4497 O'Keefe Court

TIA Strategy Report

Final

September 2025

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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Dated at Ottawa (City) this 26 day of September, 2025.

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

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4497 O'Keefe Court

TIA Strategy Report

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September 26, 2025

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STRATEGY REPORT

Parsons has been retained by O'Keefe Court Properties Ltd. to prepare a Transportation Impact Assessment (TIA) in support of a Site Plan Application (SPA) for a warehousing development located at 4497 O'Keefe Court in the Nepean South District. This document follows the TIA process, as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017). The following report represents Step 3 –Strategy Report.

1.0 SCREENING FORM

The screening form confirmed the need for a TIA Report based on the Trip Generation trigger, given that the proposed development will consist of three warehousing buildings with a total GFA of approximately 23,850m^2. The Location Trigger and the Safety Trigger were not met. The Screening Form has been provided in **Appendix A**.

2.0 SCOPING REPORT

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

The proposed development is located at the municipal address of 4497 O'Keefe Court, bounded by Highway 416 to the west, Lytle Park to the east, a MUP to the north, and O'Keefe Court to south. The site is currently zoned as Rural General Industrial Zone RG(401r)-h, where the local context is illustrated in **Figure 1**.

The development will consist of three warehousing buildings totaling approximately 23,850 m^2 of GFA and will provide two full-movement accesses on to O'Keefe Court. There will be an at-grade parking lot located on the west side of the development that will provide a total of 119 parking spaces and pedestrian facilities connecting all buildings and parking. The east side of the warehouses, or back side of buildings will have truck loading zones. **Figure 2** illustrates the proposed Concept Plan, which is assumed to be constructed in one phase with an estimated buildout year of 2026.

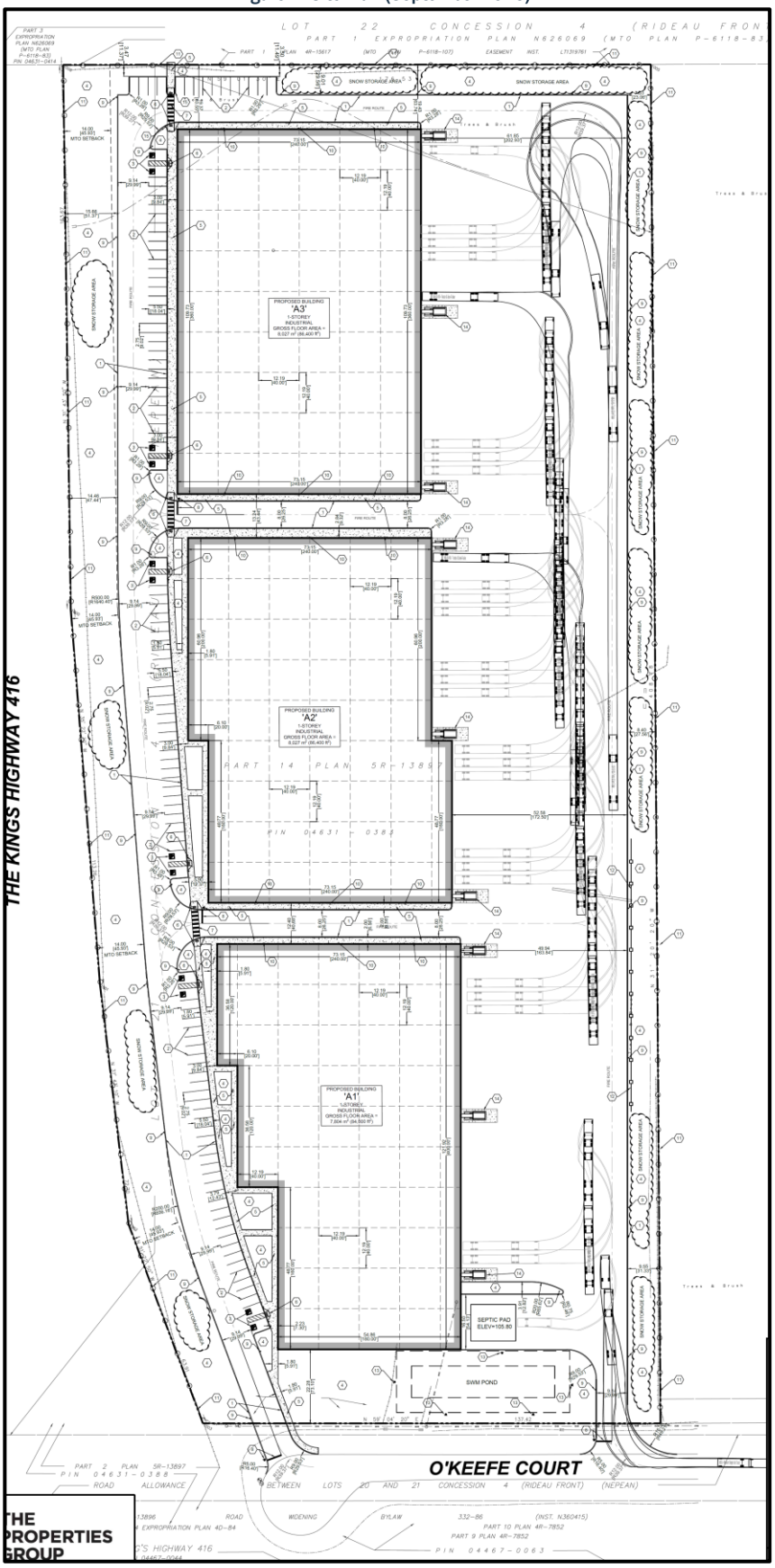
Figure 1: Local Context

As per the Public Transportation Improvement Act – Ministry of Transportation Ontario, any development located within 395m from an intersection point and 45m from MTO property line is subject to a traffic impact study.

In this case, MTO agreed that a detailed analysis of the Highway 416/Fallowfield interchange ramp terminal intersections was not required and may be assessed from a broad perspective based on the following reasons:

- The development is located approximately 1.5km driving distance away from the Highway 416/Fallowfield interchange, and the subject site does not propose direct access to the MTO ramps.
- The development is forecasted to generate less than 100 two-way vehicle trips during the peak hours by full buildout year (approximately 2 new vehicle per three minutes).
- The trip distribution of the forecasted trips suggests that the majority of the routes taken to anticipated destinations will not use the 416/Fallowfield interchange (to be confirmed in Step 3) and will therefore have an insignificant effect to the future performance of the ramps.

Figure 2: Site Plan (September 2025)



2.1.2. Existing Conditions

Area Road Network

Description of roads included within the study area has been provided below.

Highway 416 is a north-south 400-series provincial highway that extends from Highway 417 in the north to Highway 401 in the south. The roadway consists of a two-way four-lane cross section with a posted speed limit of 100km/h. The highway is part of the truck route network.

Fallowfield Road is an east-west municipal arterial roadway that extends from west of the Highway 416 to McCaffrey Trail. Within the study area, the road typically consists of a two-way two-lane cross-section with a posted speed limit of 60km/h. Fallowfield Rd is a full load truck route.

Strandherd Drive is an east-west municipal arterial roadway that extends from Fallowfield Rd in the west to River Rd in the east, where it continues as Earl Armstrong Rd. The road generally consists of a two-way four-lane cross-section with auxiliary turn lanes and a 70km/h posted speed limit. Strandherd Dr is a full load truck route.

Cedarview Road is a north-south municipal arterial roadway that extends from Baseline Rd in the north to south of Kennevale Dr. The roadway consists of a two-way two-lane cross-section with a posted speed limit of 40km/h in the vicinity of Fallowfield Rd. Cedarview Rd north of Fallowfield Rd is a half load truck route.

O'Keefe Court is an east-west municipal local roadway which extends from the proposed site accesses in the west to Fallowfield Rd in the east. Within the study area, the roadway consists of a two-way two-lane cross-section with an assumed posted speed limit of 50km/h.

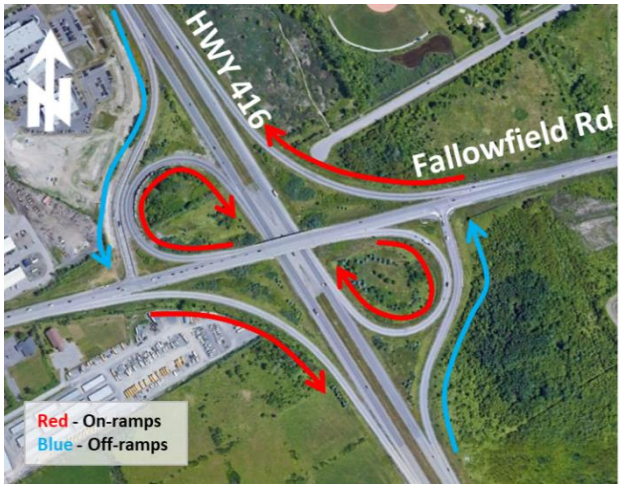
Cobble Hill Drive is a north-south municipal local roadway which extends from Fallowfield Rd in the north to Moffat Pond Ct in the south, where it continues as Anjana Cir. The roadway consists of a two-way two-lane cross-section with a posted speed limit of 40 km/h.

