4497 O'Keefe Court

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Design Review component and the Network Impact Component. This study has been prepared to support an Official Plan Amendment.

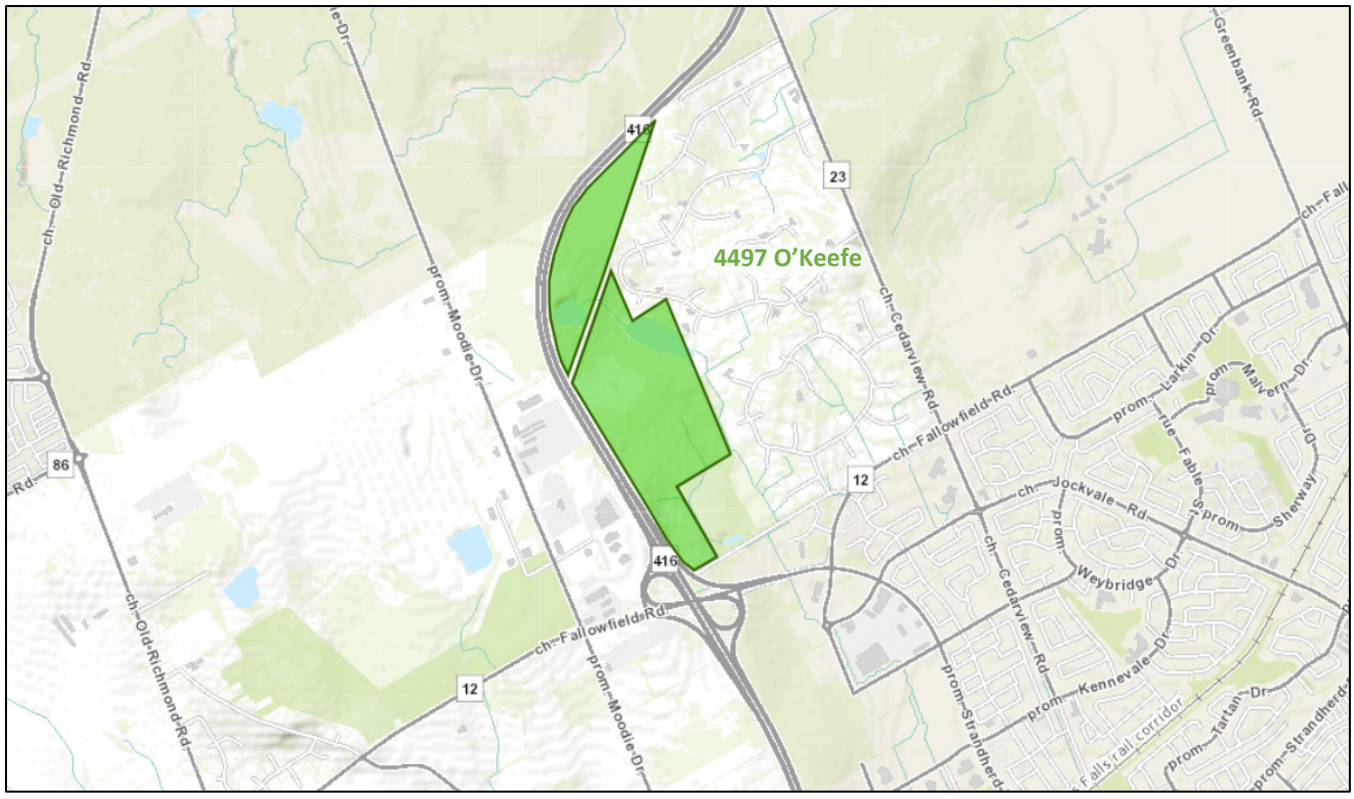
2 Existing and Planned Conditions

2.1 Proposed Development

The development site is located at 4497 O'Keefe Court is currently zoned as Rural Zones (RR4, RR4 [647, 648, 649r]), Open Space and Leisure Zones (O1, O1A), and Environmental Zone (EP3). The development concept is for a new urban community comprising a mix of densities, from detached dwellings to mid-rise condo blocks. Residential-supportive land uses are proposed as being integrated into the community's higher density southern area, where a fifteen-minute community is envisioned. A new collector road serving the community is proposed to connect O'Keefe Court to Onassa Circle.

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

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 28, 2024

Figure 2: Concept Plan

2.2 Existing Conditions

2.2.1 Area Road Network

Fallowfield Road: Fallowfield Road is a City of Ottawa arterial road with a four-lane rural cross-section west of Citigate Drive, and a two-lane rural cross-section including paved shoulders north of Strandherd Drive. A multi-use pathway (MUP) is provided on the west side of the road between O'Keefe Court and Forager Street, with an off-road MUP continuing from O'Keefe Court to Cedarview Road on the north side of Fallowfield Road. The posted speed limit is 60 km/h north of Strandherd Drive and 80 km/h west of Citigate Drive. The Ottawa Official Plan reserves a 44.5 metre right-of-way north of Strandherd Drive within the study area and the measured right-of-way is 48.0 metres west of Citigate Drive. Fallowfield Road is designated as a truck route.

Strandherd Drive: Strandherd Drive is a City of Ottawa arterial road with a four-lane, divided urban cross-section including cycletracks and sidewalks on both sides of the road. The posted speed limit is 80 km/h and the Ottawa Official Plan reserves a 44.5 metre right of way within the study area. Strandherd Drive is designated as a truck route.

Cedarview Road: Cedarview Road is a City of Ottawa arterial road north of Fallowfield Road, a major collector road between Fallowfield Road and Jockvale Road, a collector road south of Jockvale Road and a local road south of Kennevale Road. Cedarview Road has a two-lane rural cross-section, with paved shoulders north of Fallowfield Drive, and gravel shoulders to the south. South of Fallowfield Road, a MUP is provided on the east side of the road. The posted speed limit is 60 km/h north of Fallowfield Road and 40 km/h south of Fallowfield Road. The Ottawa Official Plan reserves a 37.5 metre right of way north of Fallowfield Road, a 26.0 metre right of way between Fallowfield Road and Jockvale Road, and a 24.0 metre right of way south of Jockvale Road. Cedarview Road is designated as a truck route north of Fallowfield Road.

Citigate Drive: Citigate Drive is a City of Ottawa major collector road with a two-lane urban cross-section. A sidewalk is provided along the west side of the road and a MUP is provided on the east side of the road South of CrossKeys Place. The unposted speed limit is assumed to be 50 km/h and the existing right of way is 24.0 metres north of CrossKeys Place, and 26.0 metres south of CrossKeys Place.

O'Keefe Court: O'Keefe Court is a City of Ottawa local road with a two-lane rural cross-section including gravel shoulders. An off-road MUP is provided on the north side of O'Keefe Court between Fallowfield Road and Lytle Park. The unposted speed limit is assumed to be 50 km/h and the existing right of way varies between 30.0 metres and 31.0 metres within the study area.

Cobble Hill Drive: Cobble Hill Drive is a City of Ottawa local road with a two-lane urban cross-section. Sidewalks are provided on both sides of the road. The unposted speed limit is assumed to be 50 km/h and the existing right of way is 21.5 metres.

Onassa Circle: Onassa Circle is a City of Ottawa local road with a two-lane rural cross-section. The posted speed limit is 40 km/h and the existing right of way is 20.0 metres.

2.2.2 Existing Intersections

The key study area intersections have been summarized below:

Cedarview Road at Onassa Circle	The intersection of Cedarview Road at Onassa Circle is an unsignalized T-intersection with stop control on the minor approach of Onassa Circle. The northbound approach consists of a shared left-turn/through lane, and the southbound approach consists of a shared through/right-turn lane. The eastbound approach consists of a shared

	all-movements lane which is separated from the receiving lane on this leg by a median. No turn restrictions were noted.
Fallowfield Road/Citigate Drive at Strandherd Drive	The intersection of Fallowfield Road/Citigate Drive at Strandherd Drive is a signalized intersection. The northbound approach of Citigate Drive consists of two auxiliary left-turn lanes and a shared through/right-turn lane, and the southbound approach of Fallowfield Road consists of an auxiliary left-turn lane, a through lane, and an auxiliary channelized right-turn lane. The eastbound approach of Fallowfield Road consists of two auxiliary left-turn lanes, two through lanes, an auxiliary right-turn lane, and a cycletrack, and the westbound approach of Strandherd Drive consists of an auxiliary left-turn lane, two through lanes, an auxiliary right-turn lane, and a cycletrack. No turn restrictions were noted.
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive	The intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive is an unsignalized intersection with stop control on the minor approaches of O'Keefe Court and Cobble Hill Drive. The northbound approach, considered as Cobble Hill Drive within this TIA consists of a shared all-movements lane and the southbound approach of O'Keefe Court consists of an auxiliary left-turn lane and a shared through/right-turn lane. The eastbound approach of Fallowfield Road consists of an auxiliary left-turn lane, a through lane, and a right-turn lane, and the westbound approach of Fallowfield Road consists of an auxiliary left-turn lane, a through lane, a pocket bike lane, and an auxiliary right-turn lane. No turn restrictions were noted.
Fallowfield Road at Cedarview Road	The intersection of Fallowfield Road at Cedarview Road is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. The eastbound and westbound approaches each consist of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site accesses, driveways to four detached dwellings are present on Trilby Court. Just beyond 200 metres from the proposed connection to O'Keefe Court, a driveway to Lytle Park is present.

2.2.4 Cycling and Pedestrian Facilities

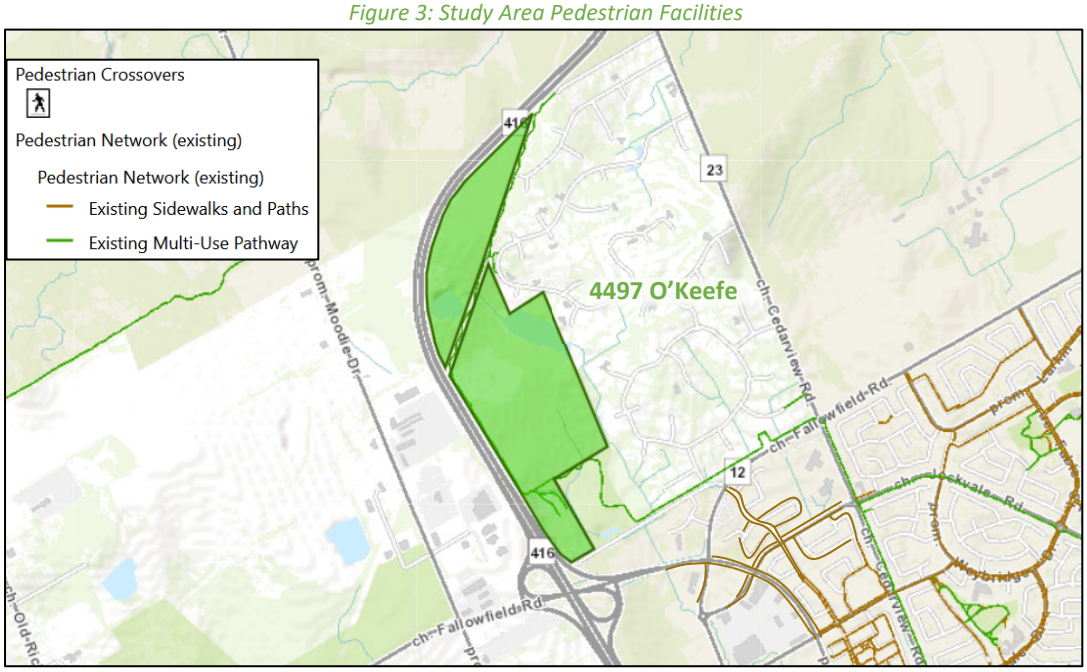
Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

Sidewalks are provided along both sides of Strandherd Drive and Cobble Hill Drive, and along the west side of Citigate Drive. A sidewalk is provided on the south side of Fallowfield Road for approximately 155 metres west of Citigate Drive.

Cycling facilities include cycletracks along both sides of Strandherd Drive, and a cycletrack on the south side of Fallowfield Road for approximately 155 metres west of Citigate Drive. Paved shoulders are provided along Fallowfield Road north of Strandherd Drive and Cedarview Road north of Fallowfield Road within the study area. A MUP is present along the east side of Cedarview Road south of Fallowfield Road and on the east side of Citigate

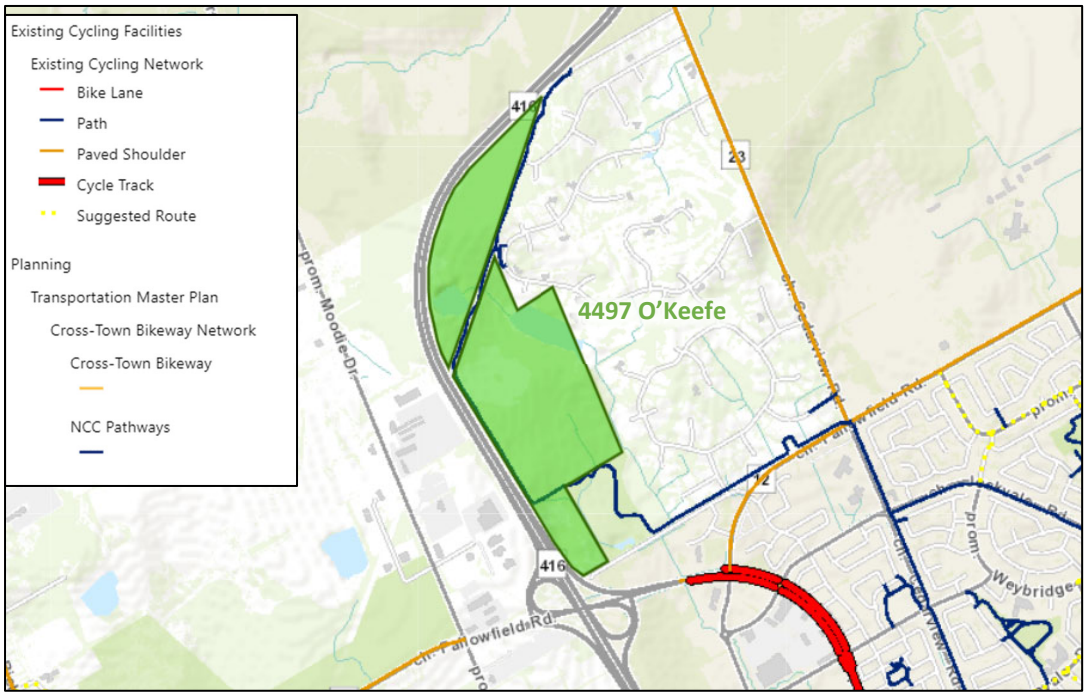
Drive south of CrossKeys Place. An off-road MUP also exists on the north side of Fallowfield Road west of Cedarview Road, continuing along O'Keefe Court to Lytle Park. This MUP circulates Lytle Park and continues as a gravel pathway is along the western edge of the 4497 O'Keefe Court parcel and along the hydro corridor to connect to Lytle Avenue. Within the 2023 Transportation Master Plan – Part 1, Strandherd Drive is designated as a cross-town bikeway.

Figure 3: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 28, 2024

Figure 4: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 28,2024

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

Figure 5: Existing Pedestrian Volumes

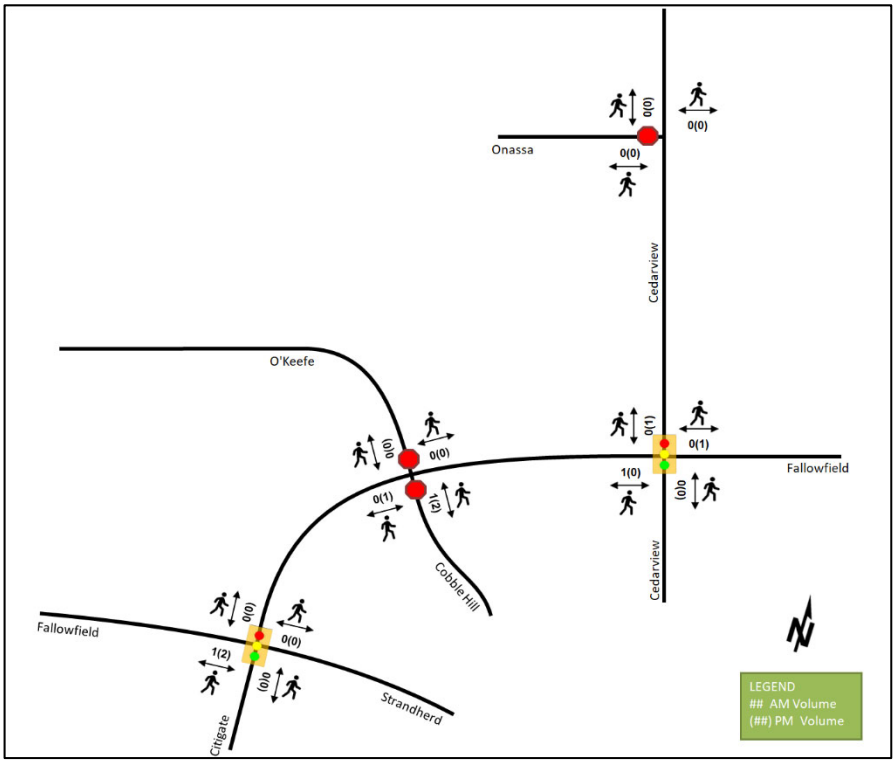
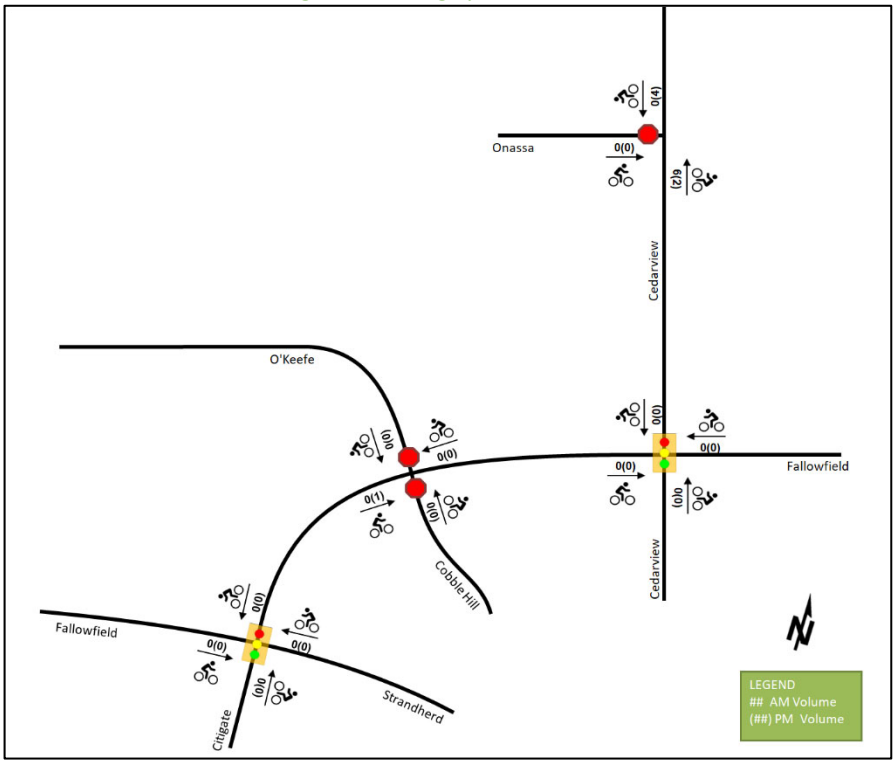


Figure 6: Existing Cyclist Volumes



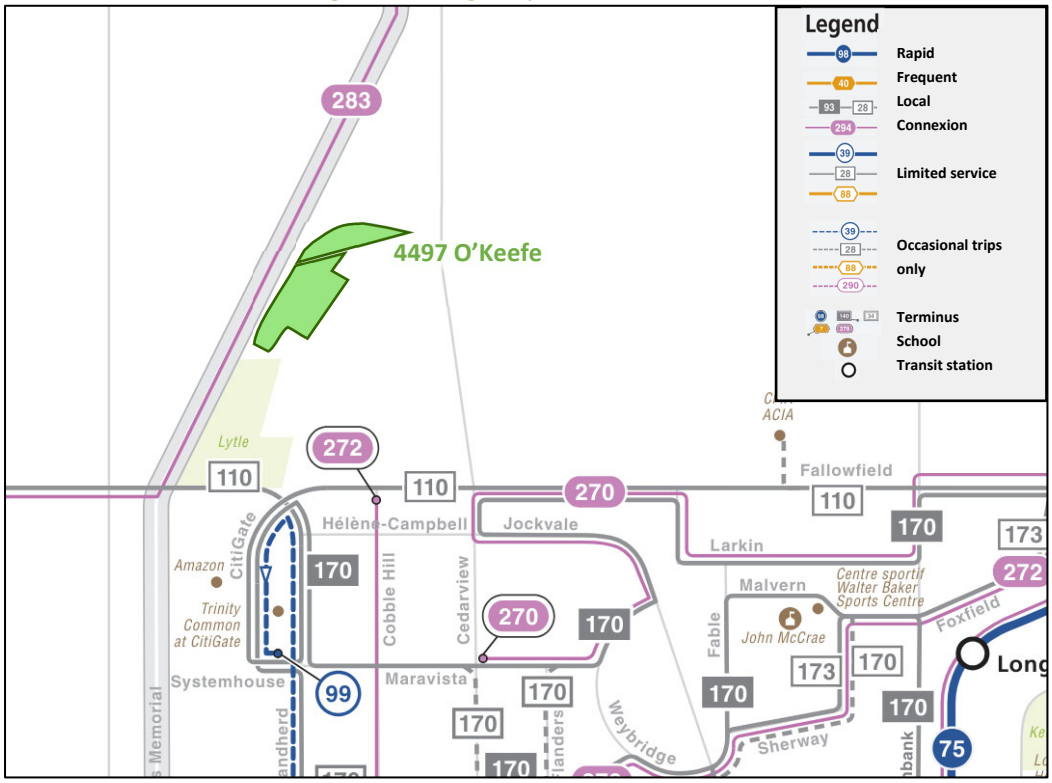
2.2.5 Existing Transit

Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates the transit stops within one kilometre from the centroid of the site. All transit information is from May 28, 2024 and is included for general information purposes and context to the surrounding area.

Within the study area, the route #110 travels along Strandherd Drive and the route #272 travels along Cobble Hill Drive. Routes presently service the Citigate employment lands are routes #99 and #170. None of these routes presently stop within walking distance of the proposed development. The frequency of these routes based on May 28, 2024 service levels are:

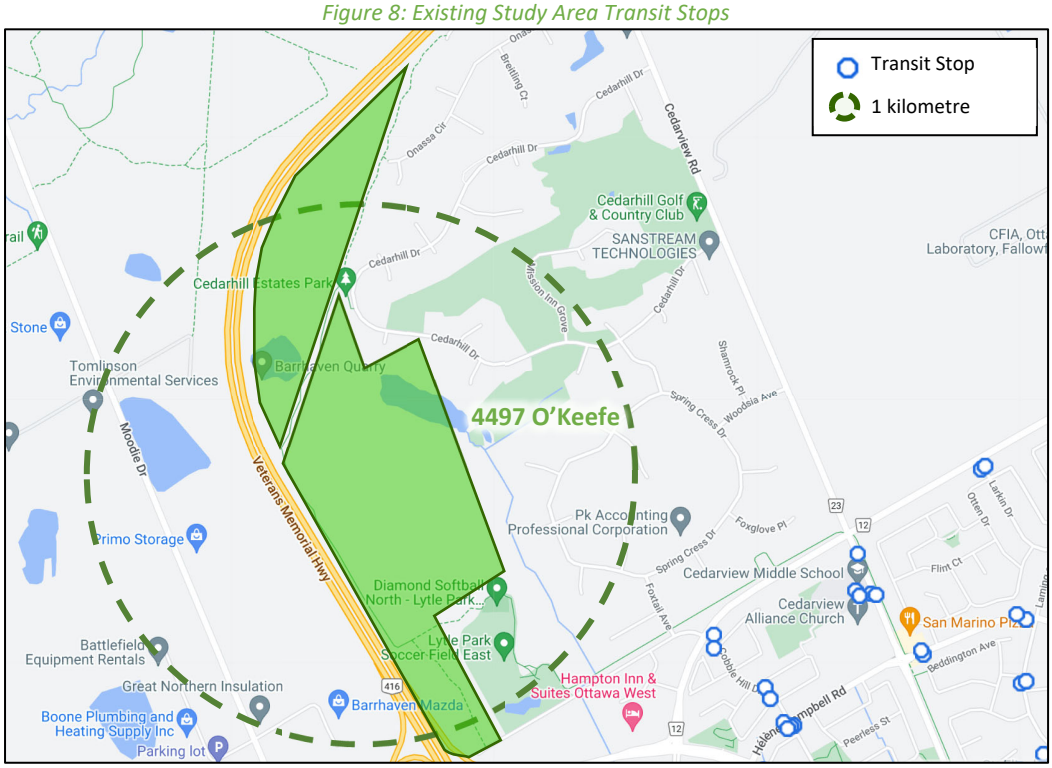
- Route # 99 – Two morning buses and two late evening buses per day
- Route # 110 – 30-minute service all-day
- Route # 170 – 30-minute service all-day
- Route # 272 – Six morning buses and eight afternoon/evening buses per day in the peak direction

Figure 7: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: Accessed: May 28, 2024

Figure 8: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: Accessed: May 30, 2024

2.2.6 Existing Area Traffic Management Measures

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

2.2.7 Existing Peak Hour Travel Demand

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

Table 1: Intersection Count Date

Intersection	Count Date	Source
Cedarview Road at Onassa Circle	Wednesday, July 18, 2023	Accu-Traffic Inc.
Fallowfield Road at Cedarview Road	Tuesday, January 7, 2020	City of Ottawa
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive	Wednesday, June 7, 2020	City of Ottawa
Fallowfield Road/Citigate Drive at Strandherd Drive	Wednesday, July 18, 2023	Accu-Traffic Inc.

Figure 9 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 9: Existing Traffic Counts

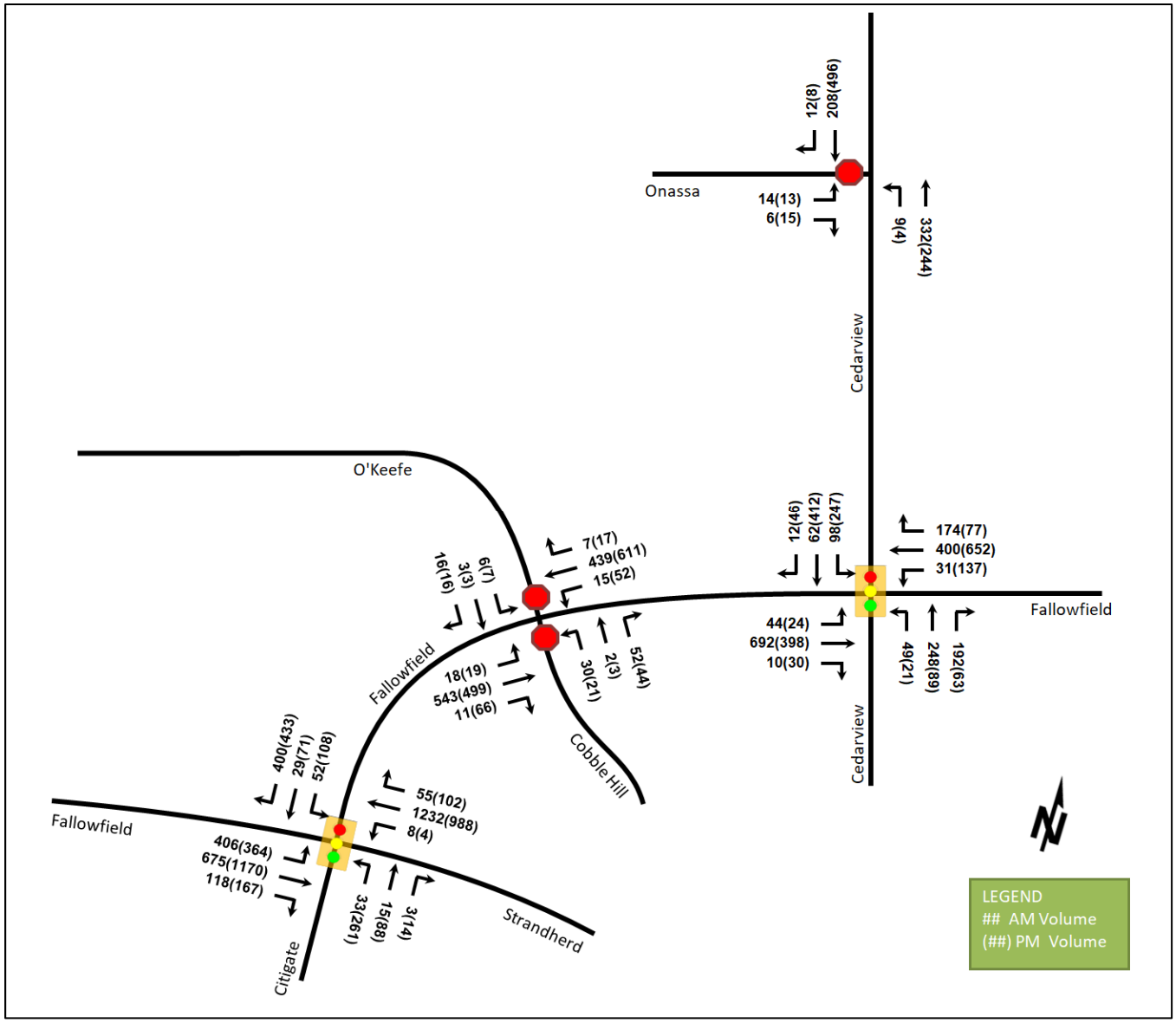


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Cedarview Road at Onassa Circle *Unsignalized*	EBL/R	B	0.05	12.6	0.8	B	0.08	14.5	1.5
	NBL/T	A	0.01	7.9	0.0	A	0.00	8.6	0.0
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.6**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fallowfield Road/Citigate Drive at Strandherd Drive *Signalized*	EBL	C	0.77	54.7	66.7	D	0.81	62.4	**#75.9**
	EBT	A	0.36	11.9	84.5	D	0.86	36.9	**#246.5**
	EBR	A	0.12	1.6	6.2	A	0.25	6.8	21.4
	WBL	A	0.12	57.2	7.3	A	0.07	56.2	4.6
	WBT	**F**	**1.07**	**81.7**	**#295.0**	**F**	**1.24**	**155.3**	**#227.6**
	WBR	A	0.08	0.2	0.0	A	0.22	2.8	5.3
	NBL	A	0.22	56.5	9.7	A	0.52	50.3	**#60.3**
	NBT/R	A	0.13	47.9	11.6	A	0.58	59.0	41.2
	SBL	A	0.22	44.5	22.8	A	0.31	40.3	39.7
	SBT	A	0.16	45.4	14.4	A	0.28	42.2	25.7
	SBR	D	0.83	20.9	41.8	D	0.88	29.8	63.4
	Overall	**D**	**0.89**	**48.3**	**-**	**E**	**0.91**	**69.0**	**-**
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive *Unsignalized*	EBL	A	0.02	8.6	0.8	A	0.03	9.3	0.8
	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.02	8.9	0.8	A	0.06	9.0	1.5
	WBT	-	-	-	-	-	-	-	-
	WBR	-	-	-	-	-	-	-	-
	NB	D	0.35	25.3	11.3	D	0.38	33.5	12.0
	SBL	E	0.06	37.0	1.5	E	0.09	48.8	2.3
	SBT/R	B	0.06	14.9	1.5	C	0.07	17.7	1.5
	Overall	**A**	**-**	**2.6**	**-**	**A**	**-**	**2.7**	**-**
Fallowfield Road at Cedarview Road *Signalized*	EBL	A	0.10	9.0	9.3	A	0.15	14.9	7.6
	EBT	C	0.73	18.4	**#172.1**	A	0.49	16.6	72.8
	EBR	A	0.01	0.0	0.0	A	0.04	2.4	2.9
	WBL	A	0.14	10.6	7.8	A	0.40	17.8	31.3
	WBT	A	0.42	11.0	65.9	D	0.82	28.0	**#168.1**
	WBR	A	0.20	2.0	8.9	A	0.11	3.7	7.3
	NBL	A	0.20	26.2	14.8	A	0.21	24.8	8.6
	NBT	C	0.71	39.7	59.6	A	0.17	20.2	21.3
	NBR	A	0.49	14.4	26.4	A	0.13	5.7	8.0
	SBL	B	0.65	47.2	30.3	B	0.69	34.3	63.0
	SBT/R	A	0.22	22.6	18.3	D	0.89	46.5	**#125.9**
	Overall	**C**	**0.72**	**19.1**	**-**	**D**	**0.85**	**27.5**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

At the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive, during the AM peak hour, the westbound through movement is over theoretical capacity and may be subject to high delays and extended queues. During the PM peak hour at this intersection, the westbound through movement is over theoretical capacity and may be subject to high delays and extended queues, and extended queues may be observed on the eastbound left, eastbound through, and northbound left movements.

At the intersection of Fallowfield Road at Cedarview Road, extended queues may be observed on the eastbound through movement during the AM peak hour, and on the westbound through and southbound through/right movements during the PM peak hour.

The intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive is understood be under monitoring by City staff for signal implementation. A signal warrant analysis was performed for the intersection of Fallowfield Road at O'Keefe Court/ Cobble Hill Drive for the existing conditions, which was found not to meet warrants. Signal warrants are provided in Appendix D.

2.2.8 Collision Analysis

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

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**74**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	15	20%
	Property Damage Only	59	80%
Initial Impact Type	**Angle**	7	9%
	Rear end	39	53%
	Sideswipe	7	9%
	Turning Movement	9	12%
	SMV Other	11	15%
	Other	1	1%
Road Surface Condition	**Dry**	52	70%
	Wet	12	16%
	Loose Snow	5	7%
	Slush	2	3%
	Packed Snow	2	3%
	Ice	1	1%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 10: Study Area Collision Records, 2018-2022

Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**74**	**100%**
Fallowfield Road at Strandherd Drive	42	57%
Fallowfield Road at Cedarview Road	21	28%
Cedarview Road between Fallowfield Road and Woodsia Avenue	4	5%
Fallowfield Road at O'Keefe Court/Cobble Hill Drive	3	4%
Fallowfield Road between Cedarview Road and O'Keefe Court	2	3%
O'Keefe Court between Foxtail Avenue and End	1	1%
Cedarview Road between Cedarhill Drive and Lytle Avenue	1	1%

Within the study area, the intersections of Fallowfield Road at Strandherd Drive and Fallowfield Road at Cedarview Road are noted to have experienced higher collisions than other locations. Table 5 and Table 6 summarize the collision types and conditions for each of the locations.

Table 5: Fallowfield Road at Strandherd Drive Collision Summary

		Number	%
Total Collisions		**42**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	7	17%
	Property Damage Only	35	83%
Initial Impact Type	**Angle**	4	10%
	Rear end	27	64%
	Sideswipe	6	14%
	Turning Movement	2	5%
	SMV Other	3	7%
Road Surface Condition	**Dry**	29	69%
	Wet	5	12%
	Loose Snow	4	10%
	Slush	2	5%
	Packed Snow	1	2%
	Ice	1	2%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Fallowfield Road at Strandherd Drive intersection had a total of 42 collisions during the 2018-2022 time period, with 35 involving property damage only and the remaining seven having non-fatal injuries. The collision types are most represented by rear end 27 with collisions, followed by six sideswipe collisions, four angle collisions, three SMV other collisions, and the remaining two turning movement collisions. Rear end and sideswipe collisions are typically associated with congestion, and no other patterns are noted. Weather conditions do not affect collisions at this location. No further review of collisions at this location is required as part of this study.

Table 6: Fallowfield Road at Cedarview Road Collision Summary

		Number	%
Total Collisions		**21**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	4	19%
	Property Damage Only	17	81%
Initial Impact Type	**Angle**	3	14%
	Rear end	10	48%
	Sideswipe	1	5%
	Turning Movement	6	29%
	Other	1	5%
Road Surface Condition	**Dry**	15	71%
	Wet	5	24%
	Loose Snow	1	5%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Fallowfield Road at Cedarview Road intersection had a total of 21 collisions during the 2018-2022 time period, with 17 involving property damage only and the remaining four having non-fatal injuries. The collision types are most represented by rear end with ten collisions, followed by six turning movement collisions, three angle collisions, and one collision each for sideswipe and other type collisions. As previously stated, rear end collisions are typically associated with congestion. Five of the six turning movement collisions were recorded in 2018, with

one recorded in 2019 and none recorded in the following three years. Weather conditions do not affect collisions at this location and no further examination is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 Signalization of Fallowfield Road at O'Keefe Court/Cobble Hill Drive

The intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive is planned for signalization in the future based on monitoring by the City. No additional modifications beyond the intersection control are understood to be planned at this time. It is anticipated that once warrants are met, this modification will be undertaken by the City.

2.3.1.2 Barnsdale Interchange

The environmental assessment study and preliminary design for an interchange at the intersection of Highway 416 and Barnsdale Road was completed in September 2023. The ultimate configuration is a partial cloverleaf interchange on the south side of Barnsdale Road, a 4-lane bridge over Highway 416. The interim configurations will be subject to traffic demands and it is expected that the free flow ramps on the north side of Barnsdale Road will not be constructed as part of this configuration and are a long-term improvement once warranted. The new interchange will be an effective highway access point for most residents and businesses in Barrhaven South, and reduce demands associated with the Fallowfield interchange. The interim buildout horizon for the new facility is understood to be 2029.

2.3.1.3 Chapman Mills Drive BRT

The median BRT corridor along the Chapman Mills Drive will be extended across the Kennedy-Burnett Stormwater Management Facility to the 90-degree bend of Chapman Mills Drive, and to continue westward as a dedicated BRT corridor to meet Barnsdale Road. This facility is anticipated to be completed before 2038.

2.3.1.4 Realigned Greenbank Road and BRT

Greenbank Road is planned to be realigned south of the existing Jockvale Road and to connect to Cambrian Road in an interim horizon, and to Barnsdale Road in the ultimate conditions. The cross-section will include median BRT which will connect to the existing BRT line at Barrhaven Town Centre. It assumed that this improvement will not be completed by 2038, and confirmation from the City of any anticipated timelines is requested.

2.3.1.5 Stage 3 LRT

The future extension of the LRT line from Baseline Station is part of the Ultimate Transit Network, as depicted in Schedule C2 of the Official Plan. This improvement will replace the existing BRT service with LRT service between Barrhaven Town Centre, which will include a transfer station to from the new LRT line to the BRT lines to the east, west, and south of this point. No timeline for implementation is currently known for this project, which will be confirmed through the upcoming TMP Part 2. It is assumed that buildout will occur after 2038.

2.3.2 Other Study Area Developments

115 Lusk Street

The proposed development application includes a site plan to construct a 3,014 sq. ft restaurant and a 6,103 sq. ft medical office. The development was forecast to be built out in 2023, though is yet to be constructed, and to generate 13 new AM and 32 new PM peak hour two-way auto trips. (IBI Group, 2021)

135 Lusk Street
The proposed development application includes a site plan to construct a 99 rooms hotel. The development was forecast to be built out in 2023, though is yet to be constructed, and to generate 42 new AM and 53 new PM peak hour two-way auto trips. (IBI Group, 2021)

140 Lusk Street
The proposed development application includes a site plan to construct a hotel with 88 rooms. The development was forecast to be built out in 2023, though is yet to be constructed, and to generate 36 new AM and 45 new PM two-way peak-hour auto trips. (IBI Group, 2022)

4451 Fallowfield Road
The proposed development application includes a site plan to construct a self-storage facility with shared office space and ground floor retail space. The development is forecast to be built out in 2025 and to generate 98 AM and 85 PM peak hour two-way auto trips. (CGH, 2023)

2740 Cedarview Road, 4190-4236 Fallowfield Road
The proposed development application includes plan of subdivision to include six (6) four-storey apartment buildings comprising a total of 108 units, three (3) four-storey back-to-back terrace homes comprising 48 units, and two (2) three-storey stacked townhomes comprising a total of 24 units, and one terrace home comprising eight units. No TIA was available for this development.

444 Citigate Drive, 560 Dealership Drive
The proposed development application includes zoning by-law amendment and plan of subdivision to construct six industrial/warehouse buildings for a total of 1,174,800. A traffic memo supporting the plan of subdivision application states that forecasted auto trips for the development area will be 623 two-way AM and 548 two-way PM peak hour trips, and that the forecasted person trips for the development will be 780 fewer AM and 880 fewer PM peak hour two-way person trips than forecast within the CTS for the development area. (Novatech, 2022)

4433 Strandherd Drive
The proposed development application includes a site plan to construct a new 99 room, 5 storey hotel, providing 5,413 sq. m of GFA. The development was initially forecast to be built out in 2020 to generate 48 new AM and 53 new PM peak hour two-way auto trips, it is currently under construction and is anticipated to be occupied in 2024. (Novatech, 2018)

Citigate Employment Lands
The overall development application for the Citigate Employment lands included a shopping centre with 350,000 sq. ft of gross floor area (GFA), a hotel, 16.56 hectares of Business Park, 67.65 hectares of Prestige Business Park, and 10.5 hectares of car dealerships. It is noted that dealerships on the east south comer, Amazon, and retail stores on the north side have been constructed and captured in the existing counts. Approximately half completed, the entire development area was initially forecast to be built out in 2029 and to generate approximately 4100 new AM and 4400 new PM peak hour two-way auto trips. (Novatech, 2012)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Fallowfield Road at:
    - Cedarview Road

  - O'Keefe Court/Cobble Hill Drive
  - Strandherd Drive & Citigate Drive
- Cedarview Road at:
  - Onassa Circle
- O'Keefe Court at:
  - Future Collector Road

No roads bound the site, and no boundary roads will be considered in this study. TRANS Screenline SL9 is located within the greenbelt north of the site and north of Fallowfield Road and will be reviewed as part of this study.

