Strandherd	**Side:**	Andora	
Controller:	**MS-3200**			**TSD:**	6726
Author:	Amadou Top			**Date:**	06-Nov-2017

Existing Timing Plans†

	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	100	70	100	70	95			
Offset	60	X	85	X	X			
EB Thru	70	40	70	40	66	7	12	4.2+1.8
WB Thru	70	40	70	40	66	-	-	4.2+1.8
NB Thru	30	30	30	30	29	7	11	3.3+2.5

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Weekday

Time	Plan
0:15	4
8:30	5
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $56.50 ($50 + HST)

APPENDIX E

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	20	3	0	1	0	1	0	0	25	81%
Non-fatal injury	1	2	0	2	0	1	0	0	6	19%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**21**	**5**	**0**	**3**	**0**	**2**	**0**	**0**	**31**	100%
	#1 or 68%	#2 or 16%	#5 or 0%	#3 or 10%	#5 or 0%	#4 or 6%	#5 or 0%	#5 or 0%		

STRANDHERD DR/ANDORA AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2011-2015	2	18,364	1826	**0.06**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	0	0	0	0	0	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

STRANDHERD DR/TARTAN DR/BORRISOKANE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2011-2015	21	26,249	1826	**0.44**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	16	1	0	1	0	0	0	0	18	86%
Non-fatal injury	1	0	0	1	0	1	0	0	3	14%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**17**	**1**	**0**	**2**	**0**	**1**	**0**	**0**	**21**	100%
	81%	5%	0%	10%	0%	5%	0%	0%		

STRANDHERD DR, TARTAN DR/BORRISOKANE RD to MADRID AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2011-2015	6		1826	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	2	0	0	0	1	0	0	4	67%
Non-fatal injury	0	2	0	0	0	0	0	0	2	33%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	100%
	17%	67%	0%	0%	0%	17%	0%	0%		

STRANDHERD DR, MADRID AVE to ANDORA AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
#VALUE!	1	n/a	1826	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

STRANDHERD DR/FRASER FIELDS WAY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
#VALUE!	1	n/a	1826	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	0	0	0	1	0	0	0	0	1	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	100%
	0%	0%	0%	100%	0%	0%	0%	0%		

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2015

Location: FRASER FIELDS WAY @ STRANDHERD DR

Traffic Control: Stop sign **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Feb-04, Wed,11:28	Clear	Angle	P.D. only	Slush	West	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Delivery van	Other motor vehicle	
2014-Jun-07, Sat,12:20	Clear	Angle	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2014-Dec-18, Thu,20:15	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Pick-up truck	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	

Location: GREENBANK RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 52

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-11, Sat,08:22	Freezing Rain	Rear end	Non-fatal injury	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jan-23, Thu,17:49	Clear	Rear end	Non-fatal injury	Ice	South	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Automobile, station wagon	Other motor vehicle	

2014-Jan-24, Fri,18:15	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jan-31, Fri,18:41	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2014-Feb-11, Tue,12:35	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Feb-09, Sun,10:01	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Pick-up truck	Other motor vehicle
2014-Feb-18, Tue,07:29	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Mar-12, Wed,19:20	Drifting Snow	Turning movement	Non-fatal injury	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Mar-29, Sat,15:28	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle

2014-May-03, Sat,09:53	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Apr-27, Sun,15:15	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2014-May-09, Fri,21:00	Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jun-11, Wed,17:27	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jun-23, Mon,13:50	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jul-23, Wed,10:47	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jul-28, Mon,14:30	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jul-14, Mon,07:45	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle

					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jul-18, Fri,13:58	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Nov-25, Tue,18:29	Clear	Rear end	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle
					North	Turning left	Delivery van	Other motor vehicle
2014-Nov-08, Sat,21:51	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-03, Mon,08:22	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-30, Tue,10:20	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Sep-05, Fri,11:43	Clear	SMV other	Non-fatal injury	Dry	West	Turning right	Motorcycle	Curb
2014-Nov-06, Thu,09:12	Clear	Sideswipe	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle

2014-Oct-29, Wed,16:10	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2014-Oct-04, Sat,01:30	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2014-Sep-20, Sat,16:40	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2014-Oct-30, Thu,16:16	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-09, Tue,07:48	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-08, Sun,10:20	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
2014-Sep-13, Sat,13:55	Rain	Rear end	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2014-Sep-26, Fri,19:50	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle

					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-May-07, Thu,09:20	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-01, Sat,16:13	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-May-12, Tue,14:00	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-14, Thu,10:46	Clear	Sideswipe	P.D. only	Dry	West	Merging	Unknown	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Sep-19, Sat,09:45	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2015-May-05, Tue,14:53	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Apr-29, Wed,13:06	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle

2015-Jul-16, Thu,21:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2014-Dec-21, Sun,00:13	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-14, Sat,11:00	Snow	Rear end	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-Mar-01, Sun,17:17	Clear	SMV other	P.D. only	Dry	South	Turning left	Pick-up truck	Snowbank/drift
2015-Mar-18, Wed,22:11	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Passenger van	Other motor vehicle
2015-Mar-21, Sat,15:19	Snow	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jun-05, Fri,18:39	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2015-Jun-06, Sat,16:29	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Sep-01, Tue,20:05	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-06, Sun,10:30	Clear	Turning movement	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Nov-16, Mon,16:29	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - dump	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Oct-20, Tue,19:58	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-30, Wed,14:00	Clear	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle

Location: JOCKVALE RD @ STRANDHERD DR

Traffic Control: Traffic signal

Total Collisions: 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-07, Tue,15:00	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	

					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Feb-14, Fri,16:44	Snow	Turning movement	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Delivery van	Other motor vehicle
2014-Mar-26, Wed,18:40	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Passenger van	Other motor vehicle
2014-Jul-03, Thu,16:50	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2014-Jul-07, Mon,14:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Truck - dump	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Aug-07, Thu,21:46	Clear	SMV other	Fatal injury	Dry	West	Going ahead	Motorcycle	Curb
2014-Sep-17, Wed,15:30	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Mar-01, Sun,12:49	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle

					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Dec-09, Tue,16:45	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Oct-01, Thu,12:39	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Feb-21, Sat,12:38	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-May-20, Wed,13:15	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2015-Oct-17, Sat,14:20	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Dec-10, Thu,11:35	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle

Location: MCKENNA CASEY DR @ STRANDHERD DR

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-20, Tue,16:13	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					East	Turning right	Automobile, station wagon	Other motor vehicle	

Location: STRANDHERD @ KENNEVALE DR

Traffic Control: Traffic signal **Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-04, Sat,13:21	Clear	SMV other	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Pole (utility, power)	
2014-Mar-17, Mon,18:08	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2014-Mar-17, Mon,22:03	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Unknown	Unknown	Other motor vehicle	
2014-Jun-12, Thu,08:30	Rain	Rear end	Non-fatal injury	Wet	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jun-23, Mon,17:05	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	

2014-Jul-18, Fri,13:13	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Aug-21, Thu,17:41	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Passenger van	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-Oct-01, Wed,18:33	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2014-Oct-01, Wed,10:29	Clear	Other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Debris falling off vehicle
					South	Going ahead	Unknown	Other
2015-Aug-23, Sun,10:17	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2015-Aug-24, Mon,17:45	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Nov-10, Tue,15:58	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					South	Stopped	Pick-up truck	Other motor vehicle	
2015-Nov-06, Fri,18:31	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
2015-Dec-08, Tue,07:35	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	

Location: STRANDHERD DR @ 215 W OF GREENBANK RD/BARRHAVE

Traffic Control: Traffic signal **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-05, Wed,21:25	Clear	Angle	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Aug-07, Thu,21:30	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Oct-14, Tue,16:37	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-18, Mon,18:34	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

					West	Stopped	Pick-up truck	Other motor vehicle	

Location: STRANDHERD DR @ ANDORA AVE

Traffic Control: Traffic signal

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jul-28, Mon,17:15	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-16, Fri,16:01	Drifting Snow	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: STRANDHERD DR @ CEDARVIEW RD/TARTAN DR

Traffic Control: Traffic signal

Total Collisions: 21

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-25, Sun,12:45	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2014-Jun-11, Wed,16:36	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-24, Tue,18:43	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Passenger van	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	

2014-Jul-15, Tue,09:52	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Sep-21, Sun,12:15	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Passenger van	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-16, Tue,13:21	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Nov-17, Mon,09:40	Snow	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
2015-May-02, Sat,18:09	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2014-Dec-18, Thu,19:06	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2014-Dec-16, Tue,15:00	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle

2015-Jun-28, Sun,13:23	Rain	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-31, Tue,19:09	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-25, Mon,16:50	Rain	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-12, Sat,14:46	Rain	Rear end	P.D. only	Wet	West	Going ahead	Passenger van	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jun-16, Tue,06:04	Rain	SMV other	Non-fatal injury	Wet	West	Slowing or stopping	Pick-up truck	Skidding/sliding
2015-Aug-20, Thu,18:20	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Aug-13, Thu,10:00	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Nov-12, Thu,11:26	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Oct-20, Tue,12:34	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-02, Wed,08:46	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Dec-21, Mon,13:23	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

Location: STRANDHERD DR btwn 215 W OF GREENBANK RD/BARRHAVEN MALL SC & GREENBANK

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-23, Thu,14:19	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Truck and trailer	Other motor vehicle	
2014-Oct-14, Tue,14:06	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Passenger van	Other motor vehicle	
					East	Unknown	Pick-up truck	Other motor vehicle	
2015-Feb-26, Thu,18:52	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: STRANDHERD DR btwn ANDORA AVE & JOCKVALE RD

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Apr-14, Mon,08:35	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Apr-17, Fri,16:50	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Nov-27, Fri,07:02	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	

Location: STRANDHERD DR btwn CEDARVIEW RD & MADRID AVE

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-12, Sun,17:31	Clear	Turning movement	Non-fatal injury	Dry	West	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Nov-16, Sun,14:24	Clear	Turning movement	P.D. only	Wet	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

2015-Feb-17, Tue,16:00	Clear	Turning movement	Non-fatal injury	Dry	West	Making "U" turn	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-01, Wed,23:12	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2015-Oct-11, Sun,19:40	Clear	Turning movement	P.D. only	Dry	West	Making "U" turn	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Oct-09, Fri,12:55	Rain	SMV other	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Ditch

Location: STRANDHERD DR btwn CEDARVIEW RD & MCKENNA CASEY DR

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Dec-04, Thu,16:38	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Feb-08, Sun,08:45	Snow	Approaching	Non-fatal injury	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: STRANDHERD DR btwn Continuation of STRANDHERD DR & MCKENNA CASEY DR

Traffic Control: Traffic gate

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

2014-Apr-10, Thu,13:08	Clear	SMV other	P.D. only	Dry	East	Going ahead	Truck - dump	Other
2014-May-15, Thu,08:28	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
2014-Jul-23, Wed,08:03	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Delivery van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-21, Tue,14:48	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

Location: STRANDHERD DR btwn JOCKVALE RD & 215 W OF GREENBANK RD/BARRHAVEN MALL

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-30, Fri,16:05	Clear	Rear end	Non-fatal injury	Ice	West	Going ahead	Passenger van	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	

Location: STRANDHERD DR btwn MADRID AVE & ANDORA AVE

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-30, Thu,19:34	Clear	Rear end	P.D. only	Dry	West	Merging	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