Citigate Drive is a north-south municipal local roadway which extends from Fallowfield Rd–Strandherd Dr in the north to Systemhouse St in the south. The roadway consists of a two-way two-lane cross-section with an assumed speed limit of 50km/h.

Existing Study Area Intersections

Highway 416/Fallowfield Rd

The Highway 416/Fallowfield Rd interchange is a four-legged interchange consisting of 4 on-ramps and 2 off-ramps. The northbound exit ramp consists of one lane that splits into one left-turn lane and one right-turn lane and is serviced by a traffic signal on approach to the southside of Fallowfield Rd. The southbound exit ramp consists of a double left-turn lane and a right-turn lane that is also serviced by a traffic signal on approach to the north side of Fallowfield Rd. The northbound and southbound on-ramps have free-flow entrances and exits that all consist of one-lane and are accessible from the east and west along Fallowfield Rd.



Strandherd Dr/Fallowfield Rd/Citigate Dr

The Strandherd Dr/Fallowfield Rd/Citigate Dr intersection is a four-legged signalized intersection. The north approach (Fallowfield Rd) consists of one left-turn lane, one through lane, and one channelized right-turn lane. The south approach (Citigate Dr) consists of two left-turn lanes and one shared through/right-turn lane. The west approach (Fallowfield Rd) consists of two left-turn lanes, two through lanes, and one right-turn lane. The east approach (Strandherd Dr) consists of one left-turn lane, two through lanes, and one right-turn lane. There are no restricted movements at this intersection. Pedestrian crossings are provided on all legs of the intersection.

O'Keefe Ct/Fallowfield Rd

The O'Keefe/Fallowfield intersection is an unsignalized four-legged intersection, with stop control on the east and west legs of the intersection. The north and south approach consists of one left-turn lane, one through lane, and one right-turn lane. The west approach consists of one left-turn lane and a right-turn lane. The east approach consists of one all-movement lane. There are no pedestrian crossings across Fallowfield Rd.

Fallowfield Rd/Cedarview Rd

The Fallowfield Rd/Cedarview Rd intersection is a signalized four-legged intersection. The south, east, and west approaches all consist of one left-turn lane, one through lane, and one right-turn lane. The north approach consists of one left-turn lane and one through/right-turn lane. There are no restricted movements at this intersection. Pedestrian crossings are provided on all legs of the intersection.

Existing Driveways to Adjacent Developments

There are no adjacent driveways within 200m of the proposed future site accesses. The only other adjacent accesses on O'Keefe is located approximately 240m east of the site on the north side providing access to Lytle Park as illustrated in **Figure 3**.

Figure 3: Adjacent Driveways within 200m of Site Access

Existing Area Traffic Management Measures

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

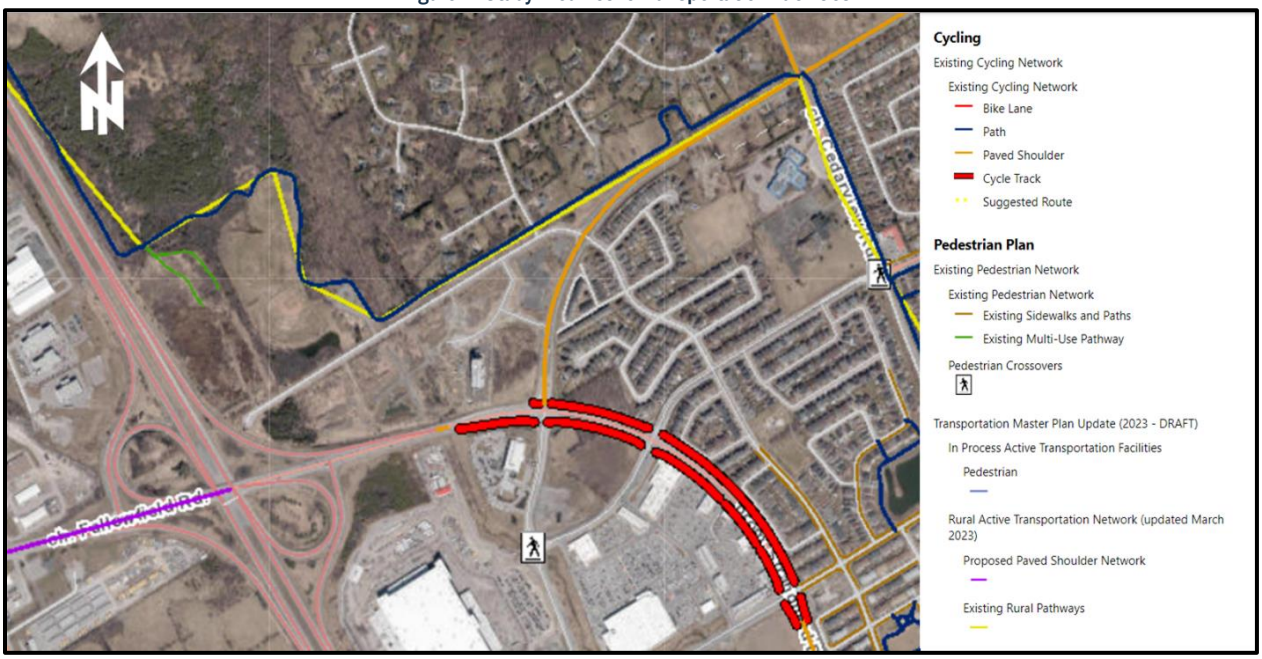
Pedestrian/Cycling Network

The dedicated pedestrian and cycling facilities provided within the study area are as follows:

- Sidewalks along both sides of Strandherd Dr
- Sidewalks along both sides of Cobble Hill Dr
- Sidewalk along the west side of Citigate Dr
- Multi-Use Pathway (MUP) that runs along the east side of Cedarview Rd south of Fallowfield Rd and continues west towards Highway 416 on the north side of Fallowfield Rd and O'Keefe Ct, then north along the east side of the highway.
- Cycle tracks along both sides of Strandherd Dr
- Paved shoulders along Fallowfield Rd

See **Figure 4** for an illustration of all active transportation facilities within the study area.

Figure 4: Study Area Active Transportation Facilities



Transit Network

The following description of OC Transpo's New Ways to Bus routes within the study area reflect the current bus operations (September 2025):

- **Route #70 (Limebank <-> Fallowfield):** identified by OC Transpo as a "Local Route", this route operates on custom scheduling with average headways of 15 minutes during peak hours and 30 minutes or longer outside peak hours. This route provides connectivity to Line 2 LRT at Limebank, Station, Barrhaven Center and Marketplace. The nearest bus stops to the site are at the intersections of Citigate Dr/CrossKeys Pl, approximately 1.1 to 1.3 km walking distance to/from the site.
- **Route #110 (Innovation <-> Fallowfield):** identified by OC Transpo as a "Local Route", this route operates on custom scheduling with average headways of 30 minutes or longer. This route provides connectivity to Line 2 LRT at Limebank, Station, Barrhaven Center and Marketplace and continues to Eagleson and Innovation industrial park. The nearest bus stops to the site are at the intersections of Citigate Dr/CrossKeys Pl, approximately 1.3 km walking distance to/from the site.
- **Route #173 (Barrhaven Center <-> Citigate):** identified by OC Transpo as a "Local Route", this route operates on custom scheduling with average headways of 30 minutes or longer. This route provides connectivity to Barrhaven Center and Marketplace. The nearest bus stops to the site are at the intersections of Citigate Dr/CrossKeys Pl, approximately 1.3 km walking distance to/from the site.

The transit network for the study area is illustrated in **Figure 5** and the transit route maps are provided in **Appendix B**. The nearest bus stop to the site is currently approximately 850m from the site but has since become inactive following the launch of New Ways to Bus. See **Figure 6** for an illustration of the bus stop locations near the proposed development.