3.2 Time Periods

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

3.3 Horizon Years

The anticipated build-out year is 2038. No additional horizons will be evaluated as part of this study given the distant nature of the site build-out.

4 Development-Generated Travel Demand

4.1 Mode Shares

4.1.1 Typical Area Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for South Nepean have been summarized in Table 7.

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – South Nepean

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)		Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM	AM	PM	AM	PM
Auto Driver	51%	53%	49%	49%	58%	54%	74%	61%
Auto Pass.	14%	19%	13%	13%	6%	15%	14%	27%
Transit	25%	18%	26%	24%	30%	25%	1%	1%
Cycling	1%	1%	2%	2%	2%	0%	0%	0%
Walking	9%	10%	9%	12%	4%	7%	11%	11%
Virtual	0%	0%	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

4.1.2 Proposed Development Mode Shares

A number of factors are anticipated to impact the proposed development's modal shares.

4.1.2.1 Evolving Context for Trip Generation

While travel demands have evolved across changing social and technological landscapes, the pre-/post-pandemic era divide represents a watershed in the ubiquity of remote access for daily activities.

The trip generation methodologies and trends documented by ITE and employed within the TRANS Trip Generation Manual (2020) represent the historical mobility context, and rapid evolution is still occurring in how people get connected with products, services, and employment. Especially on the subject development's timeline, site design, and traffic forecasting on its basis, should account for this opportunity.

Virtual travel describes trips that were previously made by auto travel and other modes being captured by internet and telecommunication technologies. These trips include those reduced by work from home, either full-time or part-time, online services such as fitness, banking, medical, or consultation appointments, and e-commerce which converts retail trips during the peak hours into off-peak deliveries.

When applied to the existing trip generation rates, virtual travel can be thought of as a new mode of transportation. As future travel surveys are conducted, and the measured trip generation of a land use simply does not capture trips made virtually, this mode will no longer be necessary. In the interim, a virtual travel mode is a useful concept for accounting for these trends in long-term planning.

While these trends are anticipated to impact background traffic, specific design elements employed for the community can enable this shift for the subject development. Examples of such elements include fibreoptic internet and 5G wireless connectivity, dwelling design that includes spaces such as dens for home office use, the provision of supportive amenity spaces, and the presence of cafés and co-working spaces within walking distance. It is noted that the nearby proposed development at 4451 Strandherd Drive includes such co-working space as part of the concept plan.

4.1.2.2 Community Vision

Informed by the 15-Minute Community design concept, the community is proposed to include local residential-supportive land uses within the community core which will be accessible by a high degree of pedestrian connectivity both along road corridors and via a system of pathways. Providing direct active transportation connections to the network serving the high density of commercial and employment land uses immediately to the south of the development area will permit higher uptake of active modes and reduce auto dependence.

4.1.2.3 Transit Service Vision

A detailed description of the proposed transit routing and service is provided in Section 10.1. A short description of which is that the community is intended to be served by 15-minute transit service all-day, with increases in service frequency during the peak periods. The development's transit routing is proposed to be synergized with existing routes through the Citigate Employment Lands and may optionally provide opportunities for connections for these lands to other nodes in the City. It is expected that the proposed transit service will permit the development to meet the typical South Nepean recommended transit shares.

4.1.2.4 Modified Mode Shares

Given the foregoing trends and development characteristics, and accounting for virtual travel, modified mode share targets are proposed for the development and are summarized in Table 8.

Table 8: Proposed Development Mode Shares – Locally-Oriented Community

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)		Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM	AM	PM	AM	PM
Auto Driver	26%	28%	24%	24%	33%	29%	54%	41%
Auto Pass.	9%	13%	8%	7%	1%	9%	9%	22%
Transit	25%	18%	26%	24%	30%	25%	16%	16%
Cycling	3%	3%	4%	4%	4%	2%	0%	0%
Walking	17%	18%	18%	21%	12%	15%	11%	11%
Virtual	20%	20%	20%	20%	20%	20%	10%	10%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

These mode shares represent an approximate doubling of the walking and cycling uptake and a halving of the auto travel compared to the typical Barrhaven suburban travel patterns. Beyond the opportunities for active transportation uptake presented by the immediate area context of the development as discussed in the preceding

sections, these changes are partly the result of the reduction in regional travel demands mitigated by the shift to virtual travel. The proposed mode shares are consistent with more locally-oriented travel and modal selection.

4.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition (2021) using the City-prescribed conversion factor of 1.28. Table 9 summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 9: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Single-Detached	210 (TRANS)	AM	-	2.05
		PM	-	2.48
Multi-Unit (Low-Rise)	220 (TRANS)	AM	-	1.35
		PM	-	1.58
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80
		PM	-	0.90
Land Use	**Land Use Code**	**Peak Hour**	**Vehicle Trip Rate**	**Person Trip Rates**
Retail (<40k sq ft)	822 (ITE)	AM	1.89	2.42
		PM	5.44	6.96

Using the above person trip rates, the total person trip generation has been estimated. Given the 15-minute community vision, only 70% of the commercial component is considered as destination retail, where 30% of the commercial development is assumed to serve the immediate surrounding community of over 1,500 dwellings. Table 10 summarizes the total person trip generation for the residential land uses by peak period and for the non-residential land uses by peak hour.

Table 10: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Single-Detached	342	210	491	701	526	322	848
Multi-Unit (Low-Rise)	1209	490	1142	1632	1070	840	1910
Multi-Unit (High-Rise)	128	32	70	102	67	48	115
Land Use	**GFA (sq. ft.)**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Retail (<40k sq ft)	34,453	50	33	83	120	120	240

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 11 represent the percentage of trips to/from the retail use based on the residential component.

Table 11: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Strip Retail Plaza	17%	14%	10%	26%

Pass-by reductions applied to the retail trip generation at a rate of 40% have been included using the recommended value presented in the ITE Trip Generation Manual 11th Edition (2021) for the most similar land

use with a recommended rate, "Retail (40k – 150k sq ft)". The application of the pass-by percentage to O'Keefe Court would not be considered to reflect the expected pass-by component of the site trips and accordingly, the analysis will forgo the application of diverted trips and will apply the 40% pass-by to the major movements at the along each Cedarview Road and Fallowfield Road.

Using the above mode share targets for the community, the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 12 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 12: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	**In**	**Out**	**Total**	**Mode Share**	**In**	**Out**	**Total**
Single-Detached	Auto Driver	**26%**	26	61	87	**28%**	64	40	104
	Auto Passenger	**9%**	9	21	30	**13%**	30	18	48
	Transit	**25%**	29	67	96	**18%**	45	27	72
	Cycling	**3%**	4	8	12	**3%**	7	5	12
	Walking	**17%**	21	48	69	**18%**	50	30	80
	Virtual	**20%**	24	57	81	**20%**	55	33	88
	Total	**100%**	**113**	**262**	**375**	**100%**	**251**	**153**	**404**
Multi-Unit (Low-Rise)	Auto Driver	**24%**	56	132	188	**24%**	113	89	202
	Auto Passenger	**8%**	19	44	63	**7%**	33	26	59
	Transit	**26%**	70	163	233	**24%**	120	95	215
	Cycling	**4%**	11	27	38	**4%**	20	16	36
	Walking	**18%**	51	120	171	**21%**	117	92	209
	Virtual	**20%**	57	132	189	**20%**	111	88	199
	Total	**100%**	**264**	**618**	**882**	**100%**	**514**	**406**	**920**
Multi-Unit (High-Rise)	Auto Driver	**33%**	5	11	16	**29%**	8	7	15
	Auto Passenger	**1%**	0	0	0	**9%**	2	2	4
	Transit	**30%**	5	12	17	**25%**	8	6	14
	Cycling	**4%**	1	1	2	**2%**	1	0	1
	Walking	**12%**	2	5	7	**15%**	5	4	9
	Virtual	**20%**	4	8	12	**20%**	7	5	12
	Total	**100%**	**17**	**37**	**54**	**100%**	**31**	**24**	**55**
Strip Retail Plaza	Auto Driver	**54%**	13	9	22	**41%**	26	21	49
	Auto Passenger	**9%**	4	3	6	**22%**	24	20	43
	Transit	**16%**	7	4	11	**16%**	17	14	32
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**11%**	5	3	8	**11%**	12	10	22
	Virtual	**10%**	4	3	7	**10%**	11	9	20
	Pass-by	*40%*	*-9*	*-6*	*-15*	*40%*	*-18*	*-15*	*-32*
	Internal Capture	*varies*	*-9*	*-5*	*-14*	*varies*	*-12*	*-31*	*-43*
	Total	**100%**	**33**	**22**	**54**	**100%**	**90**	**74**	**166**

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Total	Auto Driver	-	100	213	313	-	211	157	370
	Auto Passenger	-	32	68	99	-	89	66	154
	Transit	-	111	246	357	-	190	142	333
	Cycling	-	16	36	52	-	28	21	49
	Walking	-	79	176	255	-	184	136	320
	Virtual	-	89	200	289	-	184	135	319
	Total	-	**427**	**939**	**1365**	-	**886**	**657**	**1545**

As shown above, a total of 313 AM and 370 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of South Nepean. The virtual travel component has specifically been reduced from the proportion of regional trips. Table 13 below summarizes the distributions.

Table 13: OD Survey Distribution – South Nepean

To/From	% of Trips	Via
North	30%	20% Cedarview Rd (N), 10% Fallowfield Rd (W),
South	10%	10% Citigate Dr (S)
East	55%	45% Fallowfield Rd (E), 10% Strandherd Dr (E),
West	5%	5% Fallowfield Rd (W)
Total	**100%**	

4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Figure 11 illustrates the new site generated volumes and Figure 12 illustrates the pass-by auto volumes.

Figure 11: New Site Generation Auto Volumes

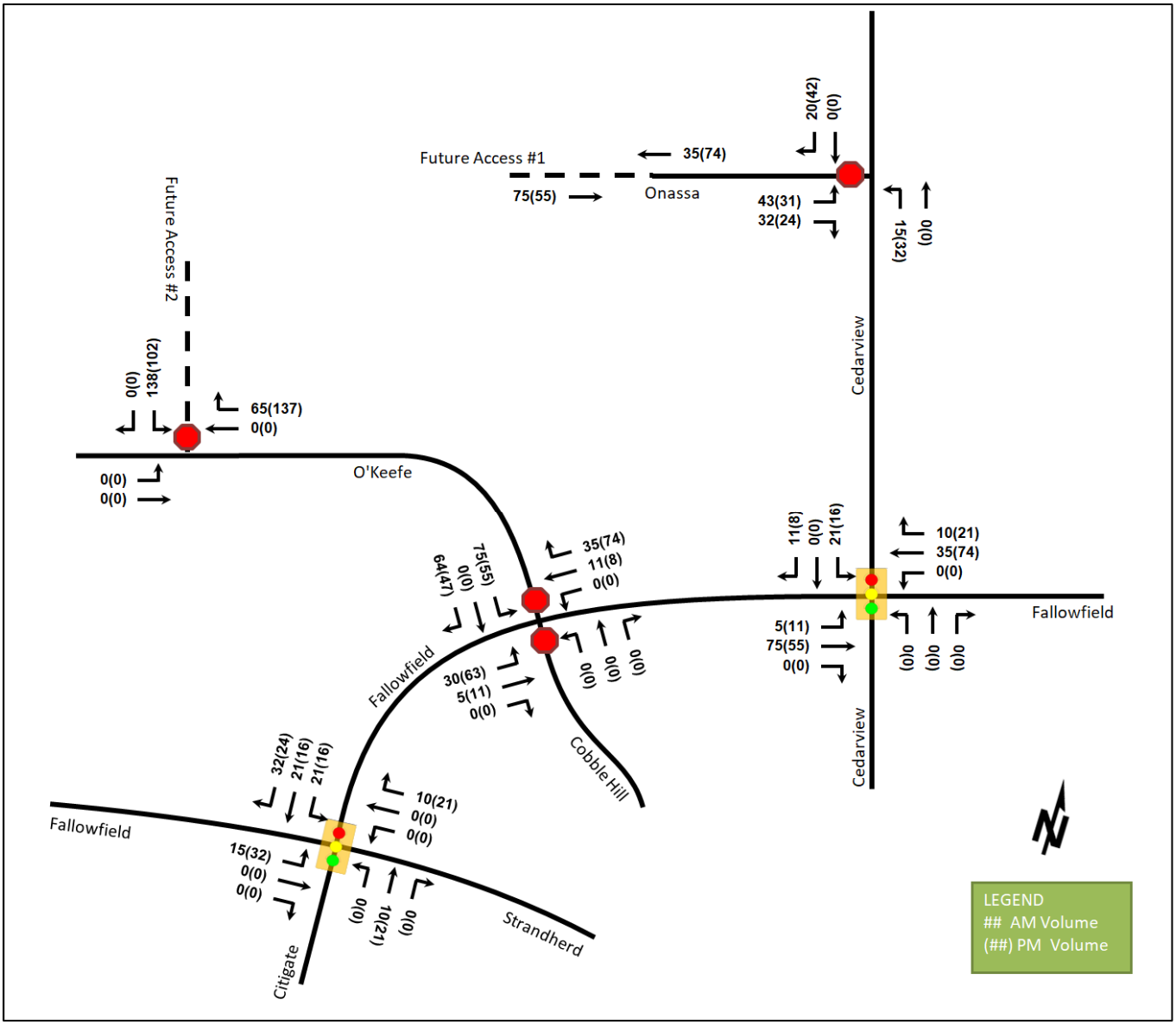
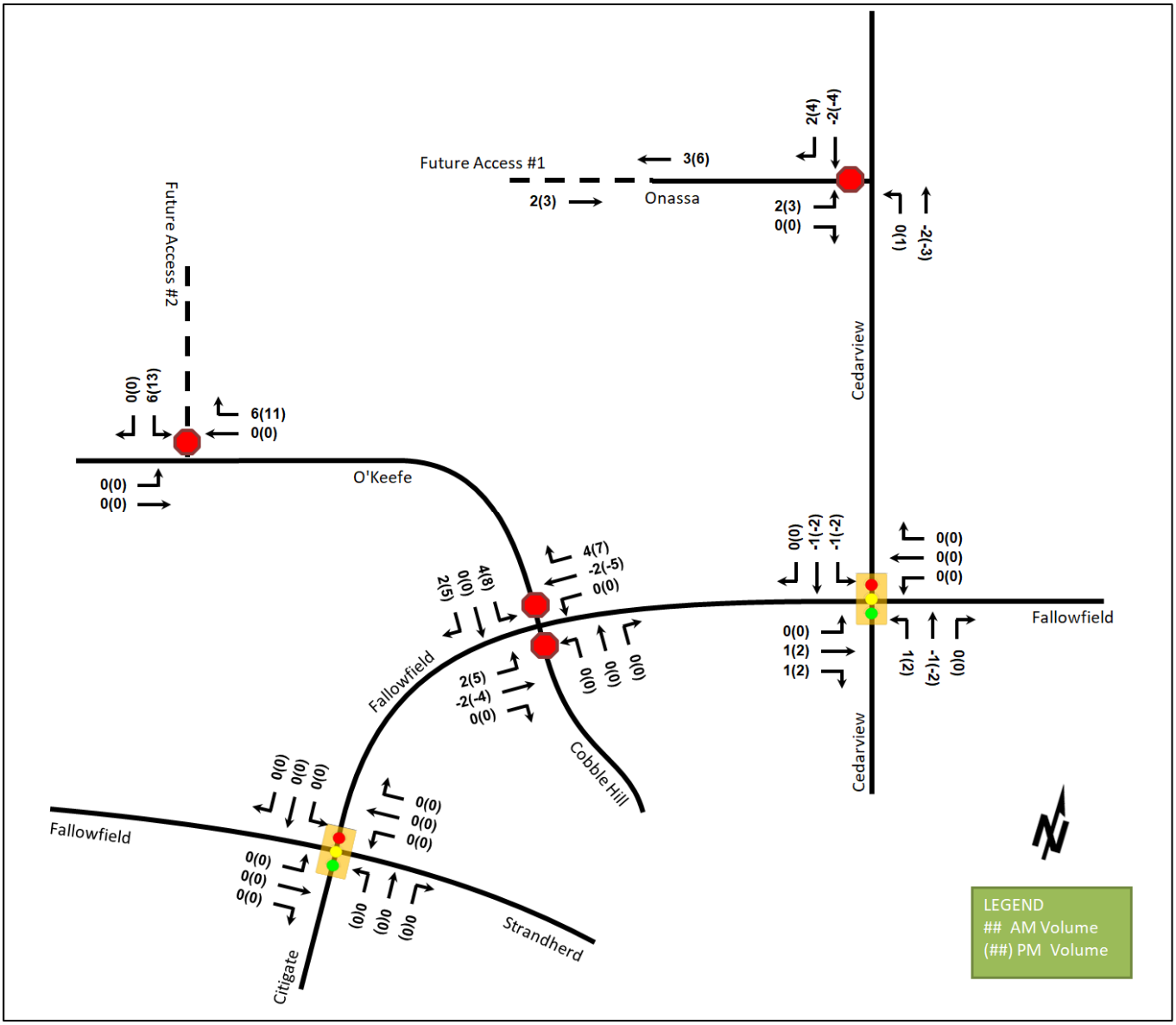


Figure 12: Pass-by Auto Volumes



5 Exemption Review

Table 14 summarizes the exemptions for this TIA.

Table 14: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Exempt
	4.1.3 New Street Networks	Only required for plans of subdivision	Required
4.2 Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Exempt

Module	Element	Explanation	Exempt/Required
4.3 Boundary Street Design		All applications	Exempt – No boundary roads
4.5 Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			
3.2 Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered	Required
3.3 Demand Rationalization		Only required when one or more other Network Impact Modules are triggered	Required
4.6 Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	Exempt
4.7 Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Required
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Required
4.8 Network Concept		Only required when proposed development generates more than 200	Required

Module	Element	Explanation	Exempt/Required
		person-trips during the peak hour in excess of equivalent volume permitted by established zoning	
4.9 Intersection Design	4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required
	4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Required

6 Development Design

6.1 Design for Sustainable Modes

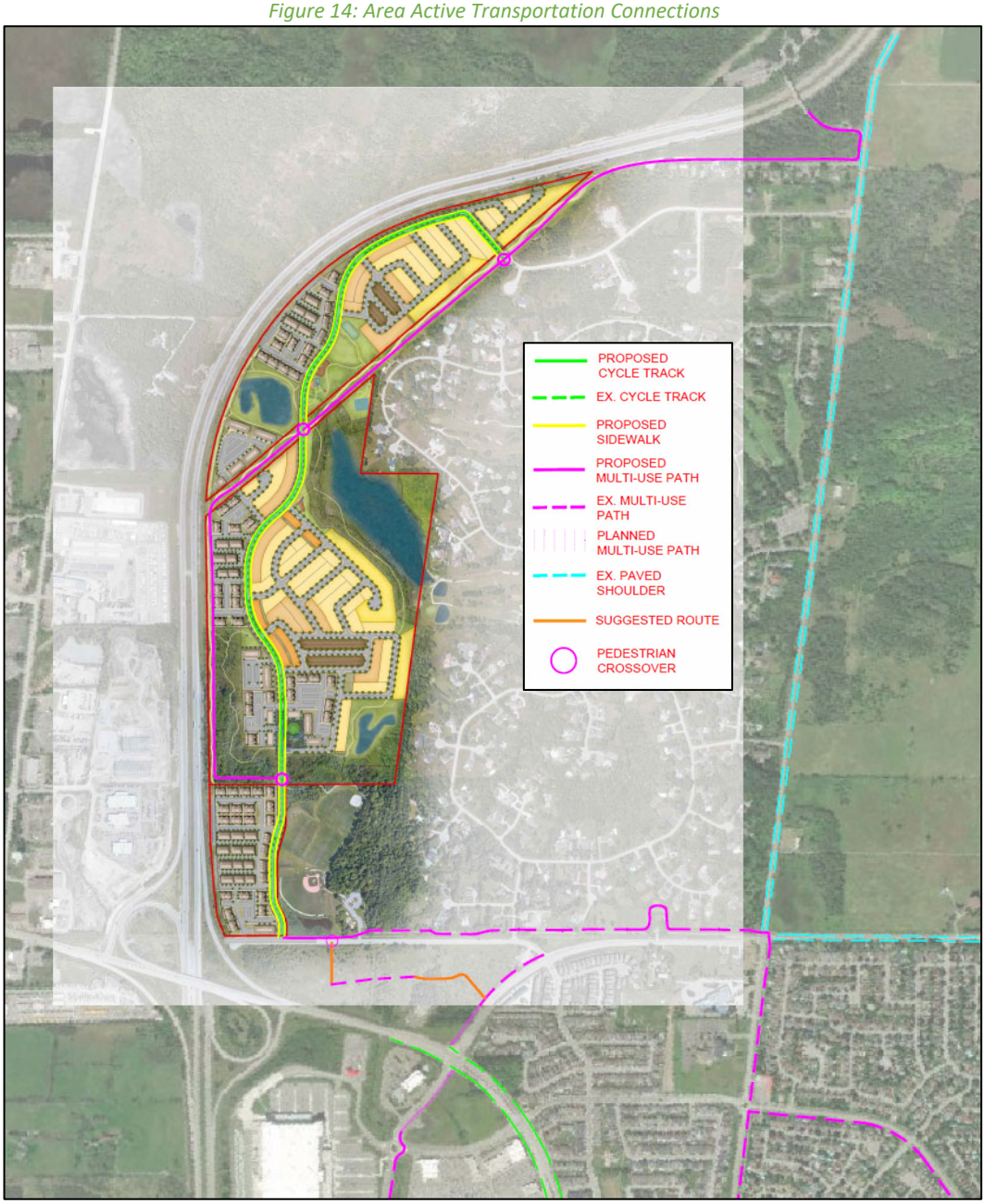
The proposed development is a residential subdivision with a mix of densities and unit types between single detached houses and mid-rise condo units. Sidewalks and cycletracks are proposed on each side of a collector road through the subdivision which is proposed to connect to O'Keefe Court to Onassa Circle. Sidewalks are proposed along at least one side of all local roads throughout the subdivision, and paving of the existing crushed stone multi-use pathway along the hydro corridor is proposed as part of the development. Pedestrian crossovers (Type C) are proposed at each of the three intersections of the MUP and the collector road.

A main street section is located centrally alongside the highest density areas, which is anticipated to have an enhanced public realm with space for additional public use. Figure 13 illustrates the major internal pedestrian and cycling network for the subdivision.

Figure 13: Internal Pedestrian and Cycling Network

Active transportation facilities are proposed be extended beyond the new community. To the south, an extension of the MUP to the existing MUP on O'Keefe Court and cycling routes on Lusk Street is proposed. This route would connect the community to the intersection of Strandherd Drive at Fallowfield Road/Citigate Drive more directly than using the facilities along the road network. These facilities would also improve connectivity for the surrounding area. To the north, the MUP is proposed to be extended along the north side of Lytle Avenue, continuing on the west side of Cedarview Road to the south side of the driveway to the Log Farm located in the Greenbelt, up to the bridge across the 416. Through this northern MUP extension and connection to the Log Farm, the community will be able to access to the NCC trail system. Figure 14 illustrates the area active transportation connections including the newly proposed external active transportation facilities.

Figure 14: Area Active Transportation Connections



6.2 New Street Networks

6.2.1 New Collector Road

The subdivision will include a new 26.0-metre-wide collector cross-section through the development area connecting O'Keefe Court to Onassa Circle. It is proposed that the sidewalk and cycling facilities within the new collector's cross-section integrate with the MUP where it meets the current terminus of Onassa Circle. Active modes would continue north on the MUP to Lytle Avenue.

The new collector road cross-sections will be context sensitive to the adjacent land uses through the proposed subdivision. Along the densest development areas, a main street cross-section proposed, including enhanced pedestrian realms, cycletracks, and parking on both sides of the road. Throughout the remainder of the

development, a 26A cross-section from the Designing Neighbourhood Collector Streets guidance is proposed, modified to increase increased boulevard space where lots front only one side of the road. The main street cross section is illustrated in Figure 15 and cross-section 26A from the Designing Neighbourhood Collector Streets guidance is illustrated in Figure 16.

Figure 15: Main Street Cross-Section

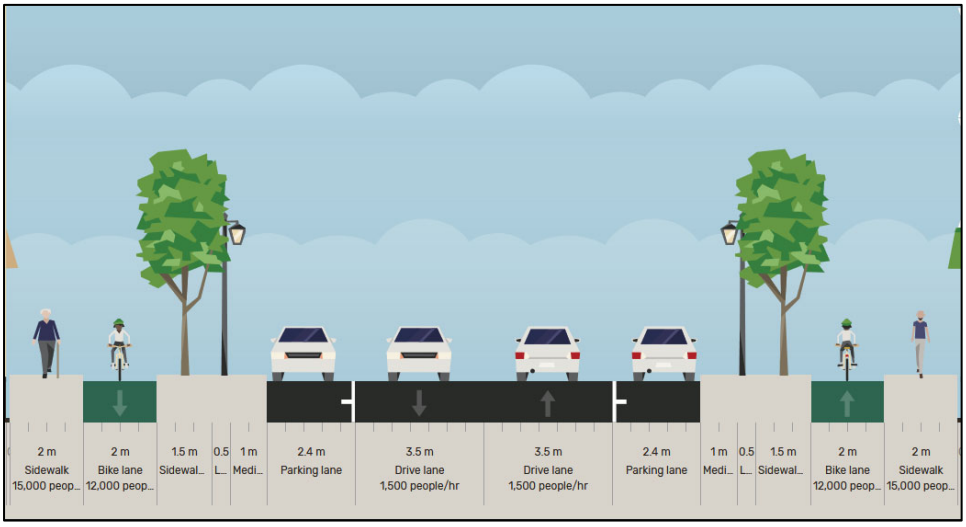
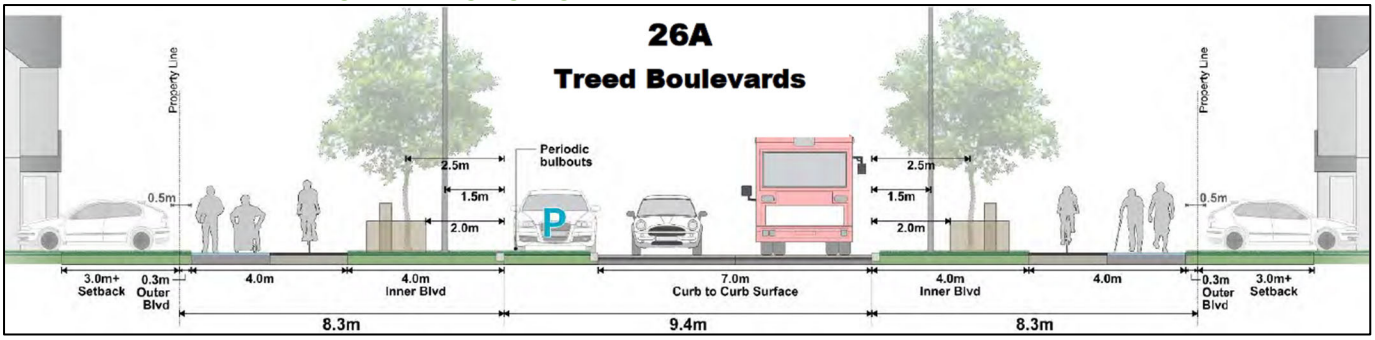


Figure 16: Designing Neighbourhood Collector Streets Cross-Section 26A



6.2.2 New Local Roads

Typical local roads of 18.0-metre rights-of-way are proposed throughout the development, as City standard 18.0-metre local cross-sections with sidewalks on one side of most roads and on both sides where appropriate. Local roads are proposed to be posted as 30 km/h and internal road intersections are recommended to be stop-controlled on the minor approaches of all intersections.

6.2.3 Traffic Calming

Traffic calming measures in line with the 30 km/h toolbox will be applied throughout the community. Horizontal deflection measured including bulb-outs, which are proposed to narrow roadways and intersections at strategic locations to reduce vehicle speeds on straight stretches. Vertical deflection measures including speed humps, are proposed along local roads are proposed to reduce vehicle speeds on straight stretches. The location of speed humps is subject to minor changes and will need to be refined as part of the detailed engineering submission once the locations of the driveway, stormwater flows, surface ponding, and servicing elements, such as utilities and fire hydrants, have been established. On-street parking will also be a key traffic calming feature of the new community and is generally included as part of all typical roadway cross-sections, and on both sides of the main street.

Figure 17 illustrates the conceptual key locations for traffic calming features within the new community.

Figure 17: Proposed Key Traffic Calming Measures

7 Transportation Demand Management

7.1 Context for TDM

The mode shares used within the TIA represent a reduction in auto travel and an increase in walking, commensurate with the local urban design and broader social trends. Overall, meeting the modal share targets are contingent on the successful implementation of the community design, however supporting TDM measures should be provided to help ensure these targets are met.

The subject site is not within a design priority area and the total bedrooms within the development is subject to the final unit breakdown and layout selections by purchasers. No age restrictions are noted.

7.2 Need and Opportunity

As previously stated, the mode share targets have been driven by the proposed community's area context, the urban design, and social trends. It is anticipated that the proposed targets will be met due to this robust set of factors. The role of transportation demand management measures will be aimed at providing awareness of travel mode options, reducing the need for vehicle ownership, and driving the adoption of transit for regional travel early in the development buildout. Any existing or forecast capacity issues are anticipated to further drive sustainable transportation adoption.

7.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for the residential and retail land uses. The checklist is provided in Appendix F. The key TDM measures recommended include:

- Display relevant walking and cycling maps along with transit schedules and route maps at major residential and retail entrances
- Provide a multimodal travel option information package to new residents and employees
- Contract with provider to install on-site carshare vehicles and promote their use by residents
- Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels

8 Background Network Travel Demands

8.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The interim buildout of the Barnsdale Road highway 416 interchange is understood to be 2029, the extension of Chapman Mills Drive BRT is anticipated by the 2038 horizon. No extension of the LRT to Barrhaven will be assumed to be complete by the 2038 horizon, and the completion of Greenbank Road is not anticipated by this horizon, and the timing for the signalization of Cobble Hill Drive will be analyzed within the operations section.

Once completed, the Barnsdale Interchange is expected to reduce the pressure on Strandherd Drive and the Highway 416-Fallowfield Road interchange from development in Barrhaven South. Local to the subject development lands, the direct impact is expected to be lowering the overall demand on the east-west travel at the Strandherd Drive at Fallowfield Road/Citigate Drive intersection. Similarly, the Chapman Mills Drive BRT is anticipated to reduce growth-related pressures on Strandherd Drive. In the background growth for the future horizon, the nominal growth rates have been included on Strandherd Drive and the expected development related growth is assumed to be accommodated through the Barnsdale Interchange and Chapman Mills BRT corridor.

8.2 Background Growth

Other area traffic studies employed a 1%-2% annual background growth rate on Strandherd Drive and Fallowfield Road in addition to other explicitly considered background developments.

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the anticipated background growth for each of the study area roadways. It is assumed that the expected growth will continue beyond the 2031 horizon to the build-out horizon. The

background TRANS model growth rates are summarized in Table 15, and Table 16 summarizes the recommended growth rates to be considered within the study area. The TRANS model plots are provided in Appendix G.

Table 15: TRANS Regional Model Projections – Study Area Growth Rates

Street	TRANS Rate	
	Eastbound	Westbound
Fallowfield Rd north of Strandherd Dr	0.34%	0.11%
Fallowfield Rd west of Citigate Dr	2.14%	1.98%
Strandherd Dr	3.46%	2.17%
	Northbound	Southbound
Cedarview Rd north of Fallowfield Rd	1.07%	5.06%
Cedarview Rd south of Fallowfield Rd	2.31%	5.05%

Table 16: Recommended Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Fallowfield Rd north of Strandherd	0.50%	0.25%	0.25%	0.50%
Fallowfield Rd west of Citigate	2.25%	2.00%	2.00%	2.25%
Strandherd Dr	3.50%	2.25%	2.25%	3.50%
	Northbound	Southbound	Northbound	Southbound
Cedarview Rd north of Fallowfield	1.00%	5.00%	5.00%	1.00%
Cedarview Rd south of Fallowfield	2.50%	5.00%	5.00%	2.50%

8.3 Other Developments

The background developments explicitly considered in the background conditions (Section 8.2) include:

- 115 Lusk Street
- 135 Lusk Street
- 140 Lusk Street
- 4451 Fallowfield Road
- 4433 Strandherd Drive
- CitiGate
- 444 Citigate, 560 Dealership Drive

Traffic from the remaining Citigate Employment Lands development areas were taken from the trip generation information in the 444 Citigate, 560 Dealership Drive TIA. The background development volumes within the study area have been provided in Appendix H.

9 Demand Rationalization

9.1 2038 Future Background Operations

Figure 18 illustrates the 2038 background volumes and Table 17 summarizes the 2038 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2038 future background horizon are provided in Appendix I.

Figure 18: 2038 Future Background Volumes

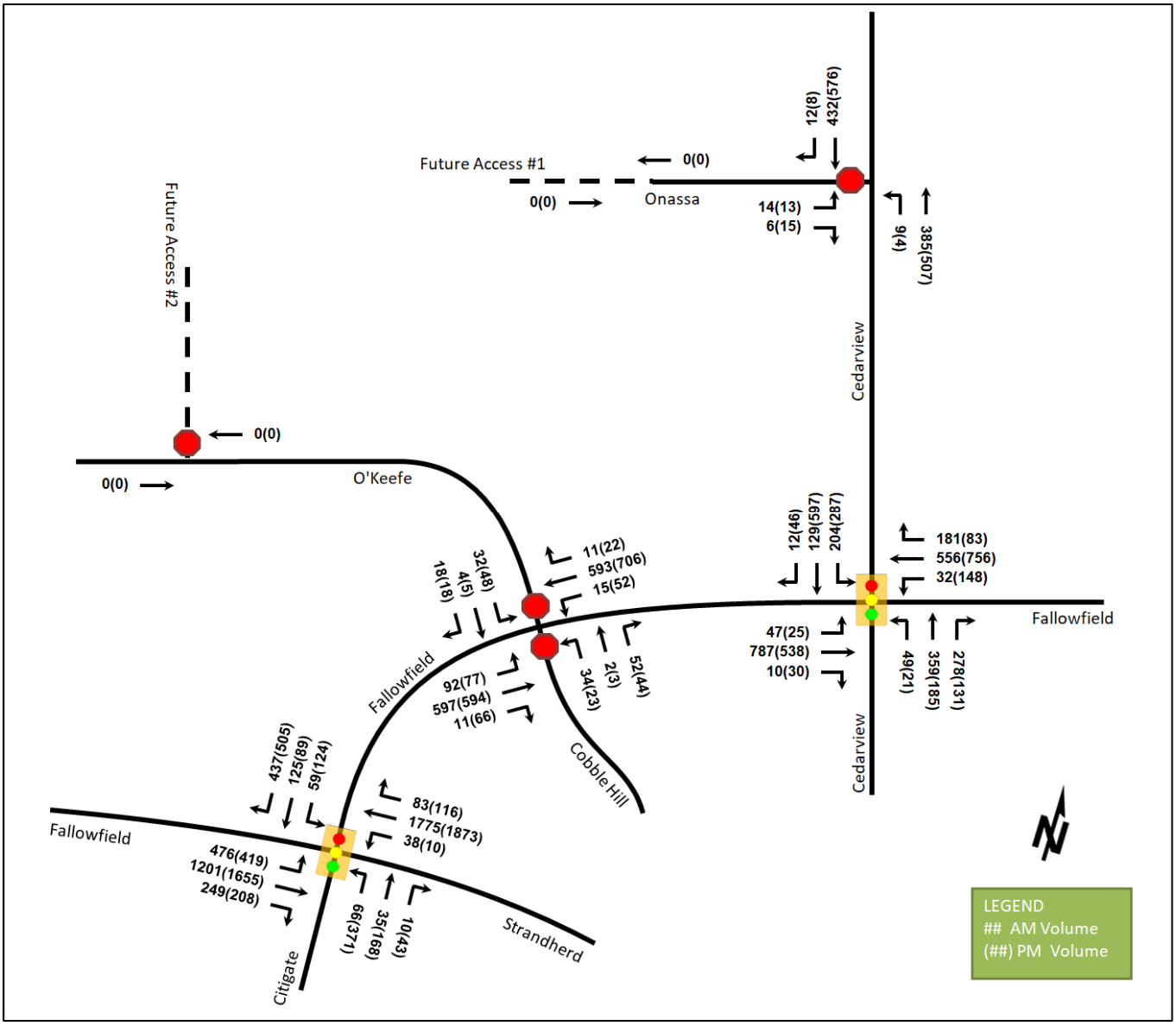


Table 17: 2038 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cedarview Road at Onassa Circle *Unsignalized*	EBL/R	C	0.05	15.3	1.5	C	0.09	17.2	2.3
	NBL/T	A	0.01	8.4	0.0	A	0.00	8.6	0.0
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.4**	**-**	**A**	**-**	**0.5**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Fallowfield Road/Citigate Drive at Strandherd Drive *Signalized*	EBL	C	0.77	54.0	70.7	D	0.88	70.2	**#79.9**
	EBT	C	0.74	29.7	**#219.2**	**F**	**1.23**	**140.4**	**#343.9**
	EBR	A	0.29	4.7	19.4	A	0.31	8.9	27.9
	WBL	A	0.37	62.2	19.5	A	0.16	58.8	7.8
	WBT	**F**	**1.46**	**239.5**	**#416.8**	**F**	**2.50**	**701.7**	**#428.7**
	WBR	A	0.12	0.3	0.0	A	0.25	3.4	6.0
	NBL	A	0.34	57.4	14.6	A	0.57	49.3	**#92.8**
	NBT/R	A	0.34	49.6	19.4	C	0.74	59.7	66.2
	SBL	A	0.29	47.8	22.4	A	0.33	43.5	45.3
	SBT	A	0.53	53.7	40.9	A	0.28	40.1	27.4
	SBR	D	0.83	22.7	47.9	D	0.89	31.1	70.1
	Overall	**F**	**1.07**	**113.2**	**-**	**F**	**1.34**	**292.9**	**-**
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive *Unsignalized*	EBL	A	0.10	9.3	2.3	A	0.09	9.7	2.3
	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.02	8.9	0.0	A	0.06	9.1	1.5
	WBT	-	-	-	-	-	-	-	-
	WBR	-	-	-	-	-	-	-	-
	NB	E	0.48	41.0	17.3	**F**	**0.48**	**50.5**	**16.5**
	SBL	**F**	**0.42**	**83.2**	**12.8**	**F**	**0.73**	**145.2**	**24.8**
	SBT/R	C	0.08	19.2	2.3	C	0.10	22.5	2.3
	Overall	**A**	**-**	**5.2**	**-**	**A**	**-**	**7.4**	**-**
Fallowfield Road at Cedarview Road *Signalized*	EBL	A	0.15	13.7	10.5	A	0.20	17.4	7.8
	EBT	D	0.87	32.3	**#192.4**	B	0.64	20.5	94.7
	EBR	A	0.01	0.0	0.0	A	0.04	2.0	2.5
	WBL	A	0.23	17.9	9.7	A	0.54	24.1	35.5
	WBT	B	0.61	18.9	100.0	D	0.90	36.3	**#179.7**
	WBR	A	0.21	2.7	9.7	A	0.11	4.1	7.6
	NBL	A	0.13	20.0	12.8	A	0.28	31.2	9.2
	NBT	B	0.66	30.7	73.4	A	0.30	21.5	37.1
	NBR	A	0.51	15.0	38.0	A	0.22	4.7	10.8
	SBL	E	0.97	**84.8**	**#69.0**	C	0.72	36.2	**#76.1**
	SBT/R	A	0.26	21.0	28.2	**F**	**1.05**	**77.7**	**#177.4**
	Overall	**E**	**0.91**	**28.0**	**-**	**E**	**0.91**	**38.1**	**-**

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

Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

At the 2038 future background horizon, the study area intersections are anticipated to operate worse than in the existing conditions with the background growth and development volumes impacting specific movements.

At the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive, during both peak hours, the westbound through movement is expected to incur further capacity, delay, and queueing issues. During the AM peak hour, the overall intersection is forecast be over theoretical capacity and may be subject to high delays, and the eastbound through movement may exhibit extended queues. During the PM peak hour, the eastbound through movement is forecast to be over theoretical capacity and may be subject to high delays, and the overall intersection is anticipated to be over theoretical capacity with high delays.

At the intersection of Fallowfield Road at O'Keefe Court/ Cobble Hill Drive, southbound left movement is anticipated to have high delays during both peak hours, and the northbound movement is anticipated to have high delays during the PM peak hour.

At the intersection of Fallowfield Road at Cedarview Road, high delays and extended queues may be observed on southbound left movement during the AM peak hour, and extended queueing may be present on the movement during the PM peak hour. Also during the PM peak hour, the southbound through/right movement is anticipated to be over theoretical capacity.

9.1.1 Future Background 2038 Mitigation Measures

Signal warrant analysis was performed for the intersections of Cedarview Road at Onassa Circle and Fallowfield Road at O'Keefe Court/ Cobble Hill Drive for the 2038 future background conditions and neither intersection was found to meet warrants. Signal warrants are provided in Appendix D.