		West	Slowing or stopping	Pick-up truck	Other motor vehicle

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2013-01-01 TO: 2014-01-01

215 W OF GREENBANK RD & STRANDHERD DR

Former Municipality: **Nepean** Traffic Control: **Traffic signal** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2013-10-16	We	18:48	Clear	Dark	Angle	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Dry	Turning left	Pick-up truck	Other motor vehicle	

CEDARVIEW RD & GORMAN DR

Former Municipality: **Nepean** Traffic Control: **Traffic signal** Number of Collisions: **3**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
2	2013-01-20	Sun	12:41	Snow	Daylight	Angle	P.D. only	V1 W	Ice	Turning right	Passenger van	Other motor vehicle	0
								V2 S	Loose snow	Stopped	Passenger van	Other motor vehicle	
	COMMENTS: EXACT LOCATION UNKNOWN												
3	2013-07-19	Fri	12:12	Clear	Daylight	Angle	P.D. only	V1 S	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle	
4	2013-09-02	Mo	17:44	Clear	Daylight	Rear end	P.D. only	V1 W	Wet	Slowing or	Automobile, station	Other motor vehicle	0
								V2 W	Wet	Slowing or	Automobile, station	Other motor vehicle	

GREENBANK RD & STRANDHERD DR

Former Municipality: **Nepean** Traffic Control: **Traffic signal** Number of Collisions: **26**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
5	2013-01-17	Thu	16:50	Clear	Dusk	Rear end	P.D. only	V1 E	Wet	Turning right	Passenger van	Other motor vehicle	0
								V2 E	Wet	Turning right	Pick-up truck	Other motor vehicle	
6	2013-01-24	Thu	13:52	Clear	Daylight	Sideswipe	P.D. only	V1 N	Loose snow	Going ahead	Truck - dump	Other motor vehicle	0
								V2 N	Loose snow	Turning left	Truck - dump	Other motor vehicle	
7	2013-01-28	Mo	11:02	Snow	Daylight	Angle	Non-fatal	V1 E	Slush	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Slush	Turning left	Pick-up truck	Other motor vehicle	
8	2013-02-03	Sun	20:28	Clear	Dark	Turning	P.D. only	V1 S	Wet	Turning left	Automobile, station	Other motor vehicle	0
								V2 N	Wet	Going ahead	Automobile, station	Other motor vehicle	
9	2013-02-28	Thu	19:19	Snow	Dark	Turning	P.D. only	V1 N	Wet	Turning left	Automobile, station	Other motor vehicle	0
								V2 S	Wet	Going ahead	Automobile, station	Other motor vehicle	
10	2013-03-21	Thu	10:20	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Stopped	Automobile, station	Other motor vehicle	
11	2013-04-24	We	16:30	Rain	Daylight	Rear end	P.D. only	V1 S	Wet	Going ahead	Automobile, station	Other motor vehicle	0
								V2 S	Wet	Slowing or	Automobile, station	Other motor vehicle	
12	2013-04-28	Sun	15:00	Clear	Daylight	Turning	P.D. only	V1 E	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle	
13	2013-04-30	Tue	15:36	Clear	Daylight	Rear end	Non-fatal	V1 W	Dry	Turning right	Pick-up truck	Other motor vehicle	0
								V2 W	Dry	Turning right	Automobile, station	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

14	2013-05-21	Tue	05:49	Rain	Daylight	Rear end	P.D. only	V1	W	Wet	Slowing or	Automobile, station	Other motor vehicle	0
								V2	W	Wet	Stopped	Pick-up truck	Other motor vehicle	
15	2013-05-29	We	16:50	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	E	Dry	Turning right	Automobile, station	Other motor vehicle	
16	2013-06-01	Sat	14:04	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Turning right	Automobile, station	Other motor vehicle	
17	2013-06-04	Tue	11:02	Clear	Daylight	Turning	P.D. only	V1	N	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	
18	2013-06-21	Fri	17:00	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	S	Dry	Turning right	Passenger van	Other motor vehicle	
19	2013-06-24	Mo	14:37	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Turning right	Pick-up truck	Other motor vehicle	0
								V2	E	Dry	Turning right	Pick-up truck	Other motor vehicle	
20	2013-08-12	Mo	11:47	Clear	Daylight	Turning	Non-fatal	V1	N	Dry	Going ahead	Bicycle	Other motor vehicle	0
								V2	S	Dry	Turning left	Passenger van	Cyclist	
21	2013-09-11	We	09:26	Clear	Daylight	Angle	Non-fatal	V1	W	Dry	Going ahead	School bus	Other motor vehicle	0
								V2	S	Dry	Going ahead	Passenger van	Other motor vehicle	
22	2013-09-11	We	08:20	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Turning right	Automobile, station	Other motor vehicle	
23	2013-09-12	Thu	09:17	Clear	Daylight	Rear end	Non-fatal	V1	W	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle	
24	2013-09-20	Fri	10:56	Clear	Daylight	Turning	Non-fatal	V1	N	Dry	Going ahead	Bicycle	Other motor vehicle	0
								V2	S	Dry	Turning left	Automobile, station	Cyclist	
25	2013-11-10	Sun	16:08	Rain	Daylight	Rear end	Non-fatal	V1	S	Wet	Slowing or	Automobile, station	Other motor vehicle	0
								V2	S	Wet	Slowing or	Automobile, station	Other motor vehicle	
								V3	S	Wet	Stopped	Automobile, station	Other motor vehicle	
26	2013-11-17	Sun	11:30	Rain	Daylight	Rear end	P.D. only	V1	S	Wet	Going ahead	Passenger van	Other motor vehicle	0
								V2	S	Wet	Stopped	Automobile, station	Other motor vehicle	
27	2013-12-03	Tue	20:15	Clear	Dark	Rear end	P.D. only	V1	E	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2	E	Dry	Stopped	Automobile, station	Other motor vehicle	
28	2013-12-03	Tue	12:15	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Turning right	Passenger van	Other motor vehicle	0
								V2	N	Dry	Turning right	Passenger van	Other motor vehicle	
29	2013-12-06	Fri	08:35	Clear	Daylight	Sideswipe	P.D. only	V1	N	Dry	Changing lanes	Automobile, station	Other motor vehicle	0
								V2	N	Dry	Turning left	Automobile, station	Other motor vehicle	
30	2013-12-26	Thu	13:38	Unknow	Daylight	Turning	P.D. only	V1	N	Unknown	Turning left	Automobile, station	Other motor vehicle	0
								V2	S	Unknown	Going ahead	Automobile, station	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

JOCKVALE RD & STRANDHERD DR

Former Municipality: **Nepean** Traffic Control: **Traffic signal** Number of Collisions: **6**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
31	2013-04-17	We	16:05	Clear	Daylight	Turning	P.D. only	V1 E	Dry	Turning left	Pick-up truck	Other motor vehicle	0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle	
32	2013-05-24	Fri	14:00	Clear	Daylight	Turning	P.D. only	V1 W	Dry	Turning left	Pick-up truck	Other motor vehicle	0
								V2 E	Dry	Turning right	Automobile, station	Other motor vehicle	
33	2013-09-09	Mo	11:44	Clear	Daylight	Single vehicle	Non-fatal	V1 S	Dry	Turning right	Automobile, station	Pedestrian	1
34	2013-09-09	Mo	18:41	Clear	Daylight	Turning	P.D. only	V1 N	Dry	Turning left	Automobile, station	Cyclist	0
								V2 S	Dry	Going ahead	Bicycle	Other motor vehicle	
35	2013-09-11	We	20:31	Clear	Dark	Turning	P.D. only	V1 E	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle	
36	2013-10-19	Sat	12:30	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Turning right	Pick-up truck	Other motor vehicle	0
								V2 N	Dry	Turning right	Automobile, station	Other motor vehicle	

STRANDHERD DR, CEDARVIEW RD to JOCKVALE RD

Former Municipality: **Nepean** Traffic Control: **No control** Number of Collisions: **3**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
37	2013-05-07	Tue	12:19	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2 W	Dry	Slowing or	Automobile, station	Other motor vehicle	
								V3 W	Dry	Stopped	Automobile, station	Other motor vehicle	
38	2013-05-14	Tue	15:57	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle	
39	2013-06-07	Fri	10:30	Rain	Daylight	Turning	P.D. only	V1 W	Wet	Going ahead	Automobile, station	Other motor vehicle	0
								V2 W	Wet	Making U-Turn	Pick-up truck	Other motor vehicle	

STRANDHERD DR, GREENBANK RD to STRANDHERD DR

Former Municipality: **Nepean** Traffic Control: **No control** Number of Collisions: **2**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
40	2013-02-06	We	17:56	Clear	Dark	Rear end	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Slowing or	Passenger van	Other motor vehicle	
	COMMENTS: EXACT LOCATION UNKNOWN												
41	2013-07-30	Tue	13:07	Clear	Daylight	Angle	Non-fatal	V1 W	Dry	Going ahead	Bicycle	Other motor vehicle	0
								V2 N	Dry	Changing lanes	Automobile, station	Cyclist	
	COMMENTS: EXACT LOCATION UNKNOWN												

(Note: Time of Day = "00:00" represents unknown collision time

STRANDHERD DR, MCKENNA CASEY DR to TEMPORARY

Former Municipality: **Nepean** Traffic Control: **Traffic gate** Number of Collisions: **3**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
42	2013-02-05	Tue	09:58	Clear	Daylight	Single vehicle	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other Fixed Objects	0
43	2013-07-08	Mo	19:27	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Unknown	Stopped	Automobile, station	Other motor vehicle	
44	2013-08-22	Thu	15:32	Rain	Daylight	Single vehicle	P.D. only	V1 N	Wet	Reversing	Truck - dump	Other Fixed Objects	0

KENNEVALE DR & STRANDHERD

Former Municipality: **Nepean** Traffic Control: **Traffic Signal** Number of Collisions: **6**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
45	2013-02-19	Tue	18:08	Snow	Dark	Turning	Non-fatal	V1 S	Loose snow	Turning left	Automobile, station	Other motor vehicle	
								V2 N	Loose snow	Going ahead	Passenger van	Other motor vehicle	
46	2013-07-08	Mo	12:56	Clear	Daylight	Angle	Non-fatal	V1 S	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Stopped	Pick-up truck	Other motor vehicle	
47	2013-08-04	Sun	10:35	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2 W	Dry	Stopped	Pick-up truck	Other motor vehicle	
48	2013-08-05	Mo	16:36	Clear	Daylight	Rear end	P.D. only	V1 S	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2 S	Dry	Slowing or	Pick-up truck	Other motor vehicle	
49	2013-11-24	Sun	09:29	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Slowing or	Pick-up truck	Other motor vehicle	
50	2013-10-26	Sat	19:10	Clear	Dark	Rear end	P.D. only	V1 E	Wet	Slowing or	Passenger van	Other motor vehicle	0
								V2 E	Wet	Stopped	Automobile, station	Other motor vehicle	

FRASER FIELDS WAY & STRANDHERD

Former Municipality: **Nepean** Traffic Control: **Traffic Signal** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
51	2013-08-23	Fri	18:18	Clear	Daylight	Angle	Non-fatal	V1 S	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2 W	Dry	Going ahead	Pick-up truck	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