Figure 5: Area Transit Network

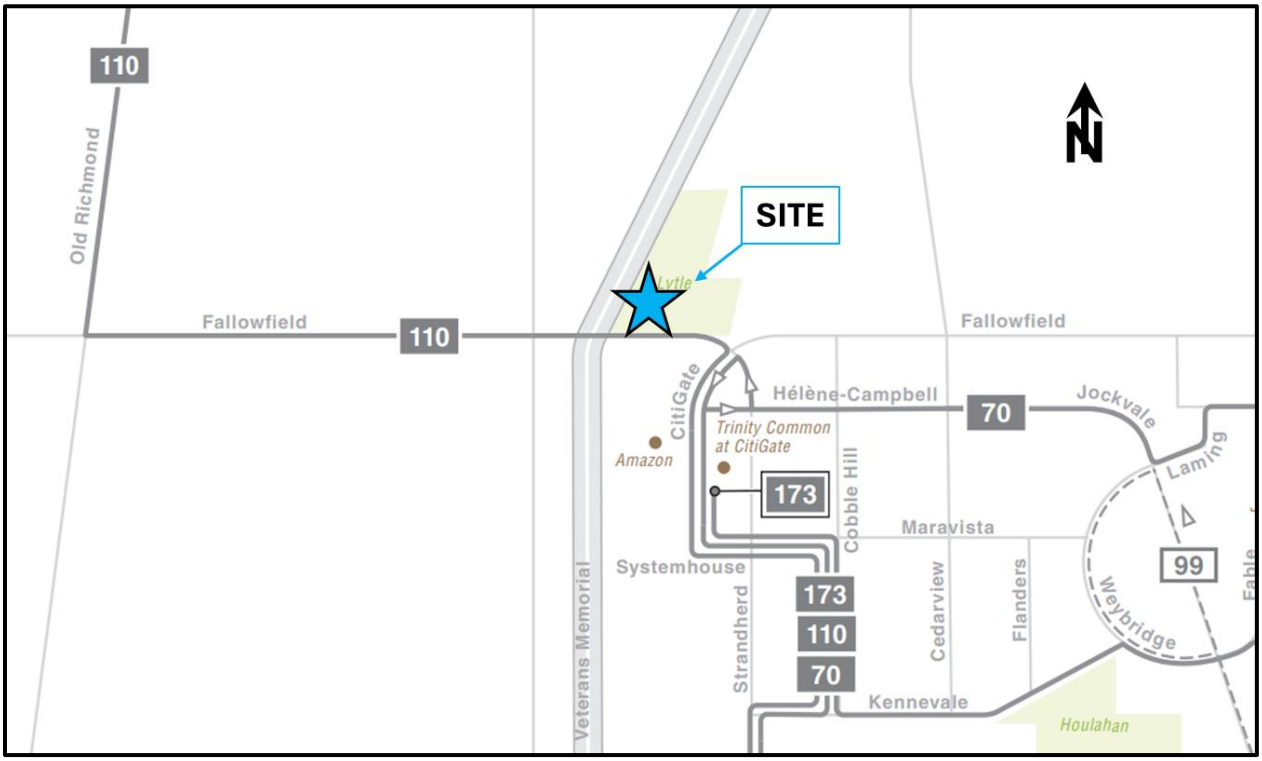
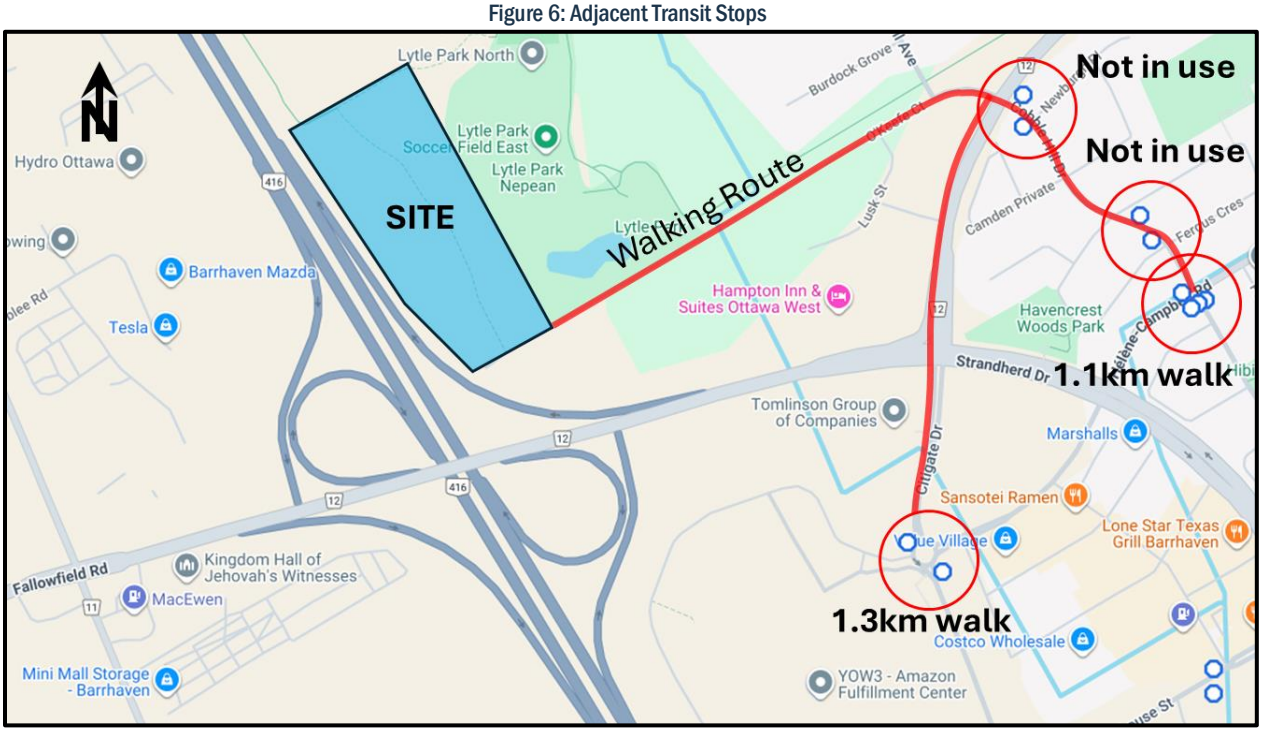


Figure 6: Adjacent Transit Stops



Peak Hour Travel Demands

The existing peak hour traffic and pedestrian volumes at the intersections within the study area were obtained from the City of Ottawa for the following intersections:

- Fallowfield Rd/Strandherd Dr/Citigate Dr – Conducted by City of Ottawa on Wednesday, August 14, 2024
- O'Keefe/Fallowfield – Conducted by City of Ottawa on Tuesday, October 25, 2022
- Cedarview Rd/Fallowfield Rd – Conducted by City of Ottawa on Tuesday, January 7, 2020

The vehicle traffic volumes at study area intersections are illustrated in **Figure 7** and active transportation volumes in **Figure 8**. Raw traffic count data is provided in **Appendix C**. Volume differences of 50 vehicles or more between intersections were balanced to reflect consistency in volumes throughout the network.