Turn-lane warrant analysis was performed for the northbound left-turn at the intersection of Cedarview Road at Onassa Circle. The northbound approach was found to warrant a left-turn lane at the future background 2038 horizon, however no turn-lane would be recommended for implementation based on the low total volumes of the movement. Turn-lane warrants are provided in Appendix J.

Although the signal warrant does not meet at intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive, to address the background delays, it is recommended that this intersection to be signalized by 2038. Also, to address the capacity issues during the PM peak hour at the intersection of Fallowfield Road at Cedarview Road, signal timing adjustments are proposed. The operations associated with these changes are summarized for the 2038 future background horizon in Table 18. The synchro worksheets for the future background 2038 mitigation measures are provided in Appendix K.

Table 18: 2038 Future Background Intersection Operations – Mitigated

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive *Signalized*	EBL	A	0.21	9.4	16.5	A	0.21	8.9	14.3
	EBT	A	0.50	10.2	94.4	A	0.47	8.9	90.2
	EBR	A	0.01	0.5	0.5	A	0.06	2.3	4.8
	WBL	A	0.03	7.8	3.7	A	0.10	7.2	9.1
	WBT	A	0.50	10.3	94.5	A	0.57	10.7	122.4
	WBR	A	0.01	0.5	0.5	A	0.02	2.9	2.6
	NB	A	0.17	9.9	13.5	A	0.15	11.6	12.9
	SBL	A	0.09	17.0	9.6	A	0.11	19.9	14.5
	SBT/R	A	0.04	9.9	5.2	A	0.05	12.1	6.1
	Overall	**A**	**0.54**	**10.2**	**-**	**B**	**0.62**	**9.7**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Fallowfield Road at Cedarview Road ***Signalized***	EBL	No mitigation required				A	0.24	21.5	8.8
	EBT					B	0.66	23.0	103.2
	EBR					A	0.04	2.5	2.9
	WBL					A	0.58	28.6	40.2
	WBT					E	0.93	42.8	**#193.3**
	WBR					A	0.12	5.1	8.6
	NBL					A	0.28	31.3	9.5
	NBT					A	0.28	20.9	37.3
	NBR					A	0.21	4.4	10.6
	SBL					B	0.68	32.8	69.9
	SBT/R					E	0.98	59.1	**#177.6**
	Overall					**E**	**0.95**	**36.0**	**-**

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

With the signalization of the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive at the 2038 future background horizon, the intersection is forecast to operate well during both peak hours. No capacity issues are noted.

At the intersection of Fallowfield Roat at Cedarview Road, with signal timing adjustments, during the PM peak hour at the 2038 future background horizon, the operations are anticipated to be similar as in the existing conditions. No capacity issues are noted.

9.2 2038 Future Total Operations

As O'Keefe court terminates immediately west of the proposed collector road intersection, this access intersection effectively constitutes a bend in the road, no delays or capacity issues will be present, and the traffic operations will not be analyzed.

Figure 19 illustrates the 2038 future total volumes and Table 19 summarizes the 2038 future total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2038 future total horizon are provided in Appendix L.

Figure 19: 2038 Future Total Volumes

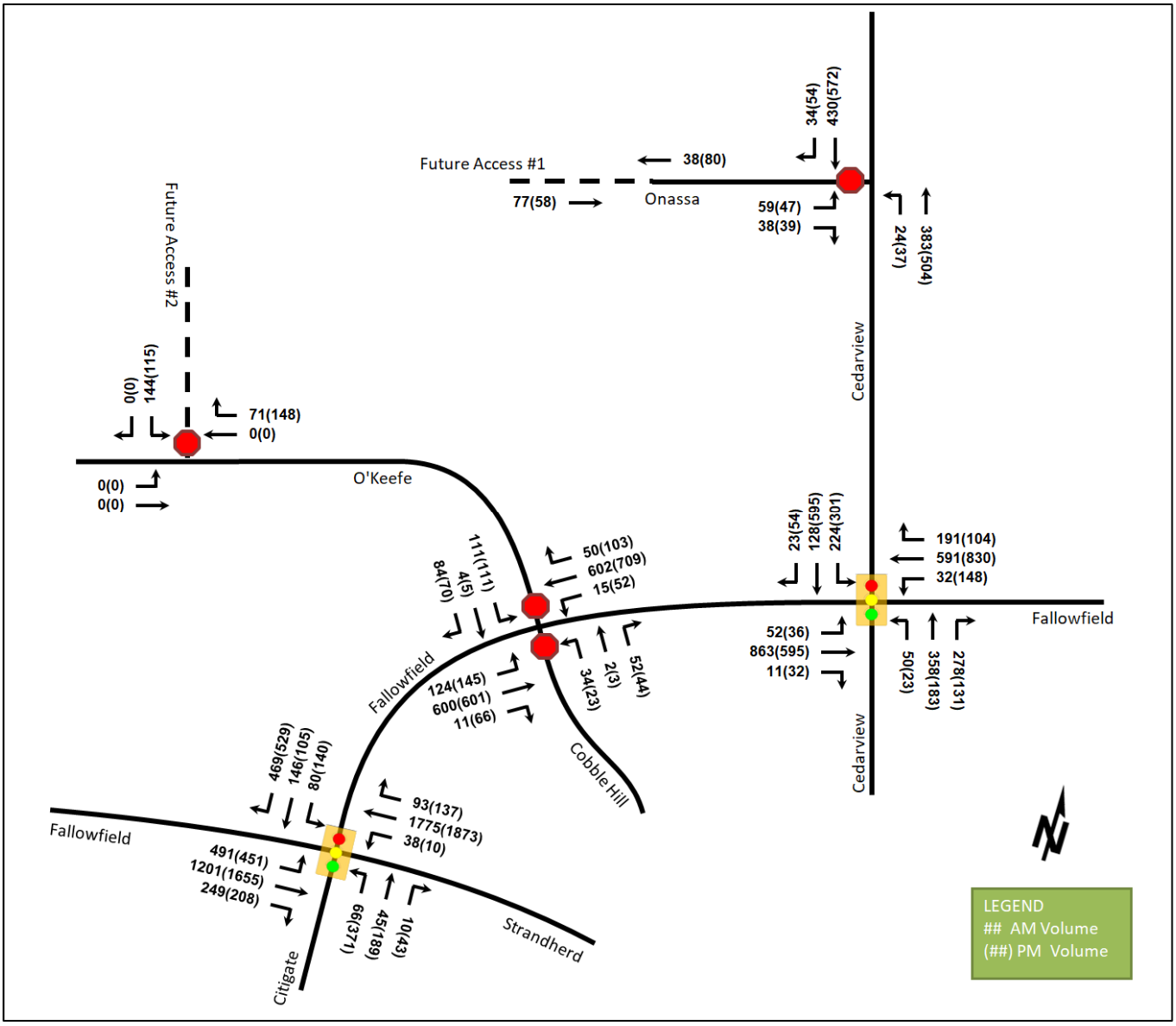


Table 19: 2038 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cedarview Road at Onassa Circle *Unsignalized*	EBL/R	C	0.28	19.5	8.3	D	0.35	27.6	11.3
	NBL/T	A	0.02	8.7	0.8	A	0.04	9.1	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**2.2**	**-**	**A**	**-**	**2.2**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Fallowfield Road/Citigate Drive at Strandherd Drive *Signalized*	EBL	E	0.91	69.9	**#89.6**	E	0.99	**92.2**	**#88.8**
	EBT	D	0.84	39.9	**#220.8**	**F**	**1.25**	**150.4**	**#343.9**
	EBR	A	0.34	5.6	20.1	A	0.32	9.1	28.2
	WBL	A	0.55	**84.1**	**#25.4**	A	0.16	58.8	7.8
	WBT	**F**	**1.75**	**370.2**	**#416.8**	**F**	**2.50**	**702.6**	**#428.7**
	WBR	A	0.16	0.6	0.0	A	0.33	5.9	11.1
	NBL	A	0.41	62.5	15.2	C	0.77	62.5	**#99.1**
	NBT/R	A	0.16	26.3	16.6	A	0.54	39.3	62.2
	SBL	B	0.70	**86.5**	**#49.0**	A	0.59	62.6	**#83.4**
	SBT	A	0.36	37.0	41.2	A	0.25	33.9	30.6
	SBR	C	0.76	16.1	53.2	D	0.86	26.6	81.3
	Overall	**F**	**1.18**	**165.0**	**-**	**F**	**1.39**	**292.1**	**-**
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive *Unsignalized*	EBL	A	0.15	9.9	3.8	B	0.20	11.1	5.3
	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.02	9.0	0.8	A	0.06	9.4	1.5
	WBT	-	-	-	-	-	-	-	-
	WBR	-	-	-	-	-	-	-	-
	NB	**F**	**0.75**	**96.3**	**31.5**	**F**	**0.97**	**196.8**	**37.5**
	SBL	**F**	**1.91**	**582.1**	**79.5**	**F**	**2.71**	**981.5**	**91.5**
	SBT/R	C	0.25	18.4	7.5	C	0.28	24.0	8.3
	Overall	**C**	**-**	**45.0**	**-**	**C**	**-**	**65.6**	**-**
Fallowfield Road at Cedarview Road *Signalized*	EBL	A	0.20	15.1	11.9	A	0.44	35.1	**#16.8**
	EBT	E	1.00	53.2	**#220.1**	B	0.70	22.6	109.8
	EBR	A	0.02	0.1	0.0	A	0.04	2.2	2.9
	WBL	A	0.43	36.3	**#16.3**	B	0.63	31.3	**#45.5**
	WBT	B	0.67	21.3	109.6	E	0.99	52.2	**#206.8**
	WBR	A	0.24	2.8	9.9	A	0.15	4.5	9.2
	NBL	A	0.13	19.7	12.9	A	0.30	32.7	10.1
	NBT	B	0.62	28.5	73.3	A	0.30	21.5	36.7
	NBR	A	0.52	18.1	44.2	A	0.23	4.8	10.9
	SBL	E	0.97	**81.9**	**#76.2**	C	0.78	40.6	**#83.5**
	SBT/R	A	0.27	19.7	29.4	**F**	**1.06**	**81.1**	**#179.9**
	Overall	**E**	**0.98**	**35.2**	**-**	**F**	**1.02**	**44.0**	**-**

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

At the 2038 future total horizon, the study area intersections are anticipated to operate similarly to the 2038 future background conditions.

At the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive, with the addition of site traffic, the westbound left and southbound left movements may be subject to high delays and extended queues, and the eastbound left movement may exhibit extended queues during the AM peak hour. During the PM peak hour, the eastbound left movement is approaching theoretical capacity and may be subject to high delays.

At the intersection of Fallowfield Road at O'Keefe Court/ Cobble Hill Drive, during the AM peak hour the southbound left movement is anticipated to be over theoretical capacity and to experience a large increase in delay, and the northbound movement may be subject to high delays. During the PM peak hour at the intersection

the southbound left movement is anticipated to be over theoretical capacity and this movement and the northbound movement are anticipated to experience large increases in delay.

At the intersection of Fallowfield Road at Cedarview Road, the westbound left movement may exhibit extended queues during both peak hours.

9.2.1 Future Total 2038 Mitigation Measures

Signal warrant analysis was performed for the intersections of Cedarview Road at Onassa Circle and Fallowfield Road at O'Keefe Court/ Cobble Hill Drive for the 2038 future total conditions and neither intersection was found to meet warrants. Signal warrants are provided in Appendix D.

Turn-lane warrants were performed for the northbound left-turn at the intersection of Cedarview Road at Onassa Circle. The northbound approach was found to warrant a left-turn lane at the 2038 future total horizon, and to support the development it is recommended that one be provided.

As in the background conditions, Fallowfield Road at O'Keefe Court/Cobble Hill Drive will be evaluated as a signalized intersection to determine the operations once signals are installed. Also as in the background conditions, at the intersection of Fallowfield Road at Cedarview Road, signal timing adjustments have been implemented to address capacity issues associated with unbalanced phasing. The operations associated with these changes are summarized for the 2038 future total horizon are illustrated in Table 20. The synchro worksheets for the future total 2038 mitigation measures are provided in Appendix M.

Table 20: 2038 Future Total Intersection Operations – Mitigated

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Fallowfield Road at O'Keefe Court/ Cobble Hill Drive *Signalized*	EBL	A	0.43	16.6	26.6	A	0.55	21.8	38.7
	EBT	A	0.58	13.2	94.5	A	0.58	12.7	99.6
	EBR	A	0.01	0.4	0.4	A	0.07	2.6	4.9
	WBL	A	0.04	8.5	3.6	A	0.14	9.3	9.3
	WBT	B	0.65	15.1	115.7	B	0.68	15.5	131.4
	WBR	A	0.06	4.4	5.4	A	0.11	4.0	8.6
	NB	A	0.20	12.3	15.5	A	0.16	12.5	13.1
	SBL	A	0.39	26.3	31.3	A	0.28	24.3	29.6
	SBT/R	A	0.18	7.4	10.9	A	0.16	8.2	10.5
	Overall	**B**	**0.67**	**14.3**	**-**	**B**	**0.67**	**14.0**	**-**
Fallowfield Road at Cedarview Road *Signalized*	EBL	No mitigation required				A	0.55	54.3	**#22.2**
	EBT					C	0.72	27.0	144.8
	EBR					A	0.04	3.9	4.1
	WBL					B	0.69	40.1	**#57.3**
	WBT					E	0.99	56.0	**#262.7**
	WBR					A	0.15	6.8	12.8
	NBL					A	0.40	49.0	**#14.2**
	NBT					A	0.28	25.6	44.2
	NBR					A	0.22	4.9	11.9
	SBL					C	0.76	44.4	**#98.4**
	SBT/R					E	1.00	71.6	**#213.9**
	Overall					**E**	**0.99**	**45.2**	**-**

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

With the signalization of the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive at the 2038 future total horizon, the intersection operates similarly to the background conditions with the signalization during both peak hours. No capacity issues are noted.

At the intersection of Fallowfield Roat at Cedarview Road, with signal timing adjustments, during the PM peak hour at the 2038 future total horizon, the operations are similar to the 2038 background conditions. With the addition of site traffic, extended queueing may be observed on the eastbound left movement, the westbound left movement, the northbound left movement, and the southbound left movement. No capacity issues are noted.

9.3 Demand Rationalization Conclusions

9.3.1 Background Travel Demand

Capacity issues have been noted at the intersection of Strandherd Drive at Fallowfield Road/Citigate Drive on the eastbound through and westbound through movements in the background conditions. These movements facilitate access to Highway 416 for the majority of the Barrhaven community. Additional background traffic on these movements over the existing volumes are largely anticipated to be a result of remaining growth in the Barrhaven South area. Once the interchange at Barnsdale Road is constructed, it is assumed that most of the forecasted background growth and a proportion of the existing volumes will reduce on these movements.

9.3.2 Development Travel Demand

The proposed development does not generate additional traffic on the overcapacity eastbound through and westbound through movements at the intersection of Strandherd Drive at Fallowfield Road/Citigate Drive. As this proposed community is situated adjacent to high density of employment and commercial development and proposes 15-minute neighbourhood design and high-quality transit service, and only minor traffic impacts are forecast, rationalization for site travel demand is not required.

10 Transit

10.1 Route Capacity

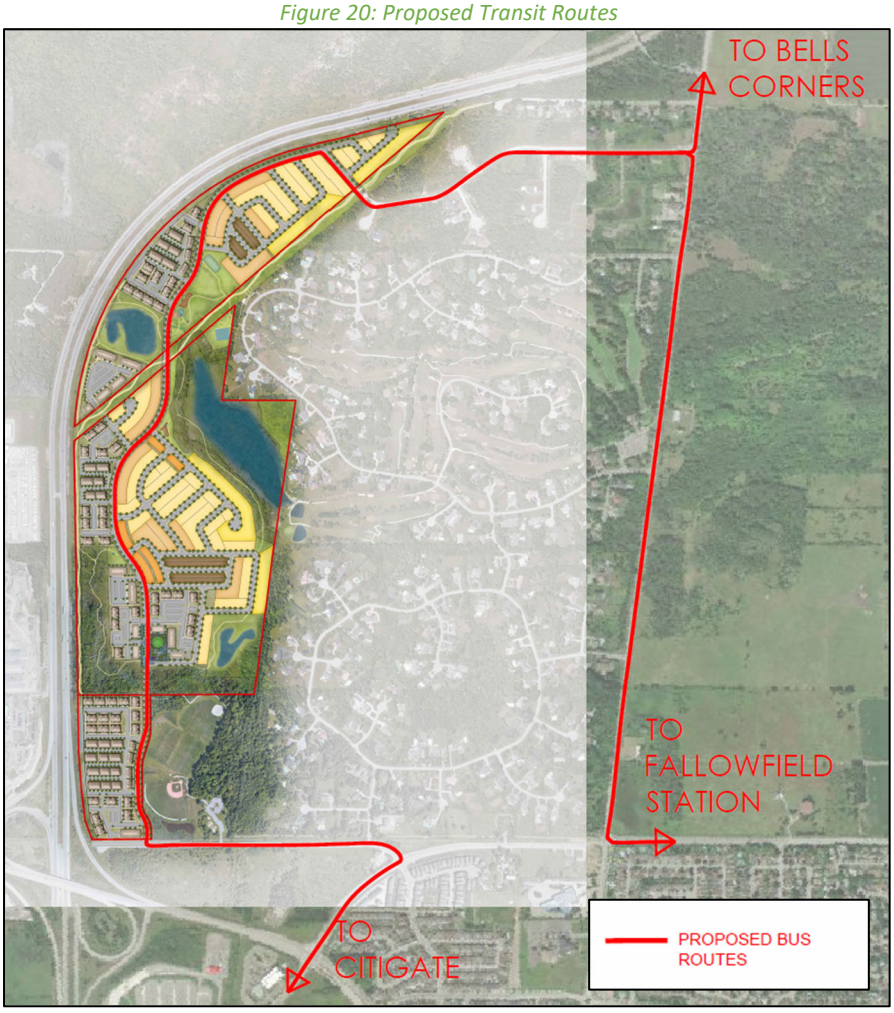
Traditional peak direction transit trips, north to (AM)/from (PM) the city's inner area, is proposed to be synergistic with transit service to the Citigate Employment Lands as extensions of existing and/or future planned routes. For example, during the AM peak period, it would be anticipated that as commuters from the rest of Barrhaven alight within the Citigate Employment Lands, buses on these routes will have low passenger loads to permit a large number of boardings within the Cedarview Community as the routes continue on to Fallowfield Station, or potentially Bells Corners and Moodie Station as determined appropriate by OC Transpo. This model will rely on routes that are understood to be presently underutilized, furthermore leaving future residual capacity for these existing routes' travel based on the synergistic ridership anticipated to result between the differing residential and employment land use patterns. Routing of existing express routes during the peak periods through the subject lands is also recommended.

Travel in the traditional off-peak direction, south to (AM)/from (PM) the rest of Barrhaven is anticipated to have appreciably high demand as trips within Barrhaven, to/from Citigate and beyond along Strandherd Drive will serve the connection of residents to local employment, commercial, and recreational destinations. This traditionally off-peak travel may be synergistic with transit service connecting Bells Corners and Moodie Station to Barrhaven, during the peak periods as determined appropriate by OC Transpo, and may additionally or alternatively provide connectivity east along Fallowfield Road to Fallowfield Station at all times of the day.

Routes travelling to/from Fallowfield Station along Fallowfield Road, through the community, continuing south through Citigate and ultimately along Strandherd Drive to Downtown Barrhaven would provide local connections to other existing and planned communities in Barrhaven including to and for the O'Keefe Court commercial lands.

The proposed transit routing options are illustrated in Figure 20. It is noted that a loop formed by a route travelling through the community continuing along Cedarview Road and connecting to Fallowfield Station would provide the adjacent Cedarhill community with transit connections.

Figure 20: Proposed Transit Routes



As Citigate builds out the transit demands are anticipated to increase and service to be expanded. This increase in demand will support increases in bus frequencies in the study area and along potential route extensions through the subject community.

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 21 summarizes the transit trip generation.

Table 21: Trip Generation by Transit Mode

Travel Mode	Residential Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	18%-30%	111	246	357	190	142	333

The development is anticipated to generate 357 AM and 333 PM peak hour two-way transit trips at full build-out.

Based on these forecasted values, Table 30 summarizes the theoretical bus requirements to meet travel demands in the traditional peak and off-peak directions.

Table 22: Cedarview Forecasted Transit Service – Minimum Bus Requirements

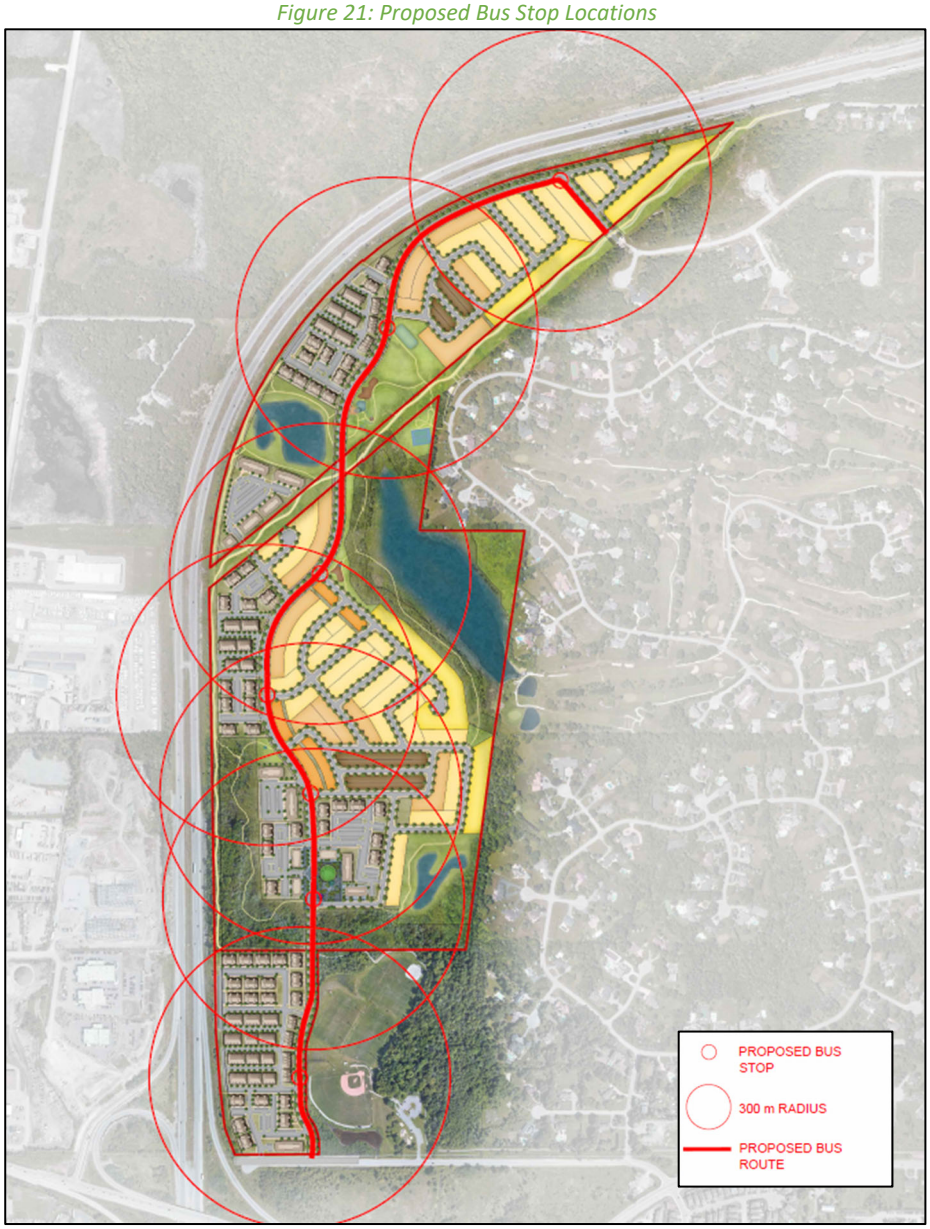
Peak Hour	Direction of Travel	Bus and Service Type		
		Single Capacity: 45 passengers	Articulated Capacity: 70 passengers	Double Decker Capacity: 90 passengers
AM	To the north/east	2	1	1
	To the south	2	2	1
PM	From the north/east	4	2	2
	From the south	6	4	3

Note: Bus and service time ranges assume capacity at 80% load

The intention of the site is to ultimately be serviced by frequent transit (15-minute service) and therefore, it is recommended that bus capacities be selected on this basis when considering the potential loads with which the routes arrive to and depart from the community. As shown above, the target transit demands, derived from the application of a more locally-oriented service model for the recommended transit mode shares from the TRANS trip generation manual for Nepean South, are supportive of frequencies better than 15-minute service in the peak periods.

As illustrated in Figure 20, transit service is envisioned to be routed along the internal collector road from O'Keefe Court to Onassa Circle continuing to Cedarview Road. To provide the entire community with access to these transit routes, the proposed bus stop locations, with 300-metre radii representing approximate 400-metre walking distances, are illustrated in Figure 21.

Figure 21: Proposed Bus Stop Locations



10.2 Transit Priority

Transit movements at the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive for existing routes are the eastbound and westbound through movements, the westbound left and northbound right movements, and the northbound through and southbound through movements. The recommended transit routes proposed in section 10.1 would utilize the northbound through and southbound through movement, and potentially eliminate the northbound right and westbound left movements depending on future combination of existing routes with new routes for the subject development. All transit movements at the intersection are anticipated to operate with transit LOS F at the future background and total horizons. All existing routes are forecast to be subject to delays at this intersection and proposed routes may be subject to lower delays with any shifts from the westbound left movement to the northbound through movement. It is anticipated that once the Barnsdale Road Highway 416 interchange is built out, delays at the intersection will be reduced.

At the intersection of Fallowfield Drive at O'Keefe Court/Cobble Hill Drive, the existing transit movements are the eastbound and westbound through movements, and proposed transit movements are the eastbound left and southbound right movements. All movements at this intersection are anticipated to operate with Transit LOS C or better with the exception of the southbound right movement during the PM peak hour which is forecast to operate with transit LOS D in the future background and total conditions.

At the intersection of Fallowfield Road at Cedarview Road, the existing routes utilize the eastbound through and westbound through movements which are anticipated to operate with more delay in the future total than the background conditions, increasing by one transit LOS letter grade. The proposed transit routes would utilize the westbound right and southbound left movements, with the westbound right forecast to operate with transit LOS B and the southbound left forecast to operate with transit LOS F.

Notwithstanding the foregoing, the transit routes within the study area do not have transit LOS targets, not being existing transit priority corridors and peak period delays are typical of Barrhaven arterial intersections.

11 Network Concept

A screenline analysis was conducted on TRANS Screenline 9 to determine the total capacities of the roadways without and without the study area. Table 35 summarizes the results of the screenline analysis. The relevant data were provided by the City of Ottawa for TRANS Screenline 9, and are provided in Appendix N.

Table 23: AM Peak Hour Directional Screenline Analysis

Screenline 9	Roads	Lane Capacity [vphpl]	Lanes per Direction	Capacity [vph]	Background Volumes	Site Traffic	Total Traffic
Northbound	Moodie north of Fallowfield	1,000	1	1,000	505	0	505
	Borrisokane South of Jock River Bridge	1,000	1	1,000	569	0	569
	Cedarview North of Lytle	1,000	1	1,000	497	43	540
	Greenbank North of Fallowfield	1,000	1	1,000	1,234	0	1,234
	Greenbank South of Jock River	800	1	800	677	0	677
	Hwy 416 North of Strandherd	1,800	2	3,600	2,614	32	2,646
	Hwy 416 South of Jock River Bridge	1,800	2	3,600	1,847	0	1,847
	Longfields South of Jock River Bridge	1,000	2	2,000	1,178	0	1,178
	Merivale North of Fallowfield	1,000	1	1,000	1,375	0	1,375
	Moodie South of Jock River Bridge	1,000	1	1,000	271	0	271
	Prince of Wales South of Jock River Bridge	1,000	2	2,000	1,546	0	1,546
	Prince of Wales North of Fallowfield	1,000	1	1,000	922	0	922
	Richmond South of Hope Side	1,000	1	1,000	245	0	245

Screenline 9	Roads	Lane Capacity [vphpl]	Lanes per Direction	Capacity [vph]	Background Volumes	Site Traffic	Total Traffic
	Woodroffe North of Fallowfield Transit Station	1,000	2	2,000	2,233	0	2,233
	Total	**-**	**19**	**22,000**	**15,713**	**75**	**15,788**
Southbound	Moodie north of Fallowfield	1,000	1	1,000	230	0	230
	Borrisokane South of Jock River Bridge	1,000	1	1,000	231	0	231
	Cedarview North of Lytle	1,000	1	1,000	244	20	264
	Greenbank North of Fallowfield	1,000	1	1,000	463	0	463
	Greenbank South of Jock River	800	1	8,00	238	0	238
	Hwy 416 North of Strandherd	1,800	2	3,600	1,048	15	1,063
	Hwy 416 South of Jock River Bridge	1,800	2	3,600	727	0	727
	Longfields South of Jock River Bridge	1,000	2	2,000	451	0	451
	Merivale North of Fallowfield	1,000	1	1,000	221	0	221
	Moodie South of Jock River Bridge	1,000	1	1,000	157	0	0
	Prince of Wales South of Jock River Bridge	1,000	2	2,000	521	0	0
	Prince of Wales North of Fallowfield	1,000	1	1,000	277	0	0
	Richmond South of Hope Side	1,000	1	1,000	287	0	0
	Woodroffe North of Fallowfield Transit Station	1,000	2	2,000	521	0	0
	Total	**-**	**19**	**22,000**	**5,616**	**35**	**6,651**

As a whole, screenline 9 has residual capacity in both the background conditions and with site traffic. Greenbank Road, Merivale Road, and Woodroffe Avenue are over their theoretical capacities in the peak direction in the background conditions, and site traffic is not anticipated to impact these roads. Therefore, forecasted site traffic can be accommodated from a network perspective.

12 Intersection Design

12.1 Intersection Control

It is recommended that the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive be signalized by 2038 to address the background conditions, as per current City monitoring.

While the build-out horizon is distant and background volumes are considered conservative, signal timing adjustments may be required to improve operations at the intersection of Fallowfield Road at Cedarview Road in the future.

No signalization of site access intersections, or other changes to network intersection control are recommended as part of this study.

12.2 Intersection Design

12.2.1 2038 Future Total Intersection Operations

The operations are noted in Section 9.2. The study area intersections operate similarly in the total condition to the background conditions. With signals at the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive required to address background conditions, and mitigation through signal timing adjustments to balance operations at the intersection of Fallowfield Road at Cedarview Road, no transportation network modifications are required to support the development.

12.2.2 Intersection MMLOS

Table 24 summarizes the MMLOS analysis for the signalized intersections of Fallowfield Road at Cedarview Road and Fallowfield Road/Citigate Drive at Strandherd Drive. The existing and future conditions for the intersections will be the same and are considered in one row. The intersection analysis is based on the policy area of Developing Community. The MMLOS worksheets has been provided in Appendix O.

Table 24: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Fallowfield Road at Cedarview Road	F	C	F	C	N/A	N/A	E	D	F	D
Fallowfield Road/Citigate Drive at Strandherd Drive	F	C	F	C	N/A	N/A	B	D	F	D

The pedestrian LOS targets will not be met at the study area intersections. To meet pedestrian LOS targets, crossing distances would need to be less than two lane widths on all crossings. Given the nature of arterial roadways, it is not feasible to meet the given targets.

The bicycle LOS targets will not be met at the study area intersections. To meet bicycle LOS targets, segregated facilities and two-stage left turns or left-turn boxes would be required on all approaches at the intersection of Fallowfield Road at Cedarview, and segregated facilities would be required on the southbound approach at the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive.

The truck LOS targets will not be met at the intersection of Fallowfield Road at Cedarview Road. To meet truck LOS targets, effective corner radius would need to be greater than 15 metres or the number of receiving lanes would need at least two lanes.

The auto LOS targets will not be met at the study area intersections. Section 10 includes recommendations to improve the auto LOS at the intersection of Fallowfield Road at Cedarview Road.

12.2.3 Recommended Design Elements

The access intersection of Cedarview Road at Onassa Circle is proposed to have an inbound northbound left-turn lane added on Cedarview Road. The recommended storage length for the lane will be confirmed through subsequent TIA revisions.

No network intersection design elements are anticipated to be required outside of those listed in the TIA to support the proposed development.

13 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The community is proposed as comprising a mix of densities, from detached dwellings to mid-rise condo blocks
- A new collector road serving the community is proposed to connect O'Keefe Court to Onassa Circle
- The trip generation trigger was met for the TIA Screening

Existing Conditions

- Fallowfield Road, Strandherd Drive, Cedarview Road north of Fallowfield Road are arterial roads, Cedarview Road between Fallowfield Road and Jockvale Road is a major collector road, and south of Jockvale Road south of Jockvale Road is a collector road in the study area
- O'Keefe Court, Cobble Hill Drive, Citigate Drive, Onassa Circle are local roads
- Sidewalks are provided along both sides of Strandherd Drive and Cobble Hill Drive, along the west side of Citigate Drive, and along the south side of Fallowfield Road for approximately 155 metres west of Citigate Drive
- Cycletracks are provided along both sides of Strandherd Drive, on the south side of Fallowfield Road for approximately 155 metres west of Citigate Drive
- MUPs are provided along the east side of Cedarview Road south of Fallowfield Road, on the east side of Citigate Drive south of CrossKeys Place, and on the north side of Fallowfield Road west of Cedarview Road continuing along O'Keefe Court to Lytle Park
- Strandherd Drive is designated as a cross-town bikeway within the 2023 Transportation Master Plan – Part 1
- Capacity issues have been noted on the westbound through movements during both peak hours in the existing condition
- The intersections of Fallowfield Road at Strandherd Drive and Fallowfield Road at Cedarview Road are noted to have experienced higher collisions than other locations within the study area
- Collisions at the Fallowfield Road at Strandherd Drive intersection are typically associated with congestion, and no further review of collisions at this location is required
- Collisions at the Fallowfield Road at Cedarview Road intersection
- The collisions at the intersections of Fallowfield Road at Strandherd Drive and Fallowfield Road at Cedarview Road are typically associated with congestion, and no further review of collisions are required at these locations

Planned Conditions

- A new Highway 416 interchange at Barnsdale Road is planned which will mitigate volumes on the Strandherd Drive and Fallowfield Road corridors from the Barrhaven South community
- The intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive is understood to be planned for signalization in the future based on monitoring by the City

- Chapman Mills Drive BRT is planned to be extended to Highway 416 and this improvement is anticipated before 2038
- Greenbank Road is to be realigned and include median BRT, and these improvements are anticipated outside of the study horizons
- The BRT line from Baseline Station to Barrhaven Town Centre is to be converted to LRT and this improvement will be subject to timing determined by the TMP Part 2
- 115 Lusk Street, 135 Lusk Street, 140 Lusk Street, 4451 Fallowfield Road, 4433 Strandherd Drive, CitiGate, 444 Citigate, and 560 Dealership Drive are background developments within the study area

Development Generated Travel Demand

- Future travel trends enabled by urban design and infrastructure should be considered for this development which is anticipated to be built out in 2038
- The community is proposed to be informed by 15-Minute Neighbourhood design philosophy, and will include residential-supportive land uses internally and provide high-quality and direct active transportation links to surrounding employment and commercial land uses
- Fifteen-minute transit service or better is envisioned for the development
- Mode shares accounting for these aspects of the community are proposed in line with reductions in regional auto travel
- The proposed development is forecasted produce 1365 two-way people trips during the AM peak hour and 1545 two-way people trips during the PM peak hour
- Of the forecasted people trips, 313 two-way trips will be vehicle trips during the AM peak hour and 370 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted trips, 30 % are anticipated to travel north, 10 % to the south, 55 % to the east, and 5% to both the west and south

Development Design

- The subdivision will include a new 26.0-metre-wide collector cross-section through the development area connecting O'Keefe Court to Onassa Circle
- Sidewalks and cycletracks will be on each side of the collector road through the subdivision
- Sidewalks will be along one side of all local roads throughout the subdivision, and paving of the existing crushed stone mixed-use pathway along the hydro corridor is proposed as part of the development
- Pedestrian crossovers (Type C) are proposed at each of the three intersections of the MUP and the collector road
- MUPs are proposed to extend to both the north and south
- Typical local roads of 18.0-metre rights-of-way are proposed throughout the development
- Traffic calming measures are proposed including bulb-outs and speed humps
- The local roads are proposed to be posted as 30 km/h

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Display relevant walking and cycling maps along with transit schedules and route maps at major residential and retail entrances
    - Provide a multimodal travel option information package to new residents and employees
    - Contract with provider to install on-site carshare vehicles and promote their use by residents

- Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels

Background Conditions

- Other area traffic studies employed a 1%-2% annual background growth rate on Strandherd Drive and Fallowfield Road in addition to other explicitly considered background developments
- To account for the Barnsdale Road interchange and the Chapman Mills BRT reducing volumes along Strandherd Drive, background growth based on the TRANS volume models will be applied
- The background developments were explicitly included in the background conditions, along with background growths along Fallowfield Road, Strandherd Drive, and Cedarview Road
- At the 2038 future background horizon, the study area intersections are anticipated to operate worse than in the existing conditions with the background growth and development volumes impacting specific movements
- Capacity issues have been noted at the intersection of Strandherd Drive at Fallowfield Road/Citigate Drive on the eastbound through and westbound through movements in the background conditions
- Once the interchange at Barnsdale Road is constructed, it is assumed that most of the forecasted background growth and a proportion of the existing volumes will reduce on these movements
- Both Cedarview Road at Onassa Circle and Fallowfield Road at O'Keefe Court/ Cobble Hill Drive intersections do not meet the signal warrant for the 2038 future background conditions
- It is recommended that the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive to be signalized by 2038
- The northbound approach was found to warrant a left-turn lane at the future background 2038 horizon at the intersection of Cedarview Road at Onassa Circle
- No turn-lane would be recommended for implementation at the intersection of Cedarview Road at Onassa Circle based on the low total volumes of the movement

Transit

- Traditional peak direction transit trips, north to (AM)/from (PM) the city's inner area is proposed to be synergistic with transit service to the Citigate Employment Lands as extensions of existing and/or future planned routes
- This travel is proposed to rely on potentially underutilized routes, and the synergistic land use patterns would be expected to leave residual capacity for existing ridership to grow along these routes
- Internal routes travelling to/from Fallowfield Station along Fallowfield Road, through the community, continuing south through Citigate and ultimately along Strandherd Drive to Downtown Barrhaven would provide local connections to other existing and planned communities in Barrhaven
- As Citigate builds out the transit demands are anticipated to increase and will support increases in bus frequencies in the study area and along potential route extensions through the subject community
- The development is anticipated to generate 357 AM and 333 PM peak hour two-way transit trips at full build-out
- It is recommended that bus capacities be selected on this basis when considering the potential loads with which the routes arrive to and depart from the community
- Transit routes have been proposed to be routed along the internal collector road from O'Keefe Court to Onassa Circle continuing to Cedarview Road

- All existing routes are forecast to be subject to delays at the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive and proposed routes may be subject to lower delays with route changes from the westbound left movement to the northbound through movement
- It is anticipated that once the Barnsdale Road Highway 416 interchange is built out, delays at the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive will be reduced
- All movements at the intersection of Fallowfield Drive at O'Keefe Court/Cobble Hill Drive are anticipated to operate with Transit LOS C or better with the exception of the southbound right movement during the PM peak hour which is forecast to operate with transit LOS D in the future background and total conditions
- The existing routes utilize the eastbound through and westbound through movements at the intersection of Fallowfield Road at Cedarview Road are anticipated to increase the transit LOS by one letter grade compared to the background conditions

Network Concept

- Screenline 9 has residual capacity in both the background conditions and with site traffic
- Forecasted site traffic can be accommodated from a network perspective

Intersection Design

- The study area intersections at the 2038 future total horizon are anticipated to operate similarly to the 2038 future background conditions
- Signal timing adjustments may be required to improve operations at the intersection of Fallowfield Road at Cedarview Road in the future
- Both Cedarview Road at Onassa Circle and Fallowfield Road at O'Keefe Court/ Cobble Hill Drive intersections do not meet the signal warrant for the 2038 future total conditions
- Similar to the background conditions, it is recommended that the intersection of Fallowfield Road at O'Keefe Court/Cobble Hill Drive to be signalized by 2038
- The access intersection of Cedarview Road at Onassa Circle is proposed to have an inbound northbound left-turn lane added on Cedarview Road
- As this proposed community is situated adjacent to high density of employment and commercial development and proposes 15-minute neighbourhood design and high quality transit service, and only minor traffic impacts are forecast, rationalization for site travel demand is not required
- The pedestrian LOS targets will not be met at the study area intersections and would need to be less than two lane widths on all crossings to meet the targets
- The bicycle LOS targets will not be met at the study area intersections
- Segregated facilities, two-stage left turns or left-turn boxes would be required on all approaches at the intersection of Fallowfield Road at Cedarview, and segregated facilities would be required on the southbound approach at the intersection of Fallowfield Road/Citigate Drive at Strandherd Drive in order to meet the bicycle LOS targets
- The truck LOS targets will not be met at the intersection of Fallowfield Road at Cedarview Road, and effective corner radius would need to be greater than 15 metres or the number of receiving lanes would need at least two lanes to meet the targets

14 Conclusion

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

Prepared By:

John Kingsley
Transportation Engineering-Intern

Reviewed By:

Christopher Gordon, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2023 Revisions to 2017 TIA Guidelines
Step 1 - Screening Form

Date: 30-May-24
Project Number: 2023-105
Project Reference: 4497 O'Keefe Court

1.1 Description of Proposed Development	
Municipal Address	4497 O'Keefe Court
Description of Location	Between Cedarview Road, O'Keefe Court, and Highway 416
Land Use Classification	Rural Zones (RR4, RR4 [647, 648, 649r]), Open Space and Leisure Zones (O1, O1A), Environmental Zone (EP3)
Development Size	342 Single-Detached, 1,209 low-rise dwellings, 128
Accesses	Access via Onassa Circle and O'Keefe Court
Phase of Development	Multiple
Buildout Year	2038
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Multi-Family (Low-Rise)	
Development Size	1209	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	No

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

Certification Form for TIA Study PM

TIA Plan Reports

On April 14, 2022, the Province's Bill 109 received Royal Assent providing legislative direction to implement the More Homes for Everyone Act, 2022 aiming to increase the supply of a range of housing options to make housing more affordable. Revisions have been made to the TIA guidelines to comply with Bill 109 and streamline the process for applicants and staff.