APPENDIX F

SYNCHRO (V9) 2020 FUTURE BACKGROUND ANALYSIS REPORTS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	887	10	1834	548	82	58	298
v/c Ratio	0.47	0.94	0.07	2.19	2.53	0.16	0.16	0.46
Control Delay	22.3	39.4	19.3	558.9	718.2	23.0	32.5	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	39.4	19.3	558.9	718.2	23.0	32.5	8.8
Queue Length 50th (m)	7.5	168.2	1.2	~695.2	~216.9	9.6	10.1	6.4
Queue Length 95th (m)	18.7	#266.9	4.8	#791.2	#284.4	22.1	21.0	29.6
Internal Link Dist (m)		362.8		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	274	1046	144	839	217	500	372	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.85	0.07	2.19	2.53	0.16	0.16	0.46

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	753	134	10	1763	71	548	51	31	58	16	282
Future Volume (vph)	81	753	134	10	1763	71	548	51	31	58	16	282
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1631	1623		1695	1753		1601	1551		1616	1505	
Flt Permitted	0.07	1.00		0.17	1.00		0.41	1.00		0.70	1.00	
Satd. Flow (perm)	113	1623		304	1753		699	1551		1197	1505	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	753	134	10	1763	71	548	51	31	58	16	282
RTOR Reduction (vph)	0	6	0	0	1	0	0	18	0	0	180	0
Lane Group Flow (vph)	81	881	0	10	1833	0	548	64	0	58	118	0
Heavy Vehicles (%)	6%	6%	30%	2%	3%	8%	8%	2%	25%	7%	0%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	67.5	67.5		54.4	54.4		35.4	35.4		35.4	35.4	
Effective Green, g (s)	67.5	67.5		54.4	54.4		35.4	35.4		35.4	35.4	
Actuated g/C Ratio	0.59	0.59		0.47	0.47		0.31	0.31		0.31	0.31	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	951		143	828		214	477		368	462	
v/s Ratio Prot	0.03	c0.54			c1.05			0.04			0.08	
v/s Ratio Perm	0.28			0.03			c0.78			0.05		
v/c Ratio	0.53	0.93		0.07	2.21		2.56	0.13		0.16	0.26	
Uniform Delay, d1	25.1	21.6		16.6	30.3		39.9	28.8		29.0	29.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	14.5		0.2	550.1		715.9	0.6		0.9	1.3	
Delay (s)	28.3	36.0		16.8	580.5		755.7	29.4		29.9	31.3	
Level of Service	C	D		B	F		F	C		C	C	
Approach Delay (s)		35.4			577.4			661.2			31.1	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	401.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.28		
Actuated Cycle Length (s)	115.1	Sum of lost time (s)	18.6
Intersection Capacity Utilization	168.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	6	921	72	1709	91	99	44	19
v/c Ratio	0.11	0.79	0.32	1.41	0.28	0.19	0.16	0.05
Control Delay	11.3	18.8	12.0	211.8	39.5	0.8	37.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	18.8	12.0	211.8	39.5	0.8	37.5	3.4
Queue Length 50th (m)	0.4	132.1	6.1	~544.6	17.4	0.0	8.2	0.0
Queue Length 95th (m)	2.4	192.4	14.8	#626.3	32.2	0.0	18.3	2.2
Internal Link Dist (m)		274.4		400.0		364.6		184.4
Turn Bay Length (m)	75.0		75.0		75.0		75.0	
Base Capacity (vph)	56	1173	228	1211	326	535	277	395
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.79	0.32	1.41	0.28	0.19	0.16	0.05

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	851	70	72	1687	22	91	0	99	44	0	19
Future Volume (vph)	6	851	70	72	1687	22	91	0	99	44	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1631	1702		1695	1762		1695	1517		1616	1488	
Flt Permitted	0.05	1.00		0.19	1.00		0.75	1.00		0.66	1.00	
Satd. Flow (perm)	83	1702		331	1762		1329	1517		1128	1488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	851	70	72	1687	22	91	0	99	44	0	19
RTOR Reduction (vph)	0	3	0	0	0	0	0	75	0	0	14	0
Lane Group Flow (vph)	6	919	0	72	1709	0	91	24	0	44	5	0
Heavy Vehicles (%)	6%	6%	2%	2%	3%	8%	2%	2%	2%	7%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	80.1	80.1		80.1	80.1		26.9	26.9		26.9	26.9	
Effective Green, g (s)	82.5	82.5		82.5	82.5		29.5	29.5		29.5	29.5	
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.25	0.25		0.25	0.25	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	1170		227	1211		326	372		277	365	
v/s Ratio Prot		0.54			c0.97			0.02			0.00	
v/s Ratio Perm	0.07			0.22			c0.07			0.04		
v/c Ratio	0.11	0.79		0.32	1.41		0.28	0.07		0.16	0.01	
Uniform Delay, d1	6.3	12.7		7.5	18.8		36.6	34.7		35.5	34.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	5.3		3.6	189.9		2.1	0.3		1.2	0.1	
Delay (s)	10.0	18.1		11.1	208.7		38.8	35.0		36.7	34.3	
Level of Service	A	B		B	F		D	D		D	C	
Approach Delay (s)		18.0			200.7			36.8			36.0	
Approach LOS		B			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	129.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	889	24	1787	121
v/c Ratio	0.68	0.07	1.33	0.51
Control Delay	9.1	3.5	172.9	23.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.1	3.5	172.9	23.2
Queue Length 50th (m)	62.9	0.9	~449.9	6.5
Queue Length 95th (m)	120.8	3.1	#543.5	22.7
Internal Link Dist (m)	400.0		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1302	364	1340	426
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	0.68	0.07	1.33	0.28

Intersection Summary

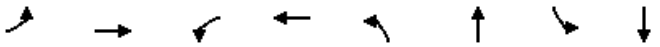
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	881	8	24	1787	36	85
Future Volume (vph)	881	8	24	1787	36	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1684		1693	1733	1497	
Flt Permitted	1.00		0.26	1.00	0.99	
Satd. Flow (perm)	1684		471	1733	1497	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	881	8	24	1787	36	85
RTOR Reduction (vph)	0	0	0	0	76	0
Lane Group Flow (vph)	889	0	24	1787	45	0
Confl. Peds. (#/hr)		3	3			4
Heavy Vehicles (%)	8%	2%	2%	5%	11%	4%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	77.3		77.3	77.3	10.9	
Effective Green, g (s)	77.3		77.3	77.3	10.9	
Actuated g/C Ratio	0.77		0.77	0.77	0.11	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1301		364	1339	163	
v/s Ratio Prot	0.53			c1.03	c0.03	
v/s Ratio Perm			0.05			
v/c Ratio	0.68		0.07	1.33	0.28	
Uniform Delay, d1	5.5		2.7	11.4	40.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.9		0.3	155.7	0.9	
Delay (s)	8.4		3.1	167.1	41.9	
Level of Service	A		A	F	D	
Approach Delay (s)	8.4			164.9	41.9	
Approach LOS	A			F	D	

Intersection Summary			
HCM 2000 Control Delay	110.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	293	2313	20	1045	195	54	93	144
v/c Ratio	1.01	1.81	0.49	1.08	0.99	0.15	0.38	0.35
Control Delay	111.1	388.2	69.3	92.1	129.0	48.1	66.0	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.1	388.2	69.3	92.1	129.0	48.1	66.0	16.0
Queue Length 50th (m)	~89.7	~1214.7	4.2	~406.3	68.7	12.8	28.5	6.6
Queue Length 95th (m)	#154.2	#1281.9	#19.7	#488.1	#123.0	26.2	48.1	27.6
Internal Link Dist (m)		367.1		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	291	1280	41	964	197	358	242	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	1.81	0.49	1.08	0.99	0.15	0.38	0.35

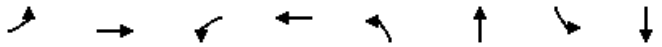
Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1816	497	20	966	79	195	39	15	93	23	121
Future Volume (vph)	293	1816	497	20	966	79	195	39	15	93	23	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.96		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1712	1748		1729	1763		1712	1744		1586	1577	
Flt Permitted	0.04	1.00		0.04	1.00		0.55	1.00		0.72	1.00	
Satd. Flow (perm)	71	1748		76	1763		982	1744		1205	1577	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	1816	497	20	966	79	195	39	15	93	23	121
RTOR Reduction (vph)	0	6	0	0	2	0	0	8	0	0	97	0
Lane Group Flow (vph)	293	2307	0	20	1043	0	195	46	0	93	47	0
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	1%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	127.6	127.6		95.6	95.6		35.2	35.2		35.2	35.2	
Effective Green, g (s)	127.6	127.6		95.6	95.6		35.2	35.2		35.2	35.2	
Actuated g/C Ratio	0.73	0.73		0.55	0.55		0.20	0.20		0.20	0.20	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	1274		41	963		197	350		242	317	
v/s Ratio Prot	0.15	c1.32			0.59			0.03			0.03	
v/s Ratio Perm	0.59			0.26			c0.20			0.08		
v/c Ratio	1.01	1.81		0.49	1.08		0.99	0.13		0.38	0.15	
Uniform Delay, d1	65.9	23.7		24.6	39.7		69.7	57.4		60.5	57.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	54.5	368.1		8.9	54.3		61.6	0.8		4.6	1.0	
Delay (s)	120.4	391.8		33.4	94.0		131.3	58.1		65.1	58.6	
Level of Service	F	F		C	F		F	E		E	E	
Approach Delay (s)		361.3			92.8			115.4			61.1	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	260.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	175.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	182.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	1817	72	1248	47	52	17	8
v/c Ratio	0.12	1.47	1.22	1.01	0.15	0.13	0.06	0.02
Control Delay	11.4	238.5	213.7	47.7	37.7	17.3	36.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	238.5	213.7	47.7	37.7	17.3	36.1	0.1
Queue Length 50th (m)	0.5	~592.3	~20.6	~282.2	8.8	2.9	3.1	0.0
Queue Length 95th (m)	2.7	#674.1	#36.7	#389.0	19.1	13.0	9.2	0.0
Internal Link Dist (m)		275.8		398.6		364.6		144.0
Turn Bay Length (m)	75.0		75.0		75.0		75.0	
Base Capacity (vph)	59	1234	59	1234	319	388	307	445
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	1.47	1.22	1.01	0.15	0.13	0.06	0.02

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1753	64	72	1203	45	47	0	52	17	0	8
Future Volume (vph)	7	1753	64	72	1203	45	47	0	52	17	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	1775		1695	1775		1695	1517		1695	1517	
Flt Permitted	0.05	1.00		0.05	1.00		0.75	1.00		0.72	1.00	
Satd. Flow (perm)	86	1775		86	1775		1343	1517		1290	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	1753	64	72	1203	45	47	0	52	17	0	8
RTOR Reduction (vph)	0	1	0	0	1	0	0	27	0	0	6	0
Lane Group Flow (vph)	7	1816	0	72	1247	0	47	25	0	17	2	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	81.0	81.0		81.0	81.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	83.4	83.4		83.4	83.4		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	1233		59	1233		320	361		307	361	
v/s Ratio Prot		c1.02			0.70			0.02			0.00	
v/s Ratio Perm	0.08			0.84			c0.04			0.01		
v/c Ratio	0.12	1.47		1.22	1.01		0.15	0.07		0.06	0.01	
Uniform Delay, d1	6.1	18.3		18.3	18.3		36.1	35.4		35.3	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	217.1		188.2	28.4		0.2	0.1		0.3	0.0	
Delay (s)	10.1	235.4		206.5	46.7		36.3	35.5		35.6	34.9	
Level of Service	B	F		F	D		D	D		D	C	
Approach Delay (s)		234.6			55.4			35.9			35.4	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	154.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1942	103	1134	74
v/c Ratio	1.32	1.37	0.78	0.47
Control Delay	166.5	255.3	11.6	42.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	166.5	255.3	11.6	42.5
Queue Length 50th (m)	~506.1	~13.0	99.2	10.4
Queue Length 95th (m)	#603.4	#47.7	209.6	23.2
Internal Link Dist (m)	398.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1469	75	1458	390
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	1.32	1.37	0.78	0.19