Figure 7: Existing Peak Hour Traffic Volumes - Vehicles

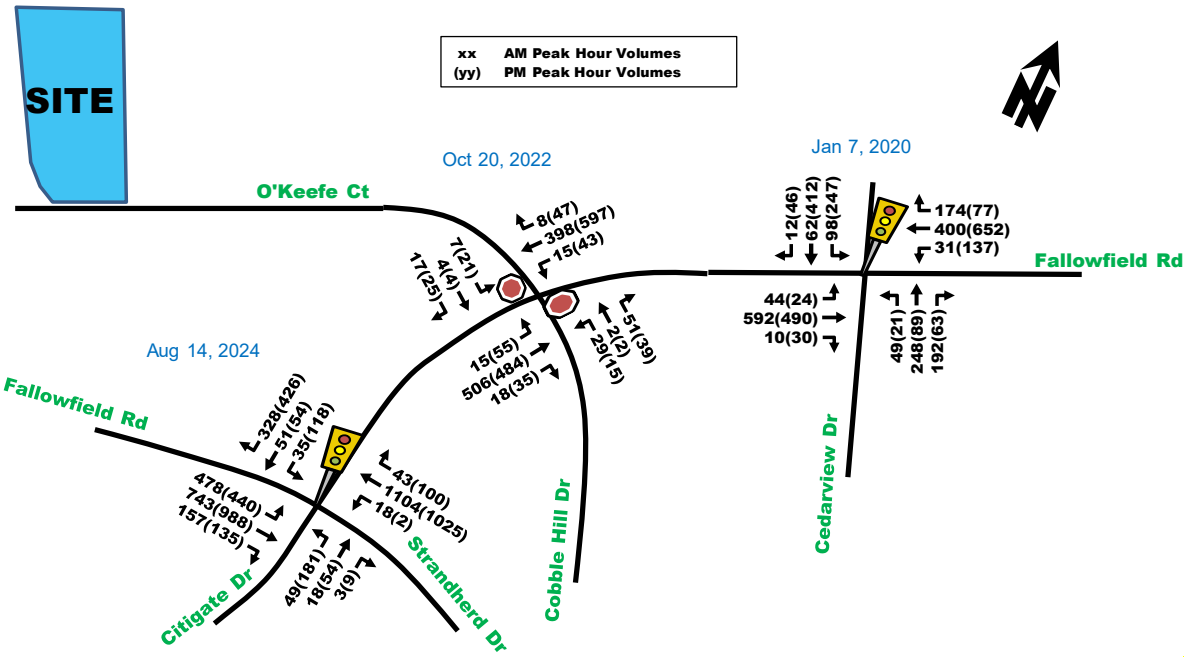
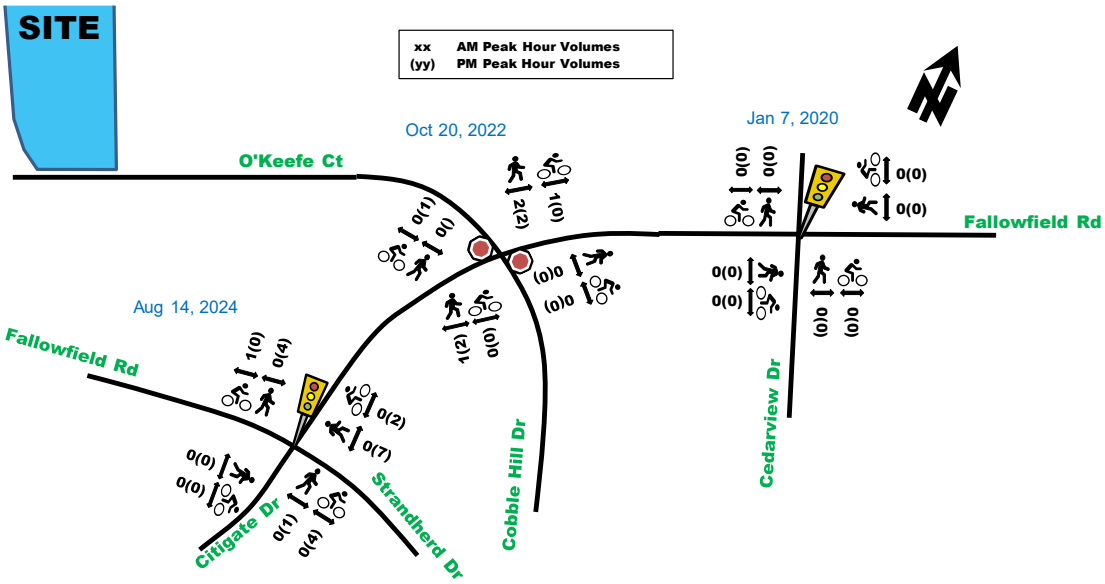


Figure 8: Existing Peak Hour Traffic Volumes – Active Transportation



Existing Road Safety Conditions

A five-year collision history data (2017-2021, inclusive) was obtained from the City of Ottawa Open Data Source for all intersections and road segments within the study area. Upon review of the collision data, it was determined that a total of 82 collisions have occurred within the five-year period. Of the reported collisions, 44 (54%) from rear ends, 9 (11%) from angled collisions, 9 (11%) from sideswipes, 9 (11%) from turning movements, 9 (11%) from single vehicle (other), 1 (1%) resulted in from approaching, and 1 (1%) from other. Furthermore, 65 (79%) collisions resulted in property damage and 17 (21%) resulted in non-fatal injuries. There were no fatal injuries recorded.

Within the study area, the quantity of collisions, collisions per million entering vehicles (MEV) and/or distance of mid-block at each location has occurred at a rate of:

- Fallowfield Rd/Strandherd Dr/Citigate Dr: 52, MEV 0.79
- Cedarview Rd/Fallowfield Rd, 24, MEV 0.51
- O'Keefe/Fallowfield: 2, MEV 0.09
- Mid-block O'Keefe Ct, O'Keefe Ct end to Foxtail Ave: 2 (735m)
- Mid-block Fallowfield Rd, Cedarview Rd to O'Keefe Ct: 2 (490m)

Fallowfield Rd/Strandherd Dr/Citigate Dr and Cedarview Rd/Fallowfield Rd had 33 (63%) and 11 (46%) collisions that were rear ends, respectively. For both intersections, this result is likely associated with higher traffic volumes, congestion, and stop and go driving patterns. Of the total collisions, 43 (83%) for Fallowfield Rd/Strandherd Dr and 19 (79%) for Cedarview Rd/Fallowfield Rd resulted in property damage only, suggesting lower speed collisions.

With regards to active transportation, there were no collisions that involved either a pedestrian or cyclist.

Based on the collision data, there are no identifiable safety concerns at any of the intersections or road segments within the study area. The source collision data provided by the City of Ottawa and the detailed analysis results are provided in **Appendix D**.

2.1.3. Planned Conditions

Future Transportation Network Changes

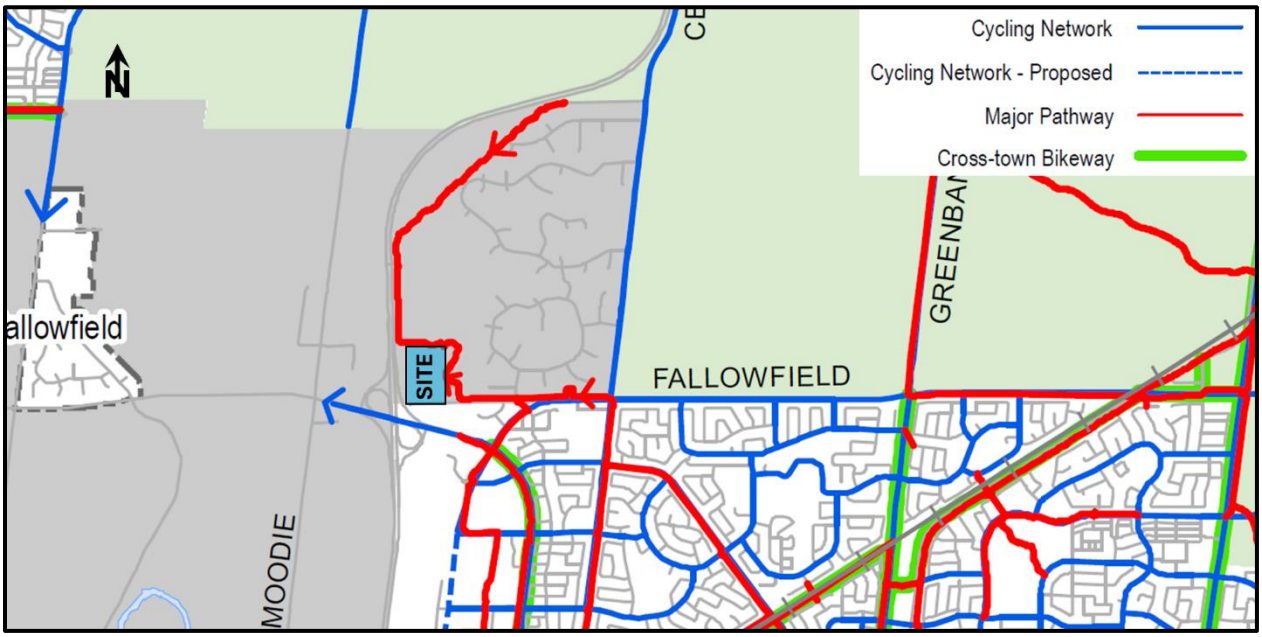
Transportation Master Plan (July 2025 Update)

The recently adopted Phase 2 of the TMP does not illustrate any new transit improvements as part of the "Transit Network – Needs Based or Priority". Similarly, the "Pedestrian Projects with Prioritization" does not highlight any new works near the site. The "Cycling Projects with Prioritization" shows a small segment from Forager St to Strandherd Dr on Fallowfield Rd listed as a 'later phase'. The "Road Network – Needs Based" shows a road widening on Fallowfield Rd from Old Richmond Rd to Moodie Dr, however this widening does not appear within the "Priority" map and is therefore not expected to occur within the study horizon years. The "Priority" road map does illustrate a road urbanization on Fallowfield Rd from Strandherd Dr to Greenbank Rd.

Strandherd Dr was recently widened from two to four lanes from Marivista Dr to Jockvale Rd in the Barrhaven area. The project also included sidewalks and cycle tracks in both directions and a grade separation (vehicular bridge) over the VIA Rail tracks.