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 they meet the four criteria listed below.

CERTIFICATION

- ☑ 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; (Update effective July 2023)
- ☑ 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;
- ☑ 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
- ☑ I am either a licensed or registered[1] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☐ or transportation planning.

[1] 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
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th fl.
Ottawa, ON
K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Revision Date: June 2023

Dated at Ottawa (City) this 17 day of August , 20 23 .

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa

Signature of individual certifier that s/he/they meet the above criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa, K2H 7W1
Telephone / Extension: 613-697-3797
Email Address: andrew.harte@cghtransportation.com

Stamp

Revision Date: June 2023

Appendix B

Turning Movement Counts

Morning Peak Diagram

Specified Period	One Hour Peak
From: 7:00:00	**From:** 8:15:00
To: 10:00:00	**To:** 9:15:00

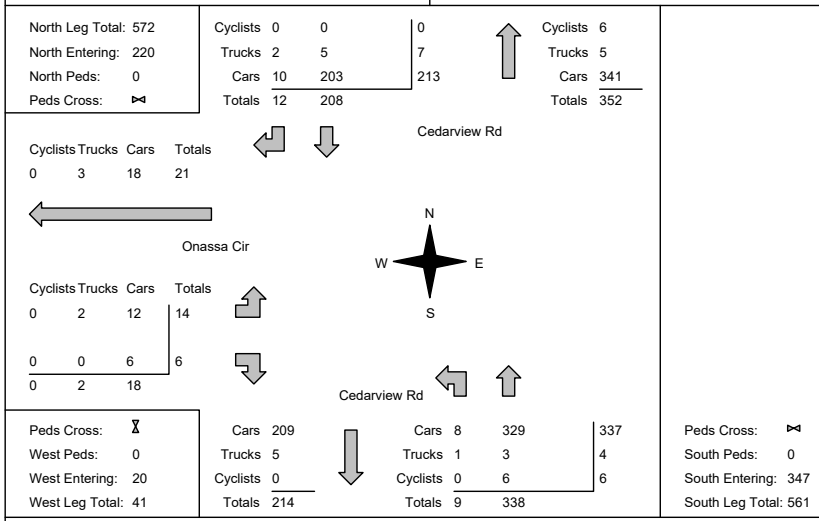
Municipality: Ottawa
Site #: 2317800002
Intersection: Cedarview Rd & Onassa Cir
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Cedarview Rd runs N/S



Comments

Mid-day Peak Diagram

Specified Period	One Hour Peak
From: 11:30:00	**From:** 12:00:00
To: 13:30:00	**To:** 13:00:00

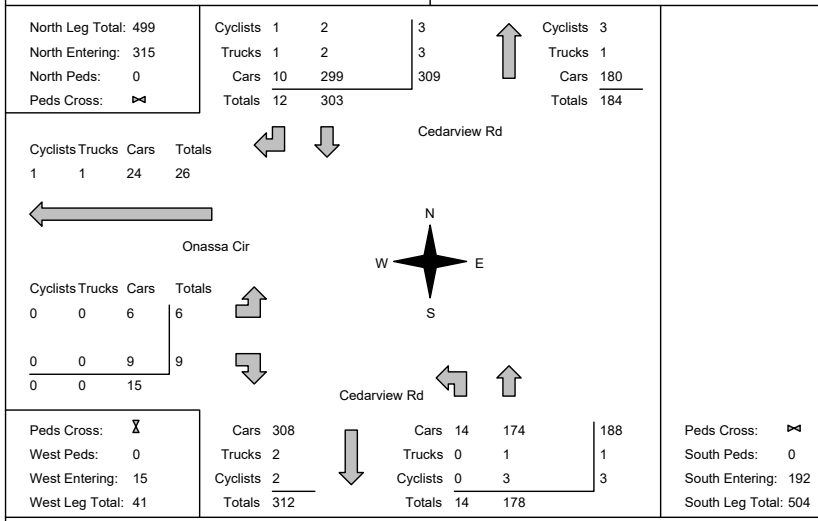
Municipality: Ottawa
Site #: 2317800002
Intersection: Cedarview Rd & Onassa Cir
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Cedarview Rd runs N/S



Comments

Afternoon Peak Diagram

Specified Period	One Hour Peak
From: 15:00:00	**From:** 16:00:00
To: 18:00:00	**To:** 17:00:00

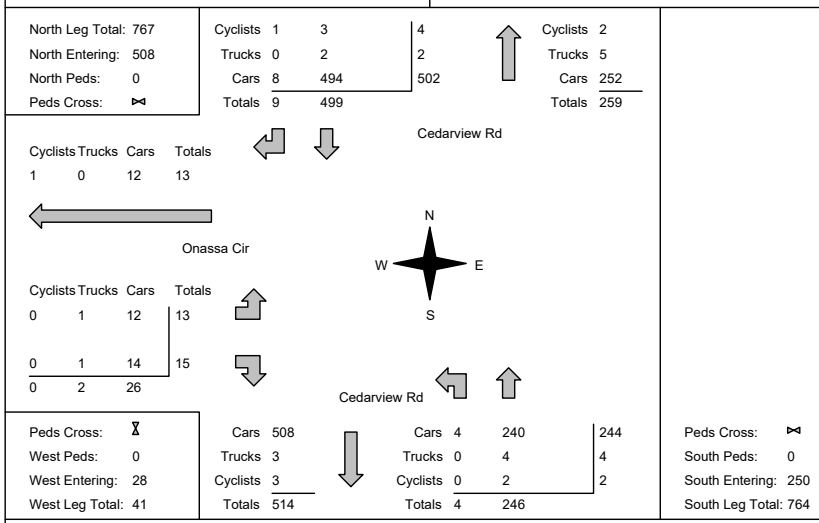
Municipality: Ottawa
Site #: 2317800002
Intersection: Cedarview Rd & Onassa Cir
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Cedarview Rd runs N/S



Comments

Total Count Diagram

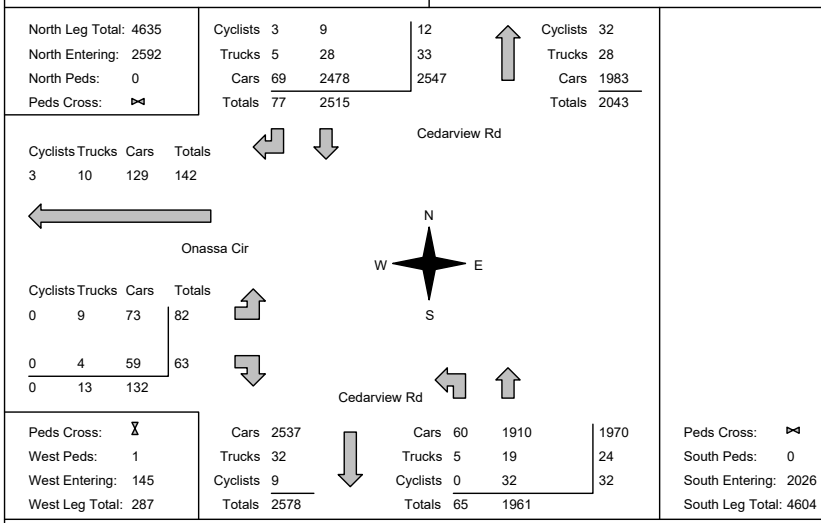
Municipality: Ottawa
Site #: 2317800002
Intersection: Cedarview Rd & Onassa Cir
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Cedarview Rd runs N/S



Comments

Traffic Count Summary

Intersection: Cedarview Rd & Onassa Cir | **Count Date:** 19-Jul-23 | **Municipality:** Ottawa

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0
8:00:00	0	171	16	187	0	448
9:00:00	0	202	12	214	0	568
10:00:00	0	195	13	208	0	479
12:00:00	0	129	2	131	0	230
13:00:00	0	303	12	315	0	507
15:00:00	0	132	1	133	0	247
16:00:00	0	404	7	411	0	660
17:00:00	0	499	9	508	0	758
18:00:00	0	480	5	485	0	721
Totals:	0	2515	77	2592	0	4618

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	7	254	0	261	0
9:00:00	12	342	0	354	0
10:00:00	9	262	0	271	0
12:00:00	2	97	0	99	0
13:00:00	14	178	0	192	0
15:00:00	5	109	0	114	0
16:00:00	9	240	0	249	0
17:00:00	4	246	0	250	0
18:00:00	3	233	0	236	0
S Totals:	65	1961	0	2026	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	10
9:00:00	0	0	0	0	0	9
10:00:00	0	0	0	0	0	24
12:00:00	0	0	0	0	0	19
13:00:00	0	0	0	0	0	15
15:00:00	0	0	0	0	0	10
16:00:00	0	0	0	0	0	16
17:00:00	0	0	0	0	0	28
18:00:00	0	0	0	0	0	14
Totals:	0	0	0	0	0	145

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	6	0	4	10	1
9:00:00	4	0	5	9	0
10:00:00	16	0	8	24	0
12:00:00	12	0	7	19	0
13:00:00	6	0	9	15	0
15:00:00	9	0	1	10	0
16:00:00	9	0	7	16	0
17:00:00	13	0	15	28	0
18:00:00	7	0	7	14	0
W Totals:	82	0	63	145	1

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	10:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	6	16	12	6	9	9	13	7

Count Date: 19-Jul-23 **Site #: 2317800002**

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	32	32	4	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7:30:00	0	0	82	50	9	5	0	0	1	1	1	0	0	0	0	0	0	0	0	0
7:45:00	0	0	120	38	12	3	0	0	3	2	1	0	0	0	0	0	0	0	0	0
8:00:00	0	0	164	44	15	3	0	0	6	3	1	0	0	0	1	1	0	0	0	0
8:15:00	0	0	211	47	18	3	0	0	6	0	2	1	0	0	1	0	0	0	0	0
8:30:00	0	0	258	47	21	3	0	0	8	2	3	1	0	0	1	0	0	0	0	0
8:45:00	0	0	312	54	24	3	0	0	9	1	3	0	0	0	1	0	0	0	0	0
9:00:00	0	0	361	49	25	1	0	0	11	2	3	0	0	0	1	0	0	0	0	0
9:15:00	0	0	414	53	28	3	0	0	11	0	4	1	0	0	1	0	0	0	0	0
9:30:00	0	0	463	49	33	5	0	0	12	1	4	0	0	0	1	0	1	1	0	0
9:45:00	0	0	508	45	35	2	0	0	14	2	4	0	0	0	1	0	1	0	0	0
10:00:00	0	0	552	44	36	1	0	0	15	1	4	0	0	0	1	0	1	0	0	0
10:15:00	0	0	552	0	36	0	0	0	15	0	4	0	0	0	1	0	1	0	0	0
11:30:00	0	0	552	0	36	0	0	0	15	0	4	0	0	0	1	0	1	0	0	0
11:45:00	0	0	612	60	37	1	0	0	15	0	4	0	0	0	1	0	1	0	0	0
12:00:00	0	0	678	66	38	1	0	0	18	3	4	0	0	0	1	0	1	0	0	0
12:15:00	0	0	749	71	40	2	0	0	18	0	4	0	0	0	2	1	1	0	0	0
12:30:00	0	0	831	82	45	5	0	0	18	0	5	1	0	0	2	0	1	0	0	0
12:45:00	0	0	908	77	46	1	0	0	19	1	5	0	0	0	3	1	1	0	0	0
13:00:00	0	0	977	69	48	2	0	0	20	1	5	0	0	0	3	0	2	1	0	0
13:15:00	0	0	1037	60	49	1	0	0	23	3	5	0	0	0	3	0	2	0	0	0
13:30:00	0	0	1104	67	49	0	0	0	25	2	5	0	0	0	3	0	2	0	0	0
13:45:00	0	0	1104	0	49	0	0	0	25	0	5	0	0	0	3	0	2	0	0	0
15:00:00	0	0	1104	0	49	0	0	0	25	0	5	0	0	0	3	0	2	0	0	0
15:15:00	0	0	1194	90	49	0	0	0	25	0	5	0	0	0	3	0	2	0	0	0
15:30:00	0	0	1301	107	50	1	0	0	25	0	5	0	0	0	3	0	2	0	0	0
15:45:00	0	0	1397	96	53	3	0	0	26	1	5	0	0	0	3	0	2	0	0	0
16:00:00	0	0	1507	110	56	3	0	0	26	0	5	0	0	0	3	0	2	0	0	0
16:15:00	0	0	1627	120	58	2	0	0	26	0	5	0	0	0	4	1	2	0	0	0
16:30:00	0	0	1746	119	60	2	0	0	26	0	5	0	0	0	4	0	2	0	0	0
16:45:00	0	0	1882	136	62	2	0	0	27	1	5	0	0	0	5	1	2	0	0	0
17:00:00	0	0	2001	119	64	2	0	0	28	1	5	0	0	0	6	1	3	1	0	0
17:15:00	0	0	2114	113	65	1	0	0	28	0	5	0	0	0	6	0	3	0	0	0
17:30:00	0	0	2237	123	66	1	0	0	28	0	5	0	0	0	6	0	3	0	0	0
17:45:00	0	0	2350	113	68	2	0	0	28	0	5	0	0	0	8	2	3	0	0	0
18:00:00	0	0	2478	128	69	1	0	0	28	0	5	0	0	0	9	1	3	0	0	0
18:15:00	0	0	2478	0	69	0	0	0	28	0	5	0	0	0	9	0	3	0	0	0
18:15:15	0	0	2478	0	69	0	0	0	28	0	5	0	0	0	9	0	3	0	0	0

Count Date: 19-Jul-23 Site #: 2317800002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Count Date: 19-Jul-23 Site #: 2317800002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	39	39	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	5	2	99	60	0	0	1	0	1	1	0	0	0	0	2	2	0	0	0	0
7:45:00	6	1	166	67	0	0	1	0	1	0	0	0	0	0	4	2	0	0	0	0
8:00:00	6	0	249	83	0	0	1	0	1	0	0	0	0	0	4	0	0	0	0	0
8:15:00	10	4	307	58	0	0	1	0	3	2	0	0	0	0	6	2	0	0	0	0
8:30:00	11	1	399	92	0	0	1	0	5	2	0	0	0	0	8	2	0	0	0	0
8:45:00	14	3	481	82	0	0	1	0	5	0	0	0	0	0	10	2	0	0	0	0
9:00:00	17	3	580	99	0	0	2	1	6	1	0	0	0	0	10	0	0	0	0	0
9:15:00	18	1	636	56	0	0	2	0	6	0	0	0	0	0	12	2	0	0	0	0
9:30:00	21	3	704	68	0	0	3	1	7	1	0	0	0	0	13	1	0	0	0	0
9:45:00	23	2	773	69	0	0	3	0	7	0	0	0	0	0	15	2	0	0	0	0
10:00:00	25	2	834	61	0	0	3	0	7	0	0	0	0	0	17	2	0	0	0	0
10:15:00	25	0	834	0	0	0	3	0	7	0	0	0	0	0	17	0	0	0	0	0
11:30:00	25	0	834	0	0	0	3	0	7	0	0	0	0	0	17	0	0	0	0	0
11:45:00	26	1	881	47	0	0	3	0	7	0	0	0	0	0	17	0	0	0	0	0
12:00:00	27	1	931	50	0	0	3	0	7	0	0	0	0	0	17	0	0	0	0	0
12:15:00	29	2	978	47	0	0	3	0	7	0	0	0	0	0	17	0	0	0	0	0
12:30:00	34	5	1012	34	0	0	3	0	7	0	0	0	0	0	18	1	0	0	0	0
12:45:00	38	4	1053	41	0	0	3	0	8	1	0	0	0	0	19	1	0	0	0	0
13:00:00	41	3	1105	52	0	0	3	0	8	0	0	0	0	0	20	1	0	0	0	0
13:15:00	43	2	1158	53	0	0	4	1	9	1	0	0	0	0	21	1	0	0	0	0
13:30:00	45	2	1212	54	0	0	4	0	9	0	0	0	0	0	21	0	0	0	0	0
13:45:00	45	0	1212	0	0	0	4	0	9	0	0	0	0	0	21	0	0	0	0	0
15:00:00	45	0	1212	0	0	0	4	0	9	0	0	0	0	0	21	0	0	0	0	0
15:15:00	46	1	1260	48	0	0	5	1	10	1	0	0	0	0	21	0	0	0	0	0
15:30:00	47	1	1304	44	0	0	5	0	12	2	0	0	0	0	22	1	0	0	0	0
15:45:00	53	6	1377	73	0	0	5	0	12	0	0	0	0	0	23	1	0	0	0	0
16:00:00	53	0	1446	69	0	0	5	0	12	0	0	0	0	0	24	1	0	0	0	0
16:15:00	53	0	1491	45	0	0	5	0	14	2	0	0	0	0	24	0	0	0	0	0
16:30:00	54	1	1553	62	0	0	5	0	15	1	0	0	0	0	25	1	0	0	0	0
16:45:00	56	2	1619	66	0	0	5	0	15	0	0	0	0	0	26	1	0	0	0	0
17:00:00	57	1	1686	67	0	0	5	0	16	1	0	0	0	0	26	0	0	0	0	0
17:15:00	58	1	1738	52	0	0	5	0	18	2	0	0	0	0	27	1	0	0	0	0
17:30:00	58	0	1794	56	0	0	5	0	19	1	0	0	0	0	28	1	0	0	0	0
17:45:00	60	2	1856	62	0	0	5	0	19	0	0	0	0	0	30	2	0	0	0	0
18:00:00	60	0	1910	54	0	0	5	0	19	0	0	0	0	0	32	2	0	0	0	0
18:15:00	60	0	1910	0	0	0	5	0	19	0	0	0	0	0	32	0	0	0	0	0
18:15:15	60	0	1910	0	0	0	5	0	19	0	0	0	0	0	32	0	0	0	0	0

Accu-Traffic Inc.

Count Date: 19-Jul-23 **Site #: 2317800002**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	4	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	5	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	5	0	0	0	4	2	1	1	0	0	0	0	0	0	0	0	0	0	1	1
8:15:00	5	0	0	0	7	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30:00	6	1	0	0	7	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0
8:45:00	8	2	0	0	7	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
9:00:00	8	0	0	0	9	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0
9:15:00	17	9	0	0	13	4	3	1	0	0	0	0	0	0	0	0	0	0	1	0
9:30:00	18	1	0	0	14	1	5	2	0	0	0	0	0	0	0	0	0	0	1	0
9:45:00	18	0	0	0	16	2	5	0	0	0	0	0	0	0	0	0	0	0	1	0
10:00:00	21	3	0	0	16	0	5	0	0	0	1	1	0	0	0	0	0	0	1	0
10:15:00	21	0	0	0	16	0	5	0	0	0	1	0	0	0	0	0	0	0	1	0
11:30:00	21	0	0	0	16	0	5	0	0	0	1	0	0	0	0	0	0	0	1	0
11:45:00	27	6	0	0	20	4	6	1	0	0	1	0	0	0	0	0	0	0	1	0
12:00:00	32	5	0	0	23	3	6	0	0	0	1	0	0	0	0	0	0	0	1	0
12:15:00	33	1	0	0	26	3	6	0	0	0	1	0	0	0	0	0	0	0	1	0
12:30:00	36	3	0	0	27	1	6	0	0	0	1	0	0	0	0	0	0	0	1	0
12:45:00	37	1	0	0	31	4	6	0	0	0	1	0	0	0	0	0	0	0	1	0
13:00:00	38	1	0	0	32	1	6	0	0	0	1	0	0	0	0	0	0	0	1	0
13:15:00	41	3	0	0	32	0	7	1	0	0	1	0	0	0	0	0	0	0	1	0
13:30:00	46	5	0	0	32	0	7	0	0	0	2	1	0	0	0	0	0	0	1	0
13:45:00	46	0	0	0	32	0	7	0	0	0	2	0	0	0	0	0	0	0	1	0
15:00:00	46	0	0	0	32	0	7	0	0	0	2	0	0	0	0	0	0	0	1	0
15:15:00	46	0	0	0	34	2	8	1	0	0	3	1	0	0	0	0	0	0	1	0
15:30:00	49	3	0	0	35	1	8	0	0	0	3	0	0	0	0	0	0	0	1	0
15:45:00	53	4	0	0	37	2	8	0	0	0	3	0	0	0	0	0	0	0	1	0
16:00:00	54	1	0	0	38	1	8	0	0	0	3	0	0	0	0	0	0	0	1	0
16:15:00	56	2	0	0	42	4	8	0	0	0	3	0	0	0	0	0	0	0	1	0
16:30:00	61	5	0	0	46	4	8	0	0	0	4	1	0	0	0	0	0	0	1	0
16:45:00	64	3	0	0	52	6	9	1	0	0	4	0	0	0	0	0	0	0	1	0
17:00:00	66	2	0	0	52	0	9	0	0	0	4	0	0	0	0	0	0	0	1	0
17:15:00	66	0	0	0	54	2	9	0	0	0	4	0	0	0	0	0	0	0	1	0
17:30:00	69	3	0	0	56	2	9	0	0	0	4	0	0	0	0	0	0	0	1	0
17:45:00	73	4	0	0	57	1	9	0	0	0	4	0	0	0	0	0	0	0	1	0
18:00:00	73	0	0	0	59	2	9	0	0	0	4	0	0	0	0	0	0	0	1	0
18:15:00	73	0	0	0	59	0	9	0	0	0	4	0	0	0	0	0	0	0	1	0
18:15:15	73	0	0	0	59	0	9	0	0	0	4	0	0	0	0	0	0	0	1	0

Ottawa

Transportation Services - Traffic Services

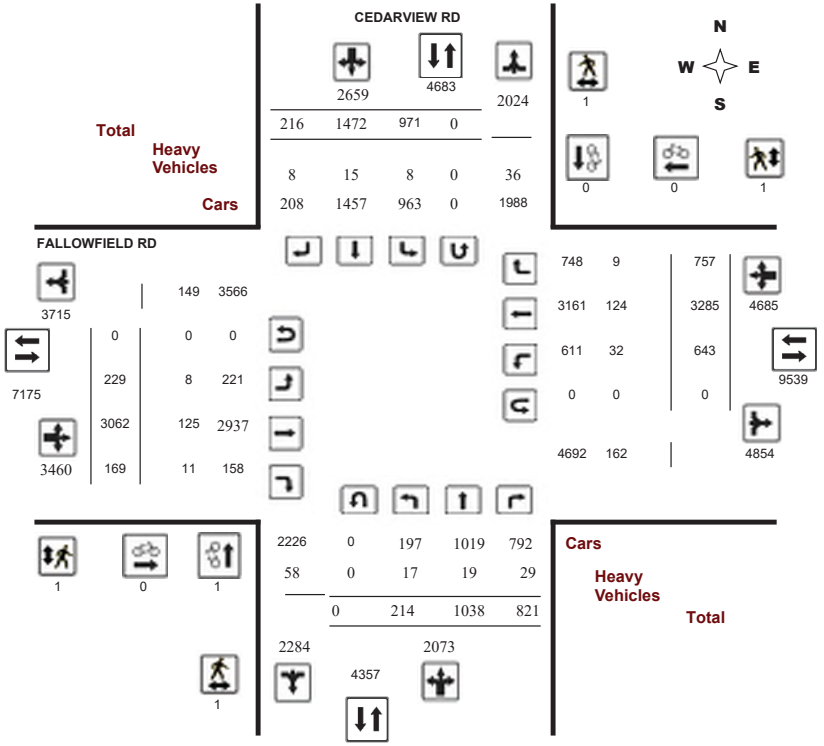
Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Diagram



5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

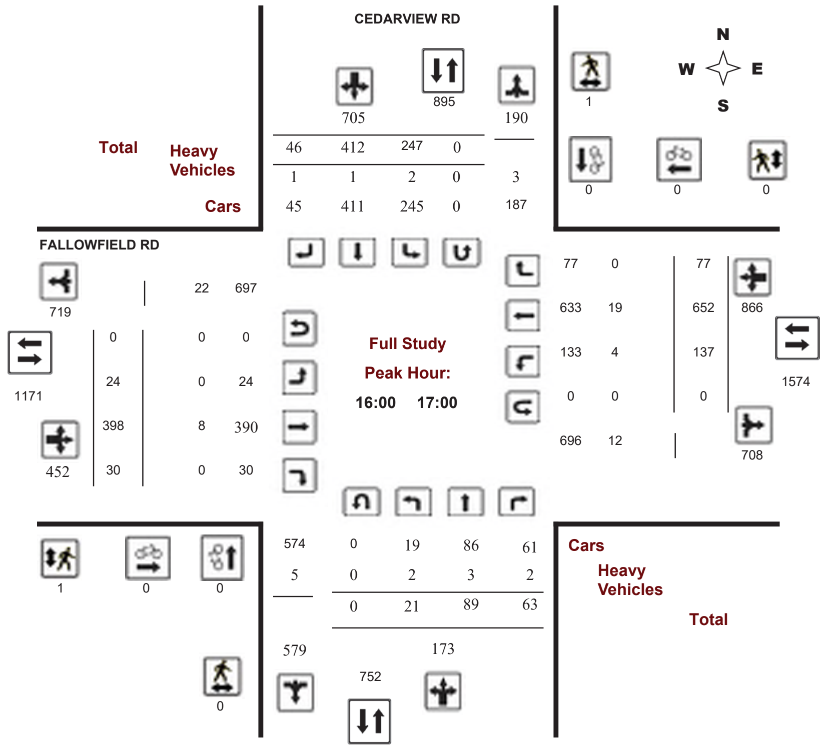
Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Peak Hour Diagram



5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

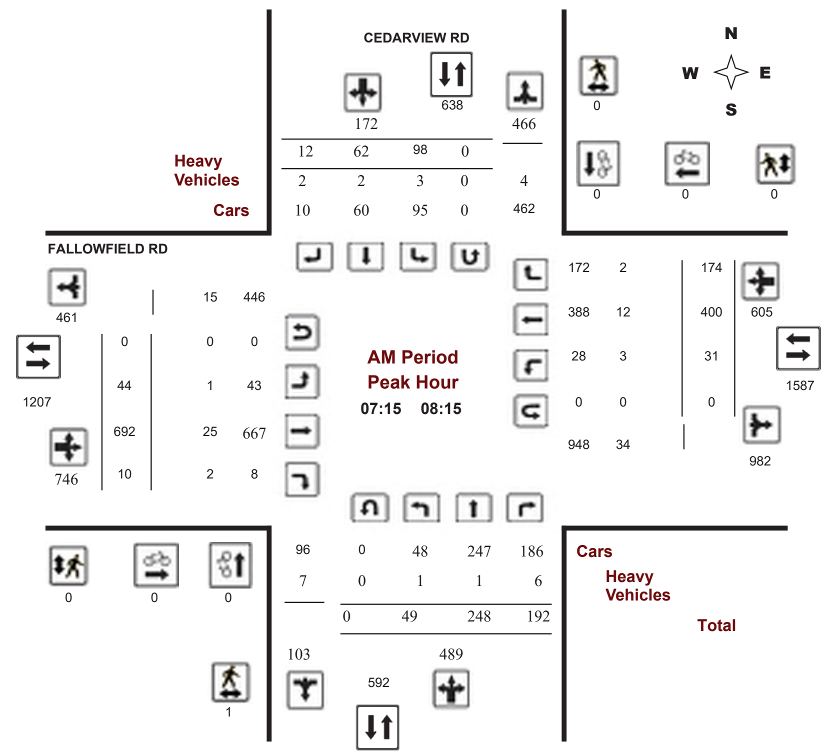
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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



Comments 5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

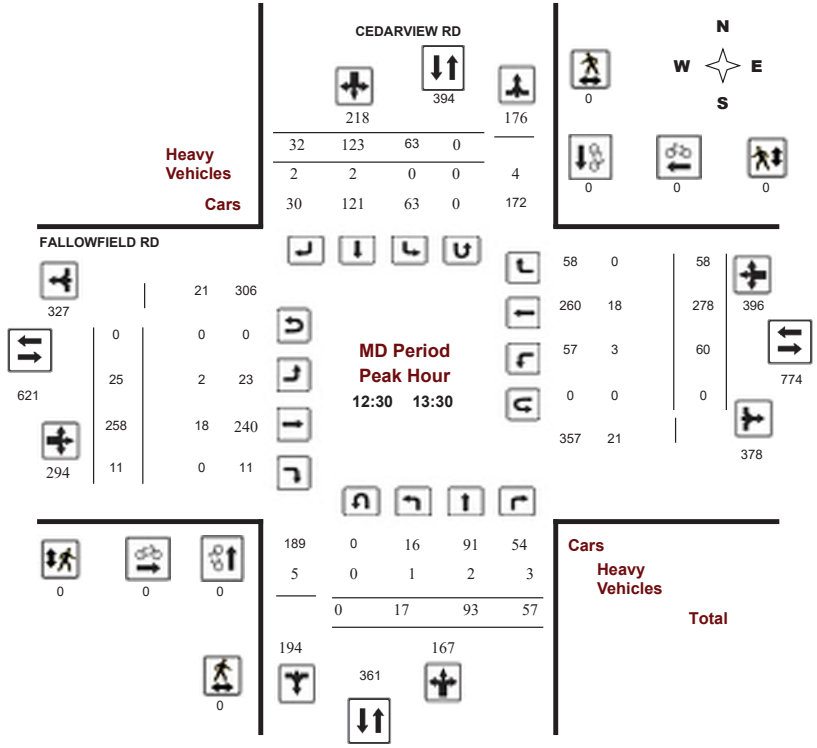
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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



Comments 5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

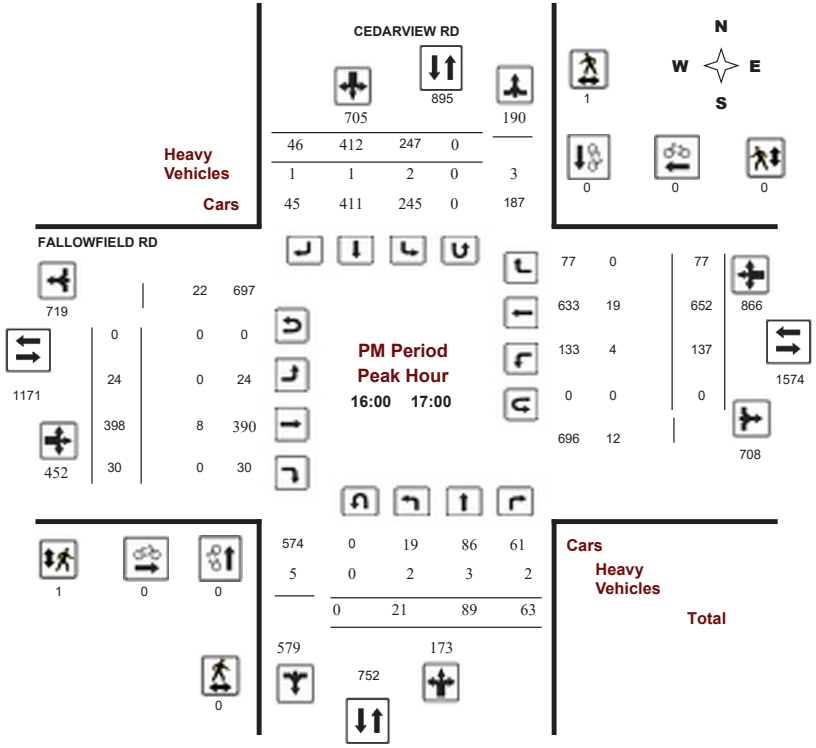
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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



Comments 5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 07, 2020

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor 1.10

	CEDARVIEW RD								FALLOWFIELD RD									
	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	38	233	186	**457**	75	50	10	**135**	**592**	45	684	10	**739**	25	331	149	**505**	**1244**	**1836**
08:00 09:00	47	229	170	**446**	100	71	11	**182**	**628**	37	497	14	**548**	48	409	190	**647**	**1195**	**1823**
09:00 10:00	27	132	102	**261**	45	67	17	**129**	**390**	30	267	16	**313**	57	279	101	**437**	**750**	**1140**
11:30 12:30	14	81	69	**164**	64	110	32	**206**	**370**	22	257	17	**296**	60	274	60	**394**	**690**	**1060**
12:30 13:30	17	93	57	**167**	63	123	32	**218**	**385**	25	258	11	**294**	60	278	58	**396**	**690**	**1075**
15:00 16:00	32	88	96	**216**	176	252	36	**464**	**680**	25	318	31	**374**	118	540	71	**729**	**1103**	**1783**
16:00 17:00	21	89	63	**173**	247	412	46	**705**	**878**	24	398	30	**452**	137	652	77	**866**	**1318**	**2196**
17:00 18:00	18	93	78	**189**	201	387	32	**620**	**809**	21	383	40	**444**	138	522	51	**711**	**1155**	**1964**
Sub Total	214	1038	821	**2073**	971	1472	216	**2659**	**4732**	229	3062	169	**3460**	643	3285	757	**4685**	**8145**	**12877**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	214	1038	821	**2073**	971	1472	216	**2659**	**4732**	229	3062	169	**3460**	643	3285	757	**4685**	**8145**	**12877**
EQ 12Hr	297	1443	1141	**2881**	1350	2046	300	**3696**	**6577**	318	4256	235	**4809**	894	4566	1052	**6512**	**11322**	**17899**

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

AVG 12Hr	327	1587	1255	**3169**	1485	2948	433	**4066**	**7235**	350	4682	258	**5290**	983	5023	1157	**7163**	**12454**	**19689**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.10**

AVG 24Hr	428	2079	1644	**4151**	1945	3862	567	**5326**	**9478**	458	6133	338	**6930**	1288	6580	1516	**9384**	**16315**	**25793**

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

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study 15 Minute Increments

		CEDARVIEW RD								FALLOWFIELD RD									
		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	47	48	99	5	6	0	11	110	8	141	3	152	4	42	26	72	224	334
07:15	07:30	8	62	43	113	21	7	3	31	144	18	201	2	221	6	90	39	135	356	500
07:30	07:45	12	61	55	128	27	20	3	50	178	11	177	4	192	7	98	42	147	339	517
07:45	08:00	14	63	40	117	22	17	4	43	160	8	165	1	174	8	101	42	151	325	485
08:00	08:15	15	62	54	131	28	18	2	48	179	7	149	3	159	10	111	51	172	331	510
08:15	08:30	13	57	47	117	20	14	4	38	155	11	139	2	152	7	91	40	138	290	445
08:30	08:45	11	61	39	111	24	16	2	42	153	10	113	2	125	14	120	53	187	312	465
08:45	09:00	8	49	30	87	28	23	3	54	141	9	96	7	112	17	87	46	150	262	403
09:00	09:15	15	49	33	97	19	20	3	42	139	14	87	6	107	22	110	33	165	272	411
09:15	09:30	6	30	26	62	10	17	4	31	93	4	70	1	75	16	67	26	109	184	277
09:30	09:45	4	22	24	50	8	14	7	29	79	8	56	5	69	10	58	26	94	163	242
09:45	10:00	2	31	19	52	8	16	3	27	79	4	54	4	62	9	44	16	69	131	210
11:30	11:45	3	21	15	39	22	28	4	54	93	3	60	5	68	15	69	14	98	166	259
11:45	12:00	3	25	17	45	10	27	7	44	89	6	68	3	77	15	74	12	101	178	267
12:00	12:15	3	21	18	42	20	32	13	65	107	6	53	7	66	12	62	20	94	160	267
12:15	12:30	5	14	19	38	12	23	8	43	81	7	76	2	85	18	69	14	101	186	267
12:30	12:45	4	35	12	51	17	35	8	60	111	8	65	1	74	9	63	14	86	160	271
12:45	13:00	7	19	13	39	17	37	4	58	97	9	67	2	78	13	66	13	92	170	267
13:00	13:15	4	21	17	42	17	25	7	49	91	1	52	3	56	21	66	19	106	162	253
13:15	13:30	2	18	15	35	12	26	13	51	86	7	74	5	86	17	83	12	112	198	284
15:00	15:15	7	19	21	47	47	52	8	107	154	7	72	6	85	33	114	23	170	255	409
15:15	15:30	5	35	17	57	43	65	7	115	172	4	69	6	79	19	134	16	169	248	420
15:30	15:45	11	16	20	47	27	57	6	90	137	6	87	10	103	30	150	13	193	296	433
15:45	16:00	9	18	38	65	59	78	15	152	217	8	90	9	107	36	142	19	197	304	521
16:00	16:15	11	14	16	41	51	97	12	160	201	6	96	7	109	35	168	21	224	333	534
16:15	16:30	5	30	10	45	74	126	12	212	257	5	92	9	106	37	158	17	212	318	575
16:30	16:45	4	28	17	49	43	85	14	142	191	8	104	6	118	33	171	23	227	345	536
16:45	17:00	1	17	20	38	79	104	8	191	229	5	106	8	119	32	155	16	203	322	551
17:00	17:15	8	32	13	53	49	105	8	162	215	5	100	11	116	28	139	14	181	297	512
17:15	17:30	5	13	17	35	49	106	14	169	204	9	112	15	136	42	136	10	188	324	528
17:30	17:45	2	24	28	54	52	98	6	156	210	4	93	7	104	38	134	16	188	292	502
17:45	18:00	3	24	20	47	51	78	4	133	180	3	78	7	88	30	113	11	154	242	422
Total:		214	1038	821	2073	971	1472	216	2659	4732	229	3062	169	3460	643	3285	757	4685	8145	12,877

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Cyclist Volume

Time Period		CEDARVIEW RD			FALLOWFIELD RD			Grand Total
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street 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
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	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
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	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
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
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
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	1	0	1	0	0	0	1
17:45	18:00	0	0	0	0	0	0	0
Total		1	0	**1**	0	0	0	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Pedestrian Volume

Time Period	CEDARVIEW RD			FALLOWFIELD RD			
	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	1	0	**1**	0	0	**0**	**1**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 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**
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**
11:30 11:45	0	0	**0**	0	0	**0**	**0**
11:45 12:00	0	0	**0**	0	0	**0**	**0**
12:00 12:15	0	0	**0**	0	0	**0**	**0**
12:15 12:30	0	0	**0**	0	0	**0**	**0**
12:30 12:45	0	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**
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	1	**1**	**1**
15:45 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	1	**1**	0	0	**0**	**1**
16:30 16:45	0	0	**0**	1	0	**1**	**1**
16:45 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**
Total	1	1	**2**	1	1	**2**	**4**

5469190 - TUE JAN 07 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study Heavy Vehicles