Intersection Summary

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

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1920	22	103	1134	19	55
Future Volume (vph)	1920	22	103	1134	19	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1781		1729	1767	1558	
Flt Permitted	1.00		0.05	1.00	0.99	
Satd. Flow (perm)	1781		91	1767	1558	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1920	22	103	1134	19	55
RTOR Reduction (vph)	0	0	0	0	17	0
Lane Group Flow (vph)	1942	0	103	1134	57	0
Confl. Peds. (#/hr)		1	1		1	1
Heavy Vehicles (%)	2%	2%	0%	3%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	80.2		80.2	80.2	8.0	
Effective Green, g (s)	80.2		80.2	80.2	8.0	
Actuated g/C Ratio	0.80		0.80	0.80	0.08	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1428		72	1417	124	
v/s Ratio Prot	1.09			0.64	c0.04	
v/s Ratio Perm			c1.13			
v/c Ratio	1.36		1.43	0.80	0.46	
Uniform Delay, d1	9.9		9.9	5.5	43.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	166.5		256.5	4.8	2.7	
Delay (s)	176.4		266.4	10.3	46.7	
Level of Service	F		F	B	D	
Approach Delay (s)	176.4			31.6	46.7	
Approach LOS	F			C	D	

Intersection Summary			
HCM 2000 Control Delay	118.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	123.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX G

SYNCHRO (V9) 2025 FUTURE BACKGROUND ANALYSIS REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	81	807	145	11	1849	71	588	85	58	16	282
v/c Ratio	0.56	0.43	0.19	0.04	1.15	0.09	1.55	0.17	0.22	0.04	0.52
Control Delay	29.8	15.3	2.5	13.3	97.6	0.2	289.0	21.0	41.5	37.7	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	15.3	2.5	13.3	97.6	0.2	289.0	21.0	41.5	37.7	27.0
Queue Length 50th (m)	7.9	53.5	0.0	0.8	~270.7	0.0	~194.9	9.3	11.3	3.0	38.5
Queue Length 95th (m)	#20.2	67.7	8.5	m1.5	#309.1	m0.0	#262.0	21.3	23.4	9.0	65.2
Internal Link Dist (m)		367.1			243.3			183.1		82.9	
Turn Bay Length (m)	100.0		100.0	100.0		100.0	75.0		35.0		
Base Capacity (vph)	145	1875	745	297	1613	752	380	506	258	394	546
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.43	0.19	0.04	1.15	0.09	1.55	0.17	0.22	0.04	0.52

Intersection Summary

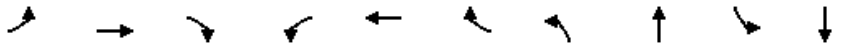
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	807	145	11	1849	71	588	51	34	58	16	282
Future Volume (vph)	81	807	145	11	1849	71	588	51	34	58	16	282
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	6.4	6.4	6.4	6.4	6.4	5.0	6.6		6.6	6.6	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1631	3262	1190	1695	3357	1432	1601	1538		1616	1820	1488
Flt Permitted	0.06	1.00	1.00	0.35	1.00	1.00	0.63	1.00		0.70	1.00	1.00
Satd. Flow (perm)	110	3262	1190	619	3357	1432	1056	1538		1194	1820	1488
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	807	145	11	1849	71	588	51	34	58	16	282
RTOR Reduction (vph)	0	0	62	0	0	37	0	20	0	0	0	54
Lane Group Flow (vph)	81	807	83	11	1849	34	588	65	0	58	16	228
Heavy Vehicles (%)	6%	6%	30%	2%	3%	8%	8%	2%	25%	7%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	pm+ov
Protected Phases	5	2			6		3	8			4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	69.0	69.0	69.0	57.7	57.7	57.7	38.0	38.0		26.0	26.0	32.3
Effective Green, g (s)	69.0	69.0	69.0	57.7	57.7	57.7	38.0	38.0		26.0	26.0	34.3
Actuated g/C Ratio	0.58	0.58	0.58	0.48	0.48	0.48	0.32	0.32		0.22	0.22	0.29
Clearance Time (s)	5.0	6.4	6.4	6.4	6.4	6.4	5.0	6.6		6.6	6.6	5.0
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
Lane Grp Cap (vph)	143	1875	684	297	1614	688	366	487		258	394	425
v/s Ratio Prot	0.03	0.25			c0.55		c0.09	0.04			0.01	c0.03
v/s Ratio Perm	0.30		0.07	0.02		0.02	c0.41			0.05		0.12
v/c Ratio	0.57	0.43	0.12	0.04	1.15	0.05	1.61	0.13		0.22	0.04	0.54
Uniform Delay, d1	26.5	14.4	11.7	16.5	31.1	16.6	41.5	29.3		38.7	37.1	36.1
Progression Factor	1.00	1.00	1.00	0.77	0.80	0.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	0.7	0.4	0.2	71.6	0.1	285.4	0.6		2.0	0.2	1.3
Delay (s)	31.5	15.1	12.0	12.9	96.6	0.1	326.9	29.8		40.7	37.3	37.4
Level of Service	C	B	B	B	F	A	F	C		D	D	D
Approach Delay (s)		16.0			92.5			289.4			38.0	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	101.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	6	920	70	72	1776	22	91	99	44	19
v/c Ratio	0.05	0.36	0.06	0.18	0.69	0.02	0.58	0.36	0.30	0.09
Control Delay	5.3	4.9	1.0	5.8	9.5	0.6	64.4	10.3	52.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	4.9	1.0	5.8	9.5	0.6	64.4	10.3	52.4	5.9
Queue Length 50th (m)	0.3	27.7	0.0	3.9	91.8	0.0	20.7	0.0	9.7	0.0
Queue Length 95th (m)	m0.8	43.6	3.1	10.6	142.5	1.1	35.9	12.2	20.2	3.0
Internal Link Dist (m)		265.8			408.6			66.1		86.8
Turn Bay Length (m)	75.0		75.0	75.0		75.0	75.0		75.0	
Base Capacity (vph)	131	2581	1172	406	2581	1164	460	598	428	550
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.36	0.06	0.18	0.69	0.02	0.20	0.17	0.10	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	920	70	72	1776	22	91	0	99	44	0	19
Future Volume (vph)	6	920	70	72	1776	22	91	0	99	44	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1517		1695	1517	
Flt Permitted	0.10	1.00	1.00	0.30	1.00	1.00	0.75	1.00		0.69	1.00	
Satd. Flow (perm)	173	3390	1517	533	3390	1517	1329	1517		1236	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	920	70	72	1776	22	91	0	99	44	0	19
RTOR Reduction (vph)	0	0	17	0	0	5	0	87	0	0	17	0
Lane Group Flow (vph)	6	920	53	72	1776	17	91	12	0	44	2	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	91.4	91.4	91.4	91.4	91.4	91.4	14.1	14.1		14.1	14.1	
Effective Green, g (s)	91.4	91.4	91.4	91.4	91.4	91.4	14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.76	0.12	0.12		0.12	0.12	
Clearance Time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	131	2582	1155	405	2582	1155	156	178		145	178	
v/s Ratio Prot		0.27			c0.52			0.01			0.00	
v/s Ratio Perm	0.03		0.04	0.14		0.01	c0.07			0.04		
v/c Ratio	0.05	0.36	0.05	0.18	0.69	0.01	0.58	0.07		0.30	0.01	
Uniform Delay, d1	3.5	4.7	3.5	3.9	7.2	3.4	50.2	47.1		48.5	46.8	
Progression Factor	0.96	0.89	0.79	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4	0.1	1.0	1.5	0.0	5.5	0.2		1.2	0.0	
Delay (s)	4.0	4.5	2.9	4.9	8.7	3.5	55.6	47.2		49.6	46.8	
Level of Service	A	A	A	A	A	A	E	D		D	D	
Approach Delay (s)		4.4			8.5			51.3			48.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	952	24	1882	121
v/c Ratio	0.37	0.06	0.72	0.58
Control Delay	3.7	3.2	7.4	27.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.7	3.2	7.4	27.3
Queue Length 50th (m)	20.6	0.7	67.0	6.7
Queue Length 95th (m)	38.1	3.1	123.2	22.7
Internal Link Dist (m)	408.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	2546	417	2621	430
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	0.37	0.06	0.72	0.28

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	944	8	24	1882	36	85
Future Volume (vph)	944	8	24	1882	36	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3199		1692	3293	1512	
Flt Permitted	1.00		0.29	1.00	0.99	
Satd. Flow (perm)	3199		523	3293	1512	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	944	8	24	1882	36	85
RTOR Reduction (vph)	0	0	0	0	78	0
Lane Group Flow (vph)	952	0	24	1882	43	0
Confl. Peds. (#/hr)		3	3			4
Heavy Vehicles (%)	8%	2%	2%	5%	11%	4%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	79.6		79.6	79.6	8.6	
Effective Green, g (s)	79.6		79.6	79.6	8.6	
Actuated g/C Ratio	0.80		0.80	0.80	0.09	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2546		416	2621	130	
v/s Ratio Prot	0.30			c0.57	c0.03	
v/s Ratio Perm			0.05			
v/c Ratio	0.37		0.06	0.72	0.33	
Uniform Delay, d1	3.0		2.2	4.9	43.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		0.3	1.7	1.5	
Delay (s)	3.4		2.4	6.6	44.5	
Level of Service	A		A	A	D	
Approach Delay (s)	3.4			6.5	44.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	11	0	0	0	0	35
Future Volume (vph)	11	0	0	0	0	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	0	0	0	0	35

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	11	0	35
Volume Left (vph)	11	0	0
Volume Right (vph)	0	0	35
Hadj (s)	0.23	0.00	-0.57
Departure Headway (s)	4.2	4.0	3.4
Degree Utilization, x	0.01	0.00	0.03
Capacity (veh/h)	844	900	1062
Control Delay (s)	7.3	7.0	6.5
Approach Delay (s)	7.3	0.0	6.5
Approach LOS	A	A	A

Intersection Summary			
Delay	6.7		
Level of Service	A		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	11	0	0	35	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	11	0	0	35	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	11	0	0	35	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	35			11			46	46	11	46	46	35
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			11			46	46	11	46	46	35
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1576			1608			955	846	1070	955	846	1038

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	11	35	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.01	0.02	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	6.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	35	0	0	11	0
Future Volume (vph)	0	35	0	0	11	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	35	0	0	11	0