The ultimate "Cycling Network – Urban" Map D1 shows a major pathway bounding the property limits and connecting the existing MUP north of O'Keefe Ct to Lytle Ave as shown in

Figure 9: 2025 TMP – Cycling Network Map D1



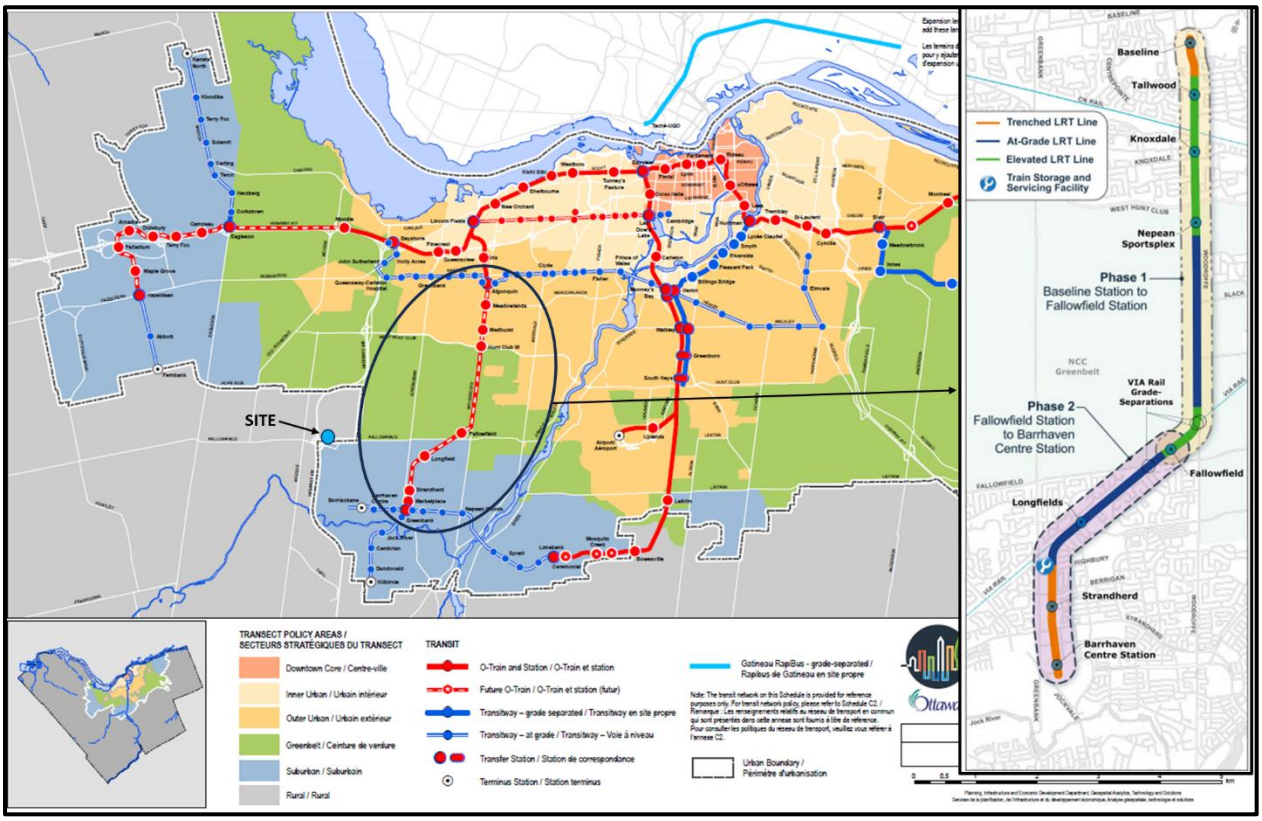
Stage 2 LRT Expansion

The City of Ottawa is currently in the process of expanding its two LRT Lines as part of Stage 2 Expansion. Stage 2 is a package of three extensions – south, east and west – totaling 44 km of new rail and 24 new LRT stations. The southernmost station as part of Stage 2 will be Limebank Station, located in Riverside South neighbourhood, across the Rideau River from Barrhaven. A park and ride will be provided at Limebank Station, allowing for commuters to/from Barrhaven to access the LRT system.

Barrhaven LRT and Rail Grade-Separations (Stage 3 LRT)

Upon completion of the O-Train west extensions to Baseline Station as part of the Stage 2 LRT, preliminary plans are underway to investigate the feasibility of converting the existing at-grade north-south bus transitway between Nepean Sportsplex and the Barrhaven Centre Station to a twin-track fully grade-separated LRT system. The major improvements would include rail-grade separations at the Woodroffe Ave, Southwest transit and Fallowfield Rd VIA Rail line crossing, modifying the existing Fallowfield, Longfields, and Strandherd Stations, and combining the existing Marketplace and Barrhaven Centre station into one terminus. In addition to expanding to Barrhaven, Stage 3 proposes an extension into Kanata/Stittsville based on the New Official Plan for the City of Ottawa, as shown in **Figure 10.** Funding for this project has not been secured yet and the timing for this project is currently unknown.

Figure 10: Stage 3 LRT Network Concept – New Official Plan

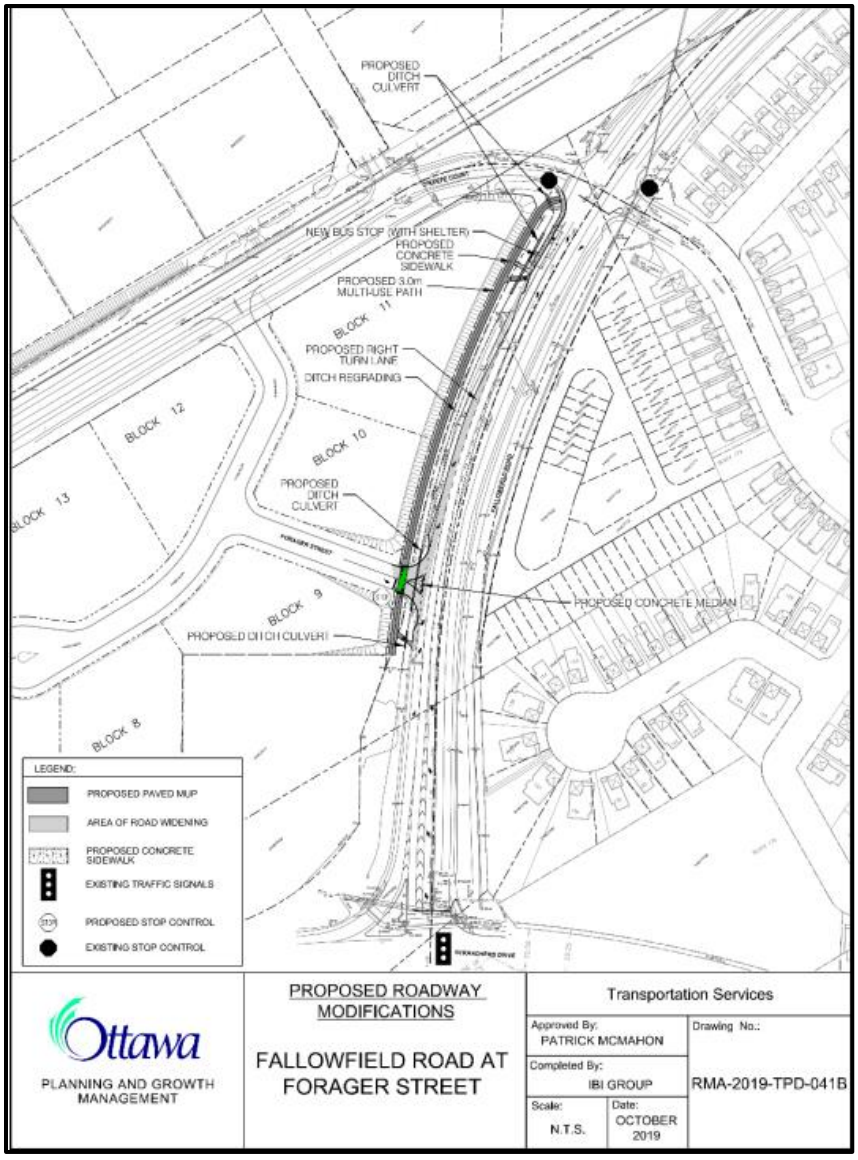


O'Keefe/Fallowfield Signalized Intersection

The intersection of O'Keefe/Fallowfield was planned to be converted from a two-way stop control to a signalized intersection in 2023, however, after contacting City staff there has been no updates regarding the project timeline or detailed design plans. It is assumed that the intersection will be built as a contemporary protected intersection design.