Time Period		CEDARVIEW RD Northbound				CEDARVIEW RD Southbound					FALLOWFIELD RD Eastbound				FALLOWFIELD RD 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	07:15	0	0	3	**6**	0	0	0	**0**	**6**	0	5	2	**9**	1	2	0	**11**	**20**	**13**
07:15	07:30	0	0	0	**0**	0	0	0	**1**	**1**	0	7	0	**11**	0	4	1	**12**	**23**	**12**
07:30	07:45	0	0	3	**6**	1	0	0	**2**	**8**	0	7	2	**11**	1	2	1	**15**	**26**	**17**
07:45	08:00	0	0	0	**1**	0	1	0	**1**	**2**	0	7	0	**11**	0	4	0	**11**	**22**	**12**
08:00	08:15	1	1	3	**8**	2	1	2	**7**	**15**	1	4	0	**10**	2	2	0	**13**	**23**	**19**
08:15	08:30	1	1	0	**2**	0	0	0	**4**	**6**	1	7	0	**11**	0	2	2	**11**	**22**	**14**
08:30	08:45	0	0	2	**5**	0	2	0	**2**	**7**	0	6	0	**9**	1	3	0	**12**	**21**	**14**
08:45	09:00	1	0	0	**4**	0	0	0	**0**	**4**	0	3	2	**14**	1	8	0	**12**	**26**	**15**
09:00	09:15	9	3	3	**17**	0	0	1	**4**	**21**	0	2	0	**29**	2	17	0	**24**	**53**	**37**
09:15	09:30	0	1	0	**1**	1	0	0	**3**	**4**	0	6	0	**13**	0	7	1	**15**	**28**	**16**
09:30	09:45	0	1	1	**4**	0	1	0	**4**	**8**	1	2	0	**5**	1	2	1	**7**	**12**	**10**
09:45	10:00	0	0	0	**1**	0	1	1	**4**	**5**	0	5	0	**7**	0	1	2	**8**	**15**	**10**
11:30	11:45	0	0	1	**2**	1	0	0	**1**	**3**	0	7	0	**12**	1	5	0	**15**	**27**	**15**
11:45	12:00	0	3	0	**6**	0	1	1	**5**	**11**	0	3	1	**11**	1	6	0	**10**	**21**	**16**
12:00	12:15	0	0	2	**4**	0	1	0	**2**	**6**	0	5	0	**5**	1	0	1	**9**	**14**	**10**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**5**	0	3	0	**5**	**10**	**5**
12:30	12:45	0	1	2	**6**	0	1	0	**3**	**9**	1	2	0	**7**	2	4	0	**10**	**17**	**13**
12:45	13:00	1	0	0	**1**	0	0	1	**2**	**3**	1	4	0	**9**	0	2	0	**6**	**15**	**9**
13:00	13:15	0	1	1	**3**	0	0	0	**1**	**4**	0	5	0	**9**	1	4	0	**11**	**20**	**12**
13:15	13:30	0	0	0	**1**	0	1	1	**2**	**3**	0	7	0	**16**	0	8	0	**15**	**31**	**17**
15:00	15:15	0	0	0	**2**	1	0	0	**1**	**3**	0	6	1	**14**	1	7	0	**15**	**29**	**16**
15:15	15:30	0	1	0	**4**	0	1	0	**2**	**6**	0	4	1	**8**	1	3	0	**8**	**16**	**11**
15:30	15:45	0	0	1	**4**	0	0	0	**0**	**4**	0	2	2	**6**	1	2	0	**6**	**12**	**8**
15:45	16:00	1	0	2	**8**	0	2	0	**3**	**11**	1	1	0	**5**	3	2	0	**8**	**13**	**12**
16:00	16:15	1	0	1	**2**	0	0	0	**0**	**2**	0	2	0	**9**	0	6	0	**9**	**18**	**10**
16:15	16:30	1	0	0	**2**	0	0	0	**0**	**2**	0	2	0	**8**	1	5	0	**8**	**16**	**9**
16:30	16:45	0	2	1	**5**	0	0	1	**3**	**8**	0	2	0	**10**	2	7	0	**12**	**22**	**15**
16:45	17:00	0	1	0	**3**	2	1	0	**4**	**7**	0	2	0	**3**	1	1	0	**6**	**9**	**8**
17:00	17:15	0	1	1	**4**	0	1	0	**2**	**6**	0	3	0	**4**	1	1	0	**6**	**10**	**8**
17:15	17:30	1	0	0	**4**	0	0	0	**1**	**5**	1	1	0	**3**	3	0	0	**4**	**7**	**6**
17:30	17:45	0	2	1	**5**	0	0	0	**2**	**7**	0	2	0	**5**	2	3	0	**8**	**13**	**10**
17:45	18:00	0	0	1	**2**	0	0	0	**1**	**3**	1	2	0	**4**	1	1	0	**5**	**9**	**6**
Total:	None	17	19	29	**123**	8	15	8	**67**	**190**	8	125	11	**293**	32	124	9	**327**	**620**	**405**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CEDARVIEW RD @ FALLOWFIELD RD

Survey Date: Tuesday, January 07, 2020 **WO No:** 39248

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

Full Study 15 Minute U-Turn Total

Time Period		CEDARVIEW RD Northbound U-Turn Total	CEDARVIEW RD Southbound U-Turn Total	FALLOWFIELD RD Eastbound U-Turn Total	FALLOWFIELD RD 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	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	0	0

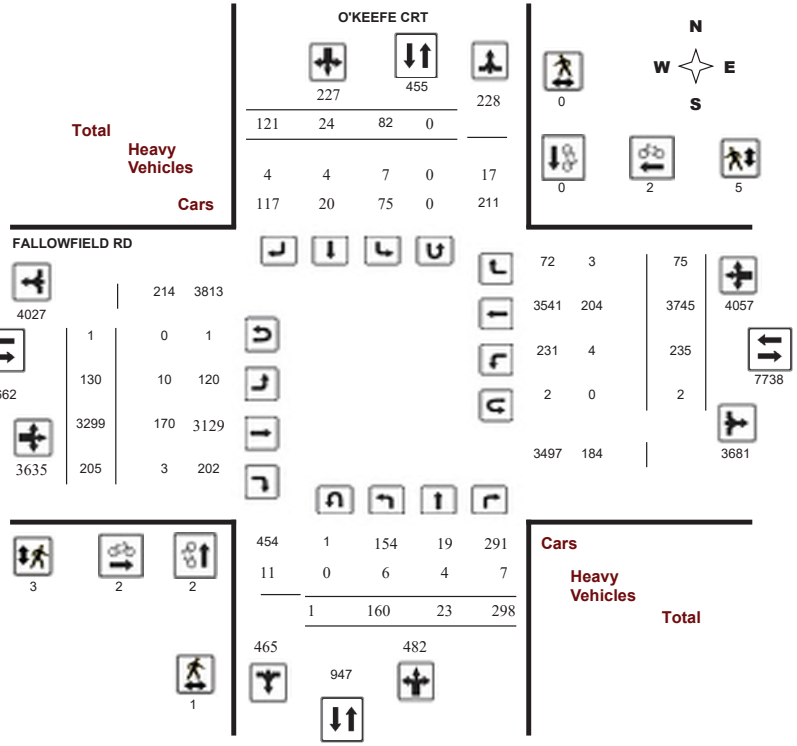
Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023
Start Time: 07:00
WO No: 40986
Device: Miovision

Full Study Diagram



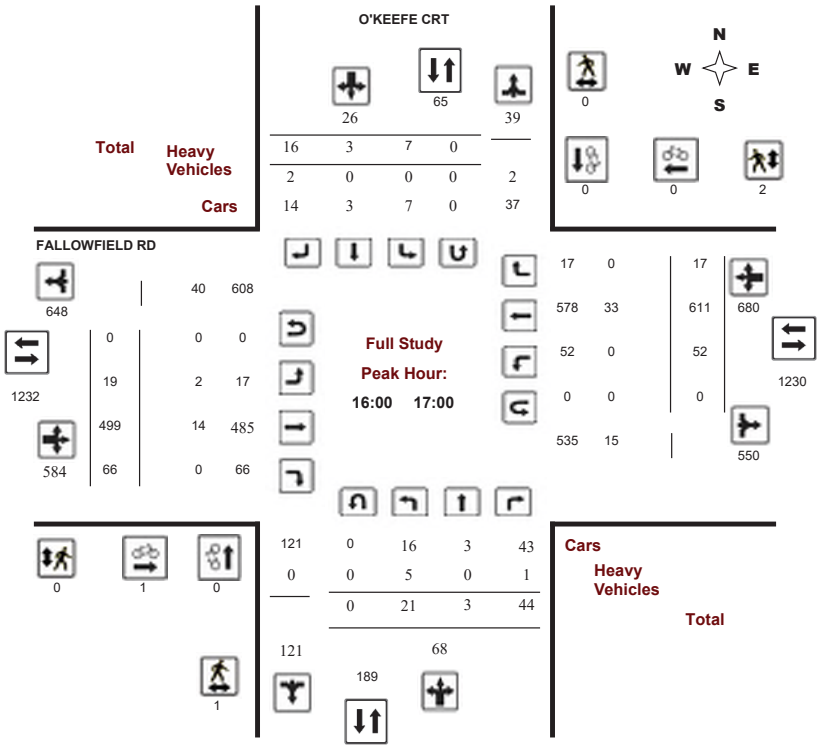
Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023
Start Time: 07:00
WO No: 40986
Device: Miovision

Full Study Peak Hour Diagram



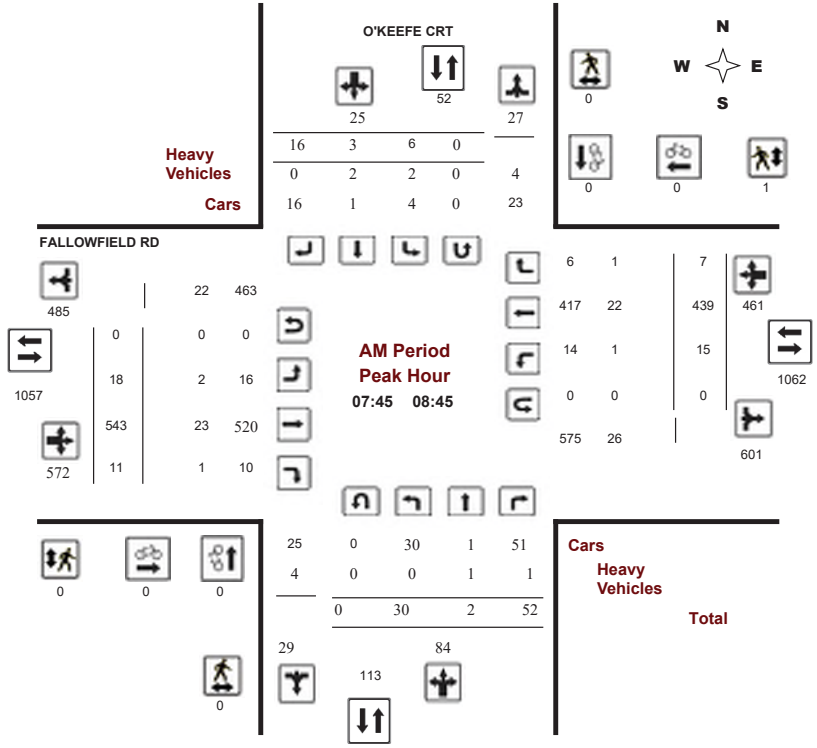
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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



Comments

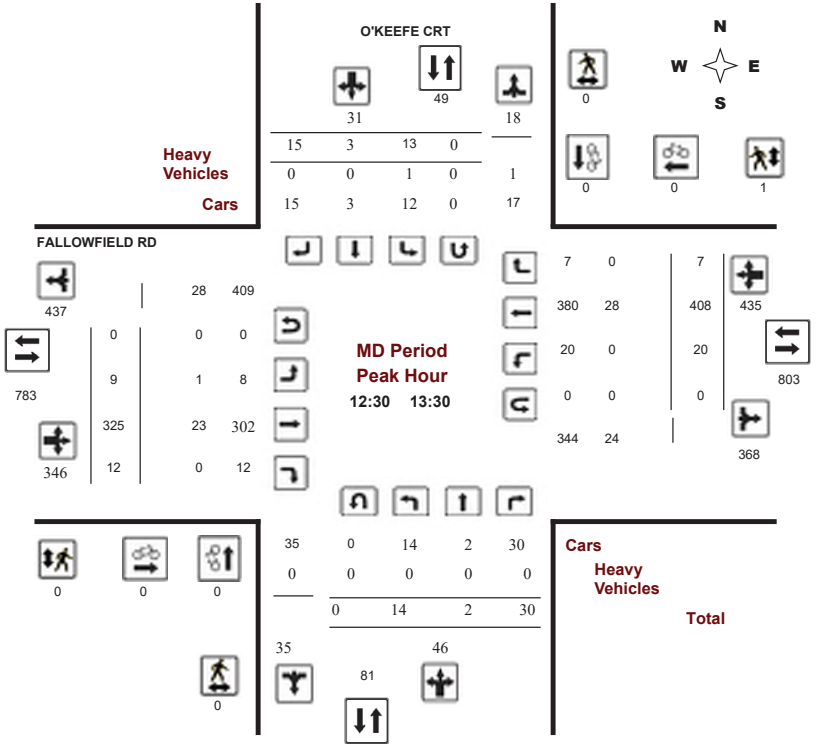
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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



Comments

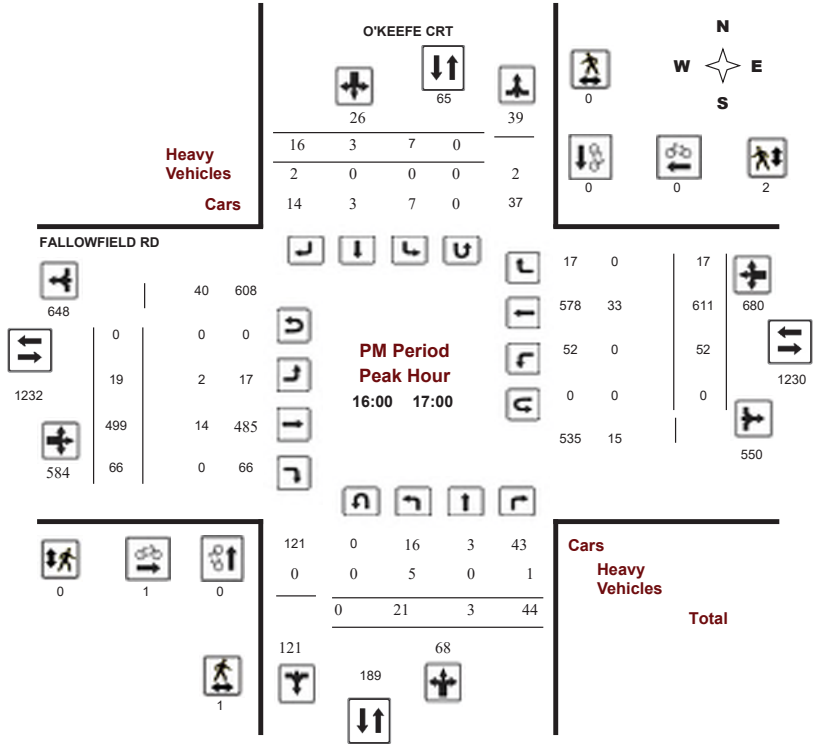
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, June 07, 2023

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 1 Westbound: 2

AADT Factor .90

	O'KEEFE CRT								FALLOWFIELD RD									
	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	27	1	42	**70**	20	1	18	**39**	**109**	18	453	13	**484**	6	411	8	**425**	**909**	**1018**
08:00 09:00	33	2	51	**86**	9	6	16	**31**	**117**	12	497	13	**522**	19	437	7	**463**	**985**	**1102**
09:00 10:00	20	3	34	**57**	9	3	13	**25**	**82**	9	340	17	**366**	24	417	12	**453**	**819**	**901**
11:30 12:30	13	4	21	**38**	10	3	22	**35**	**73**	18	309	12	**339**	22	359	9	**390**	**729**	**802**
12:30 13:30	14	2	30	**46**	13	3	15	**31**	**77**	9	325	12	**346**	20	408	7	**435**	**781**	**858**
15:00 16:00	14	4	37	**55**	6	2	5	**13**	**68**	25	414	31	**470**	38	563	7	**608**	**1078**	**1146**
16:00 17:00	21	3	44	**68**	7	3	16	**26**	**94**	19	499	66	**584**	52	611	17	**680**	**1264**	**1358**
17:00 18:00	18	4	39	**61**	8	3	16	**27**	**88**	20	462	41	**523**	54	539	8	**601**	**1124**	**1212**
Sub Total	160	23	298	**481**	82	24	121	**227**	**708**	130	3299	205	**3634**	235	3745	75	**4055**	**7689**	**8397**
U Turns				**1**				**0**	**1**				**1**				**2**	**3**	**4**
Total	160	23	298	**482**	82	24	121	**227**	**709**	130	3299	205	**3635**	235	3745	75	**4057**	**7692**	**8401**
EQ 12Hr	222	32	414	**670**	114	33	168	**316**	**986**	181	4586	285	**5053**	327	5206	104	**5639**	**10692**	**11677**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	200	29	373	**603**	103	39	198	**284**	**887**	163	4127	256	**4548**	294	4685	94	**5075**	**9623**	**10509**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	262	38	489	**790**	135	51	259	**372**	**1162**	214	5406	335	**5958**	385	6137	123	**6648**	**12606**	**13767**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study 15 Minute Increments

		O'KEEFE CRT									FALLOWFIELD RD									
		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	5	1	15	21	5	0	2	7	28	3	68	3	74	2	95	0	97	171	199
07:15	07:30	8	0	7	15	7	1	3	11	26	2	98	3	103	3	96	4	103	206	232
07:30	07:45	9	0	11	20	7	0	7	14	34	5	134	3	142	1	109	1	111	253	287
07:45	08:00	5	0	9	14	1	0	6	7	21	8	153	4	165	0	111	3	114	279	300
08:00	08:15	7	0	15	22	2	2	1	5	27	4	136	1	141	4	85	0	89	230	257
08:15	08:30	10	1	15	26	3	1	5	9	35	4	144	4	152	5	103	1	109	261	296
08:30	08:45	8	1	13	22	0	0	4	4	26	2	110	2	114	6	140	3	149	263	289
08:45	09:00	8	0	8	16	4	3	6	13	29	2	107	6	115	4	109	3	116	231	260
09:00	09:15	5	0	11	17	2	0	5	7	24	2	84	1	87	7	106	3	116	203	227
09:15	09:30	7	0	4	11	0	1	3	4	15	3	95	12	110	8	121	3	132	242	257
09:30	09:45	4	2	10	16	2	1	1	4	20	2	89	1	92	7	118	4	129	221	241
09:45	10:00	4	1	9	14	5	1	4	10	24	2	72	3	77	2	72	2	76	153	177
11:30	11:45	3	0	4	7	0	0	2	2	9	3	86	1	90	4	103	1	109	199	208
11:45	12:00	3	3	5	11	5	1	10	16	27	3	67	4	74	8	92	4	104	178	205
12:00	12:15	5	1	5	11	2	0	3	5	16	7	74	4	85	5	93	3	101	186	202
12:15	12:30	2	0	7	9	3	2	7	12	21	5	82	3	90	5	71	1	77	167	188
12:30	12:45	2	1	8	11	5	0	1	6	17	4	86	1	91	4	119	2	125	216	233
12:45	13:00	3	0	6	9	5	1	8	14	23	2	86	3	91	7	92	2	101	192	215
13:00	13:15	5	1	12	18	0	1	1	2	20	3	69	3	75	4	112	0	116	191	211
13:15	13:30	4	0	4	8	3	1	5	9	17	0	84	5	89	5	85	3	93	182	199
15:00	15:15	2	1	4	7	1	0	0	1	8	7	90	7	104	8	144	2	155	259	267
15:15	15:30	3	0	10	13	3	1	1	5	18	8	97	6	111	8	156	2	166	277	295
15:30	15:45	2	1	15	18	2	0	1	3	21	7	107	7	122	10	131	0	141	263	284
15:45	16:00	7	2	8	17	0	1	3	4	21	3	120	11	134	12	132	3	147	281	302
16:00	16:15	3	0	9	12	1	1	4	6	18	8	129	20	157	13	160	8	181	338	356
16:15	16:30	8	0	16	24	3	1	3	7	31	2	123	20	145	8	176	2	186	331	362
16:30	16:45	2	3	12	17	1	1	6	8	25	5	124	10	139	11	117	4	132	271	296
16:45	17:00	8	0	7	15	2	0	3	5	20	4	123	16	143	20	158	3	181	324	344
17:00	17:15	8	0	4	12	2	0	2	4	16	6	115	9	130	19	125	2	146	276	292
17:15	17:30	2	2	11	15	5	0	5	10	25	2	118	14	134	15	170	2	187	321	346
17:30	17:45	4	0	16	20	1	1	5	7	27	5	123	10	138	11	123	1	135	273	300
17:45	18:00	4	2	8	14	0	2	4	6	20	7	106	8	121	9	121	3	133	254	274
Total:		160	23	298	482	82	24	121	227	709	130	3299	205	3635	235	3745	75	4057	7692	8,401

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study Cyclist Volume

		O'KEEFE CRT			FALLOWFIELD RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
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
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	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
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	1	0	1	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
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	2	0	2	0	0	0	2
15:45	16:00	0	0	0	0	1	1	1
16:00	16:15	0	0	0	1	0	1	1
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
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
Total		2	0	**2**	2	2	4	6

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study Pedestrian Volume

		O'KEEFE CRT			FALLOWFIELD RD			
Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	0	0	**0**	1	1	**2**	**2**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	1	0	**1**	**1**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	1	**1**	**1**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	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**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	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**
15:00	15:15	0	0	**0**	1	0	**1**	**1**
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**
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	1	**1**	**1**
16:45	17:00	1	0	**1**	0	1	**1**	**2**
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**
Total	.....	1	0	**1**	3	5	**8**	**9**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study Heavy Vehicles

		O'KEEFE CRT									FALLOWFIELD RD									
		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	1	0	**1**	1	0	0	**2**	**3**	0	9	0	**16**	0	7	0	**17**	**33**	**18**
07:15	07:30	0	0	0	**2**	1	0	0	**1**	**3**	0	8	1	**11**	1	2	0	**12**	**23**	**13**
07:30	07:45	0	0	0	**0**	0	0	0	**2**	**2**	1	10	0	**15**	0	4	1	**15**	**30**	**16**
07:45	08:00	0	0	0	**0**	0	0	0	**1**	**1**	1	3	0	**9**	0	5	0	**8**	**17**	**9**
08:00	08:15	0	0	0	**2**	0	1	0	**2**	**4**	1	4	0	**7**	1	2	0	**7**	**14**	**9**
08:15	08:30	0	0	1	**3**	2	1	0	**3**	**6**	0	7	1	**15**	0	7	0	**17**	**32**	**19**
08:30	08:45	0	1	0	**1**	0	0	0	**2**	**3**	0	9	0	**17**	0	8	1	**18**	**35**	**19**
08:45	09:00	0	0	1	**3**	0	2	0	**2**	**5**	0	6	0	**7**	0	1	0	**8**	**15**	**10**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**31**	0	24	0	**31**	**62**	**31**
09:15	09:30	0	0	0	**0**	0	0	0	**1**	**1**	1	3	0	**13**	0	9	0	**12**	**25**	**13**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**16**	0	10	0	**16**	**32**	**16**
09:45	10:00	0	0	0	**0**	1	0	0	**2**	**2**	0	4	0	**8**	0	4	1	**10**	**18**	**10**
11:30	11:45	0	0	0	**0**	0	0	0	**1**	**1**	1	7	0	**17**	0	9	0	**16**	**33**	**17**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**11**	0	7	0	**11**	**22**	**11**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**11**	0	5	0	**11**	**22**	**11**
12:15	12:30	0	0	0	**0**	0	0	0	**1**	**1**	1	3	0	**9**	0	5	0	**8**	**17**	**9**
12:30	12:45	0	0	0	**0**	1	0	0	**1**	**1**	0	8	0	**17**	0	9	0	**18**	**35**	**18**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**12**	0	5	0	**12**	**24**	**12**
13:00	13:15	0	0	0	**0**	0	0	0	**1**	**1**	1	2	0	**12**	0	9	0	**11**	**23**	**12**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**11**	0	5	0	**11**	**22**	**11**
15:00	15:15	0	1	0	**2**	0	0	0	**1**	**3**	0	5	0	**12**	1	7	0	**13**	**25**	**14**
15:15	15:30	0	0	1	**1**	1	0	0	**2**	**3**	1	6	0	**13**	0	6	0	**14**	**27**	**15**
15:30	15:45	0	1	0	**1**	0	0	0	**1**	**2**	0	14	0	**17**	0	3	0	**17**	**34**	**18**
15:45	16:00	0	0	1	**3**	0	0	1	**1**	**4**	0	7	1	**17**	1	8	0	**17**	**34**	**19**
16:00	16:15	1	0	0	**1**	0	0	0	**0**	**1**	0	5	0	**17**	0	11	0	**16**	**33**	**17**
16:15	16:30	3	0	1	**4**	0	0	1	**2**	**6**	1	4	0	**22**	0	13	0	**18**	**40**	**23**
16:30	16:45	0	0	0	**0**	0	0	1	**2**	**2**	1	2	0	**8**	0	4	0	**6**	**14**	**8**
16:45	17:00	1	0	0	**1**	0	0	0	**0**	**1**	0	3	0	**9**	0	5	0	**8**	**17**	**9**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**5**	0	5	0	**5**	**10**	**5**
17:15	17:30	0	0	2	**2**	0	0	1	**1**	**3**	0	3	0	**4**	0	0	0	**5**	**9**	**6**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**4**	0	3	0	**4**	**8**	**4**
17:45	18:00	1	0	0	**1**	0	0	0	**0**	**1**	0	1	0	**4**	0	2	0	**3**	**7**	**4**
Total:	None	6	4	7	**28**	7	4	4	**32**	**60**	10	170	3	**397**	4	204	3	**395**	**792**	**426**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, June 07, 2023 **WO No:** 40986

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

Full Study 15 Minute U-Turn Total

Time Period		O'KEEFE CRT Northbound U-Turn Total	O'KEEFE CRT Southbound U-Turn Total	FALLOWFIELD RD Eastbound U-Turn Total	FALLOWFIELD RD 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	1	0	0	0	1
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	1	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	1	1
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	1	0	1
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		1	0	1	2	4

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

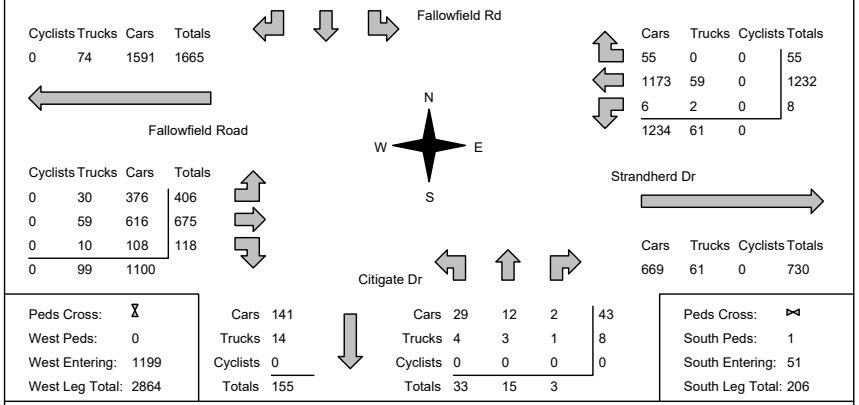
Municipality: Ottawa
Site #: 2317800001
Intersection: Strandherd Dr & Citigate Dr
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Strandherd Dr runs W/E



Comments

Mid-day Peak Diagram

Specified Period	One Hour Peak
From: 11:30:00	**From:** 12:15:00
To: 13:30:00	**To:** 13:15:00

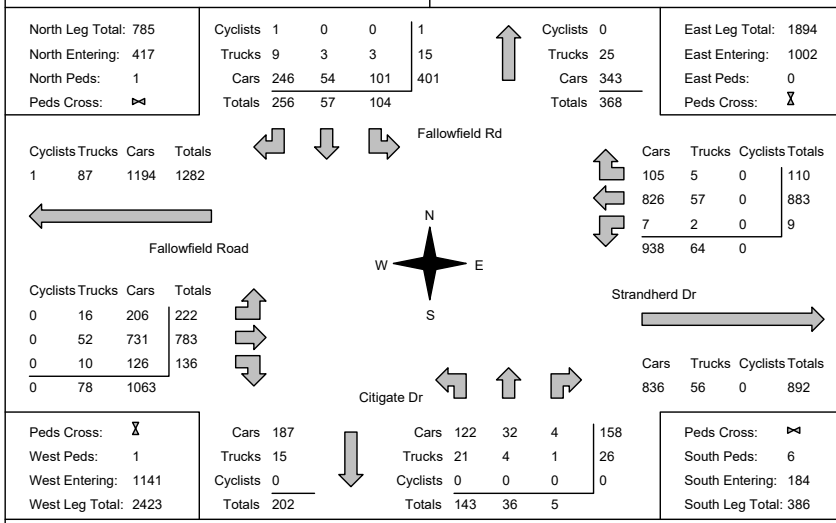
Municipality: Ottawa
Site #: 2317800001
Intersection: Strandherd Dr & Citigate Dr
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Strandherd Dr runs W/E



Comments

Afternoon Peak Diagram

Specified Period	One Hour Peak
From: 15:00:00	**From:** 16:45:00
To: 18:00:00	**To:** 17:45:00

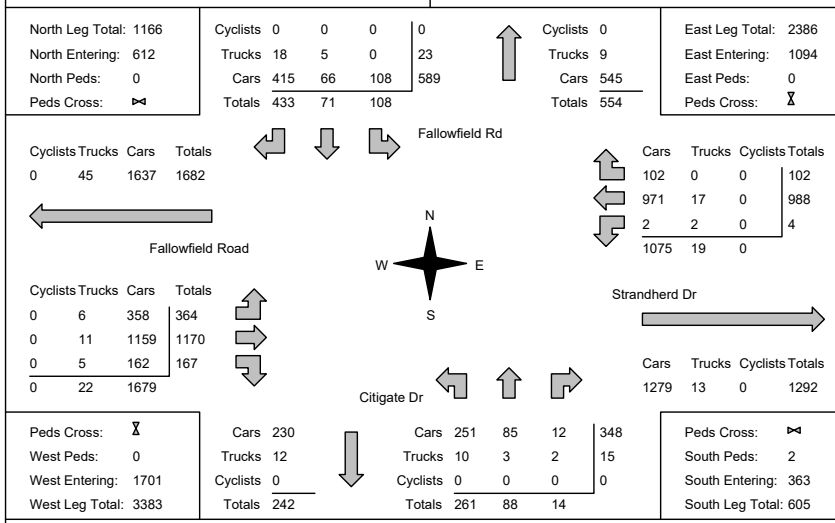
Municipality: Ottawa
Site #: 2317800001
Intersection: Strandherd Dr & Citigate Dr
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Strandherd Dr runs W/E



Comments

Total Count Diagram

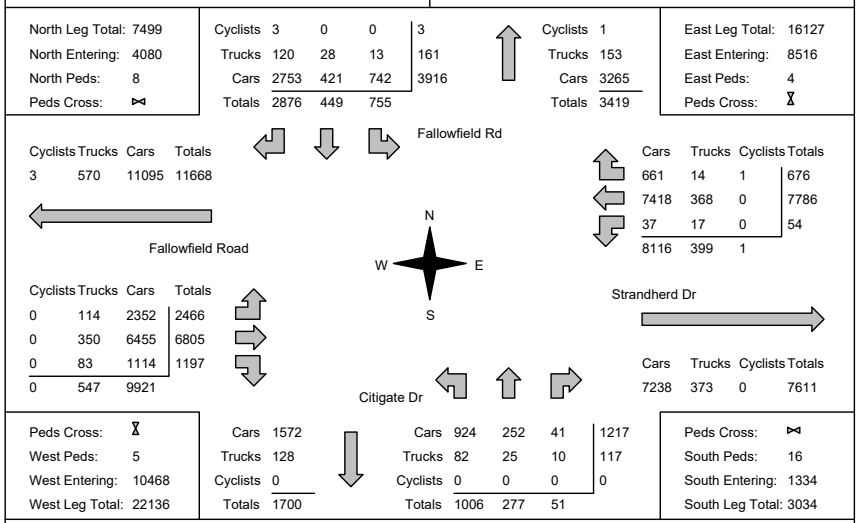
Municipality: Ottawa
Site #: 2317800001
Intersection: Strandherd Dr & Citigate Dr
TFR File #: 1
Count date: 19-Jul-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Strandherd Dr runs W/E



Comments

Traffic Count Summary

Intersection: Strandherd Dr & Citigate Dr | **Count Date:** 19-Jul-23 | **Municipality:** Ottawa

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	41	91	302	434	1	530	8:00:00	67	25	4	96	3
9:00:00	55	25	394	474	2	528	9:00:00	40	11	3	54	0
10:00:00	91	52	350	493	0	581	10:00:00	69	14	5	88	1
12:00:00	55	23	156	234	0	303	12:00:00	49	17	3	69	1
13:00:00	105	66	253	424	1	581	13:00:00	122	30	5	157	7
15:00:00	61	14	128	203	0	285	15:00:00	65	16	1	82	0
16:00:00	112	39	395	546	3	724	16:00:00	137	31	10	178	1
17:00:00	124	60	489	673	1	934	17:00:00	206	43	12	261	1
18:00:00	111	79	409	599	0	948	18:00:00	251	90	8	349	2
Totals:	755	449	2876	4080	8	5414	S Totals:	1006	277	51	1334	16

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	17	1055	38	1110	1	2259	8:00:00	336	591	222	1149	2
9:00:00	5	1232	65	1302	2	2455	9:00:00	376	654	123	1153	0
10:00:00	6	886	69	961	0	2045	10:00:00	252	728	104	1084	1
12:00:00	3	435	68	506	1	1083	12:00:00	127	374	76	577	0
13:00:00	8	824	103	935	0	2104	13:00:00	231	787	151	1169	1
15:00:00	3	445	45	493	0	1060	15:00:00	113	384	70	567	0
16:00:00	5	919	95	1019	0	2447	16:00:00	311	978	139	1428	1
17:00:00	3	1017	101	1121	0	2761	17:00:00	362	1128	150	1640	0
18:00:00	4	973	92	1069	0	2770	18:00:00	358	1181	162	1701	0
Totals:	54	7786	676	8516	4	18984	W Totals:	2466	6805	1197	10468	5

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	10:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	202	213	128	294	142	289	390	452

Count Date: 19-Jul-23 Site #: 2317800001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	10	10	29	29	44	44	2	2	1	1	2	2	0	0	0	0	0	0	0	0
7:30:00	16	6	67	38	102	58	2	0	1	0	3	1	0	0	0	0	0	0	1	1
7:45:00	23	7	78	11	202	100	3	1	2	1	4	1	0	0	0	0	0	0	1	0
8:00:00	38	15	89	11	295	93	3	0	2	0	7	3	0	0	0	0	0	0	1	0
8:15:00	50	12	92	3	385	90	4	1	3	1	10	3	0	0	0	0	0	0	1	0
8:30:00	64	14	97	5	466	81	4	0	3	0	12	2	0	0	0	0	0	0	1	0
8:45:00	74	10	105	8	591	125	4	0	4	1	15	3	0	0	0	0	0	0	1	0
9:00:00	91	17	112	7	677	86	5	1	4	0	19	4	0	0	0	0	0	0	3	2
9:15:00	126	35	124	12	757	80	6	1	6	2	21	2	0	0	0	0	1	1	3	0
9:30:00	141	15	135	11	845	88	6	0	8	2	23	2	0	0	0	0	2	1	3	0
9:45:00	162	21	145	10	927	82	6	0	9	1	26	3	0	0	0	0	2	0	3	0
10:00:00	179	17	158	13	1009	82	8	2	10	1	35	9	0	0	0	0	2	0	3	0
10:15:00	179	0	158	0	1009	0	8	0	10	0	35	0	0	0	0	0	2	0	3	0
11:30:00	179	0	158	0	1009	0	8	0	10	0	35	0	0	0	0	0	2	0	3	0
11:45:00	201	22	167	9	1084	75	8	0	13	3	42	7	0	0	0	0	2	0	3	0
12:00:00	233	32	178	11	1151	67	9	1	13	0	49	7	0	0	0	0	2	0	3	0
12:15:00	271	38	191	13	1214	63	9	0	15	2	52	3	0	0	0	0	2	0	3	0
12:30:00	294	23	213	22	1277	63	9	0	15	0	54	2	0	0	0	0	3	1	3	0
12:45:00	314	20	229	16	1338	61	10	1	16	1	56	2	0	0	0	0	3	0	4	1
13:00:00	337	23	240	11	1393	55	10	0	17	1	59	3	0	0	0	0	3	0	4	0
13:15:00	372	35	245	5	1460	67	12	2	18	1	61	2	0	0	0	0	3	0	4	0
13:30:00	396	24	253	8	1510	50	12	0	18	0	70	9	0	0	0	0	3	0	4	0
13:45:00	396	0	253	0	1510	0	12	0	18	0	70	0	0	0	0	0	3	0	4	0
15:00:00	396	0	253	0	1510	0	12	0	18	0	70	0	0	0	0	0	3	0	4	0
15:15:00	422	26	263	10	1617	107	12	0	19	1	79	9	0	0	0	0	3	0	5	1
15:30:00	448	26	275	12	1698	81	12	0	19	0	84	5	0	0	0	0	3	0	6	1
15:45:00	475	27	281	6	1788	90	13	1	21	2	90	6	0	0	0	0	3	0	6	0
16:00:00	507	32	289	8	1883	95	13	0	21	0	92	2	0	0	0	0	3	0	7	1
16:15:00	549	42	308	19	2003	120	13	0	22	1	94	2	0	0	0	0	3	0	7	0
16:30:00	577	28	321	13	2135	132	13	0	22	0	98	4	0	0	0	0	3	0	8	1
16:45:00	606	29	332	11	2256	121	13	0	23	1	99	1	0	0	0	0	3	0	8	0
17:00:00	631	25	345	13	2355	99	13	0	25	2	109	10	0	0	0	0	3	0	8	0
17:15:00	658	27	360	15	2466	111	13	0	27	2	112	3	0	0	0	0	3	0	8	0
17:30:00	680	22	377	17	2572	106	13	0	27	0	115	3	0	0	0	0	3	0	8	0
17:45:00	714	34	398	21	2671	99	13	0	28	1	117	2	0	0	0	0	3	0	8	0
18:00:00	742	28	421	23	2753	82	13	0	28	0	120	3	0	0	0	0	3	0	8	0
18:15:00	742	0	421	0	2753	0	13	0	28	0	120	0	0	0	0	0	3	0	8	0
18:15:15	742	0	421	0	2753	0	13	0	28	0	120	0	0	0	0	0	3	0	8	0