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	35	0	11
Volume Left (vph)	0	0	11
Volume Right (vph)	35	0	0
Hadj (s)	-0.57	0.00	0.23
Departure Headway (s)	3.4	4.0	4.2
Degree Utilization, x	0.03	0.00	0.01
Capacity (veh/h)	1060	900	846
Control Delay (s)	6.5	7.0	7.3
Approach Delay (s)	6.5	0.0	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	6.7		
Level of Service	A		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	293	1908	532	22	1031	79	210	56	93	23	121
v/c Ratio	0.76	0.83	0.44	0.35	0.60	0.10	0.71	0.14	0.35	0.06	0.26
Control Delay	23.9	18.8	1.8	33.4	19.9	2.6	58.0	29.3	44.3	38.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	18.8	1.8	33.4	19.9	2.6	58.0	29.3	44.3	38.0	7.9
Queue Length 50th (m)	23.6	158.0	0.0	2.0	79.0	0.0	46.3	7.4	18.7	4.3	0.0
Queue Length 95th (m)	50.0	192.8	10.2	m9.4	109.9	4.4	#79.5	18.5	34.8	11.3	14.6
Internal Link Dist (m)		367.1			243.2			183.1		82.9	
Turn Bay Length (m)	100.0		100.0	100.0		100.0	75.0		35.0		
Base Capacity (vph)	436	2311	1217	63	1714	798	295	397	266	403	464
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.83	0.44	0.35	0.60	0.10	0.71	0.14	0.35	0.06	0.26

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1908	532	22	1031	79	210	39	17	93	23	121
Future Volume (vph)	293	1908	532	22	1031	79	210	39	17	93	23	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	6.4	6.4	6.4	6.4	6.4	6.6	6.6		6.6	6.6	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1712	3424	1547	1729	3390	1502	1712	1737		1586	1820	1532
Flt Permitted	0.18	1.00	1.00	0.07	1.00	1.00	0.74	1.00		0.72	1.00	1.00
Satd. Flow (perm)	316	3424	1547	126	3390	1502	1338	1737		1203	1820	1532
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	1908	532	22	1031	79	210	39	17	93	23	121
RTOR Reduction (vph)	0	0	176	0	0	39	0	13	0	0	0	92
Lane Group Flow (vph)	293	1908	356	22	1031	40	210	43	0	93	23	29
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	1%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	80.4	80.4	80.4	60.7	60.7	60.7	26.6	26.6		26.6	26.6	26.6
Effective Green, g (s)	80.4	80.4	80.4	60.7	60.7	60.7	26.6	26.6		26.6	26.6	29.2
Actuated g/C Ratio	0.67	0.67	0.67	0.51	0.51	0.51	0.22	0.22		0.22	0.22	0.24
Clearance Time (s)	5.0	6.4	6.4	6.4	6.4	6.4	6.6	6.6		6.6	6.6	6.6
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
Lane Grp Cap (vph)	382	2294	1036	63	1714	759	296	385		266	403	372
v/s Ratio Prot	0.09	c0.56			0.30			0.02			0.01	
v/s Ratio Perm	0.42		0.23	0.17		0.03	c0.16			0.08		0.02
v/c Ratio	0.77	0.83	0.34	0.35	0.60	0.05	0.71	0.11		0.35	0.06	0.08
Uniform Delay, d1	13.8	14.8	8.5	17.8	21.1	15.1	43.1	37.3		39.4	36.8	35.0
Progression Factor	1.00	1.00	1.00	0.84	0.85	0.62	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.9	3.7	0.9	13.4	1.4	0.1	13.5	0.6		3.6	0.3	0.4
Delay (s)	22.7	18.5	9.4	28.3	19.3	9.4	56.6	37.8		43.0	37.1	35.4
Level of Service	C	B	A	C	B	A	E	D		D	D	D
Approach Delay (s)		17.1			18.8			52.6			38.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	1846	64	72	1296	45	47	52	17	8
v/c Ratio	0.02	0.66	0.05	0.51	0.46	0.04	0.38	0.30	0.14	0.05
Control Delay	5.0	7.0	2.6	20.0	4.2	1.0	60.0	26.8	52.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	7.0	2.6	20.0	4.2	1.0	60.0	26.8	52.2	0.5
Queue Length 50th (m)	0.3	77.7	1.2	4.6	40.6	0.1	10.7	3.3	3.8	0.0
Queue Length 95th (m)	m0.7	116.7	m3.8	#27.8	60.6	2.4	22.3	15.1	10.8	0.0
Internal Link Dist (m)		265.8			408.6			66.1		148.6
Turn Bay Length (m)	75.0		75.0	75.0		75.0	75.0		75.0	
Base Capacity (vph)	289	2806	1262	142	2831	1274	518	609	498	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.66	0.05	0.51	0.46	0.04	0.09	0.09	0.03	0.01

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1846	64	72	1296	45	47	0	52	17	0	8
Future Volume (vph)	7	1846	64	72	1296	45	47	0	52	17	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	7.1	6.0	6.0	6.0	7.4	7.4		7.4	7.4	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1517		1695	1517	
Flt Permitted	0.20	1.00	1.00	0.10	1.00	1.00	0.75	1.00		0.72	1.00	
Satd. Flow (perm)	350	3390	1517	171	3390	1517	1343	1517		1290	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	1846	64	72	1296	45	47	0	52	17	0	8
RTOR Reduction (vph)	0	0	8	0	0	8	0	34	0	0	7	0
Lane Group Flow (vph)	7	1846	56	72	1296	37	47	18	0	17	1	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	96.4	96.4	96.4	96.4	96.4	96.4	9.1	9.1		9.1	9.1	
Effective Green, g (s)	96.4	96.4	96.4	97.5	97.5	97.5	9.1	9.1		9.1	9.1	
Actuated g/C Ratio	0.80	0.80	0.80	0.81	0.81	0.81	0.08	0.08		0.08	0.08	
Clearance Time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	281	2723	1218	138	2754	1232	101	115		97	115	
v/s Ratio Prot		c0.54			0.38			0.01			0.00	
v/s Ratio Perm	0.02		0.04	0.42		0.02	c0.04			0.01		
v/c Ratio	0.02	0.68	0.05	0.52	0.47	0.03	0.47	0.15		0.18	0.01	
Uniform Delay, d1	2.4	5.1	2.4	3.7	3.4	2.2	53.1	51.9		51.9	51.3	
Progression Factor	1.51	1.13	1.79	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.0	13.4	0.6	0.0	3.4	0.6		0.9	0.0	
Delay (s)	3.7	6.6	4.4	17.1	4.0	2.2	56.5	52.5		52.8	51.3	
Level of Service	A	A	A	B	A	A	E	D		D	D	
Approach Delay (s)		6.5			4.6			54.4			52.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	2049	103	1213	74
v/c Ratio	0.74	1.00	0.44	0.47
Control Delay	7.8	109.5	4.0	44.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.8	109.5	4.0	44.2
Queue Length 50th (m)	86.5	~21.6	31.7	11.2
Queue Length 95th (m)	142.5	#37.0	51.4	24.0
Internal Link Dist (m)	408.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	2786	103	2765	390
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	0.74	1.00	0.44	0.19

Intersection Summary

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

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2027	22	103	1213	19	55
Future Volume (vph)	2027	22	103	1213	19	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3384		1729	3357	1569	
Flt Permitted	1.00		0.07	1.00	0.99	
Satd. Flow (perm)	3384		126	3357	1569	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2027	22	103	1213	19	55
RTOR Reduction (vph)	0	0	0	0	13	0
Lane Group Flow (vph)	2049	0	103	1213	61	0
Confl. Peds. (#/hr)		1	1		1	1
Heavy Vehicles (%)	2%	2%	0%	3%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	80.0		80.0	80.0	8.2	
Effective Green, g (s)	80.0		80.0	80.0	8.2	
Actuated g/C Ratio	0.80		0.80	0.80	0.08	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2707		100	2685	128	
v/s Ratio Prot	0.61			0.36	c0.04	
v/s Ratio Perm			c0.82			
v/c Ratio	0.76		1.03	0.45	0.48	
Uniform Delay, d1	5.1		10.0	3.1	43.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.0		98.3	0.6	2.8	
Delay (s)	7.1		108.3	3.7	46.7	
Level of Service	A		F	A	D	
Approach Delay (s)	7.1			11.9	46.7	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	37	0	0	0	0	23
Future Volume (vph)	37	0	0	0	0	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	37	0	0	0	0	23

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	37	0	23
Volume Left (vph)	37	0	0
Volume Right (vph)	0	0	23
Hadj (s)	0.23	0.00	-0.57
Departure Headway (s)	4.2	4.0	3.4
Degree Utilization, x	0.04	0.00	0.02
Capacity (veh/h)	851	900	1036
Control Delay (s)	7.4	7.0	6.5
Approach Delay (s)	7.4	0.0	6.5
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	37	0	0	23	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	37	0	0	23	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	37	0	0	23	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		221			231							
pX, platoon unblocked												
vC, conflicting volume	23			37			60	60	37	60	60	23
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			37			60	60	37	60	60	23
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1592			1574			936	831	1035	936	831	1054

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	37	23	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.02	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	6.7%	ICU Level of Service	A	
Analysis Period (min)	15			

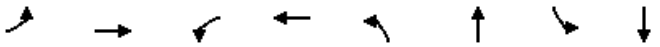
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	23	0	0	37	0
Future Volume (vph)	0	23	0	0	37	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	23	0	0	37	0

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	23	0	37
Volume Left (vph)	0	0	37
Volume Right (vph)	23	0	0
Hadj (s)	-0.57	0.00	0.23
Departure Headway (s)	3.4	4.0	4.2
Degree Utilization, x	0.02	0.00	0.04
Capacity (veh/h)	1035	900	853
Control Delay (s)	6.5	7.0	7.4
Approach Delay (s)	6.5	0.0	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX H

SYNCHRO (V9) 2020 FUTURE TOTAL ANALYSIS REPORTS



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	916	26	1898	548	89	58	298
v/c Ratio	0.47	0.96	0.20	2.25	2.55	0.18	0.16	0.46
Control Delay	22.4	44.1	24.0	586.9	729.8	22.0	32.7	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	44.1	24.0	586.9	729.8	22.0	32.7	8.9
Queue Length 50th (m)	7.5	180.6	3.4	~729.6	~218.5	9.9	10.1	6.7
Queue Length 95th (m)	18.9	#281.6	10.7	#823.1	#284.7	22.7	21.0	29.8
Internal Link Dist (m)		362.8		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	273	1042	128	844	215	493	368	644
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.88	0.20	2.25	2.55	0.18	0.16	0.46