4401 Fallowfield Rd Roadway Modifications

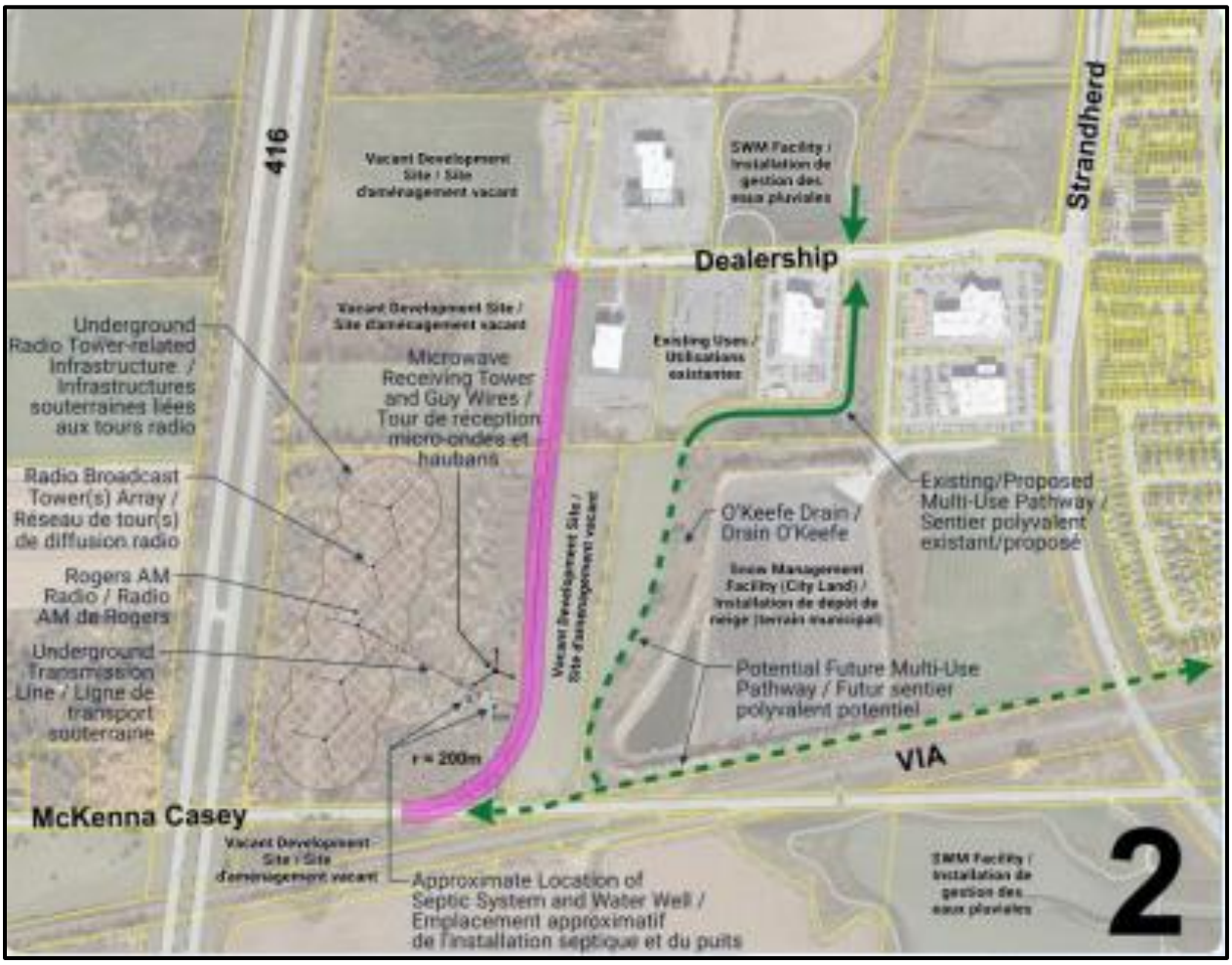
The 140 Lusk TIA by IBI Group, located within the 4401 Fallowfield subdivision, indicated that roadway modifications (RMA-2019-TPD-041B) have been completed to satisfy requirements for the subdivision. The modifications included a new southbound auxiliary right turn lane at Forager St/Fallowfield Rd, a right-in/right-out intersection at Fallowfield Rd/Forager St, and a MUP along the west side of Fallowfield Rd. The RMA originally included a new southbound bus stop south of O'Keefe/Fallowfield, however, OC Transpo has deferred the installation of the future stop until the intersection is signalized.



McKenna Casey Drive Realignment

McKenna Casey Dr is planned to undergo a realignment to provide connectivity between the existing Mckenna Casey Dr and Strandherd Dr via Dealership Dr. The realignment will provide an additional point of access to the Highway 416 Employment Lands by connecting to the Citigate Dr/Dealership Dr roundabout from the south via Moodie Dr and through a Highway 416 underpass. Although several design alternatives have been proposed, the typical design features would include a two-way two-lane divided cross section, sidewalks on both sides of the road and uni-directional cycle tracks. See **Figure 11** for an illustration of the preferred alignment (Alternative 2) that forms the basis of the draft recommended plan.

Figure 11: McKenna Casey Drive Realignment (Alternative 2)



Other Study Area Developments

This section outlines developments that are either approved or have an active planning application in the City and may affect traffic conditions in the future.

Mattamy Homes – 4497 O'Keefe (same municipal address)

It has come to the developer's attention that Mattamy Homes has applied for an Official Plan Amendment (OPA) to expand the urban boundary and zone for residential uses for the site directly north of the subject development. The Mattamy site is bound by this development to the south, the existing community to the east and Highway 416 to the west and north. The development is intended to operate as a 15-minute neighbourhood and would consist of approximately 1,500 residential units. Based on the TIA prepared by CGH in September 2024, the development is expected to generate 315 and 370 veh/h during the morning and afternoon peak hours, respectively. This development is reliant on a new collector road which would bisect the subject site and provide a southern access to the new community. Aside from this southern access, the Mattamy Homes plan of subdivision would only provide one other access, to the north at Onassa Circle. The southern access via the subject site is also critical for providing a bus route through the new community and would provide cycle-tracks based on the CGH TIA. However, based on conversations with the client, it is understood that an agreement has not been reached, and the current intention of the client is to provide access to O'Keefe Ct to only their trucking logistics site. For this reason, trips generated by the Mattamy development will not be included as background traffic via O'Keefe Ct. Should an agreement be reached, then the traffic analysis in this report will need to be updated. A snip of the proposed plan of subdivision has been illustrated in **Figure 12**.

Figure 12: Mattamy Homes – Proposed OPA for 4497 O'Keefe (Subject Development)

Other developments that are either approved or have an active planning application in the City are included below in **Table 1** and illustrated as part of the map in **Figure 13**.

Table 1: Proposed Adjacent Developments

Map Ref.	Development	Land Use and Size	Referenced Projected Build-Out Year	Projected Vehicle Trips Generated			
				AM		PM	
				In	Out	In	Out
1	**100 Lusk** [1]	General Office Space 1,895 m^2	2021[3]	20	3	3	19
2	**115 Lusk St** [1]	Medical Offices 560 m^2; Quality Restaurant 280 m^2	2023[3]	8	5	17	15
3	**135 Lusk St** [1]	Hotel 99 units	2023[3]	25	17	27	26
4	**140 Lusk St** [2,3]	Hotel 88 units	2023[3]	20	16	23	22
5	**4190, 4200, 4210, 4236 Fallowfield and 2740 Cedarview**	195 Residential Units	Under Construction	108	33	131	76
6	**Citigate – 4433 Strandherd** [2]	99 & 83 hotel rooms (P1 & P2)	(P1 Built); (P2)[4]	29	20	27	26
7	**4149 Strandherd** [2]	Auto dealerships 6,400 m^2	Built	79	30	57	86
8	**Citigate – 416 Employement Lands (Lot 3)**	Prestige Business Park/Office (43,560 ft^2)	2029	–	–	–	–
9	**444 Citigate & 560 Dealership**	Light Industrial 1,174,800 ft^2	Unknown[3]	979	133	137	841
10	**575 Dealership**	Warehouse 320,000 ft^2	2026[3]	54	15	20	54
11	**4433 Strandherd** [2]	255 hotel rooms;10,000 ft^2 of restaurant	2020[3]	147	120	157	129
12	**Future Prestige Business Park**	500,000 ft^2	Unknown	756	95	116	718
13	**Future Business Park**	275,000 ft^2	Unknown	388	68	119	338
14	**4497 O'Keefe (same site)**[4]	1,500 homes	2038	*134*	*283*	*281*	*209*
			Total Combined	2,613	555	834	2,350

Note: 1. Within the 4401 Fallowfield development 2. Within the Citigate – 416 Employment Lands 3. For this study, occupancy assumed by 2031 or earlier. 4. Trip gen not included, see rationale in paragraph above.

As shown in **Table 1**, a significant amount of other area developments have been identified within a large study area. There is a high level of uncertainty for various developments to when and if they will ever get built. The future analysis will assume all developments are built by the 2031 horizon (very unlikely) to produce the most conservative analysis, and sensitivity will be carried out if necessary.

Figure 13: Other Area Developments

2.2. Study Area and Time Periods

Full buildout of the proposed development is assumed to be 2026. As such, the horizon years being analyzed in this report are 2026 and 2031 (five years after full buildout) horizon years, using the weekday morning and afternoon peak hour time periods.

Proposed study area intersections and boundary roads are outlined below and highlighted in **Figure 14**.