Count Date: 19-Jul-23 Site #: 2317800001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	7	199	199	3	3	0	0	7	7	0	0	0	0	0	0	0	0	0	0
7:30:00	9	2	457	258	12	9	2	2	15	8	1	1	0	0	0	0	0	0	1	1
7:45:00	11	2	727	270	25	13	2	0	32	17	2	1	0	0	0	0	0	0	1	0
8:00:00	14	3	1010	283	36	11	3	1	45	13	2	0	0	0	0	0	0	0	1	0
8:15:00	16	2	1289	279	54	18	3	0	59	14	2	0	0	0	0	0	0	0	1	0
8:30:00	16	0	1591	302	67	13	4	1	74	15	2	0	0	0	0	0	0	0	1	0
8:45:00	17	1	1900	309	80	13	4	0	91	17	2	0	0	0	0	0	0	0	1	0
9:00:00	17	0	2186	286	100	20	5	1	101	10	3	1	0	0	0	0	0	0	3	2
9:15:00	20	3	2378	192	117	17	5	0	117	16	4	1	0	0	0	0	0	0	3	0
9:30:00	21	1	2615	237	134	17	6	1	128	11	4	0	0	0	0	0	0	0	3	0
9:45:00	21	0	2811	196	150	16	6	0	144	16	4	0	0	0	0	0	0	0	3	0
10:00:00	21	0	3016	205	167	17	7	1	157	13	5	1	0	0	0	0	0	0	3	0
10:15:00	21	0	3016	0	167	0	7	0	157	0	5	0	0	0	0	0	0	0	3	0
11:30:00	21	0	3016	0	167	0	7	0	157	0	5	0	0	0	0	0	0	0	3	0
11:45:00	23	2	3222	206	203	36	7	0	175	18	6	1	0	0	0	0	0	0	3	0
12:00:00	23	0	3417	195	233	30	8	1	191	16	7	1	0	0	0	0	0	0	4	1
12:15:00	24	1	3587	170	254	21	8	0	201	10	7	0	0	0	0	0	0	0	4	0
12:30:00	26	2	3778	191	277	23	9	1	209	8	9	2	0	0	0	0	0	0	4	0
12:45:00	27	1	4000	222	311	34	9	0	223	14	11	2	0	0	0	0	0	0	4	0
13:00:00	29	2	4192	192	332	21	10	1	240	17	11	0	0	0	0	0	0	0	4	0
13:15:00	31	2	4413	221	359	27	10	0	258	18	12	1	0	0	0	0	0	0	4	0
13:30:00	31	0	4605	192	374	15	11	1	272	14	13	1	0	0	0	0	1	1	4	0
13:45:00	31	0	4605	0	374	0	11	0	272	0	13	0	0	0	0	0	1	0	4	0
15:00:00	31	0	4605	0	374	0	11	0	272	0	13	0	0	0	0	0	1	0	4	0
15:15:00	32	1	4800	195	397	23	11	0	283	11	13	0	0	0	0	0	1	0	4	0
15:30:00	34	2	5033	233	418	21	12	1	291	8	13	0	0	0	0	0	1	0	4	0
15:45:00	34	0	5255	222	444	26	12	0	302	11	13	0	0	0	0	0	1	0	4	0
16:00:00	34	0	5490	235	468	24	13	1	306	4	14	1	0	0	0	0	1	0	4	0
16:15:00	34	0	5713	223	487	19	13	0	322	16	14	0	0	0	0	0	1	0	4	0
16:30:00	34	0	5963	250	514	27	14	1	333	11	14	0	0	0	0	0	1	0	4	0
16:45:00	34	0	6209	246	540	26	14	0	346	13	14	0	0	0	0	0	1	0	4	0
17:00:00	35	1	6464	255	569	29	15	1	349	3	14	0	0	0	0	0	1	0	4	0
17:15:00	35	0	6703	239	589	20	15	0	355	6	14	0	0	0	0	0	1	0	4	0
17:30:00	36	1	6926	223	620	31	16	1	362	7	14	0	0	0	0	0	1	0	4	0
17:45:00	36	0	7180	254	642	22	16	0	363	1	14	0	0	0	0	0	1	0	4	0
18:00:00	37	1	7418	238	661	19	17	1	368	5	14	0	0	0	0	0	1	0	4	0
18:15:00	37	0	7418	0	661	0	17	0	368	0	14	0	0	0	0	0	1	0	4	0
18:15:15	37	0	7418	0	661	0	17	0	368	0	14	0	0	0	0	0	1	0	4	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 19-Jul-23 Site #: 2317800001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	22	22	5	5	1	1	3	3	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	36	14	14	9	2	1	4	1	2	2	1	1	0	0	0	0	0	0	2	1
7:45:00	57	21	17	3	2	0	4	0	2	0	2	1	0	0	0	0	0	0	2	0
8:00:00	62	5	22	5	2	0	5	1	3	1	2	0	0	0	0	0	0	0	3	1
8:15:00	69	7	23	1	2	0	8	3	3	0	2	0	0	0	0	0	0	0	3	0
8:30:00	77	8	27	4	3	1	8	0	3	0	2	0	0	0	0	0	0	0	3	0
8:45:00	86	9	29	2	4	1	8	0	5	2	3	1	0	0	0	0	0	0	3	0
9:00:00	96	10	30	1	4	0	11	3	6	1	3	0	0	0	0	0	0	0	3	0
9:15:00	112	16	31	1	5	1	12	1	7	1	3	0	0	0	0	0	0	0	3	0
9:30:00	125	13	32	1	6	1	14	2	9	2	3	0	0	0	0	0	0	0	3	0
9:45:00	143	18	35	3	7	1	19	5	10	1	4	1	0	0	0	0	0	0	3	0
10:00:00	154	11	39	4	8	1	22	3	11	1	4	0	0	0	0	0	0	0	4	1
10:15:00	154	0	39	0	8	0	22	0	11	0	4	0	0	0	0	0	0	0	4	0
11:30:00	154	0	39	0	8	0	22	0	11	0	4	0	0	0	0	0	0	0	4	0
11:45:00	175	21	49	10	10	2	23	1	11	0	4	0	0	0	0	0	0	0	4	0
12:00:00	200	25	55	6	11	1	25	2	12	1	4	0	0	0	0	0	0	0	5	1
12:15:00	215	15	61	6	12	1	28	3	12	0	4	0	0	0	0	0	0	0	6	1
12:30:00	239	24	71	10	13	1	31	3	13	1	5	1	0	0	0	0	0	0	9	3
12:45:00	276	37	76	5	14	1	38	7	14	1	5	0	0	0	0	0	0	0	9	0
13:00:00	305	29	82	6	15	1	42	4	15	1	5	0	0	0	0	0	0	0	12	3
13:15:00	337	32	93	11	16	1	49	7	16	1	5	0	0	0	0	0	0	0	12	0
13:30:00	361	24	96	3	16	0	51	2	17	1	5	0	0	0	0	0	0	0	12	0
13:45:00	361	0	96	0	16	0	51	0	17	0	5	0	0	0	0	0	0	0	12	0
15:00:00	361	0	96	0	16	0	51	0	17	0	5	0	0	0	0	0	0	0	12	0
15:15:00	400	39	103	7	16	0	56	5	17	0	6	1	0	0	0	0	0	0	12	0
15:30:00	430	30	110	7	16	0	58	2	18	1	6	0	0	0	0	0	0	0	12	0
15:45:00	463	33	121	11	21	5	59	1	18	0	8	2	0	0	0	0	0	0	12	0
16:00:00	488	25	125	4	23	2	61	2	19	1	8	0	0	0	0	0	0	0	13	1
16:15:00	541	53	133	8	25	2	64	3	20	1	8	0	0	0	0	0	0	0	13	0
16:30:00	578	37	139	6	27	2	65	1	20	0	8	0	0	0	0	0	0	0	13	0
16:45:00	632	54	151	12	29	2	68	3	21	1	8	0	0	0	0	0	0	0	13	0
17:00:00	682	50	165	14	34	5	73	5	22	1	9	1	0	0	0	0	0	0	14	1
17:15:00	739	57	182	17	36	2	73	0	22	0	9	0	0	0	0	0	0	0	15	1
17:30:00	777	38	189	7	38	2	76	3	23	1	9	0	0	0	0	0	0	0	15	0
17:45:00	883	106	236	47	41	3	78	2	24	1	10	1	0	0	0	0	0	0	15	0
18:00:00	924	41	252	16	41	0	82	4	25	1	10	0	0	0	0	0	0	0	16	1
18:15:00	924	0	252	0	41	0	82	0	25	0	10	0	0	0	0	0	0	0	16	0
18:15:15	924	0	252	0	41	0	82	0	25	0	10	0	0	0	0	0	0	0	16	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 19-Jul-23 Site #: 2317800001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	54	54	90	90	71	71	5	5	13	13	0	0	0	0	0	0	0	0	0	0
7:30:00	121	67	231	141	153	82	14	9	27	14	0	0	0	0	0	0	0	0	2	2
7:45:00	207	86	348	117	187	34	20	6	47	20	6	6	0	0	0	0	0	0	2	0
8:00:00	307	100	527	179	212	25	29	9	64	17	10	4	0	0	0	0	0	0	2	0
8:15:00	401	94	672	145	245	33	37	8	80	16	13	3	0	0	0	0	0	0	2	0
8:30:00	489	88	803	131	275	30	43	6	89	9	14	1	0	0	0	0	0	0	2	0
8:45:00	583	94	964	161	295	20	50	7	106	17	16	2	0	0	0	0	0	0	2	0
9:00:00	659	76	1124	160	325	30	53	3	121	15	20	4	0	0	0	0	0	0	2	0
9:15:00	733	74	1288	164	346	21	56	3	144	23	23	3	0	0	0	0	0	0	2	0
9:30:00	796	63	1485	197	370	24	62	6	164	20	26	3	0	0	0	0	0	0	2	0
9:45:00	845	49	1641	156	390	20	67	5	174	10	27	1	0	0	0	0	0	0	2	0
10:00:00	896	51	1787	146	420	30	68	1	186	12	29	2	0	0	0	0	0	0	3	1
10:15:00	896	0	1787	0	420	0	68	0	186	0	29	0	0	0	0	0	0	0	3	0
11:30:00	896	0	1787	0	420	0	68	0	186	0	29	0	0	0	0	0	0	0	3	0
11:45:00	948	52	1960	173	452	32	69	1	206	20	38	9	0	0	0	0	0	0	3	0
12:00:00	1020	72	2130	170	483	31	71	2	217	11	42	4	0	0	0	0	0	0	3	0
12:15:00	1076	56	2304	174	517	34	75	4	225	8	48	6	0	0	0	0	0	0	3	0
12:30:00	1140	64	2491	187	552	35	77	2	236	11	55	7	0	0	0	0	0	0	3	0
12:45:00	1164	24	2657	166	580	28	80	3	253	17	58	3	0	0	0	0	0	0	3	0
13:00:00	1236	72	2867	210	618	38	86	6	267	14	58	0	0	0	0	0	0	0	4	1
13:15:00	1282	46	3035	168	643	25	91	5	277	10	58	0	0	0	0	0	0	0	4	0
13:30:00	1343	61	3232	197	682	39	92	1	286	9	64	6	0	0	0	0	0	0	4	0
13:45:00	1343	0	3232	0	682	0	92	0	286	0	64	0	0	0	0	0	0	0	4	0
15:00:00	1343	0	3232	0	682	0	92	0	286	0	64	0	0	0	0	0	0	0	4	0
15:15:00	1396	53	3434	202	714	32	94	2	296	10	67	3	0	0	0	0	0	0	4	0
15:30:00	1477	81	3689	255	744	30	95	1	302	6	68	1	0	0	0	0	0	0	4	0
15:45:00	1546	69	3930	241	774	30	99	4	305	3	68	0	0	0	0	0	0	0	4	0
16:00:00	1644	98	4179	249	815	41	102	3	317	12	70	2	0	0	0	0	0	0	5	1
16:15:00	1710	66	4440	261	846	31	105	3	324	7	74	4	0	0	0	0	0	0	5	0
16:30:00	1826	116	4735	295	886	40	105	0	328	4	75	1	0	0	0	0	0	0	5	0
16:45:00	1912	86	5005	270	919	33	108	3	337	9	78	3	0	0	0	0	0	0	5	0
17:00:00	1997	85	5285	280	957	38	111	3	339	2	78	0	0	0	0	0	0	0	5	0
17:15:00	2078	81	5555	270	996	39	111	0	341	2	80	2	0	0	0	0	0	0	5	0
17:30:00	2182	104	5893	338	1039	43	112	1	343	2	83	3	0	0	0	0	0	0	5	0
17:45:00	2270	88	6164	271	1081	42	114	2	348	5	83	0	0	0	0	0	0	0	5	0
18:00:00	2352	82	6455	291	1114	33	114	0	350	2	83	0	0	0	0	0	0	0	5	0
18:15:00	2352	0	6455	0	1114	0	114	0	350	0	83	0	0	0	0	0	0	0	5	0
18:15:15	2352	0	6455	0	1114	0	114	0	350	0	83	0	0	0	0	0	0	0	5	0

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	6	9	332	208	12
Future Vol, veh/h	14	6	9	332	208	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	2	11	2	2	17
Mvmt Flow	16	7	10	369	231	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	627	238	244	0	-	0
Stage 1	238	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.54	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	429	801	1271	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	425	801	1271	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1271	-	495	-	-
HCM Lane V/C Ratio	0.008	-	0.045	-	-
HCM Control Delay (s)	7.9	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	406	675	118	8	1232	55	33	15	3	52	29	400
Future Volume (vph)	406	675	118	8	1232	55	33	15	3	52	29	400
Satd. Flow (prot)	3066	3103	1401	1353	3221	1483	2929	1426	0	1658	1664	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3066	3103	1401	1353	3221	1483	2927	1426	0	1658	1664	1450
Satd. Flow (RTOR)			131			225		3				405
Lane Group Flow (vph)	451	750	131	9	1369	61	37	20	0	58	32	444
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	10 2	7	9	6		7	4		3	8	
Permitted Phases			10 2			6						8
Detector Phase	13	10 2	7	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1		11.5	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	28.0		13.0	13.0	31.0	31.0	13.0	48.0		13.0	48.0	48.0
Total Split (%)	23.3%		10.8%	10.8%	25.8%	25.8%	10.8%	40.0%		10.8%	40.0%	40.0%
Yellow Time (s)	4.6		3.7	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5		2.8	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1		6.5	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag			Lag	Lead			Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?			Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None		None	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	23.1	79.7	87.4	6.4	47.7	47.7	7.0	12.4		18.7	14.8	14.8
Actuated g/C Ratio	0.19	0.66	0.73	0.05	0.40	0.40	0.06	0.10		0.16	0.12	0.12
v/c Ratio	0.77	0.36	0.12	0.12	1.07	0.08	0.22	0.13		0.22	0.16	0.83
Control Delay	54.7	11.9	1.6	57.2	81.7	0.2	56.5	47.9		44.5	45.4	20.9
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	54.7	11.9	1.6	57.2	81.7	0.2	56.5	47.9		44.5	45.4	20.9
LOS	D	B	A	E	F	A	E	D		D	D	C
Approach Delay		25.4			78.1			53.5			24.9	
Approach LOS		C			E			D			C	
Queue Length 50th (m)	52.2	29.0	0.0	2.1	163.3	0.0	4.3	3.8		11.4	7.2	8.8
Queue Length 95th (m)	66.7	84.5	6.2	7.3	#295.0	0.0	9.7	11.6		22.8	14.4	41.8
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	605	2055	1031	74	1279	724	176	489		259	568	762
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	0.75	0.36	0.13	0.12	1.07	0.08	0.21	0.04		0.22	0.06	0.58

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	29.9	12.0
Total Split (s)	31.0	15.0
Total Split (%)	26%	13%
Yellow Time (s)	4.6	2.0
All-Red Time (s)	2.3	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		Yes
Recall Mode	C-Max	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

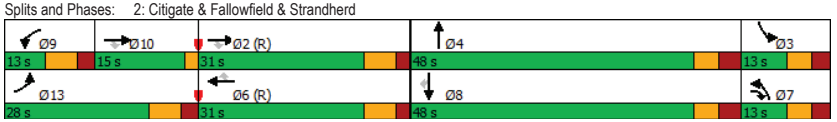
Intersection Summary

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 48.3	Intersection LOS: D
Intersection Capacity Utilization 83.6%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	543	11	15	439	7	30	2	52	6	3	16
Future Vol, veh/h	18	543	11	15	439	7	30	2	52	6	3	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	11	4	9	7	5	14	2	50	2	33	67	2
Mvmt Flow	20	603	12	17	488	8	33	2	58	7	3	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	496	0	0	615	0	0	1180	1173	604	1202	1177	488
Stage 1	-	-	-	-	-	-	643	643	-	522	522	-
Stage 2	-	-	-	-	-	-	537	530	-	680	655	-
Critical Hdwy	4.21	-	-	4.17	-	-	7.12	7	6.22	7.43	7.17	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Follow-up Hdwy	2.299	-	-	2.263	-	-	3.518	4.45	3.318	3.797	4.603	3.318
Pot Cap-1 Maneuver	1023	-	-	941	-	-	167	157	498	140	145	580
Stage 1	-	-	-	-	-	-	462	402	-	485	438	-
Stage 2	-	-	-	-	-	-	528	456	-	394	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1023	-	-	941	-	-	154	151	498	119	139	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	151	-	119	139	-
Stage 1	-	-	-	-	-	-	453	394	-	475	430	-
Stage 2	-	-	-	-	-	-	499	448	-	339	368	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	25.3	20.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	269	1023	-	-	941	-	-	119	386
HCM Lane V/C Ratio	0.347	0.02	-	-	0.018	-	-	0.056	0.055
HCM Control Delay (s)	25.3	8.6	-	-	8.9	-	-	37	14.9
HCM Lane LOS	D	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.5	0.1	-	-	0.1	-	-	0.2	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	692	10	31	400	174	49	248	192	98	62	12
Future Volume (vph)	44	692	10	31	400	174	49	248	192	98	62	12
Satd. Flow (prot)	1658	1712	1261	1537	1728	1483	1658	1745	1469	1642	1651	0
Flt Permitted	0.467			0.248			0.704			0.431		
Satd. Flow (perm)	815	1712	1234	401	1728	1483	1229	1745	1469	745	1651	0
Satd. Flow (RTOR)			49			193			134		12	
Lane Group Flow (vph)	49	769	11	34	444	193	54	276	213	109	82	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	52.4	52.4	52.4	52.4	52.4	52.4	19.1	19.1	19.1	19.1	19.1	
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.22	0.22	0.22	0.22	0.22	
v/c Ratio	0.10	0.73	0.01	0.14	0.42	0.20	0.20	0.71	0.49	0.65	0.22	
Control Delay	9.0	18.4	0.0	10.6	11.0	2.0	26.2	39.7	14.4	47.2	22.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.0	18.4	0.0	10.6	11.0	2.0	26.2	39.7	14.4	47.2	22.6	
LOS	A	B	A	B	B	A	C	D	B	D	C	
Approach Delay		17.6			8.4			28.4			36.7	
Approach LOS		B			A			C			D	
Queue Length 50th (m)	2.9	77.7	0.0	2.1	33.2	0.0	7.2	41.7	10.6	16.2	9.3	
Queue Length 95th (m)	9.3	#172.1	0.0	7.8	65.9	8.9	14.8	59.6	26.4	30.3	18.3	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	502	1055	779	247	1065	988	436	619	608	264	594	
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	0.10	0.73	0.01	0.14	0.42	0.20	0.12	0.45	0.35	0.41	0.14	

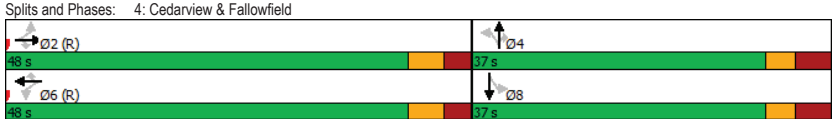
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 77.6%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview & Fallowfield



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	15	4	244	496	8
Future Vol, veh/h	13	15	4	244	496	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	8	7	2	2	2	2
Mvmt Flow	14	17	4	271	551	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	835	556	560	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.48	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	330	521	1011	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	521	1011	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	560	-	-	-	-	-
Stage 2	755	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	0.1	0
HCM LOS	B		

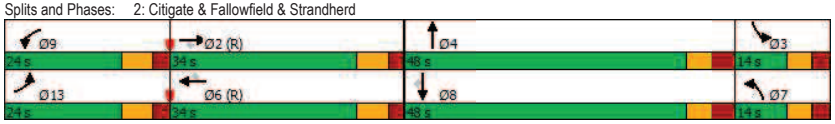
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1011	-	409	-	-
HCM Lane V/C Ratio	0.004	-	0.076	-	-
HCM Control Delay (s)	8.6	0	14.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	364	1170	167	4	988	102	261	88	14	108	71	433
Future Volume (vph)	364	1170	167	4	988	102	261	88	14	108	71	433
Satd. Flow (prot)	3216	3316	1469	1127	3316	1483	3154	1667	0	1658	1664	1455
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3216	3316	1432	1126	3316	1483	3154	1667	0	1658	1664	1455
Satd. Flow (RTOR)			160			160		7				359
Lane Group Flow (vph)	404	1300	186	4	1098	113	290	114	0	120	79	481
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	2		9	6		7	4		3	8	
Permitted Phases			2			6						8
Detector Phase	13	2	2	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	24.0	34.0	34.0	24.0	34.0	34.0	14.0	48.0		14.0	48.0	48.0
Total Split (%)	20.0%	28.3%	28.3%	20.0%	28.3%	28.3%	11.7%	40.0%		11.7%	40.0%	40.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag							Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	18.7	55.0	55.0	6.1	32.1	32.1	21.2	13.6		28.2	20.6	20.6
Actuated g/C Ratio	0.16	0.46	0.46	0.05	0.27	0.27	0.18	0.11		0.24	0.17	0.17
v/c Ratio	0.81	0.86	0.25	0.07	1.24	0.22	0.52	0.58		0.31	0.28	0.88
Control Delay	62.4	36.9	6.8	56.2	155.3	2.8	50.3	59.0		40.3	42.2	29.8
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	62.4	36.9	6.8	56.2	155.3	2.8	50.3	59.0		40.3	42.2	29.8
LOS	E	D	A	E	F	A	D	E		D	D	C
Approach Delay		39.4			140.7			52.8			33.1	
Approach LOS		D			F			D			C	
Queue Length 50th (m)	46.5	127.7	3.0	0.9	~169.8	0.0	32.4	24.4		24.0	16.7	29.9
Queue Length 95th (m)	#75.9	#246.5	21.4	4.6	#227.6	5.3	#60.3	41.2		39.7	25.7	63.4
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	503	1519	743	158	886	513	556	574		389	568	733
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	0.80	0.86	0.25	0.03	1.24	0.22	0.52	0.20		0.31	0.14	0.66

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.24
Intersection Signal Delay: 69.0 — Intersection LOS: E
Intersection Capacity Utilization 82.0% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	499	66	52	611	17	21	3	44	7	3	16
Future Vol, veh/h	19	499	66	52	611	17	21	3	44	7	3	16
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	11	3	2	2	5	2	24	2	2	2	2	13
Mvmt Flow	21	554	73	58	679	19	23	3	49	8	3	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	698	0	0	628	0	0	1412	1411	557	1456	1465	679
Stage 1	-	-	-	-	-	-	597	597	-	795	795	-
Stage 2	-	-	-	-	-	-	815	814	-	661	670	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.34	6.52	6.22	7.12	6.52	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	3.716	4.018	3.318	3.518	4.018	3.417
Pot Cap-1 Maneuver	858	-	-	954	-	-	103	138	530	108	128	433
Stage 1	-	-	-	-	-	-	454	491	-	381	399	-
Stage 2	-	-	-	-	-	-	341	391	-	452	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	858	-	-	953	-	-	90	126	529	90	117	433
Mov Cap-2 Maneuver	-	-	-	-	-	-	90	126	-	90	117	-
Stage 1	-	-	-	-	-	-	443	479	-	372	375	-
Stage 2	-	-	-	-	-	-	304	367	-	397	444	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	33.5	26.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	200	858	-	-	953	-	-	90	304
HCM Lane V/C Ratio	0.378	0.025	-	-	0.061	-	-	0.086	0.069
HCM Control Delay (s)	33.5	9.3	-	-	9	-	-	48.8	17.7
HCM Lane LOS	D	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0.2	-	-	0.3	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	398	30	137	652	77	21	89	63	247	412	46
Future Volume (vph)	24	398	30	137	652	77	21	89	63	247	412	46
Satd. Flow (prot)	1658	1745	1483	1642	1728	1483	1537	1728	1469	1658	1717	0
Flt Permitted	0.200			0.427			0.210			0.693		
Satd. Flow (perm)	349	1745	1483	738	1728	1451	340	1728	1469	1209	1717	0
Satd. Flow (RTOR)			49			81			70		7	
Lane Group Flow (vph)	27	442	33	152	724	86	23	99	70	274	509	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	43.5	43.5	43.5	43.5	43.5	43.5	28.0	28.0	28.0	28.0	28.0	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.33	0.33	0.33	0.33	0.33	
v/c Ratio	0.15	0.49	0.04	0.40	0.82	0.11	0.21	0.17	0.13	0.69	0.89	
Control Delay	14.9	16.6	2.4	17.8	28.0	3.7	24.8	20.2	5.7	34.3	46.5	
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	14.9	16.6	2.4	17.8	28.0	3.7	24.8	20.2	5.7	34.3	46.5	
LOS	B	B	A	B	C	A	C	C	A	C	D	
Approach Delay		15.6			24.2			15.5			42.2	
Approach LOS		B			C			B			D	
Queue Length 50th (m)	2.3	47.2	0.0	15.3	99.3	0.4	2.6	10.8	0.0	36.5	73.4	
Queue Length 95th (m)	7.6	72.8	2.9	31.3	#168.1	7.3	8.6	21.3	8.0	63.0	#125.9	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	178	893	783	377	885	782	120	613	567	429	614	
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	0.15	0.49	0.04	0.40	0.82	0.11	0.19	0.16	0.12	0.64	0.83	

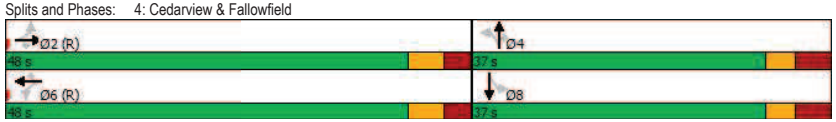
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview & Fallowfield



Appendix D

Signal Warrant

O'Keefe @ Fallowfield
Existing

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	625	87%	30%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	51	30%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	574	80%	23%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	18	23%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

O'Keefe @ Fallowfield
FB2038

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	780	108%	42%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	71	42%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	709	98%	49%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	37	49%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

O'Keefe @ Fallowfield
FT2038

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	945	131%	80%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	136	80%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	809	112%	96%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	72	96%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Appendix E

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
7/31/2020	2020	3:34	FALLOWFIELD RD @ O'KEEFE CRT (0010311)	01 - Clear	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
12/24/2021	2021	9:39	FALLOWFIELD RD @ O'KEEFE CRT (0010311)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
2/17/2022	2022	22:08	FALLOWFIELD RD @ O'KEEFE CRT (0010311)	03 - Snow	07 - Dark	02 - Stop sign	0	03 - P.D. only	07 - SMV other	05 - Packed snow	0	0	0	0
8/4/2019	2019	0:18	O'KEEFE CRT btwn END & FOXTAIL AVE (__3ZA1I4)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
6/18/2019	2019	21:30	FALLOWFIELD RD btwn CEDARVIEW RD & O'KEEFE CRT (__3ZA4Y8)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
11/17/2020	2020	3:15	FALLOWFIELD RD btwn CEDARVIEW RD & O'KEEFE CRT (__3ZA4Y8)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
1/8/2018	2018	12:55	FALLOWFIELD RD @ STRANDHERD DR (0005238)	03 - Snow	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	04 - Slush	0	0	0	0
2/16/2018	2018	15:35	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/8/2018	2018	15:46	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2/9/2018	2018	17:45	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
3/9/2018	2018	10:55	FALLOWFIELD RD @ STRANDHERD DR (0005238)	03 - Snow	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	02 - Wet	0	0	0	0
4/26/2018	2018	16:11	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
6/19/2018	2018	21:05	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	05 - Dusk	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	1	0	0
6/24/2018	2018	14:01	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
8/16/2018	2018	12:28	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
9/10/2018	2018	7:45	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
9/17/2018	2018	14:10	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/24/2018	2018	8:45	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
12/22/2018	2018	8:04	FALLOWFIELD RD @ STRANDHERD DR (0005238)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	03 - Loose snow	0	0	0	0
1/1/2019	2019	19:29	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
1/31/2019	2019	16:32	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	05 - Packed snow	0	0	0	0
1/29/2019	2019	8:35	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
2/25/2019	2019	21:05	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
3/5/2019	2019	16:30	FALLOWFIELD RD @ STRANDHERD DR (0005238)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
5/4/2019	2019	10:30	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
4/24/2019	2019	18:20	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/30/2019	2019	8:03	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
9/14/2019	2019	15:00	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
9/16/2019	2019	8:35	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
11/16/2019	2019	13:41	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/31/2020	2020	11:01	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
3/8/2020	2020	10:29	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/20/2020	2020	7:15	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
6/5/2020	2020	15:10	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/27/2020	2020	16:27	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/1/2020	2020	11:26	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/19/2021	2021	6:46	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/28/2020	2020	18:51	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
2/27/2021	2021	14:21	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	04 - Slush	0	0	0	0
2/18/2021	2021	8:20	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
3/11/2021	2021	8:49	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/20/2021	2021	16:30	FALLOWFIELD RD @ STRANDHERD DR (0005238)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
8/27/2021	2021	16:04	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
10/31/2021	2021	3:00	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
10/31/2021	2021	4:27	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
11/21/2021	2021	14:45	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/15/2021	2021	11:55	FALLOWFIELD RD @ STRANDHERD DR (0005238)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
3/7/2022	2022	19:45	FALLOWFIELD RD @ STRANDHERD DR (0005238)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
1/22/2018	2018	18:13	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	03 - Loose snow	0	0	0	0
5/22/2018	2018	8:18	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
6/14/2018	2018	8:35	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
7/9/2018	2018	11:21	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
6/22/2018	2018	8:35	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
8/16/2018	2018	8:29	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/30/2018	2018	13:56	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
3/13/2019	2019	16:21	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
3/22/2019	2019	7:50	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	02 - Rain	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	02 - Wet	0	0	0	0
4/12/2019	2019	12:00	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
6/9/2019	2019	11:34	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
9/1/2019	2019	13:10	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
9/26/2019	2019	15:30	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/13/2020	2020	7:20	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2/22/2020	2020	16:01	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
6/22/2020	2020	16:55	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
8/13/2021	2021	15:00	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
11/3/2021	2021	17:18	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
1/5/2022	2022	22:00	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
7/20/2022	2022	14:07	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
9/30/2022	2022	7:41	CEDARVIEW RD @ FALLOWFIELD RD (0001603)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/29/2018	2018	6:10	CEDARVIEW RD btwn FALLOWFIELD RD & WOODSIA AVE (__3ZA4Y7)	02 - Rain	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	0
11/9/2018	2018	19:20	CEDARVIEW RD btwn FALLOWFIELD RD & WOODSIA AVE (__3ZA4Y7)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
9/4/2019	2019	17:30	CEDARVIEW RD btwn FALLOWFIELD RD & WOODSIA AVE (__3ZA4Y7)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/25/2019	2019	20:01	CEDARVIEW RD btwn FALLOWFIELD RD & WOODSIA AVE (__3ZA4Y7)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
9/16/2020	2020	16:10	CEDARVIEW RD btwn CEDARHILL DR & LYTLE AVE (__3ZA4XG)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0

Appendix F

TDM Checklist

CGH TRANSPORTATION

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

Legend

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

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

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

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

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

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

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

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

Legend

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

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

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

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

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

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

Appendix G

TRANS Model Plots

CGH TRANSPORTATION

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Cedarview Road Area

2011 Model - Basecase

N/A

User Initials: MANS
Plot Prepared: July 24, 2023
EMME Scenario: 21713

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800 1000

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Cedarview Road Area

2031 Model - Basecase

N/A

User Initials: MANS
Plot Prepared: July 24, 2023
EMME Scenario: 21717

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

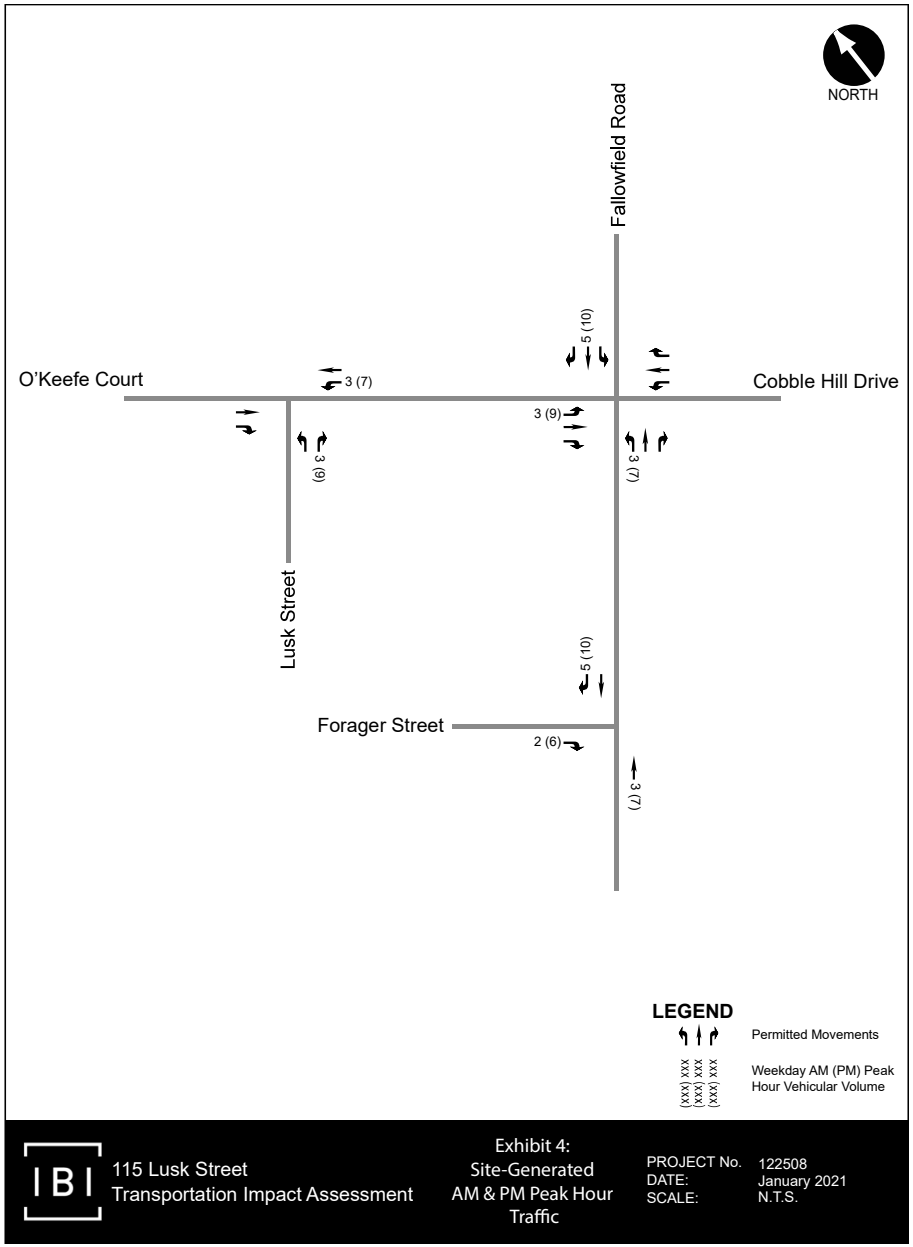
Distance (m)

200 400 600 800 1000

Appendix H

Background Development Volumes

CGH TRANSPORTATION

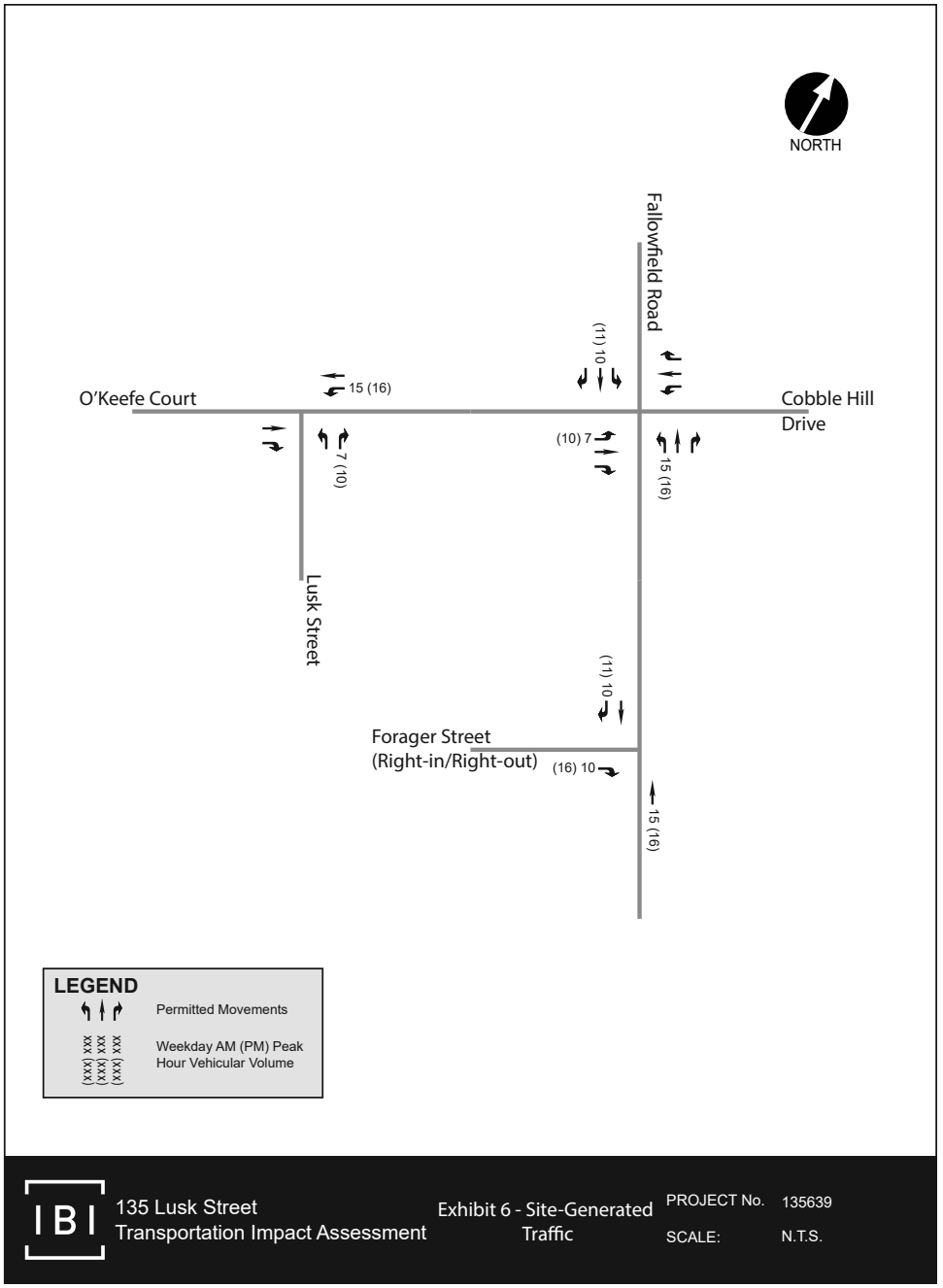


IBI

115 Lusk Street
Transportation Impact Assessment

Exhibit 4:
Site-Generated
AM & PM Peak Hour
Traffic

PROJECT No. 122508
DATE: January 2021
SCALE: N.T.S.

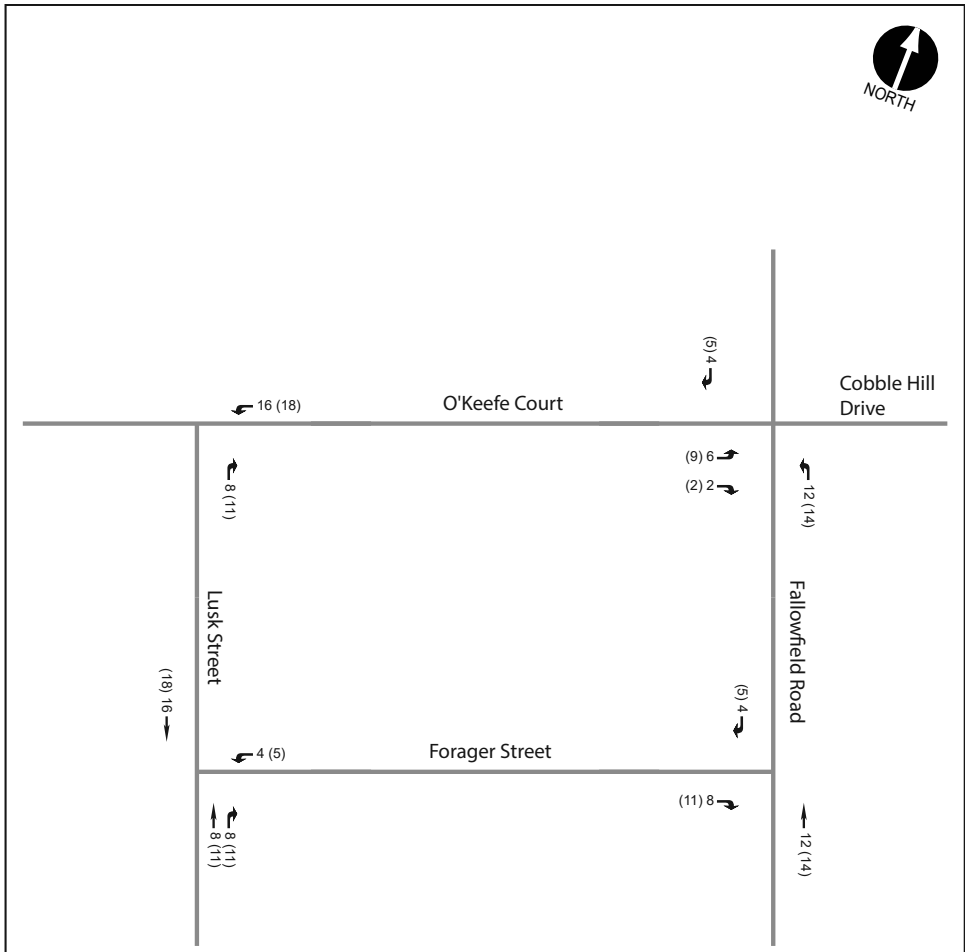


IBI

135 Lusk Street
Transportation Impact Assessment

Exhibit 6 - Site-Generated
Traffic

PROJECT No. 135639
SCALE: N.T.S.



ARCADIS IBI GROUP 140 Lusk Street Transportation Impact Assessment

Exhibit 6: Site-Generated Traffic

PROJECT No. 140895

SCALE: N.T.S.

Figure 4: Site Generated Traffic Volumes

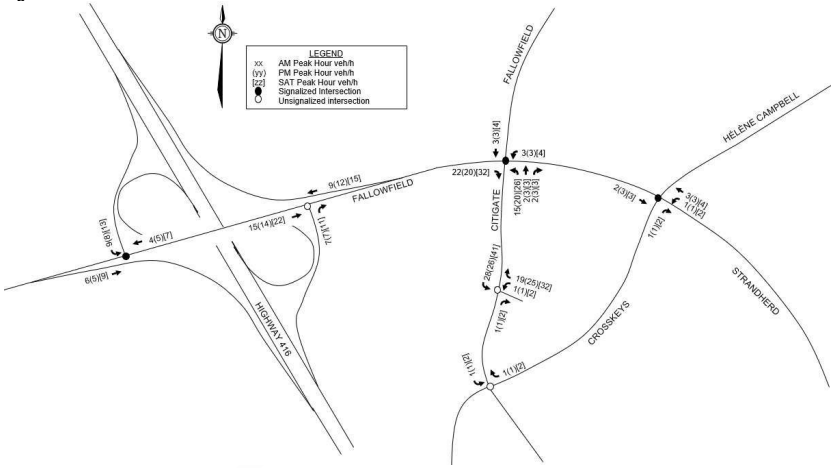
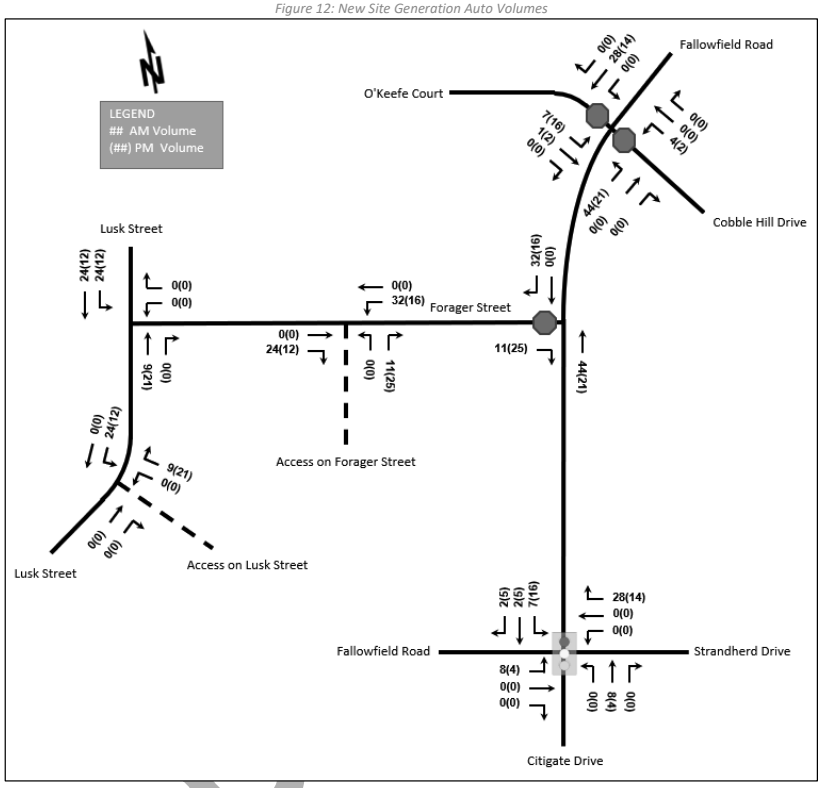


Figure 12: New Site Generation Auto Volumes



4.3 Other CitiGate Traffic

Trips generated by the car dealerships as well as developments at 4175/4149 Strandherd Drive (Blocks 3 and 4) are anticipated to generate traffic to/from Strandherd Drive and not utilize the internal Business Park intersections. The following table shows person trips generated by the proposed/future uses within the CitiGate Business Park that are anticipated to generate traffic at the internal intersections.