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	782	134	26	1827	71	548	51	38	58	16	282
Future Volume (vph)	81	782	134	26	1827	71	548	51	38	58	16	282
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1631	1625		1695	1754		1601	1523		1616	1505	
Flt Permitted	0.07	1.00		0.15	1.00		0.41	1.00		0.70	1.00	
Satd. Flow (perm)	112	1625		266	1754		695	1523		1189	1505	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	782	134	26	1827	71	548	51	38	58	16	282
RTOR Reduction (vph)	0	5	0	0	1	0	0	22	0	0	180	0
Lane Group Flow (vph)	81	911	0	26	1897	0	548	67	0	58	118	0
Heavy Vehicles (%)	6%	6%	30%	2%	3%	8%	8%	2%	25%	7%	0%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	68.1	68.1		55.0	55.0		35.4	35.4		35.4	35.4	
Effective Green, g (s)	68.1	68.1		55.0	55.0		35.4	35.4		35.4	35.4	
Actuated g/C Ratio	0.59	0.59		0.48	0.48		0.31	0.31		0.31	0.31	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	956		126	833		212	465		363	460	
v/s Ratio Prot	0.03	c0.56			c1.08			0.04			0.08	
v/s Ratio Perm	0.28			0.10			c0.79			0.05		
v/c Ratio	0.53	0.95		0.21	2.28		2.58	0.14		0.16	0.26	
Uniform Delay, d1	25.2	22.3		17.7	30.4		40.2	29.1		29.3	30.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	18.6		0.8	578.6		726.8	0.6		0.9	1.3	
Delay (s)	28.5	40.9		18.5	608.9		766.9	29.8		30.2	31.6	
Level of Service	C	D		B	F		F	C		C	C	
Approach Delay (s)		39.9			601.0			664.0			31.4	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	416.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.33		
Actuated Cycle Length (s)	115.7	Sum of lost time (s)	18.6
Intersection Capacity Utilization	172.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	6	958	109	1709	171	179	44	19
v/c Ratio	0.11	0.82	0.54	1.41	0.52	0.33	0.21	0.05
Control Delay	11.3	20.7	21.2	211.8	46.0	4.0	39.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	20.7	21.2	211.8	46.0	4.0	39.1	3.4
Queue Length 50th (m)	0.4	144.6	11.5	~544.6	35.0	0.0	8.3	0.0
Queue Length 95th (m)	2.4	213.2	31.9	#626.3	57.7	10.0	18.8	2.2
Internal Link Dist (m)		274.4		400.0		289.5		184.4
Turn Bay Length (m)	75.0		75.0		75.0		75.0	
Base Capacity (vph)	56	1169	203	1211	326	535	214	395
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.82	0.54	1.41	0.52	0.33	0.21	0.05

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	851	107	109	1687	22	171	0	179	44	0	19
Future Volume (vph)	6	851	107	109	1687	22	171	0	179	44	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1631	1695		1695	1762		1695	1517		1616	1488	
Flt Permitted	0.05	1.00		0.17	1.00		0.75	1.00		0.51	1.00	
Satd. Flow (perm)	83	1695		297	1762		1329	1517		873	1488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	851	107	109	1687	22	171	0	179	44	0	19
RTOR Reduction (vph)	0	4	0	0	0	0	0	135	0	0	14	0
Lane Group Flow (vph)	6	954	0	109	1709	0	171	44	0	44	5	0
Heavy Vehicles (%)	6%	6%	2%	2%	3%	8%	2%	2%	2%	7%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	80.1	80.1		80.1	80.1		26.9	26.9		26.9	26.9	
Effective Green, g (s)	82.5	82.5		82.5	82.5		29.5	29.5		29.5	29.5	
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.25	0.25		0.25	0.25	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	1165		204	1211		326	372		214	365	
v/s Ratio Prot		0.56			c0.97			0.03			0.00	
v/s Ratio Perm	0.07			0.37			c0.13			0.05		
v/c Ratio	0.11	0.82		0.53	1.41		0.52	0.12		0.21	0.01	
Uniform Delay, d1	6.3	13.4		9.3	18.8		39.2	35.1		35.9	34.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	6.5		9.7	189.9		5.9	0.6		2.2	0.1	
Delay (s)	10.0	19.9		18.9	208.7		45.1	35.8		38.1	34.3	
Level of Service	A	B		B	F		D	D		D	C	
Approach Delay (s)		19.8			197.3			40.3			37.0	
Approach LOS		B			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	123.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	120.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	969	24	1824	121
v/c Ratio	0.74	0.08	1.36	0.51
Control Delay	10.9	3.7	185.1	23.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.9	3.7	185.1	23.2
Queue Length 50th (m)	76.2	0.9	~464.9	6.5
Queue Length 95th (m)	150.1	3.2	#558.5	22.7
Internal Link Dist (m)	400.0		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1303	316	1340	426
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	0.74	0.08	1.36	0.28

Intersection Summary

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

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	961	8	24	1824	36	85
Future Volume (vph)	961	8	24	1824	36	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1684		1695	1733	1498	
Flt Permitted	1.00		0.23	1.00	0.99	
Satd. Flow (perm)	1684		408	1733	1498	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	961	8	24	1824	36	85
RTOR Reduction (vph)	0	0	0	0	76	0
Lane Group Flow (vph)	969	0	24	1824	45	0
Confl. Peds. (#/hr)		3	3			4
Heavy Vehicles (%)	8%	2%	2%	5%	11%	4%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	77.4		77.4	77.4	10.8	
Effective Green, g (s)	77.4		77.4	77.4	10.8	
Actuated g/C Ratio	0.77		0.77	0.77	0.11	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1303		315	1341	161	
v/s Ratio Prot	0.58			c1.05	c0.03	
v/s Ratio Perm			0.06			
v/c Ratio	0.74		0.08	1.36	0.28	
Uniform Delay, d1	6.0		2.7	11.3	41.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.9		0.5	167.0	1.0	
Delay (s)	9.9		3.2	178.3	42.0	
Level of Service	A		A	F	D	
Approach Delay (s)	9.9			176.0	42.0	
Approach LOS	A			F	D	

Intersection Summary			
HCM 2000 Control Delay	115.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	11	22	80	0	0	35
Future Volume (vph)	11	22	80	0	0	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	22	80	0	0	35

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	33	80	35
Volume Left (vph)	11	80	0
Volume Right (vph)	22	0	35
Hadj (s)	-0.30	0.23	-0.57
Departure Headway (s)	3.8	4.2	3.5
Degree Utilization, x	0.04	0.09	0.03
Capacity (veh/h)	905	832	1015
Control Delay (s)	7.0	7.7	6.6
Approach Delay (s)	7.0	7.7	6.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	33	15	0	115	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	33	15	0	115	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	33	15	0	115	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	115			48			156	156	40	156	163	115
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	115			48			156	156	40	156	163	115
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1474			1559			811	736	1031	811	729	937

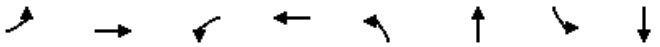
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	115	0	0
Volume Left	0	0	0	0
Volume Right	15	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.03	0.07	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	9.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	115	80	0	48	37
Future Volume (vph)	0	115	80	0	48	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	115	80	0	48	37

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	115	80	85
Volume Left (vph)	0	0	48
Volume Right (vph)	115	0	0
Hadj (s)	-0.57	0.03	0.15
Departure Headway (s)	3.7	4.2	4.4
Degree Utilization, x	0.12	0.09	0.10
Capacity (veh/h)	929	814	800
Control Delay (s)	7.2	7.7	7.9
Approach Delay (s)	7.2	7.7	7.9
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
Level of Service	A		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	293	2375	31	1088	195	70	93	144
v/c Ratio	1.01	1.85	0.76	1.13	0.99	0.20	0.39	0.35
Control Delay	111.1	409.0	118.0	108.0	129.0	42.9	66.3	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.1	409.0	118.0	108.0	129.0	42.9	66.3	16.0
Queue Length 50th (m)	~89.7	~1259.6	8.1	~437.7	68.7	14.6	28.5	6.6
Queue Length 95th (m)	#154.2	#1325.4	#32.7	#520.2	#123.0	29.8	48.2	27.6
Internal Link Dist (m)		367.1		488.2		183.1		82.9
Turn Bay Length (m)	100.0		100.0		75.0		35.0	
Base Capacity (vph)	291	1281	41	964	197	357	238	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	1.85	0.76	1.13	0.99	0.20	0.39	0.35

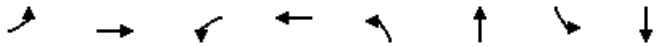
Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1878	497	31	1009	79	195	39	31	93	23	121
Future Volume (vph)	293	1878	497	31	1009	79	195	39	31	93	23	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1712	1749		1729	1764		1712	1699		1586	1577	
Flt Permitted	0.04	1.00		0.04	1.00		0.55	1.00		0.71	1.00	
Satd. Flow (perm)	71	1749		76	1764		982	1699		1188	1577	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	1878	497	31	1009	79	195	39	31	93	23	121
RTOR Reduction (vph)	0	5	0	0	2	0	0	16	0	0	97	0
Lane Group Flow (vph)	293	2370	0	31	1086	0	195	54	0	93	47	0
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	1%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	127.6	127.6		95.6	95.6		35.2	35.2		35.2	35.2	
Effective Green, g (s)	127.6	127.6		95.6	95.6		35.2	35.2		35.2	35.2	
Actuated g/C Ratio	0.73	0.73		0.55	0.55		0.20	0.20		0.20	0.20	
Clearance Time (s)	6.4	6.4		6.4	6.4		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	1275		41	963		197	341		238	317	
v/s Ratio Prot	0.15	c1.35			0.62			0.03			0.03	
v/s Ratio Perm	0.59			0.41			c0.20			0.08		
v/c Ratio	1.01	1.86		0.76	1.13		0.99	0.16		0.39	0.15	
Uniform Delay, d1	65.9	23.7		30.7	39.7		69.7	57.7		60.6	57.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	54.5	389.4		55.2	70.9		61.6	1.0		4.8	1.0	
Delay (s)	120.4	413.1		85.9	110.6		131.3	58.7		65.4	58.6	
Level of Service	F	F		F	F		F	E		E	E	
Approach Delay (s)		380.9			110.0			112.1			61.2	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	275.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	175.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	185.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	1895	150	1248	101	106	17	8
v/c Ratio	0.12	1.54	2.54	1.01	0.32	0.27	0.06	0.02
Control Delay	11.4	269.3	758.2	47.7	41.0	26.6	36.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	269.3	758.2	47.7	41.0	26.6	36.3	0.1
Queue Length 50th (m)	0.5	~632.3	~45.2	~282.2	19.7	13.2	3.1	0.0
Queue Length 95th (m)	2.7	#713.6	#87.1	#389.0	35.8	28.7	9.2	0.0
Internal Link Dist (m)		275.8		398.6		289.7		144.0
Turn Bay Length (m)	75.0		75.0		75.0		75.0	
Base Capacity (vph)	59	1229	59	1234	319	388	275	445
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	1.54	2.54	1.01	0.32	0.27	0.06	0.02

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1753	142	150	1203	45	101	0	106	17	0	8
Future Volume (vph)	7	1753	142	150	1203	45	101	0	106	17	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	1764		1695	1775		1695	1517		1695	1517	
Flt Permitted	0.05	1.00		0.05	1.00		0.75	1.00		0.65	1.00	
Satd. Flow (perm)	86	1764		86	1775		1343	1517		1155	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	1753	142	150	1203	45	101	0	106	17	0	8
RTOR Reduction (vph)	0	2	0	0	1	0	0	27	0	0	6	0
Lane Group Flow (vph)	7	1893	0	150	1247	0	101	79	0	17	2	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	81.0	81.0		81.0	81.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	83.4	83.4		83.4	83.4		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	1225		59	1233		320	361		275	361	
v/s Ratio Prot		1.07			0.70			0.05			0.00	
v/s Ratio Perm	0.08			c1.75			c0.08			0.01		
v/c Ratio	0.12	1.54		2.54	1.01		0.32	0.22		0.06	0.01	
Uniform Delay, d1	6.1	18.3		18.3	18.3		37.6	36.7		35.3	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	249.3		741.2	28.4		0.6	0.3		0.4	0.0	
Delay (s)	10.1	267.6		759.5	46.7		38.2	37.0		35.8	34.9	
Level of Service	B	F		F	D		D	D		D	C	
Approach Delay (s)		266.7			123.2			37.6			35.5	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	194.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	137.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1996	103	1212	74
v/c Ratio	1.36	1.37	0.83	0.47
Control Delay	182.7	256.9	14.5	43.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	182.7	256.9	14.5	43.4
Queue Length 50th (m)	~528.5	~13.0	121.9	10.8
Queue Length 95th (m)	#625.8	#47.7	#299.4	23.6
Internal Link Dist (m)	398.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	1469	75	1456	389
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	1.36	1.37	0.83	0.19