- O'Keefe/Fallowfield- Cobble Hill Dr (unsignalized)
- Fallowfield Rd/Strandherd Rd/Citigate Dr (signalized)
- Fallowfield Rd/Cedarview Rd (signalized)

Figure 14: Proposed Study Area

2.3. Exemption Review

The modules/elements in **Table 2** are recommended to be exempt from the TIA Report based on the City's TIA guidelines.

Table 2: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Not required for applications involving SPA
4.6 Neighbourhood Traffic Calming	All Elements	Does not meet criteria.
4.7 Transit	All Elements	Anticipated low transit mode share
4.8 Network Concept	4.8 Network Concept	Only required if proposed development is anticipated to generate more than 200 person-trips over the permitted zoning

3.0 FORECASTING REPORT

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and Mode Shares

The proposed development will consist of 23,858m^2 (256,800 ft^2) of light industrial/warehouse uses. Previously, the ITE Trip Generation Manual (11th Edition) was consulted in the development of forecasted trip generation. To better understand inbound and outbound truck activity, Parsons performed a proxy site count at the 1000 and 1201 Logistics Private warehouses in Ottawa during typical weekday peak hours. The proxy site consists of approximately 310,000 ft^2 and based on the client, is estimated to be of similar land uses to the subject site. Note that one of the tenants, Black Widow Cheerleading Gym is the only tenant unlikely to be similar to the future subject site. During the PM peak hour, a large number of personal vehicles headed to the gym after 17:00 was observed, of which these trips were excluded. **Table 3** below summarizes the observed peak hour vehicle trips in and out of the proxy site by vehicle category, with a summary of counts provided in **Appendix E**.

Table 3: Proxy Site Trip Generation Vehicle Trips Observed

Peak Hour	Personal Vehicles		Single Unit Trucks		Truck Trailer		Total		
	In	Out	In	Out	In	Out	In	Out	Two-Way
AM	64	11	17	18	3	2	84	31	115
PM	11	58	28	2	1	0	40	60	100
AM peak hour observed between 06:30-07:30 and PM peak hour between 16:15-17:15 (excluding personal vehicles to Black Widow).									

These vehicle trips were then divided by the GFA of the proxy site to develop a rate per square foot as shown in **Table 4**.

Table 4: Vehicle Category Trip Generation Rate from Proxy Site

Peak Hour	Personal Vehicles		Single Unit Trucks		Truck Trailer		Total		
	In	Out	In	Out	In	Out	In	Out	Two-Way
AM	0.21	0.04	0.05	0.06	0.01	0.01	0.27	0.10	0.37
PM	0.04	0.19	0.09	0.01	0.00	0.00	0.13	0.19	0.32
Proxy site is 310,000 ft². The rates shown are per 1,000 ft².									

The rates shown in **Table 4** were then multiplied by the proposed site GFA of 256,800 ft² to get an estimate of vehicle trips to and from the site during the peak hours, as summarized in

Table 5: Peak Hour Vehicle Trip Generated Trips

Peak Hour	Personal Vehicles		Single Unit Trucks		Truck Trailer		Total		
	In	Out	In	Out	In	Out	In	Out	Two-Way
AM	53	9	14	15	2	2	70	26	95
PM	9	48	23	2	1	0	33	50	83

Based on **Table 5**, the site is forecasted to generate approximately 95 vehicle trips in the AM peak hour and 85 vehicle trips in the PM peak hour, which is very comparable with ITE Trip Generation rates and further validates the data. **Table 6** below compares the 2020 TRANS Manual for commercial developments located in the "South Nepean" district and the 2020 222 Citigate Dr TIA (Amazon Distribution Facility). Custom mode shares and rationale have been provided to determine the total person trips estimated into the site.

Table 6: Mode Share Assumptions

Travel Mode	TRANS 2020 Mode Share	Amazon Distribution Facility Mode Share	Custom Mode Share	Rationale
Auto Driver	74%	56%	78%	Generally consistent with TRANS 2020 and adjusted for the site context.
Auto Passenger	14%	14%	15%	
Transit	1%	23%	0%	The nearest transit stop is 1.3km walk.
Walk and Bike	0%	8%	7%	Active transportation facilities are located adjacent to the site.
Total Person Trips	**100%**	**100%**	**100%**	–

The total number of person trips per hour generated by the proposed development are calculated by multiplying the estimated vehicle trips by the mode shares proposed above. The resultant trip generation by mode shares has been summarized below.

Table 7: Peak Hour People Trip Generated Trips Using Custom Mode Shares

Travel Mode	Mode Share	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
		In	Out (12%)	Total	In (14%)	Out (86%)	Total
Auto Driver	78%	70	26	95	33	50	83
Auto Passenger	15%	13	5	18	6	10	16
Transit	0%	0	0	0	0	0	0
Walk and Bike	7%	6	2	9	3	4	7
Total Person Trips	100%	89	33	122	42	64	106
Total 'New' Auto Trips		**70**	**26**	**95**	**33**	**50**	**83**

The proposed development is anticipated to generate a total of approximately 95 and 85 'new' auto trips during the morning and afternoon peak hours. There are no transit trips forecasted while active transportation mode shares (cycling and walking) are expected to generate 5 to 10 trips during both the morning and afternoon peak hours. Of the vehicle trips, 35 and 25 are assumed to be trucks entering and leaving the site during the AM and PM peak hours respectively.

3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (South Nepean district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows and illustrated in **Figure 15**, with the estimated percentage of truck traffic compared to the future 2031 traffic (+2% base background heavy vehicle percentage) has been illustrated in **Figure 16.** Note that truck distribution was done using truck routes only which include Fallowfield Rd, Cedarview Rd to the north and Strandherd Dr.