Peak hour of site traffic for the neighboring Amazon facility is anticipated to occur at 6:00AM-7:00AM and 5:30PM-6:30PM, due to the nature of shift work anticipated at this facility. Based on the recent traffic counts, the weekday peak hour of adjacent road traffic along Strandherd Drive typically occurs between 7:45AM-8:45AM and from 4:00PM-5:00PM. While Amazon site traffic and peak hour of road traffic are not expected to coincide, the Amazon site traffic has been superimposed on peak hour of road traffic for this memo. This will result in a more conservative and robust analysis.

Table 4: Other CitiGate Traffic - Person Trips

Land Use	ITE Code	Size	AM Peak			PM Peak		
			IN	OUT	TOT	IN	OUT	TOT
Amazon Distribution Facility								
Distribution Facility	-	2,728,000 ft^2	519	538	1057	679	691	1370
Proposed Hotel – 101 CitiGate								
Phase 1 – Hotel	310	99 rooms	34	23	57	32	30	62
Phase 2 – Hotel	310	85 rooms	26	19	45	23	22	45
Future Hotel – 4433 Strandherd								
Phase 1 – Hotel	310	120 rooms	37	31	68	40	38	78
Phase 1 – Restaurant	932	5,000 ft^2	33	28	61	35	23	58
Phase 2 – Hotel	310	135 rooms	44	33	77	47	45	92
Phase 2 – Restaurant	932	5,000 ft^2	33	28	61	35	23	58
Future Warehouse - 575 Dealership								
Warehouse	150	320,000 ft^2	54	15	69	20	54	74
Future Prestige Business Park (lands south of Dealership Drive)								
Office Park	750	500,000 ft^2	756	95	851	116	718	834
Future Business Park (lands south of Dealership Drive)								
Business Park	770	275,000 ft^2	388	68	456	119	338	457

Modal shares are anticipated to be consistent with recent traffic studies prepared for the above developments or the overall 2012 CitiGate CTS. Vehicle trips generated by the proposed/future uses within the CitiGate Business Park are shown in **Table 5**.

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Trips generated by the Amazon facility and the proposed hotel at 101 CitiGate Drive have been assigned using the assumptions outlined in their respective traffic studies. Trips generated by the hotel at 4433 Strandherd Drive have been assigned in a similar manner to the traffic study for the hotel at 101 CitiGate Drive. Trips generated by the future warehouse, prestige business park and business park lands have been assigned in a manner consistent with the 2012 CTS.

The Amazon facility and proposed hotel at 101 CitiGate Drive have been assumed to be in place for the subject site buildout year. For the ultimate development scenario, the McKenna Casey Drive realignment is anticipated to be in place and 5% of Amazon traffic destined to the west has been reassigned to this connection. All other developments and the McKenna Casey Drive realignment are assumed to be in place for the ultimate condition.

Table 5: Other CitiGate Traffic – Vehicle Trips

Land Use	Auto Driver Share	Size	AM Peak			PM Peak		
			IN	OUT	TOT	IN	OUT	TOT
Amazon Distribution Facility								
Distribution Facility	56%	2,728,000 ft^2	284	295	579	375	381	756
Proposed Hotel – 101 CitiGate								
Phases 1 and 2 (two hotels)	85%	184 rooms	51	36	87	47	44	91
Future Hotel – 4433 Strandherd								
Phases 1 and 2 (two hotels and two restaurants)	85%	255 rooms, 10,000 ft^2 restaurant	125	102	227	133	110	243
Future Warehouse - 575 Dealership								
Warehouse	56%	320,000 ft^2	30	8	38	11	30	41
Future Prestige Business Park (lands south of Dealership Drive)								
Office Park	56%	500,000 ft^2	423	53	476	65	402	467
Future Business Park (lands south of Dealership Drive)								
Business Park	56%	275,000 ft^2	217	38	255	67	189	256

Background and total traffic volumes are shown in the following figures:

- **Figure 6** shows the background traffic (not including subject site) for the buildout year.
- **Figure 7** shows the background traffic (not including the subject site) for the ultimate condition.
- **Figure 8** shows the total traffic (including the subject site) for the buildout year.
- **Figure 9** shows the total traffic (including the subject site) for the ultimate condition.

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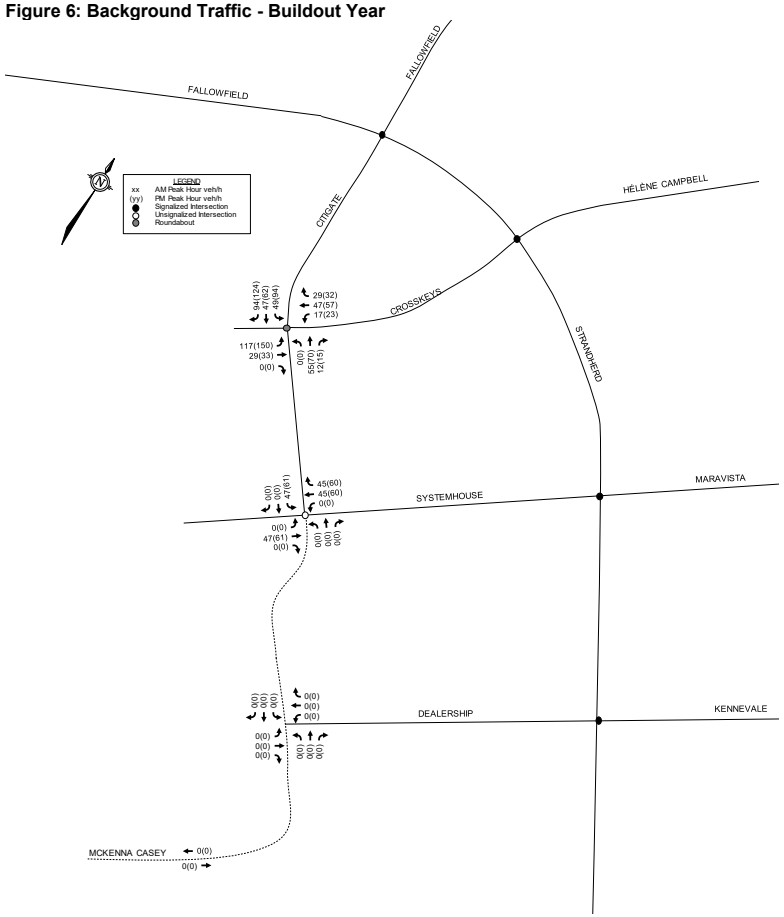
Figure 6: Background Traffic - Buildout Year



M:\2022\122003\DATA\REPORTS\TRAFFIC\20221129-TRAFFIC.DOCX

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Figure 7: Background Traffic – Ultimate

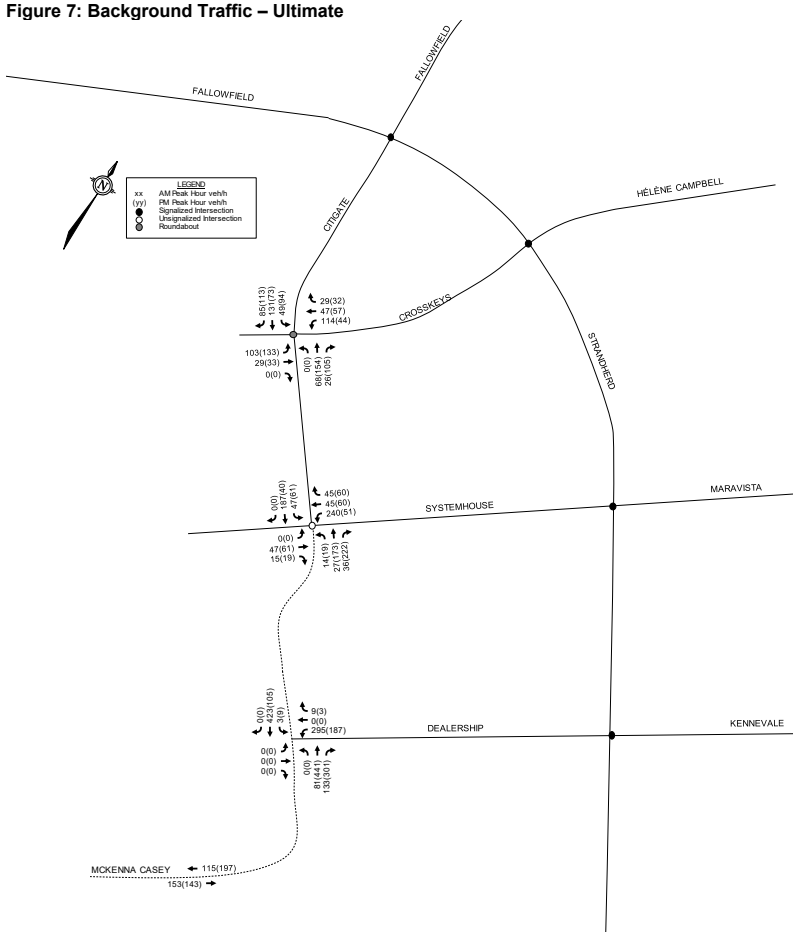

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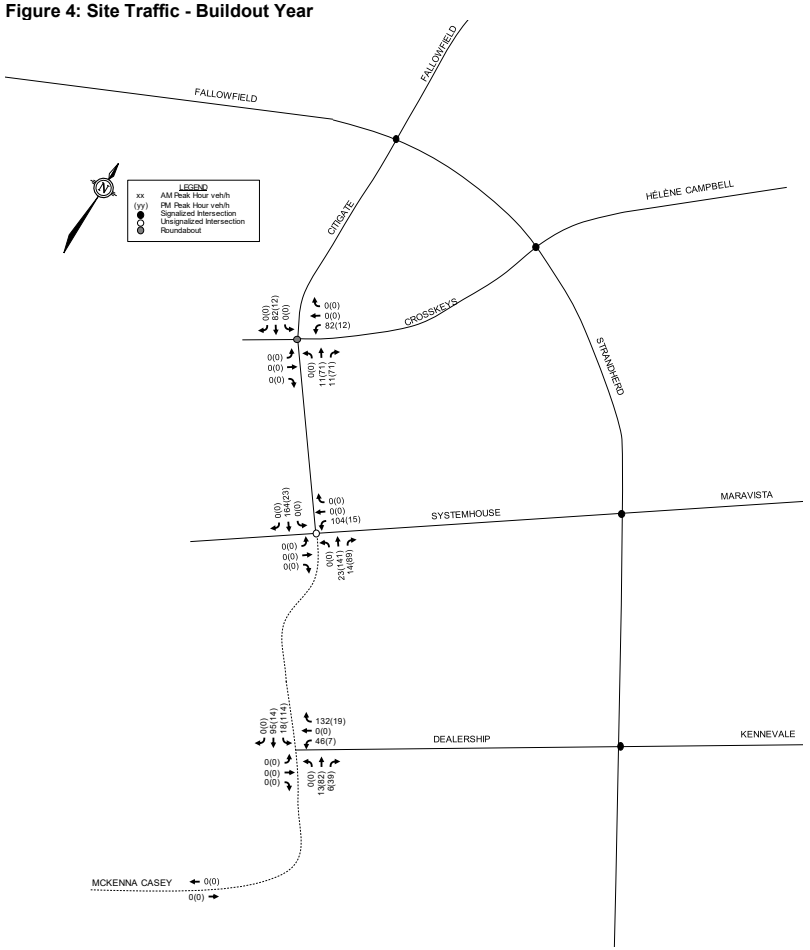
Figure 4: Site Traffic - Buildout Year



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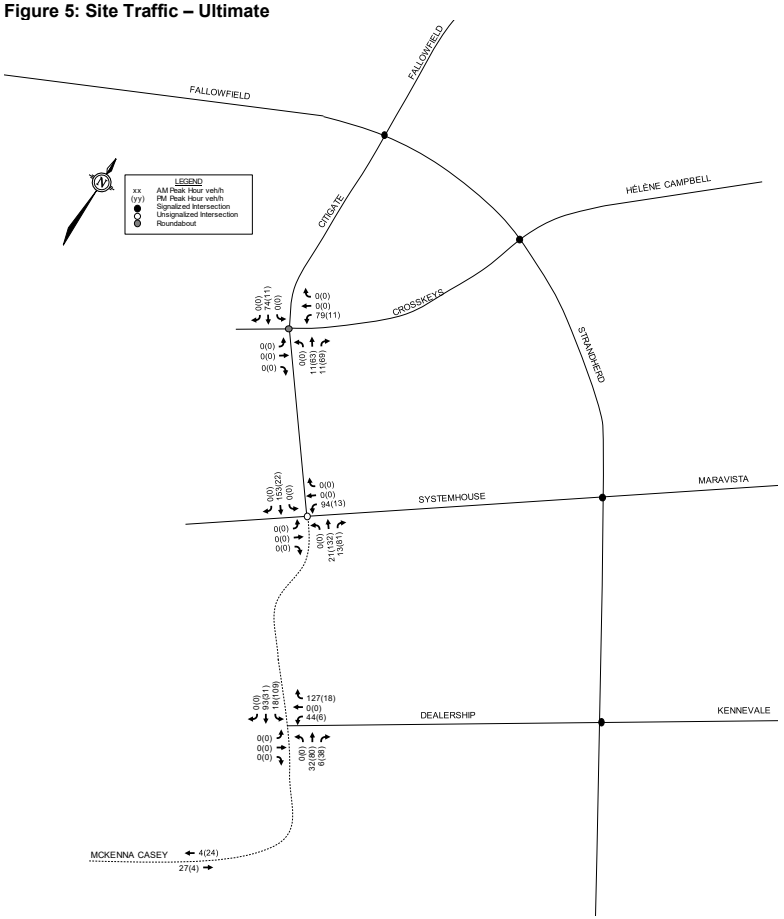
Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Figure 5: Site Traffic – Ultimate



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Appendix I

Synchro Intersection Worksheets – 2038 Future Background Conditions

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	6	9	385	432	12
Future Vol, veh/h	14	6	9	385	432	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	2	11	2	2	17
Mvmt Flow	14	6	9	385	432	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	841	438	444	0	-	0
Stage 1	438	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.54	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	319	619	1070	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	315	619	1070	-	-	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	650	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1070	-	369	-	-
HCM Lane V/C Ratio	0.008	-	0.054	-	-
HCM Control Delay (s)	8.4	0	15.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	476	1201	249	38	1775	83	66	35	10	59	125	437
Future Volume (vph)	476	1201	249	38	1775	83	66	35	10	59	125	437
Satd. Flow (prot)	3066	3103	1401	1353	3221	1483	2929	1401	0	1658	1664	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3066	3103	1401	1353	3221	1483	2927	1401	0	1658	1664	1450
Satd. Flow (RTOR)			240			225		10				371
Lane Group Flow (vph)	476	1201	249	38	1775	83	66	45	0	59	125	437
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	2		9	6		7	4		3	8	
Permitted Phases			2			6						8
Detector Phase	13	2	2	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	28.0	46.0	46.0	13.0	31.0	31.0	13.0	48.0		13.0	48.0	48.0
Total Split (%)	23.3%	38.3%	38.3%	10.8%	25.8%	25.8%	10.8%	40.0%		10.8%	40.0%	40.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag							Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	24.2	63.1	63.1	9.1	45.4	45.4	8.1	10.5		14.9	17.2	17.2
Actuated g/C Ratio	0.20	0.53	0.53	0.08	0.38	0.38	0.07	0.09		0.12	0.14	0.14
v/c Ratio	0.77	0.74	0.29	0.37	1.46	0.12	0.34	0.34		0.29	0.53	0.83
Control Delay	54.0	29.7	4.7	62.2	239.5	0.3	57.4	49.6		47.8	53.7	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	54.0	29.7	4.7	62.2	239.5	0.3	57.4	49.6		47.8	53.7	22.7
LOS	D	C	A	E	F	A	E	D		D	D	C
Approach Delay		32.5			225.4			54.2			31.4	
Approach LOS		C			F			D			C	
Queue Length 50th (m)	54.6	115.7	1.0	8.7	~301.3	0.0	7.7	7.9		13.1	28.4	14.5
Queue Length 95th (m)	70.7	#219.2	19.4	19.5	#416.8	0.0	14.6	19.4		22.4	40.9	47.9
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	627	1632	850	102	1219	701	200	485		206	568	739
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	0.76	0.74	0.29	0.37	1.46	0.12	0.33	0.09		0.29	0.22	0.59

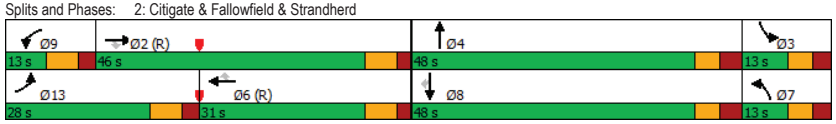
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 113.2	Intersection LOS: F
Intersection Capacity Utilization 102.4%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	597	11	15	593	11	34	2	52	32	4	18
Future Vol, veh/h	92	597	11	15	593	11	34	2	52	32	4	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	4	9	7	5	14	2	50	2	33	67	2
Mvmt Flow	92	597	11	15	593	11	34	2	52	32	4	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	604	0	0	608	0	0	1421	1415	598	1438	1415	593
Stage 1	-	-	-	-	-	-	781	781	-	623	623	-
Stage 2	-	-	-	-	-	-	640	634	-	815	792	-
Critical Hdwy	4.21	-	-	4.17	-	-	7.12	7	6.22	7.43	7.17	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Follow-up Hdwy	2.299	-	-	2.263	-	-	3.518	4.45	3.318	3.797	4.603	3.318
Pot Cap-1 Maneuver	931	-	-	946	-	-	114	109	502	95	101	506
Stage 1	-	-	-	-	-	-	388	343	-	425	390	-
Stage 2	-	-	-	-	-	-	464	406	-	330	320	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	931	-	-	946	-	-	97	97	502	76	90	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	97	-	76	90	-
Stage 1	-	-	-	-	-	-	350	309	-	383	384	-
Stage 2	-	-	-	-	-	-	436	400	-	265	288	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.2	41	57.1
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	185	931	-	-	946	-	-	76	275
HCM Lane V/C Ratio	0.476	0.099	-	-	0.016	-	-	0.421	0.08
HCM Control Delay (s)	41	9.3	-	-	8.9	-	-	83.2	19.2
HCM Lane LOS	E	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.3	0.3	-	-	0	-	-	1.7	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	787	10	32	556	181	49	359	278	204	129	12
Future Volume (vph)	47	787	10	32	556	181	49	359	278	204	129	12
Satd. Flow (prot)	1658	1712	1261	1537	1728	1483	1658	1745	1469	1642	1686	0
Flt Permitted	0.341			0.166			0.667			0.389		
Satd. Flow (perm)	595	1712	1234	269	1728	1483	1164	1745	1469	672	1686	0
Satd. Flow (RTOR)			49			181			128		6	
Lane Group Flow (vph)	47	787	10	32	556	181	49	359	278	204	141	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	44.8	44.8	44.8	44.8	44.8	44.8	26.7	26.7	26.7	26.7	26.7	
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53	0.53	0.31	0.31	0.31	0.31	0.31	
v/c Ratio	0.15	0.87	0.01	0.23	0.61	0.21	0.13	0.66	0.51	0.97	0.26	
Control Delay	13.7	32.3	0.0	17.9	18.9	2.7	20.0	30.7	15.0	84.8	21.0	
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	13.7	32.3	0.0	17.9	18.9	2.7	20.0	30.7	15.0	84.8	21.0	
LOS	B	C	A	B	B	A	B	C	B	F	C	
Approach Delay		30.9			15.0			23.5			58.7	
Approach LOS		C			B			C			E	
Queue Length 50th (m)	4.1	116.1	0.0	2.9	65.3	0.0	5.3	46.6	17.2	30.2	15.1	
Queue Length 95th (m)	10.5	#192.4	0.0	9.7	100.0	9.7	12.8	73.4	38.0	#69.0	28.2	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	313	901	673	141	910	866	413	619	604	238	602	
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	0.15	0.87	0.01	0.23	0.61	0.21	0.12	0.58	0.46	0.86	0.23	

Intersection Summary

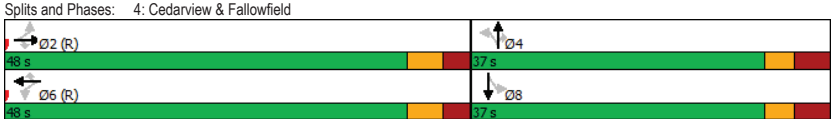
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 28.0	Intersection LOS: C
Intersection Capacity Utilization 92.5%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview & Fallowfield



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	15	4	507	576	8
Future Vol, veh/h	13	15	4	507	576	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	8	7	2	2	2	2
Mvmt Flow	13	15	4	507	576	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1095	580	584	0	-	0
Stage 1	580	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.48	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	230	505	991	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	229	505	991	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	991	-	324	-	-
HCM Lane V/C Ratio	0.004	-	0.086	-	-
HCM Control Delay (s)	8.6	0	17.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	1655	208	10	1873	116	371	168	43	124	89	505
Future Volume (vph)	419	1655	208	10	1873	116	371	168	43	124	89	505
Satd. Flow (prot)	3216	3316	1469	1127	3316	1483	3154	1639	0	1658	1664	1455
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3216	3316	1432	1127	3316	1483	3154	1639	0	1658	1664	1455
Satd. Flow (RTOR)			160			160		12				358
Lane Group Flow (vph)	419	1655	208	10	1873	116	371	211	0	124	89	505
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	2		9	6		7	4		3	8	
Permitted Phases			2			6						8
Detector Phase	13	2	2	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	24.0	34.0	34.0	24.0	34.0	34.0	14.0	48.0		14.0	48.0	48.0
Total Split (%)	20.0%	28.3%	28.3%	20.0%	28.3%	28.3%	11.7%	40.0%		11.7%	40.0%	40.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag							Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	17.9	48.9	48.9	6.8	27.1	27.1	24.6	20.2		27.4	22.9	22.9
Actuated g/C Ratio	0.15	0.41	0.41	0.06	0.23	0.23	0.20	0.17		0.23	0.19	0.19
v/c Ratio	0.88	1.23	0.31	0.16	2.50	0.25	0.57	0.74		0.33	0.28	0.89
Control Delay	70.2	140.4	8.9	58.8	701.7	3.4	49.3	59.7		43.5	40.1	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	70.2	140.4	8.9	58.8	701.7	3.4	49.3	59.7		43.5	40.1	31.1
LOS	E	F	A	E	F	A	D	E		D	D	C
Approach Delay		115.5			658.0			53.0			34.4	
Approach LOS		F			F			D			C	
Queue Length 50th (m)	50.2	~240.4	6.5	2.3	~386.4	0.0	40.4	45.1		24.6	18.4	37.0
Queue Length 95th (m)	#79.9	#343.9	27.9	7.8	#428.7	6.0	#92.8	66.2		45.3	27.4	70.1
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	478	1351	678	158	749	458	646	567		378	568	732
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	0.88	1.23	0.31	0.06	2.50	0.25	0.57	0.37		0.33	0.16	0.69

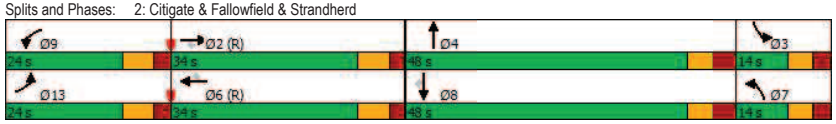
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.50

Intersection Signal Delay: 292.9	Intersection LOS: F
Intersection Capacity Utilization 115.8%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	594	66	52	706	22	23	3	44	48	5	18
Future Vol, veh/h	77	594	66	52	706	22	23	3	44	48	5	18
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	3	2	2	5	2	24	2	2	2	2	13
Mvmt Flow	77	594	66	52	706	22	23	3	44	48	5	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	728	0	0	661	0	0	1582	1581	597	1617	1625	706
Stage 1	-	-	-	-	-	-	749	749	-	810	810	-
Stage 2	-	-	-	-	-	-	833	832	-	807	815	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.34	6.52	6.22	7.12	6.52	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	3.716	4.018	3.318	3.518	4.018	3.417
Pot Cap-1 Maneuver	836	-	-	927	-	-	78	109	503	83	102	418
Stage 1	-	-	-	-	-	-	372	419	-	374	393	-
Stage 2	-	-	-	-	-	-	333	384	-	375	391	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	836	-	-	926	-	-	64	93	502	66	87	418
Mov Cap-2 Maneuver	-	-	-	-	-	-	64	93	-	66	87	-
Stage 1	-	-	-	-	-	-	337	380	-	340	371	-
Stage 2	-	-	-	-	-	-	297	362	-	308	355	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.6	50.5	105.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	146	836	-	-	926	-	-	66	229
HCM Lane V/C Ratio	0.479	0.092	-	-	0.056	-	-	0.727	0.1
HCM Control Delay (s)	50.5	9.7	-	-	9.1	-	-	145.2	22.5
HCM Lane LOS	F	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.2	0.3	-	-	0.2	-	-	3.3	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	538	30	148	756	83	21	185	131	287	597	46
Future Volume (vph)	25	538	30	148	756	83	21	185	131	287	597	46
Satd. Flow (prot)	1658	1745	1483	1642	1728	1483	1537	1728	1469	1658	1724	0
Flt Permitted	0.150			0.330			0.132			0.641		
Satd. Flow (perm)	262	1745	1483	570	1728	1451	214	1728	1469	1119	1724	0
Satd. Flow (RTOR)			49			74			131		5	
Lane Group Flow (vph)	25	538	30	148	756	83	21	185	131	287	643	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	41.3	41.3	41.3	41.3	41.3	41.3	30.2	30.2	30.2	30.2	30.2	
Actuated g/C Ratio	0.49	0.49	0.49	0.49	0.49	0.49	0.36	0.36	0.36	0.36	0.36	
v/c Ratio	0.20	0.64	0.04	0.54	0.90	0.11	0.28	0.30	0.22	0.72	1.05	
Control Delay	17.4	20.5	2.0	24.1	36.3	4.1	31.2	21.5	4.7	36.2	77.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.4	20.5	2.0	24.1	36.3	4.1	31.2	21.5	4.7	36.2	77.7	
LOS	B	C	A	C	D	A	C	C	A	D	E	
Approach Delay		19.4			31.8			15.6			64.9	
Approach LOS		B			C			B			E	
Queue Length 50th (m)	2.2	62.0	0.0	15.9	107.0	0.7	2.4	21.3	0.0	39.8	~114.4	
Queue Length 95th (m)	7.8	94.7	2.5	35.5	#179.7	7.6	9.2	37.1	10.8	#76.1	#177.4	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	127	847	745	276	839	743	76	613	606	397	615	
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	0.20	0.64	0.04	0.54	0.90	0.11	0.28	0.30	0.22	0.72	1.05	

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 38.1	Intersection LOS: D
Intersection Capacity Utilization 117.3%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview & Fallowfield