Intersection Summary

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

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1974	22	103	1212	19	55
Future Volume (vph)	1974	22	103	1212	19	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1781		1729	1767	1558	
Flt Permitted	1.00		0.05	1.00	0.99	
Satd. Flow (perm)	1781		91	1767	1558	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1974	22	103	1212	19	55
RTOR Reduction (vph)	0	0	0	0	15	0
Lane Group Flow (vph)	1996	0	103	1212	59	0
Confl. Peds. (#/hr)		1	1		1	1
Heavy Vehicles (%)	2%	2%	0%	3%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	80.1		80.1	80.1	8.1	
Effective Green, g (s)	80.1		80.1	80.1	8.1	
Actuated g/C Ratio	0.80		0.80	0.80	0.08	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1426		72	1415	126	
v/s Ratio Prot	1.12			0.69	c0.04	
v/s Ratio Perm			c1.13			
v/c Ratio	1.40		1.43	0.86	0.47	
Uniform Delay, d1	10.0		10.0	6.3	43.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	184.1		256.5	6.9	2.8	
Delay (s)	194.1		266.4	13.2	46.7	
Level of Service	F		F	B	D	
Approach Delay (s)	194.1			33.0	46.7	
Approach LOS	F			C	D	

Intersection Summary			
HCM 2000 Control Delay	128.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	126.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	37	47	54	0	0	23
Future Volume (vph)	37	47	54	0	0	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	37	47	54	0	0	23

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	84	54	23
Volume Left (vph)	37	54	0
Volume Right (vph)	47	0	23
Hadj (s)	-0.21	0.23	-0.57
Departure Headway (s)	3.9	4.3	3.6
Degree Utilization, x	0.09	0.06	0.02
Capacity (veh/h)	912	805	979
Control Delay (s)	7.2	7.6	6.6
Approach Delay (s)	7.2	7.6	6.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	84	31	0	77	0	0	0	0	0	0	0
Future Volume (vph)	0	84	31	0	77	0	0	0	0	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	84	31	0	77	0	0	0	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	115	77	0	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	31	0	0	0
Hadj (s)	-0.13	0.03	0.00	0.00
Departure Headway (s)	3.8	4.0	4.3	4.3
Degree Utilization, x	0.12	0.09	0.00	0.00
Capacity (veh/h)	927	883	808	808
Control Delay (s)	7.4	7.4	7.3	7.3
Approach Delay (s)	7.4	7.4	0.0	0.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.4		
Level of Service		A		
Intersection Capacity Utilization		10.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	77	54	0	115	78
Future Volume (vph)	0	77	54	0	115	78
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	77	54	0	115	78

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	77	54	193
Volume Left (vph)	0	0	115
Volume Right (vph)	77	0	0
Hadj (s)	-0.57	0.03	0.15
Departure Headway (s)	3.9	4.3	4.3
Degree Utilization, x	0.08	0.06	0.23
Capacity (veh/h)	871	808	826
Control Delay (s)	7.2	7.6	8.5
Approach Delay (s)	7.2	7.6	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.1		
Level of Service	A		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX I

SYNCHRO (V9) 2025 FUTURE TOTAL ANALYSIS REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	81	836	145	27	1913	71	588	92	58	16	282
v/c Ratio	0.56	0.45	0.19	0.09	1.19	0.09	1.55	0.18	0.23	0.04	0.52
Control Delay	29.8	15.5	2.5	16.6	113.9	1.3	289.0	19.9	41.6	37.7	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	15.5	2.5	16.6	113.9	1.3	289.0	19.9	41.6	37.7	27.0
Queue Length 50th (m)	7.9	56.2	0.0	2.3	~287.7	0.0	~194.9	9.5	11.3	3.0	38.5
Queue Length 95th (m)	#20.2	70.7	8.5	m4.5	#325.0	m1.0	#262.0	21.9	23.4	9.0	65.2
Internal Link Dist (m)		367.1			243.3			183.1		82.9	
Turn Bay Length (m)	100.0		100.0	100.0		100.0	75.0		35.0		
Base Capacity (vph)	145	1875	745	288	1613	752	380	503	256	394	546
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.45	0.19	0.09	1.19	0.09	1.55	0.18	0.23	0.04	0.52

Intersection Summary

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	836	145	27	1913	71	588	51	41	58	16	282
Future Volume (vph)	81	836	145	27	1913	71	588	51	41	58	16	282
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	6.4	6.4	6.4	6.4	6.4	5.0	6.6		6.6	6.6	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1631	3262	1190	1695	3357	1432	1601	1513		1616	1820	1488
Flt Permitted	0.06	1.00	1.00	0.34	1.00	1.00	0.63	1.00		0.70	1.00	1.00
Satd. Flow (perm)	110	3262	1190	602	3357	1432	1056	1513		1186	1820	1488
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	836	145	27	1913	71	588	51	41	58	16	282
RTOR Reduction (vph)	0	0	62	0	0	37	0	24	0	0	0	54
Lane Group Flow (vph)	81	836	83	27	1913	34	588	68	0	58	16	228
Heavy Vehicles (%)	6%	6%	30%	2%	3%	8%	8%	2%	25%	7%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	pm+ov
Protected Phases	5	2			6		3	8			4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	69.0	69.0	69.0	57.7	57.7	57.7	38.0	38.0		26.0	26.0	32.3
Effective Green, g (s)	69.0	69.0	69.0	57.7	57.7	57.7	38.0	38.0		26.0	26.0	34.3
Actuated g/C Ratio	0.58	0.58	0.58	0.48	0.48	0.48	0.32	0.32		0.22	0.22	0.29
Clearance Time (s)	5.0	6.4	6.4	6.4	6.4	6.4	5.0	6.6		6.6	6.6	5.0
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
Lane Grp Cap (vph)	143	1875	684	289	1614	688	366	479		256	394	425
v/s Ratio Prot	0.03	c0.26			c0.57		c0.09	0.04			0.01	0.03
v/s Ratio Perm	0.30		0.07	0.04		0.02	c0.41			0.05		0.12
v/c Ratio	0.57	0.45	0.12	0.09	1.19	0.05	1.61	0.14		0.23	0.04	0.54
Uniform Delay, d1	26.5	14.6	11.7	16.9	31.1	16.6	41.5	29.3		38.7	37.1	36.1
Progression Factor	1.00	1.00	1.00	0.92	0.79	4.14	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	0.8	0.4	0.5	88.2	0.1	285.4	0.6		2.0	0.2	1.3
Delay (s)	31.5	15.3	12.0	16.1	112.8	68.7	326.9	30.0		40.8	37.3	37.4
Level of Service	C	B	B	B	F	E	F	C		D	D	D
Approach Delay (s)		16.1			109.9			286.7			38.0	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	108.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	121.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	6	920	107	109	1776	22	171	179	44	19
v/c Ratio	0.06	0.39	0.10	0.30	0.75	0.02	0.73	0.50	0.26	0.06
Control Delay	8.7	7.4	1.3	10.9	14.9	1.1	63.8	21.4	43.9	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	7.4	1.3	10.9	14.9	1.1	63.8	21.4	43.9	4.5
Queue Length 50th (m)	0.4	37.0	0.0	8.6	122.4	0.0	38.5	14.0	9.1	0.0
Queue Length 95th (m)	m1.2	49.2	4.8	23.2	195.2	1.5	57.2	32.5	18.5	2.7
Internal Link Dist (m)		265.8			408.6			66.1		86.8
Turn Bay Length (m)	75.0		75.0	75.0		75.0	75.0		75.0	
Base Capacity (vph)	102	2383	1098	361	2383	1078	460	598	332	550
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.39	0.10	0.30	0.75	0.02	0.37	0.30	0.13	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	920	107	109	1776	22	171	0	179	44	0	19
Future Volume (vph)	6	920	107	109	1776	22	171	0	179	44	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1517		1695	1517	
Flt Permitted	0.08	1.00	1.00	0.29	1.00	1.00	0.75	1.00		0.54	1.00	
Satd. Flow (perm)	147	3390	1517	514	3390	1517	1329	1517		958	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	920	107	109	1776	22	171	0	179	44	0	19
RTOR Reduction (vph)	0	0	32	0	0	7	0	91	0	0	16	0
Lane Group Flow (vph)	6	920	75	109	1776	15	171	88	0	44	3	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	84.4	84.4	84.4	84.4	84.4	84.4	21.1	21.1		21.1	21.1	
Effective Green, g (s)	84.4	84.4	84.4	84.4	84.4	84.4	21.1	21.1		21.1	21.1	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70	0.70	0.18	0.18		0.18	0.18	
Clearance Time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	103	2384	1066	361	2384	1066	233	266		168	266	
v/s Ratio Prot		0.27			c0.52			0.06			0.00	
v/s Ratio Perm	0.04		0.05	0.21		0.01	c0.13			0.05		
v/c Ratio	0.06	0.39	0.07	0.30	0.74	0.01	0.73	0.33		0.26	0.01	
Uniform Delay, d1	5.5	7.2	5.6	6.7	11.1	5.3	46.8	43.3		42.7	40.8	
Progression Factor	0.92	0.85	0.75	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.4	0.1	2.1	2.2	0.0	11.3	0.7		0.8	0.0	
Delay (s)	6.1	6.6	4.3	8.8	13.3	5.4	58.1	44.0		43.6	40.9	
Level of Service	A	A	A	A	B	A	E	D		D	D	
Approach Delay (s)		6.4			12.9			50.9			42.7	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1032	24	1919	121
v/c Ratio	0.41	0.06	0.73	0.58
Control Delay	3.9	3.3	7.7	27.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.9	3.3	7.7	27.3
Queue Length 50th (m)	23.2	0.8	70.2	6.7
Queue Length 95th (m)	42.6	3.1	129.2	22.7
Internal Link Dist (m)	408.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	2546	380	2621	430
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	0.06	0.73	0.28

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1024	8	24	1919	36	85
Future Volume (vph)	1024	8	24	1919	36	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3199		1692	3293	1512	
Flt Permitted	1.00		0.27	1.00	0.99	
Satd. Flow (perm)	3199		477	3293	1512	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1024	8	24	1919	36	85
RTOR Reduction (vph)	0	0	0	0	78	0
Lane Group Flow (vph)	1032	0	24	1919	43	0
Confl. Peds. (#/hr)		3	3			4
Heavy Vehicles (%)	8%	2%	2%	5%	11%	4%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	79.6		79.6	79.6	8.6	
Effective Green, g (s)	79.6		79.6	79.6	8.6	
Actuated g/C Ratio	0.80		0.80	0.80	0.09	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2546		379	2621	130	
v/s Ratio Prot	0.32			c0.58	c0.03	
v/s Ratio Perm			0.05			
v/c Ratio	0.41		0.06	0.73	0.33	
Uniform Delay, d1	3.1		2.2	5.0	43.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5		0.3	1.8	1.5	
Delay (s)	3.6		2.5	6.8	44.5	
Level of Service	A		A	A	D	
Approach Delay (s)	3.6			6.8	44.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	11	22	80	0	0	35
Future Volume (vph)	11	22	80	0	0	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	22	80	0	0	35