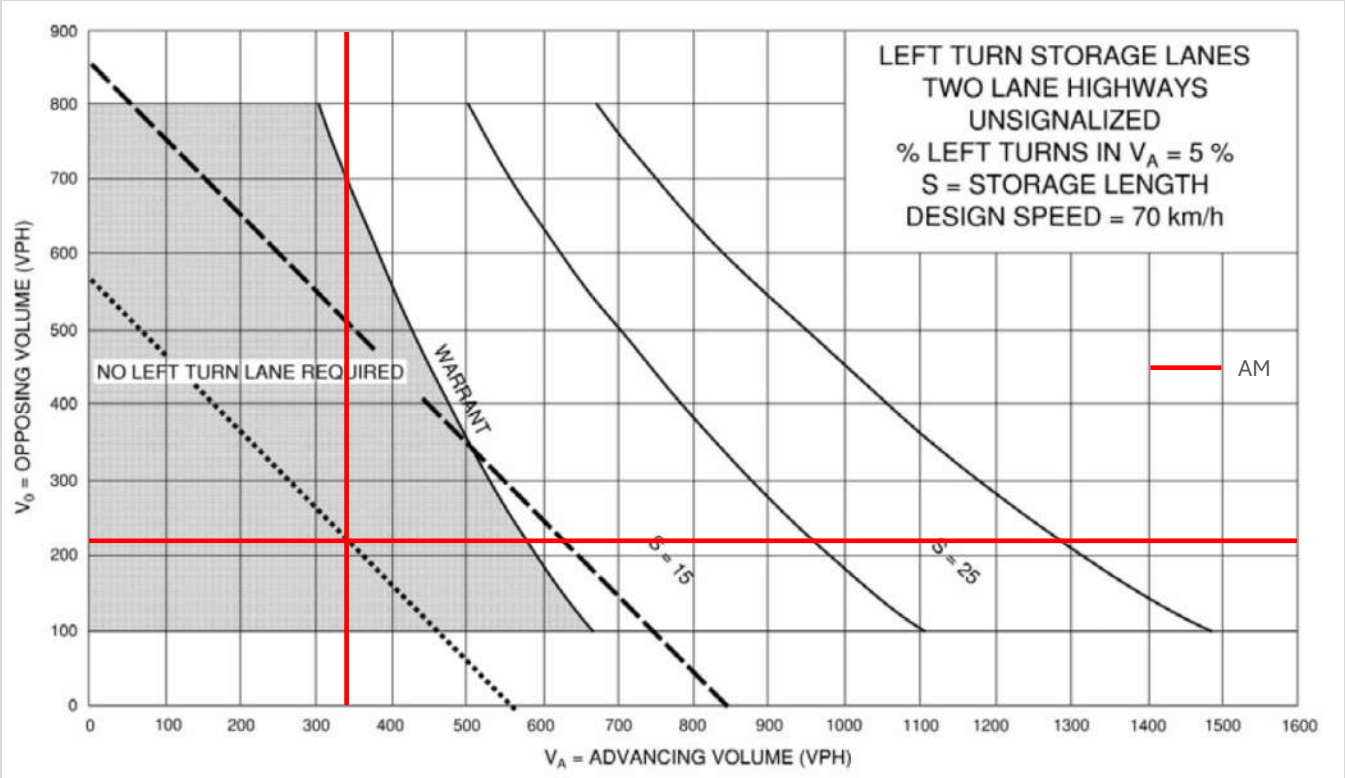
Appendix J

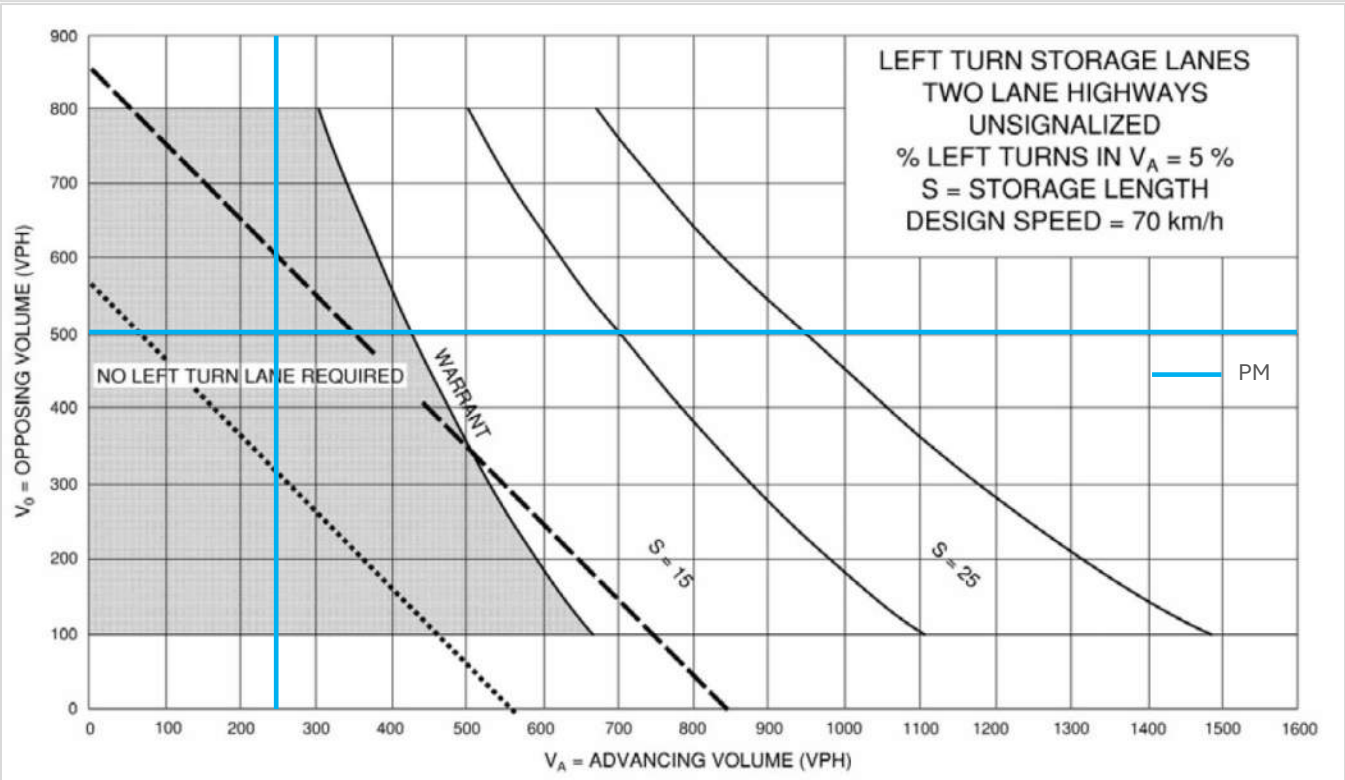
Turn-Lane Warrants

CGH TRANSPORTATION

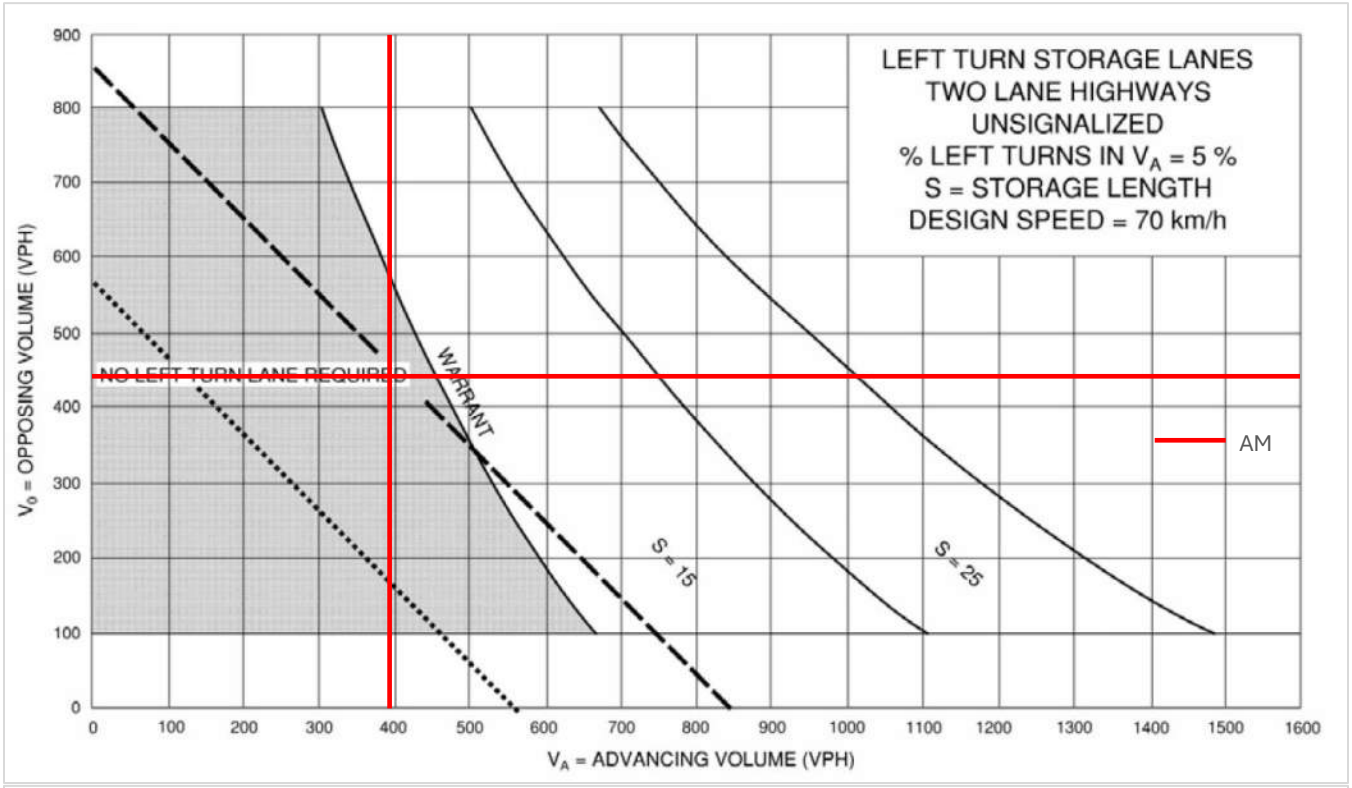
Cedarview Road at Onassa Circle

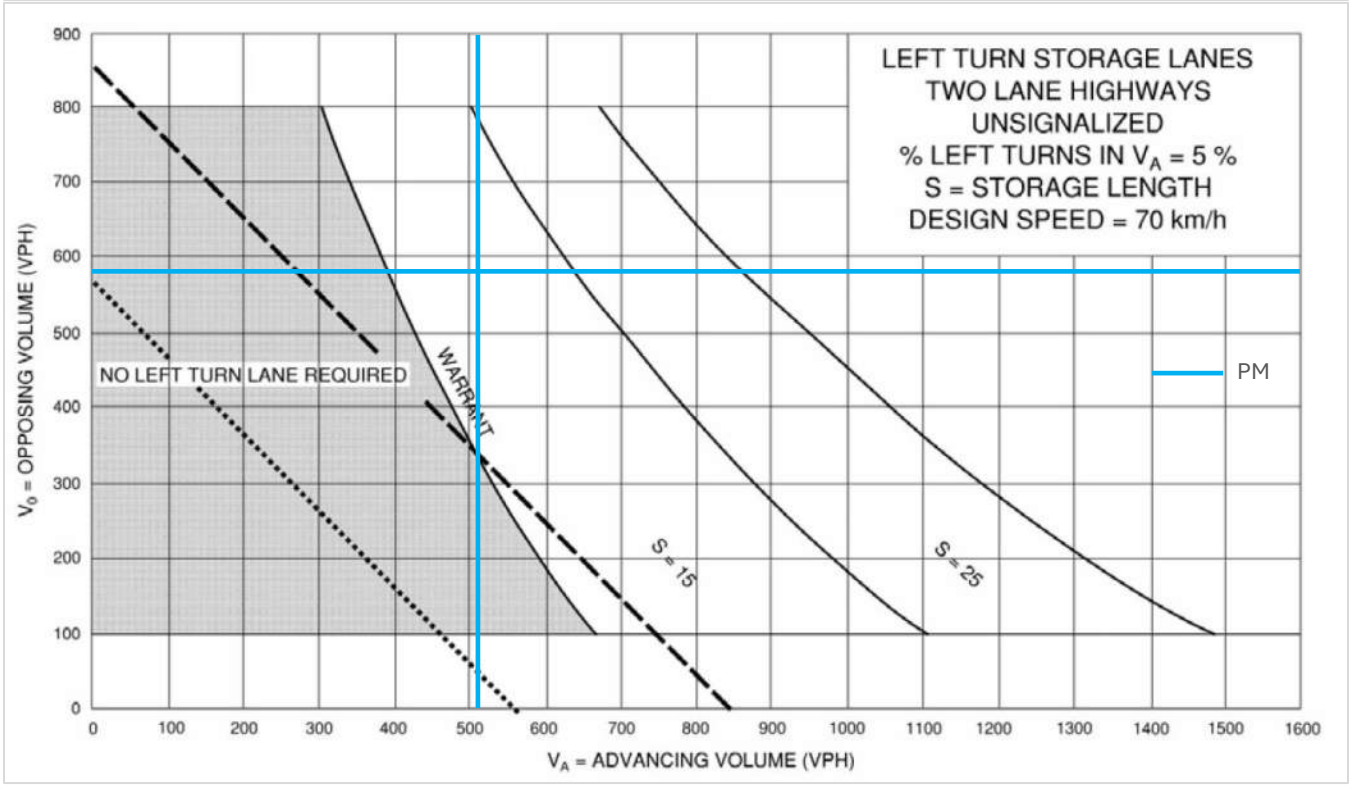
Existing – Northbound Left



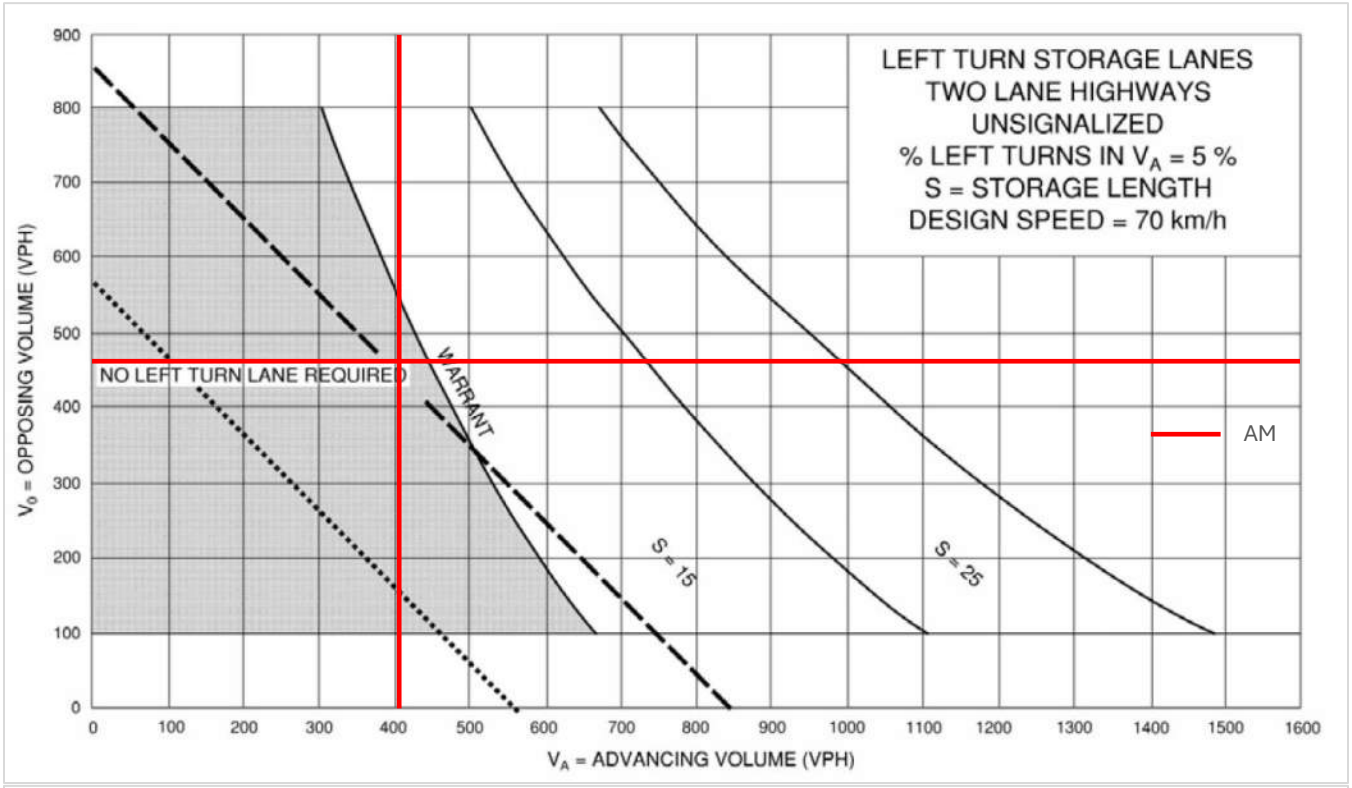


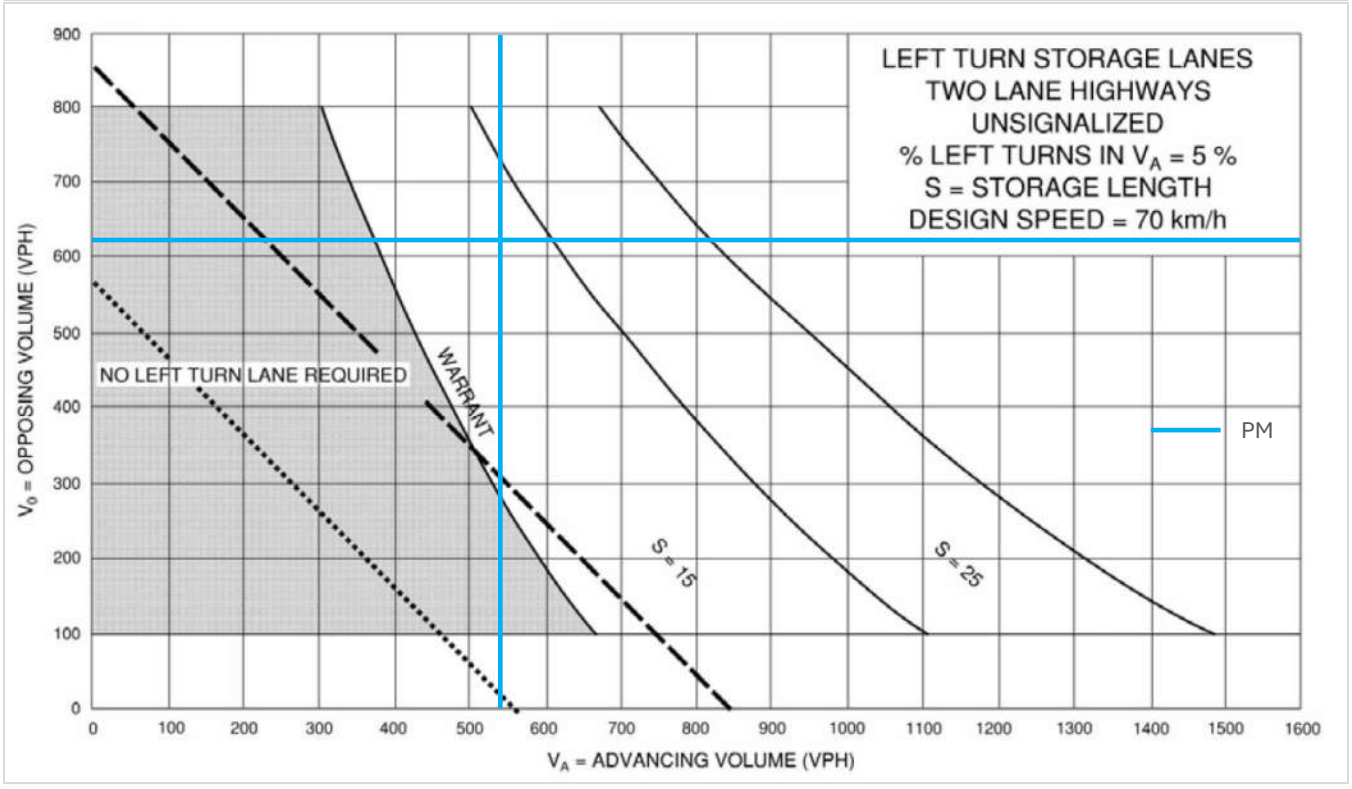
FB2038 – Northbound Left





FT2038 – Northbound Left





Appendix K

Synchro Intersection Worksheets –Future Background 2038 Mitigation Measures

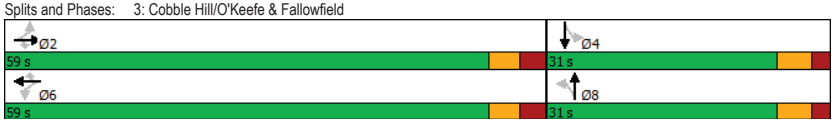
CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	597	11	15	593	11	34	2	52	32	4	18
Future Volume (vph)	92	597	11	15	593	11	34	2	52	32	4	18
Satd. Flow (prot)	1523	1712	1388	1580	1695	1327	0	1538	0	1271	1372	0
Flt Permitted	0.386			0.383				0.864		0.700		
Satd. Flow (perm)	619	1712	1388	637	1695	1327	0	1355	0	935	1372	0
Satd. Flow (RTOR)			35			35		52			18	
Lane Group Flow (vph)	92	597	11	15	593	11	0	88	0	32	22	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		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	38.2	38.2	38.2	38.2	38.2	38.2	30.9	30.9		30.9	30.9	
Total Split (s)	59.0	59.0	59.0	59.0	59.0	59.0	31.0	31.0		31.0	31.0	
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%		34.4%	34.4%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		5.9		5.9	5.9	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Act Effct Green (s)	28.6	28.6	28.6	28.6	28.6	28.6		15.1		15.1	15.1	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70	0.70		0.37		0.37	0.37	
v/c Ratio	0.21	0.50	0.01	0.03	0.50	0.01		0.17		0.09	0.04	
Control Delay	9.4	10.2	0.5	7.8	10.3	0.5		9.9		17.0	9.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	9.4	10.2	0.5	7.8	10.3	0.5		9.9		17.0	9.9	
LOS	A	B	A	A	B	A		A		B	A	
Approach Delay		10.0			10.1			9.9			14.1	
Approach LOS		A			B			A			B	
Queue Length 50th (m)	3.7	31.2	0.0	0.5	31.0	0.0		2.0		1.8	0.3	
Queue Length 95th (m)	16.5	94.4	0.5	3.7	94.5	0.5		13.5		9.6	5.2	
Internal Link Dist (m)		356.4			561.2			133.0			776.8	
Turn Bay Length (m)	147.5			60.0		30.5				42.5		
Base Capacity (vph)	578	1599	1298	595	1583	1241		959		650	960	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.16	0.37	0.01	0.03	0.37	0.01		0.09		0.05	0.02	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 40.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.50

Intersection Signal Delay: 10.2 — Intersection LOS: B
Intersection Capacity Utilization 69.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Cobble Hill/O'Keefe & Fallowfield

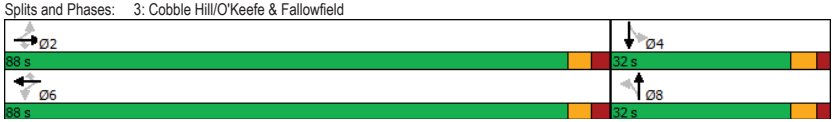


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	594	66	52	706	22	23	3	44	48	5	18
Future Volume (vph)	77	594	66	52	706	22	23	3	44	48	5	18
Satd. Flow (prot)	1523	1728	1483	1658	1695	1483	0	1444	0	1658	1421	0
Flt Permitted	0.315			0.395				0.881		0.711		
Satd. Flow (perm)	505	1728	1450	689	1695	1483	0	1293	0	1236	1421	0
Satd. Flow (RTOR)			66			26		44			18	
Lane Group Flow (vph)	77	594	66	52	706	22	0	70	0	48	23	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		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	38.2	38.2	38.2	60.5	60.5	60.5	30.9	30.9		30.9	30.9	
Total Split (s)	88.0	88.0	88.0	88.0	88.0	88.0	32.0	32.0		32.0	32.0	
Total Split (%)	73.3%	73.3%	73.3%	73.3%	73.3%	73.3%	26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		5.9		5.9	5.9	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Act Effct Green (s)	33.3	33.3	33.3	33.3	33.3	33.3		15.4		15.4	15.4	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.34		0.34	0.34	
v/c Ratio	0.21	0.47	0.06	0.10	0.57	0.02		0.15		0.11	0.05	
Control Delay	8.9	8.9	2.3	7.2	10.7	2.9		11.6		19.9	12.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	8.9	8.9	2.3	7.2	10.7	2.9		11.6		19.9	12.1	
LOS	A	A	A	A	B	A		B		B	B	
Approach Delay		8.3			10.2			11.6			17.4	
Approach LOS		A			B			B			B	
Queue Length 50th (m)	3.1	30.8	0.0	1.9	41.2	0.0		1.7		3.2	0.3	
Queue Length 95th (m)	14.3	90.2	4.8	9.1	122.4	2.6		12.9		14.5	6.1	
Internal Link Dist (m)		356.4			561.2			133.0			776.8	
Turn Bay Length (m)	147.5			60.0		30.5				42.5		
Base Capacity (vph)	497	1701	1429	678	1669	1461		887		834	965	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.15	0.35	0.05	0.08	0.42	0.02		0.08		0.06	0.02	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 45.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.57

Intersection Signal Delay: 9.7 — Intersection LOS: A
Intersection Capacity Utilization 74.6% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Cobble Hill/O'Keefe & Fallowfield



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	538	30	148	756	83	21	185	131	287	597	46
Future Volume (vph)	25	538	30	148	756	83	21	185	131	287	597	46
Satd. Flow (prot)	1658	1745	1483	1642	1728	1483	1537	1728	1469	1658	1724	0
Flt Permitted	0.129			0.314			0.123			0.641		
Satd. Flow (perm)	225	1745	1483	543	1728	1451	199	1728	1469	1119	1724	0
Satd. Flow (RTOR)			46			68			131		5	
Lane Group Flow (vph)	25	538	30	148	756	83	21	185	131	287	643	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	49.0	49.0	49.0	49.0	49.0	49.0	41.0	41.0	41.0	41.0	41.0	
Total Split (%)	54.4%	54.4%	54.4%	54.4%	54.4%	54.4%	45.6%	45.6%	45.6%	45.6%	45.6%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	42.3	42.3	42.3	42.3	42.3	42.3	34.2	34.2	34.2	34.2	34.2	
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47	0.47	0.38	0.38	0.38	0.38	0.38	
v/c Ratio	0.24	0.66	0.04	0.58	0.93	0.12	0.28	0.28	0.21	0.68	0.98	
Control Delay	21.5	23.0	2.5	28.6	42.8	5.1	31.3	20.9	4.4	32.8	59.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.5	23.0	2.5	28.6	42.8	5.1	31.3	20.9	4.4	32.8	59.1	
LOS	C	C	A	C	D	A	C	C	A	C	E	
Approach Delay		21.9			37.5			15.1			50.9	
Approach LOS		C			D			B			D	
Queue Length 50th (m)	2.5	68.6	0.0	17.9	118.4	1.3	2.5	21.8	0.0	40.6	107.0	
Queue Length 95th (m)	8.8	103.2	2.9	40.2	#193.3	8.6	9.5	37.3	10.6	69.9	#177.6	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	105	820	721	255	812	718	75	656	639	425	658	
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	0.24	0.66	0.04	0.58	0.93	0.12	0.28	0.28	0.21	0.68	0.98	

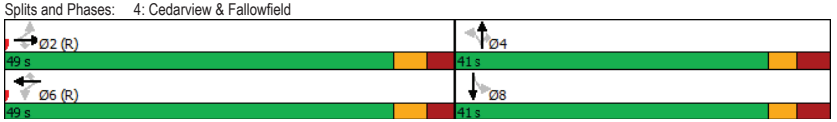
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 36.0	Intersection LOS: D
Intersection Capacity Utilization 117.3%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview & Fallowfield



Appendix L

Synchro Intersection Worksheets – 2038 Future Total Conditions

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	38	24	383	430	34
Future Vol, veh/h	59	38	24	383	430	34
Conflicting Peds, #/hr	0	0	26	0	0	26
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	2	11	2	2	17
Mvmt Flow	59	38	24	383	430	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	904	473	490	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.54	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	293	591	1028	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	273	579	1007	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1007	-	344	-	-
HCM Lane V/C Ratio	0.024	-	0.282	-	-
HCM Control Delay (s)	8.7	0	19.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	491	1201	249	38	1775	93	66	45	10	80	146	469
Future Volume (vph)	491	1201	249	38	1775	93	66	45	10	80	146	469
Satd. Flow (prot)	3066	3103	1401	1353	3221	1483	2929	1405	0	1658	1664	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3031	3103	1323	1343	3221	1347	2874	1405	0	1623	1664	1394
Satd. Flow (RTOR)			240			225		10				371
Lane Group Flow (vph)	491	1201	249	38	1775	93	66	55	0	80	146	469
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	2		9	6		7	4		3	8	
Permitted Phases			2			6						8
Detector Phase	13	2	2	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	28.0	46.0	46.0	13.0	31.0	31.0	13.0	48.0		13.0	48.0	48.0
Total Split (%)	23.3%	38.3%	38.3%	10.8%	25.8%	25.8%	10.8%	40.0%		10.8%	40.0%	40.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag							Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	21.3	55.4	55.4	6.2	37.7	37.7	6.7	28.6		8.3	29.3	29.3
Actuated g/C Ratio	0.18	0.46	0.46	0.05	0.31	0.31	0.06	0.24		0.07	0.24	0.24
v/c Ratio	0.91	0.84	0.34	0.55	1.75	0.16	0.41	0.16		0.70	0.36	0.76
Control Delay	69.9	39.9	5.6	84.1	370.2	0.6	62.5	26.3		86.5	37.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	69.9	39.9	5.6	84.1	370.2	0.6	62.5	26.3		86.5	37.0	16.1
LOS	E	D	A	F	F	A	E	C		F	D	B
Approach Delay		43.1			346.4			46.1			28.6	
Approach LOS		D			F			D			C	
Queue Length 50th (m)	59.2	~179.3	1.5	8.9	~374.3	0.0	7.9	7.2		19.1	24.7	16.3
Queue Length 95th (m)	#89.6	#220.8	20.1	#25.4	#416.8	0.0	15.2	16.6		#49.0	41.2	53.2
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	546	1432	739	70	1012	578	166	486		114	568	720
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	0.90	0.84	0.34	0.54	1.75	0.16	0.40	0.11		0.70	0.26	0.65

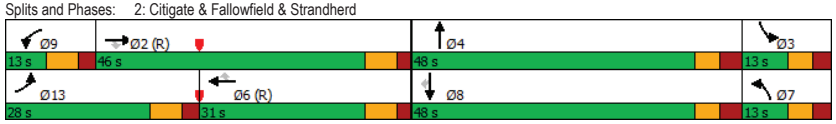
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.75

Intersection Signal Delay: 165.0	Intersection LOS: F
Intersection Capacity Utilization 116.4%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	45

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	124	600	11	15	602	50	34	2	52	111	4	84
Future Vol, veh/h	124	600	11	15	602	50	34	2	52	111	4	84
Conflicting Peds, #/hr	26	0	26	26	0	26	26	0	14	14	0	26
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	4	9	7	5	14	2	50	2	33	67	2
Mvmt Flow	124	600	11	15	602	50	34	2	52	111	4	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	678	0	0	637	0	0	1601	1582	640	1553	1543	654
Stage 1	-	-	-	-	-	-	874	874	-	658	658	-
Stage 2	-	-	-	-	-	-	727	708	-	895	885	-
Critical Hdwy	4.21	-	-	4.17	-	-	7.12	7	6.22	7.43	7.17	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	6	-	6.43	6.17	-
Follow-up Hdwy	2.299	-	-	2.263	-	-	3.518	4.45	3.318	3.797	4.603	3.318
Pot Cap-1 Maneuver	873	-	-	923	-	-	85	85	475	~ 78	83	467
Stage 1	-	-	-	-	-	-	344	308	-	406	374	-
Stage 2	-	-	-	-	-	-	415	373	-	296	287	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	855	-	-	904	-	-	56	69	460	~ 58	67	448
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	69	-	~ 58	67	-
Stage 1	-	-	-	-	-	-	288	258	-	340	360	-
Stage 2	-	-	-	-	-	-	321	359	-	220	241	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.2	96.3	$ 332.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	117	855	-	-	904	-	-	58	356
HCM Lane V/C Ratio	0.752	0.145	-	-	0.017	-	-	1.914	0.247
HCM Control Delay (s)	96.3	9.9	-	-	9	-	-	$ 582.1	18.4
HCM Lane LOS	F	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	4.2	0.5	-	-	0.1	-	-	10.6	1

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

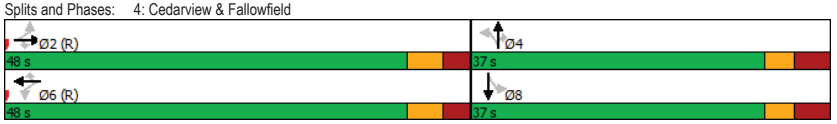
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	863	11	32	591	191	50	358	278	224	128	23
Future Volume (vph)	52	863	11	32	591	191	50	358	278	224	128	23
Satd. Flow (prot)	1658	1712	1261	1537	1728	1483	1658	1745	1469	1642	1647	0
Flt Permitted	0.300			0.093			0.661			0.407		
Satd. Flow (perm)	517	1712	1209	150	1728	1396	1139	1745	1402	694	1647	0
Satd. Flow (RTOR)			49			191			95		12	
Lane Group Flow (vph)	52	863	11	32	591	191	50	358	278	224	151	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	43.1	43.1	43.1	43.1	43.1	43.1	28.4	28.4	28.4	28.4	28.4	
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.33	0.33	0.33	0.33	0.33	
v/c Ratio	0.20	1.00	0.02	0.43	0.67	0.24	0.13	0.62	0.52	0.97	0.27	
Control Delay	15.1	53.2	0.1	36.3	21.3	2.8	19.7	28.5	18.1	81.9	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.1	53.2	0.1	36.3	21.3	2.8	19.7	28.5	18.1	81.9	19.7	
LOS	B	D	A	D	C	A	B	C	B	F	B	
Approach Delay		50.5			17.5			23.6			56.9	
Approach LOS		D			B			C			E	
Queue Length 50th (m)	4.6	~153.0	0.0	3.2	71.6	0.0	5.4	46.5	22.0	34.1	15.6	
Queue Length 95th (m)	11.9	#220.1	0.0	#16.3	109.6	9.9	12.9	73.3	44.2	#76.2	29.4	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	262	867	637	75	876	802	404	619	559	246	592	
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	0.20	1.00	0.02	0.43	0.67	0.24	0.12	0.58	0.50	0.91	0.26	

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00
Intersection Signal Delay: 35.2 — Intersection LOS: D
Intersection Capacity Utilization 97.8% — ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedarview & Fallowfield



Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	39	37	504	572	54
Future Vol, veh/h	47	39	37	504	572	54
Conflicting Peds, #/hr	0	0	32	0	0	32
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	8	7	2	2	2	2
Mvmt Flow	47	39	37	504	572	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1209	631	658	0	-	0
Stage 1	631	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Critical Hdwy	6.48	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	196	472	930	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	176	460	907	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.6	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	907	-	244	-	-
HCM Lane V/C Ratio	0.041	-	0.352	-	-
HCM Control Delay (s)	9.1	0	27.6	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	451	1655	208	10	1873	137	371	189	43	140	105	529
Future Volume (vph)	451	1655	208	10	1873	137	371	189	43	140	105	529
Satd. Flow (prot)	3216	3316	1469	1127	3316	1483	3154	1632	0	1658	1664	1455
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3176	3316	1372	1122	3316	1315	3078	1632	0	1624	1664	1383
Satd. Flow (RTOR)			160			160		10				358
Lane Group Flow (vph)	451	1655	208	10	1873	137	371	232	0	140	105	529
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	13	2		9	6		7	4		3	8	
Permitted Phases			2			6						8
Detector Phase	13	2	2	9	6	6	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	48.0
Total Split (s)	24.0	34.0	34.0	24.0	34.0	34.0	14.0	48.0		14.0	48.0	48.0
Total Split (%)	20.0%	28.3%	28.3%	20.0%	28.3%	28.3%	11.7%	40.0%		11.7%	40.0%	40.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.1	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	7.0
Lead/Lag							Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	17.0	48.0	48.0	6.8	27.1	27.1	18.3	31.1		17.3	30.1	30.1
Actuated g/C Ratio	0.14	0.40	0.40	0.06	0.23	0.23	0.15	0.26		0.14	0.25	0.25
v/c Ratio	0.99	1.25	0.32	0.16	2.50	0.33	0.77	0.54		0.59	0.25	0.86
Control Delay	92.2	150.4	9.1	58.8	702.6	5.9	62.5	39.3		62.6	33.9	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	92.2	150.4	9.1	58.8	702.6	5.9	62.5	39.3		62.6	33.9	26.6
LOS	F	F	A	E	F	A	E	D		E	C	C
Approach Delay		126.4			652.1			53.6			34.1	
Approach LOS		F			F			D			C	
Queue Length 50th (m)	55.4	~244.7	6.6	2.3	~386.4	0.0	~68.8	39.7		~43.2	17.3	35.4
Queue Length 95th (m)	#88.8	#343.9	28.2	7.8	#428.7	11.1	#99.1	62.2		#83.4	30.6	81.3
Internal Link Dist (m)		441.7			233.3			132.8			356.4	
Turn Bay Length (m)	127.0		96.5	95.0		90.0	90.0			140.0		125.0
Base Capacity (vph)	454	1326	645	158	748	420	480	564		239	568	708
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	0.99	1.25	0.32	0.06	2.50	0.33	0.77	0.41		0.59	0.18	0.75

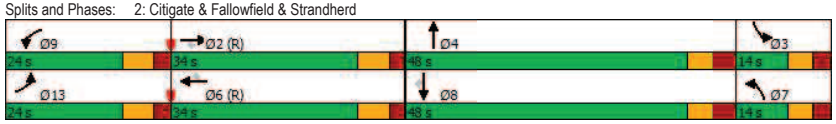
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.50

Intersection Signal Delay: 292.1	Intersection LOS: F
Intersection Capacity Utilization 127.6%	ICU Level of Service H
Analysis Period (min) 15	

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

Splits and Phases: 2: Citigate & Fallowfield & Strandherd



Intersection	
Int Delay, s/veh	65.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	601	66	52	709	103	23	3	44	111	5	70
Future Vol, veh/h	145	601	66	52	709	103	23	3	44	111	5	70
Conflicting Peds, #/hr	32	0	33	33	0	32	32	0	18	18	0	32
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	147.5	-	0	-	-	30.5	-	-	-	42.5	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	3	2	2	5	2	24	2	2	2	2	13
Mvmt Flow	145	601	66	52	709	103	23	3	44	111	5	70

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	844	0	0	700	0	0	1858	1872	652	1811	1835	773
Stage 1	-	-	-	-	-	-	924	924	-	845	845	-
Stage 2	-	-	-	-	-	-	934	948	-	966	990	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.34	6.52	6.22	7.12	6.52	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.34	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	3.716	4.018	3.318	3.518	4.018	3.417
Pot Cap-1 Maneuver	755	-	-	897	-	-	49	72	468	~ 61	76	382
Stage 1	-	-	-	-	-	-	295	348	-	357	379	-
Stage 2	-	-	-	-	-	-	291	339	-	306	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	736	-	-	874	-	-	28	52	450	~ 41	55	363
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	52	-	~ 41	55	-
Stage 1	-	-	-	-	-	-	231	272	-	280	348	-
Stage 2	-	-	-	-	-	-	212	311	-	216	253	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.6	196.8	$ 595.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	72	736	-	-	874	-	-	41	264
HCM Lane V/C Ratio	0.972	0.197	-	-	0.059	-	-	2.707	0.284
HCM Control Delay (s)	196.8	11.1	-	-	9.4	-	-	$ 981.5	24
HCM Lane LOS	F	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	5	0.7	-	-	0.2	-	-	12.2	1.1

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	595	32	148	830	104	23	183	131	301	595	54
Future Volume (vph)	36	595	32	148	830	104	23	183	131	301	595	54
Satd. Flow (prot)	1658	1745	1483	1642	1728	1483	1537	1728	1469	1658	1720	0
Flt Permitted	0.097			0.281			0.132			0.642		
Satd. Flow (perm)	169	1745	1418	482	1728	1381	214	1728	1393	1092	1720	0
Satd. Flow (RTOR)			49			85			131		6	
Lane Group Flow (vph)	36	595	32	148	830	104	23	183	131	301	649	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (%)	56.5%	56.5%	56.5%	56.5%	56.5%	56.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	41.3	41.3	41.3	41.3	41.3	41.3	30.2	30.2	30.2	30.2	30.2	
Actuated g/C Ratio	0.49	0.49	0.49	0.49	0.49	0.49	0.36	0.36	0.36	0.36	0.36	
v/c Ratio	0.44	0.70	0.04	0.63	0.99	0.15	0.30	0.30	0.23	0.78	1.06	
Control Delay	35.1	22.6	2.2	31.3	52.2	4.5	32.7	21.5	4.8	40.6	81.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.1	22.6	2.2	31.3	52.2	4.5	32.7	21.5	4.8	40.6	81.1	
LOS	D	C	A	C	D	A	C	C	A	D	F	
Approach Delay		22.3			44.8			15.7			68.3	
Approach LOS		C			D			B			E	
Queue Length 50th (m)	3.6	71.9	0.0	17.0	127.1	1.5	2.7	21.1	0.0	42.9	~116.5	
Queue Length 95th (m)	#16.8	109.8	2.9	#45.5	#206.8	9.2	10.1	36.7	10.9	#83.5	#179.9	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	82	847	714	234	839	714	76	613	579	387	614	
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	0.44	0.70	0.04	0.63	0.99	0.15	0.30	0.30	0.23	0.78	1.06	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06
Intersection Signal Delay: 44.0 Intersection LOS: D
Intersection Capacity Utilization 121.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedarview & Fallowfield

Appendix M

Synchro Intersection Worksheets –Future Total 2038 Mitigation Measures

CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	611	11	15	686	50	34	2	52	111	4	84
Future Volume (vph)	124	611	11	15	686	50	34	2	52	111	4	84
Satd. Flow (prot)	1523	1712	1388	1580	1695	1327	0	1517	0	1271	1362	0
Flt Permitted	0.292			0.347				0.847		0.700		
Satd. Flow (perm)	463	1712	1311	570	1695	1253	0	1289	0	916	1362	0
Satd. Flow (RTOR)			35			35		52			84	
Lane Group Flow (vph)	124	611	11	15	686	50	0	88	0	111	88	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		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	38.2	38.2	38.2	38.2	38.2	38.2	30.9	30.9		30.9	30.9	
Total Split (s)	59.0	59.0	59.0	59.0	59.0	59.0	31.0	31.0		31.0	31.0	
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%		34.4%	34.4%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		5.9		5.9	5.9	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Act Effct Green (s)	34.5	34.5	34.5	34.5	34.5	34.5		17.3		17.3	17.3	
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62		0.31		0.31	0.31	
v/c Ratio	0.43	0.58	0.01	0.04	0.65	0.06		0.20		0.39	0.18	
Control Delay	16.6	13.2	0.4	8.5	15.1	4.4		12.3		26.3	7.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	16.6	13.2	0.4	8.5	15.1	4.4		12.3		26.3	7.4	
LOS	B	B	A	A	B	A		B		C	A	
Approach Delay		13.6			14.2			12.3			17.9	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	6.3	35.3	0.0	0.6	43.0	0.6		2.5		8.6	0.3	
Queue Length 95th (m)	26.6	94.5	0.4	3.6	115.7	5.4		15.5		31.3	10.9	
Internal Link Dist (m)		356.4			561.2			133.0			776.8	
Turn Bay Length (m)	147.5			60.0		30.5				42.5		
Base Capacity (vph)	396	1465	1127	488	1451	1077		724		498	779	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.31	0.42	0.01	0.03	0.47	0.05		0.12		0.22	0.11	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 55.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.3 — Intersection LOS: B
Intersection Capacity Utilization 79.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Cobble Hill/O'Keefe & Fallowfield

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	635	66	52	737	103	23	3	44	111	5	70
Future Volume (vph)	145	635	66	52	737	103	23	3	44	111	5	70
Satd. Flow (prot)	1523	1728	1483	1658	1695	1483	0	1426	0	1658	1280	0
Flt Permitted	0.261			0.334				0.879		0.711		
Satd. Flow (perm)	414	1728	1385	574	1695	1388	0	1256	0	1212	1280	0
Satd. Flow (RTOR)			66			68		44			70	
Lane Group Flow (vph)	145	635	66	52	737	103	0	70	0	111	75	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		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	38.2	38.2	38.2	38.2	38.2	38.2	30.9	30.9		30.9	30.9	
Total Split (s)	59.1	59.1	59.1	59.1	59.1	59.1	30.9	30.9		30.9	30.9	
Total Split (%)	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	34.3%	34.3%		34.3%	34.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		5.9		5.9	5.9	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Act Effct Green (s)	36.0	36.0	36.0	36.0	36.0	36.0		18.5		18.5	18.5	
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64		0.33		0.33	0.33	
v/c Ratio	0.55	0.58	0.07	0.14	0.68	0.11		0.16		0.28	0.16	
Control Delay	21.8	12.7	2.6	9.3	15.5	4.0		12.5		24.3	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	21.8	12.7	2.6	9.3	15.5	4.0		12.5		24.3	8.2	
LOS	C	B	A	A	B	A		B		C	A	
Approach Delay		13.5			13.8			12.5			17.8	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	7.9	35.3	0.0	2.0	46.0	1.3		1.9		8.6	0.4	
Queue Length 95th (m)	38.7	99.6	4.9	9.3	131.4	8.6		13.1		29.6	10.5	
Internal Link Dist (m)		356.4			561.2			133.0			776.8	
Turn Bay Length (m)	147.5			60.0		30.5				42.5		
Base Capacity (vph)	350	1460	1180	485	1432	1183		687		643	712	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.41	0.43	0.06	0.11	0.51	0.09		0.10		0.17	0.11	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 56.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68

Intersection Signal Delay: 14.0 — Intersection LOS: B
Intersection Capacity Utilization 82.3% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Cobble Hill/O'Keefe & Fallowfield

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	629	32	148	858	104	23	183	131	301	595	54
Future Volume (vph)	36	629	32	148	858	104	23	183	131	301	595	54
Satd. Flow (prot)	1658	1745	1483	1642	1728	1483	1537	1728	1469	1658	1719	0
Flt Permitted	0.076			0.251			0.097			0.627		
Satd. Flow (perm)	133	1745	1408	430	1728	1359	157	1728	1379	1059	1719	0
Satd. Flow (RTOR)			38			66			131		5	
Lane Group Flow (vph)	36	629	32	148	858	104	23	183	131	301	649	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0	
Total Split (s)	62.0	62.0	62.0	62.0	62.0	62.0	48.0	48.0	48.0	48.0	48.0	
Total Split (%)	56.4%	56.4%	56.4%	56.4%	56.4%	56.4%	43.6%	43.6%	43.6%	43.6%	43.6%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.8	3.8	3.8	3.8	3.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	55.3	55.3	55.3	55.3	55.3	55.3	41.2	41.2	41.2	41.2	41.2	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50	0.50	0.37	0.37	0.37	0.37	0.37	
v/c Ratio	0.55	0.72	0.04	0.69	0.99	0.15	0.40	0.28	0.22	0.76	1.00	
Control Delay	54.3	27.0	3.9	40.1	56.0	6.8	49.0	25.6	4.9	44.4	71.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.3	27.0	3.9	40.1	56.0	6.8	49.0	25.6	4.9	44.4	71.6	
LOS	D	C	A	D	E	A	D	C	A	D	E	
Approach Delay		27.4			49.2			19.2			62.9	
Approach LOS		C			D			B			E	
Queue Length 50th (m)	5.1	101.1	0.0	23.2	175.4	4.0	3.6	27.2	0.0	55.8	~137.9	
Queue Length 95th (m)	#22.2	144.8	4.1	#57.3	#262.7	12.8	#14.2	44.2	11.9	#98.4	#213.9	
Internal Link Dist (m)		561.2			452.7			444.3			482.1	
Turn Bay Length (m)	60.0		55.0	60.0		55.0	180.0		80.0	45.5		
Base Capacity (vph)	66	877	726	216	868	716	58	647	598	396	646	
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	0.55	0.72	0.04	0.69	0.99	0.15	0.40	0.28	0.22	0.76	1.00	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00
Intersection Signal Delay: 45.2 — Intersection LOS: D
Intersection Capacity Utilization 123.5% — ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Cedarview & Fallowfield

Appendix N

TRANS Screenline 9

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Network Coding - Lane and Capacity

Barrhaven Area

2011 Model

N/A

User Initials: TIMW
Plot Prepared: August 24, 2021
EMME Scenario: 21713

TRANS

Legend

Lane Capacity

- 200 vphpl
- 400 vphpl
- 600 vphpl
- 800 vphpl
- 1000 vphpl
- 1200 vphpl
- 1400 vphpl
- 1600 vphpl
- 1800 vphpl
- all other

N

Number of Lanes Per Direction

1 2 3 4 5

Distance (m)

500 1000 1500 2000

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

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

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

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Network Coding - Lane and Capacity

Barrhaven Area

2031 Model

N/A

User Initials: TIMW
Plot Prepared: August 24, 2021
EMME Scenario: 21711

TRANS

Legend

Lane Capacity

- 200 vphpl
- 400 vphpl
- 600 vphpl
- 800 vphpl
- 1000 vphpl
- 1200 vphpl
- 1400 vphpl
- 1600 vphpl
- 1800 vphpl
- all other

N

Number of Lanes Per Direction

1 2 3 4 5

Distance (m)

500 1000 1500 2000

Screenline	Station ID	Station Location	direction	flow_motorcycles	flow_cars	flow_light_goods	flow_buses	flow_single_trucks	flow_articulated_trucks	flow_bicycles
49	1101	Moodie Imm South of Jock River Bridge	Southbound	0	60	26	0	64	7	0
49	1101	Moodie Imm South of Jock River Bridge	Northbound	0	143	53	2	65	8	0
49	1310	Longfields Imm. South of Jock River Bridge	Southbound	0	359	59	27	5	1	0
49	1310	Longfields Imm. South of Jock River Bridge	Northbound	0	1060	82	21	11	2	2
49	50017	Prince of Wales Imm South of Jock River Bridge	Southbound	0	428	64	8	16	5	0
49	50017	Prince of Wales Imm South of Jock River Bridge	Northbound	0	1365	162	2	9	8	0
49	50052	Hwy 416 Imm. South of Jock River Bridge	Southbound	0	530	129	2	28	38	0
49	50052	Hwy 416 Imm. South of Jock River Bridge	Northbound	0	1425	321	3	41	57	0
49	50826	Greenbank Imm South of Jock River	Southbound	0	203	26	8	1	0	0
49	50826	Greenbank Imm South of Jock River	Northbound	0	607	49	19	1	1	0
49	50827	Borrisokane Imm South of Jock River Bridge	Southbound	0	154	31	1	42	3	0
49	50827	Borrisokane Imm South of Jock River Bridge	Northbound	0	481	46	1	41	0	0
9	1102	Moodie Imm. North of Fallowfield	Southbound	0	66	83	2	75	4	0
9	1102	Moodie Imm. North of Fallowfield	Northbound	1	334	126	4	38	2	0
9	1312	Greenbank Imm North of Fallowfield	Southbound	0	405	39	6	12	1	0
9	1312	Greenbank Imm North of Fallowfield	Northbound	3	1142	76	3	9	1	0
9	1502	Woodroffe Imm North of Fallowfield Transit Station	Southbound	0	452	53	6	7	1	2
9	1502	Woodroffe Imm North of Fallowfield Transit Station	Northbound	1	2042	163	8	16	1	2
9	1702	Merivale Imm North of Fallowfield	Southbound	0	167	37	4	11	2	0
9	1702	Merivale Imm North of Fallowfield	Northbound	1	1229	113	9	15	5	3
9	2301	Cedarview Imm. North of Lytle	Southbound	0	205	29	1	8	1	0
9	2301	Cedarview Imm. North of Lytle	Northbound	1	455	34	2	3	0	2
9	50030	Prince of Wales North of Fallowfield	Southbound	1	220	34	6	10	6	0
9	50030	Prince of Wales North of Fallowfield	Northbound	2	830	72	2	6	4	6
9	50051	Hwy 416 Imm. North of Strandherd	Southbound	0	793	129	5	74	47	0
9	50051	Hwy 416 Imm. North of Strandherd	Northbound	1	2382	98	8	73	52	0
9	5901	Richmond Imm. South of Hopeside	Southbound	0	240	37	2	8	0	0
9	5901	Richmond Imm. South of Hopeside	Northbound	2	192	30	5	12	4	0

Appendix O

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2023-105**
Scenario	**Existing/Future**	**Date**	**5/30/2024**
Comments			

INTERSECTIONS		Fallowfield Road at Cedarview Road				Fallowfield Road/Citigate Drive at Strandherd Drive			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	6	6	10+	7	10+	9
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive	Protected	Protected	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	Conventional with Receiving Lane	No Channel	No Channel	No Channel
	Corner Radius	10-15m	10-15m	10-15m	10-15m	>25m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**20**	**20**	**20**	**20**	**-39**	**12**	**-37**	**-21**
	Ped. Exposure to Traffic LoS	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
	Cycle Length	85	85	85	85	120	120	120	120
	Effective Walk Time	16	16	19	19	7	7	8	8
	Average Pedestrian Delay	**28**	**28**	**26**	**26**	**53**	**53**	**52**	**52**
	Pedestrian Delay LoS	**C**	**C**	**C**	**C**	**E**	**E**	**E**	**E**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
		F				**F**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration		> 50 m	> 50 m	> 50 m	> 50 m	> 50 m	Not Applicable	Not Applicable
	Right Turning Speed		≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	>25 km/h	≤ 25 km/h	Not Applicable	Not Applicable
	Cyclist relative to RT motorists	**#N/A**	**F**	**F**	**F**	**F**	**F**	**Not Applicable**	**Not Applicable**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**
	Left Turn Approach	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	Other LT config	2-stage, LT box
	Operating Speed	≥ 60 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**F**	**E**	**F**	**F**	**F**	**F**	**F**	**A**
	Level of Service	**#N/A**	**F**	**F**	**F**	**F**	**F**	**F**	**A**
		#N/A				**F**			
Transit	Average Signal Delay								
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		-				**-**			
Truck	Effective Corner Radius			10 - 15 m		> 15 m		10 - 15 m	
	Number of Receiving Lanes on Departure from Intersection			1		≥ 2		≥ 2	
	Level of Service	**-**	**-**	**E**	**-**	**A**	**-**	**B**	**-**
		E				**B**			
Auto	Volume to Capacity Ratio								
	Level of Service	**-**				**-**			