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	33	80	35
Volume Left (vph)	11	80	0
Volume Right (vph)	22	0	35
Hadj (s)	-0.30	0.23	-0.57
Departure Headway (s)	3.8	4.2	3.5
Degree Utilization, x	0.04	0.09	0.03
Capacity (veh/h)	905	832	1015
Control Delay (s)	7.0	7.7	6.6
Approach Delay (s)	7.0	7.7	6.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	33	15	0	115	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	33	15	0	115	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	33	15	0	115	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	115			48			156	156	40	156	163	115
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	115			48			156	156	40	156	163	115
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1474			1559			811	736	1031	811	729	937

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	115	0	0
Volume Left	0	0	0	0
Volume Right	15	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.03	0.07	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	9.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	115	80	0	48	37
Future Volume (vph)	0	115	80	0	48	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	115	80	0	48	37

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	115	80	85
Volume Left (vph)	0	0	48
Volume Right (vph)	115	0	0
Hadj (s)	-0.57	0.03	0.15
Departure Headway (s)	3.7	4.2	4.4
Degree Utilization, x	0.12	0.09	0.10
Capacity (veh/h)	929	814	800
Control Delay (s)	7.2	7.7	7.9
Approach Delay (s)	7.2	7.7	7.9
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
Level of Service	A		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	293	1970	532	33	1074	79	210	72	93	23	121
v/c Ratio	0.76	0.86	0.44	0.55	0.64	0.10	0.72	0.19	0.36	0.06	0.26
Control Delay	26.0	20.0	1.8	53.3	19.7	2.4	58.8	29.4	44.7	38.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	20.0	1.8	53.3	19.7	2.4	58.8	29.4	44.7	38.0	8.0
Queue Length 50th (m)	24.9	170.2	0.0	3.4	92.2	0.0	46.3	9.8	18.8	4.3	0.0
Queue Length 95th (m)	55.6	207.7	10.2	m#18.6	62.5	4.0	#79.5	22.3	34.9	11.3	14.6
Internal Link Dist (m)		367.1			243.2			183.1		82.9	
Turn Bay Length (m)	100.0		100.0	100.0		100.0	75.0		35.0		
Base Capacity (vph)	420	2311	1217	60	1683	785	292	386	258	398	460
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.85	0.44	0.55	0.64	0.10	0.72	0.19	0.36	0.06	0.26

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1970	532	33	1074	79	210	39	33	93	23	121
Future Volume (vph)	293	1970	532	33	1074	79	210	39	33	93	23	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	6.4	6.4	6.4	6.4	6.4	6.6	6.6		6.6	6.6	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1712	3424	1547	1729	3390	1502	1712	1695		1586	1820	1532
Flt Permitted	0.16	1.00	1.00	0.07	1.00	1.00	0.74	1.00		0.71	1.00	1.00
Satd. Flow (perm)	285	3424	1547	122	3390	1502	1338	1695		1186	1820	1532
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	1970	532	33	1074	79	210	39	33	93	23	121
RTOR Reduction (vph)	0	0	174	0	0	40	0	16	0	0	0	92
Lane Group Flow (vph)	293	1970	358	33	1074	39	210	56	0	93	23	29
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	1%	0%	0%	9%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	80.8	80.8	80.8	59.6	59.6	59.6	26.2	26.2		26.2	26.2	26.2
Effective Green, g (s)	80.8	80.8	80.8	59.6	59.6	59.6	26.2	26.2		26.2	26.2	28.8
Actuated g/C Ratio	0.67	0.67	0.67	0.50	0.50	0.50	0.22	0.22		0.22	0.22	0.24
Clearance Time (s)	5.0	6.4	6.4	6.4	6.4	6.4	6.6	6.6		6.6	6.6	6.6
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
Lane Grp Cap (vph)	384	2305	1041	60	1683	745	292	370		258	397	367
v/s Ratio Prot	0.10	c0.58			0.32			0.03			0.01	
v/s Ratio Perm	0.41		0.23	0.27		0.03	c0.16			0.08		0.02
v/c Ratio	0.76	0.85	0.34	0.55	0.64	0.05	0.72	0.15		0.36	0.06	0.08
Uniform Delay, d1	15.8	15.1	8.3	20.9	22.3	15.6	43.5	37.9		39.8	37.1	35.3
Progression Factor	1.00	1.00	1.00	0.78	0.78	0.57	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.7	4.3	0.9	28.7	1.7	0.1	14.2	0.9		3.9	0.3	0.4
Delay (s)	24.5	19.4	9.2	45.1	19.0	9.0	57.7	38.8		43.7	37.4	35.7
Level of Service	C	B	A	D	B	A	E	D		D	D	D
Approach Delay (s)		18.0			19.1			52.9			39.0	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	1846	142	150	1296	45	101	106	17	8
v/c Ratio	0.03	0.72	0.12	1.29	0.50	0.04	0.61	0.48	0.11	0.04
Control Delay	7.4	10.1	3.5	203.8	6.6	1.6	64.5	38.2	45.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	10.1	3.5	203.8	6.6	1.6	64.5	38.2	45.9	0.2
Queue Length 50th (m)	0.4	88.7	3.8	~44.9	51.2	0.1	22.9	15.2	3.6	0.0
Queue Length 95th (m)	m0.9	126.2	m10.2	#62.9	80.7	3.2	39.0	31.1	10.0	0.0
Internal Link Dist (m)		265.8			408.6			66.1		148.6
Turn Bay Length (m)	75.0		75.0	75.0		75.0	75.0		75.0	
Base Capacity (vph)	252	2560	1168	116	2591	1169	518	609	475	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.72	0.12	1.29	0.50	0.04	0.19	0.17	0.04	0.01

Intersection Summary

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1846	142	150	1296	45	101	0	106	17	0	8
Future Volume (vph)	7	1846	142	150	1296	45	101	0	106	17	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	7.1	6.0	6.0	6.0	7.4	7.4		7.4	7.4	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1517		1695	1517	
Flt Permitted	0.19	1.00	1.00	0.09	1.00	1.00	0.75	1.00		0.69	1.00	
Satd. Flow (perm)	333	3390	1517	152	3390	1517	1343	1517		1229	1517	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	1846	142	150	1296	45	101	0	106	17	0	8
RTOR Reduction (vph)	0	0	23	0	0	10	0	32	0	0	7	0
Lane Group Flow (vph)	7	1846	119	150	1296	35	101	74	0	17	1	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	90.6	90.6	90.6	90.6	90.6	90.6	14.9	14.9		14.9	14.9	
Effective Green, g (s)	90.6	90.6	90.6	91.7	91.7	91.7	14.9	14.9		14.9	14.9	
Actuated g/C Ratio	0.75	0.75	0.75	0.76	0.76	0.76	0.12	0.12		0.12	0.12	
Clearance Time (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.4		7.4	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	251	2559	1145	116	2590	1159	166	188		152	188	
v/s Ratio Prot		0.54			0.38			0.05			0.00	
v/s Ratio Perm	0.02		0.08	c0.98		0.02	c0.08			0.01		
v/c Ratio	0.03	0.72	0.10	1.29	0.50	0.03	0.61	0.39		0.11	0.01	
Uniform Delay, d1	3.7	7.9	3.9	14.1	5.4	3.4	49.8	48.4		46.7	46.1	
Progression Factor	1.49	1.03	1.80	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.0	0.1	181.6	0.7	0.0	6.2	1.3		0.3	0.0	
Delay (s)	5.6	9.2	7.1	195.8	6.1	3.5	56.0	49.7		47.0	46.1	
Level of Service	A	A	A	F	A	A	E	D		D	D	
Approach Delay (s)		9.0			25.1			52.8			46.7	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	2103	103	1291	74
v/c Ratio	0.76	1.10	0.47	0.47
Control Delay	8.3	143.5	4.2	44.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.3	143.5	4.2	44.6
Queue Length 50th (m)	93.3	~23.4	35.2	11.4
Queue Length 95th (m)	154.1	#40.4	56.8	24.1
Internal Link Dist (m)	408.6		137.4	79.7
Turn Bay Length (m)		50.0		
Base Capacity (vph)	2784	94	2762	389
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	0.76	1.10	0.47	0.19

Intersection Summary

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

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2081	22	103	1291	19	55
Future Volume (vph)	2081	22	103	1291	19	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0		6.0	6.0	5.8	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3384		1729	3357	1569	
Flt Permitted	1.00		0.06	1.00	0.99	
Satd. Flow (perm)	3384		114	3357	1569	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2081	22	103	1291	19	55
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	2103	0	103	1291	62	0
Confl. Peds. (#/hr)		1	1		1	1
Heavy Vehicles (%)	2%	2%	0%	3%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	79.9		79.9	79.9	8.3	
Effective Green, g (s)	79.9		79.9	79.9	8.3	
Actuated g/C Ratio	0.80		0.80	0.80	0.08	
Clearance Time (s)	6.0		6.0	6.0	5.8	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2703		91	2682	130	
v/s Ratio Prot	0.62			0.38	c0.04	
v/s Ratio Perm			c0.90			
v/c Ratio	0.78		1.13	0.48	0.48	
Uniform Delay, d1	5.3		10.0	3.3	43.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.3		134.3	0.6	2.8	
Delay (s)	7.6		144.4	3.9	46.5	
Level of Service	A		F	A	D	
Approach Delay (s)	7.6			14.3	46.5	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	37	47	54	0	0	23
Future Volume (vph)	37	47	54	0	0	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	37	47	54	0	0	23

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	84	54	23
Volume Left (vph)	37	54	0
Volume Right (vph)	47	0	23
Hadj (s)	-0.21	0.23	-0.57
Departure Headway (s)	3.9	4.3	3.6
Degree Utilization, x	0.09	0.06	0.02
Capacity (veh/h)	912	805	979
Control Delay (s)	7.2	7.6	6.6
Approach Delay (s)	7.2	7.6	6.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	84	31	0	77	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	84	31	0	77	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	84	31	0	77	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		221			231							
pX, platoon unblocked												
vC, conflicting volume	77			115			176	176	100	176	192	77
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			115			176	176	100	176	192	77
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1522			1474			786	717	956	786	703	984

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	77	0	0
Volume Left	0	0	0	0
Volume Right	31	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.07	0.05	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	10.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	77	54	0	115	78
Future Volume (vph)	0	77	54	0	115	78
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	77	54	0	115	78

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	77	54	193
Volume Left (vph)	0	0	115
Volume Right (vph)	77	0	0
Hadj (s)	-0.57	0.03	0.15
Departure Headway (s)	3.9	4.3	4.3
Degree Utilization, x	0.08	0.06	0.23
Capacity (veh/h)	871	808	826
Control Delay (s)	7.2	7.6	8.5
Approach Delay (s)	7.2	7.6	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.1		
Level of Service	A		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		