Figure 15: Inbound Trip Distribution Percentages

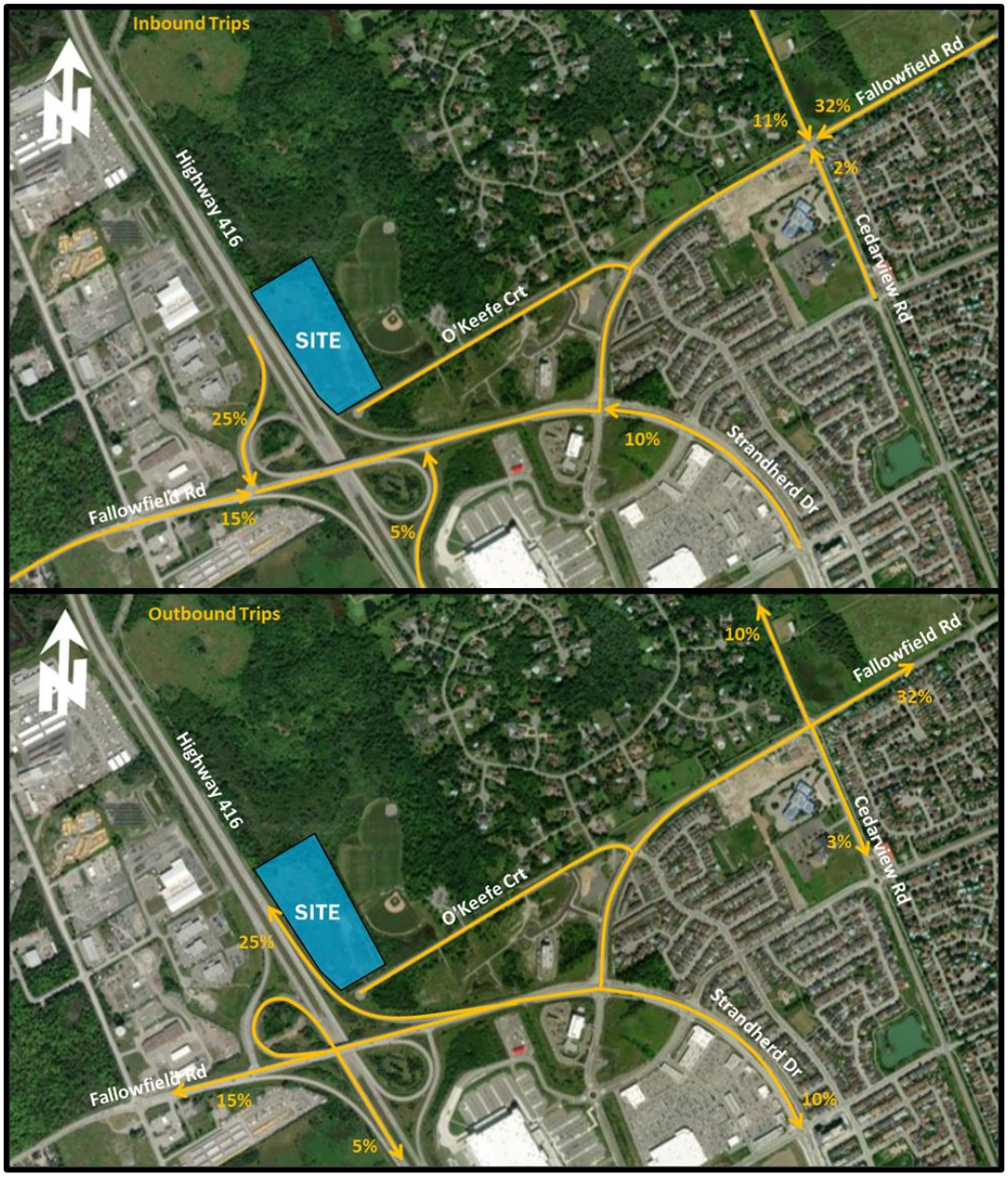
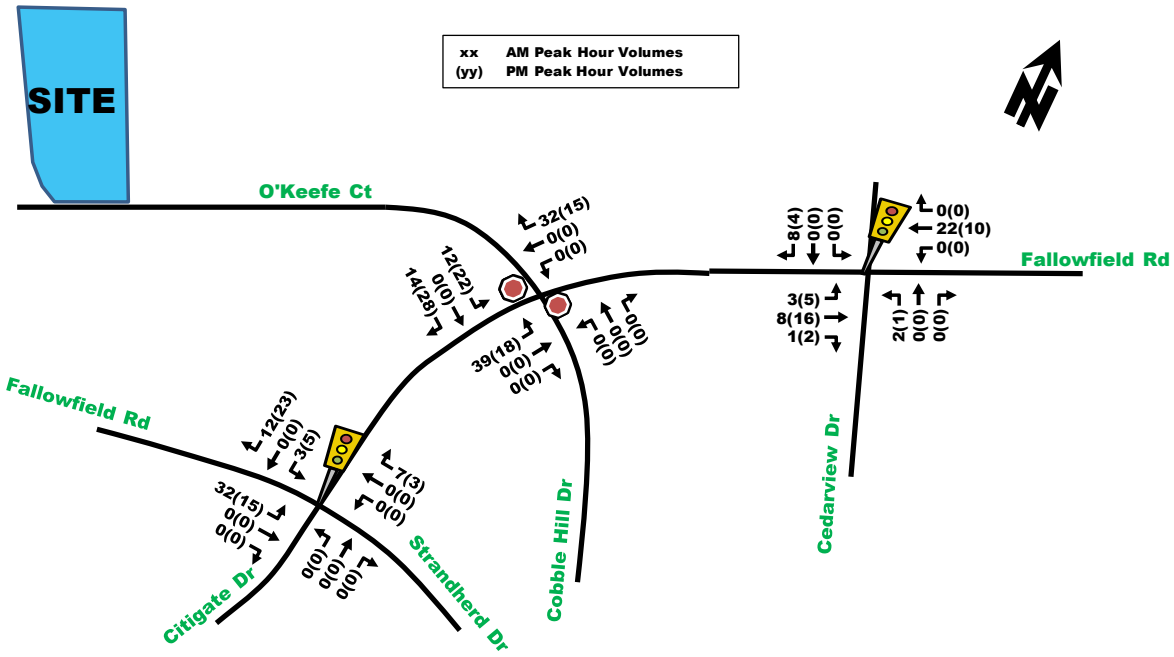


Figure 16: Truck Traffic Percentages (Percent Heavy Vehicles) – 2031 Horizon

The anticipated new auto trips for the proposed development (provided in **Table 7**) were then assigned to the road network as shown in **Figure 17**.

Figure 17: Site-Generated Traffic Volumes



3.2. Background Network Traffic

3.2.1. Transportation Network Plans

Refer to Section 2.1.3 for a detailed description of future transportation network changes. Major changes include the conversion of O'Keefe/Fallowfieldto a signalized intersection.

3.2.2. Background Growth

After reviewing the background growth rates applied for adjacent development TIAs, it was found the consensus was to utilize a 2% background growth rate per annum. However, upon further review of each TIA, there were generally fewer adjacent developments included on the background volumes (575 Dealership Dr, 444 Citigate Dr & 560 Dealership Dr, and 4433 Strandherd Dr future hotels were typically not included), likely due to uncertainty regarding each development's timeline. For the proposed development, it was assumed each development outlined in Section 2.1.3 would be constructed by the 2030 horizon year based on previously indicated buildout years and approximated rate of construction of developments on adjacent lots.

A review of the historic background growth rates demonstrated significant growth in the area as expected, however, since several significant adjacent developments with indefinite timelines were layered on to the background volumes, a 1% annual growth rate was maintained to all the major movements of the study area intersections to account for regional growth and any unanticipated future development within the horizon years.

3.2.3. Other Developments

As mentioned in Section 2.1.3, several adjacent future developments with active or approved development applications have been identified in the study area.

Recently constructed developments such as the Hampton Inn & Suites (125 Lusk St), the Amazon Distribution Facility (222 Citigate Dr), and the Volkswagen dealership (4149 Fallowfield Rd) have been accounted for in the refreshed August 2024 counts. A review of 24-hour count data at Fallowfield Rd/Strandherd Dr/Citigate Dr indicated a surge of traffic entering Citigate Dr between 6:15 AM and 7:30 AM, suggesting the arrival of Amazon workers prior to their shift. As a result, majority of the volumes generated by the facility during the morning will be captured outside of the intersection peak hour.

The adjacent developments outlined in Section 2.1.3 were added to the background volumes and distributed along the road network in accordance with the trip distribution utilized for each developments respective TIA. All adjacent developments were added to the background volumes except for Lot 3 of the Citigate – 416 Employment Lands due to the limited information available and the current sale of the lot, suggesting there will be no development in the foreseeable future. Nevertheless, the inclusion of the remaining adjacent lots is considered very conservative, given the fact that most developments will likely be constructed beyond the projected study horizon years. Although some developments did not include some or all the intersections within the scope of this study, their volumes were distributed in consideration of the adjacent developments land-use and each intersections directional splits.

Figures illustrating future site-generated traffic volumes of adjacent development were obtained from their respective TIA Reports and provided in Appendix F. The future adjacent development traffic volumes were added to existing traffic volumes to produce future background 2026 and 2031 volumes, illustrated in Figure 18 and Figure 19.

Figure 18: Future Background 2026 Traffic Volumes

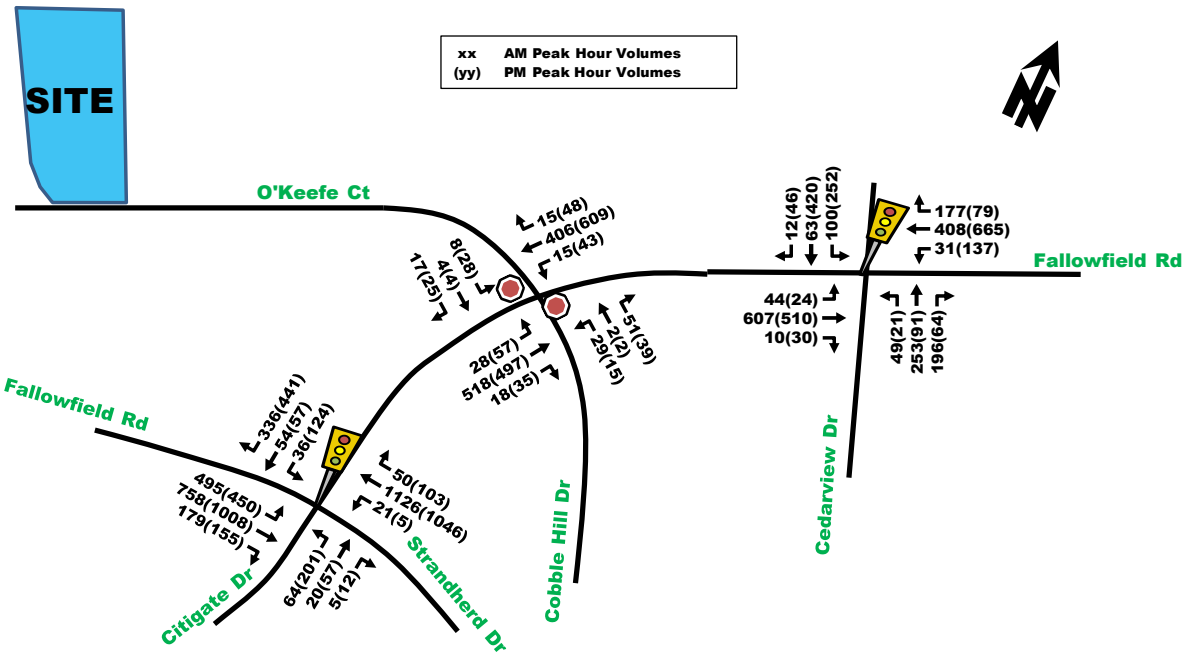
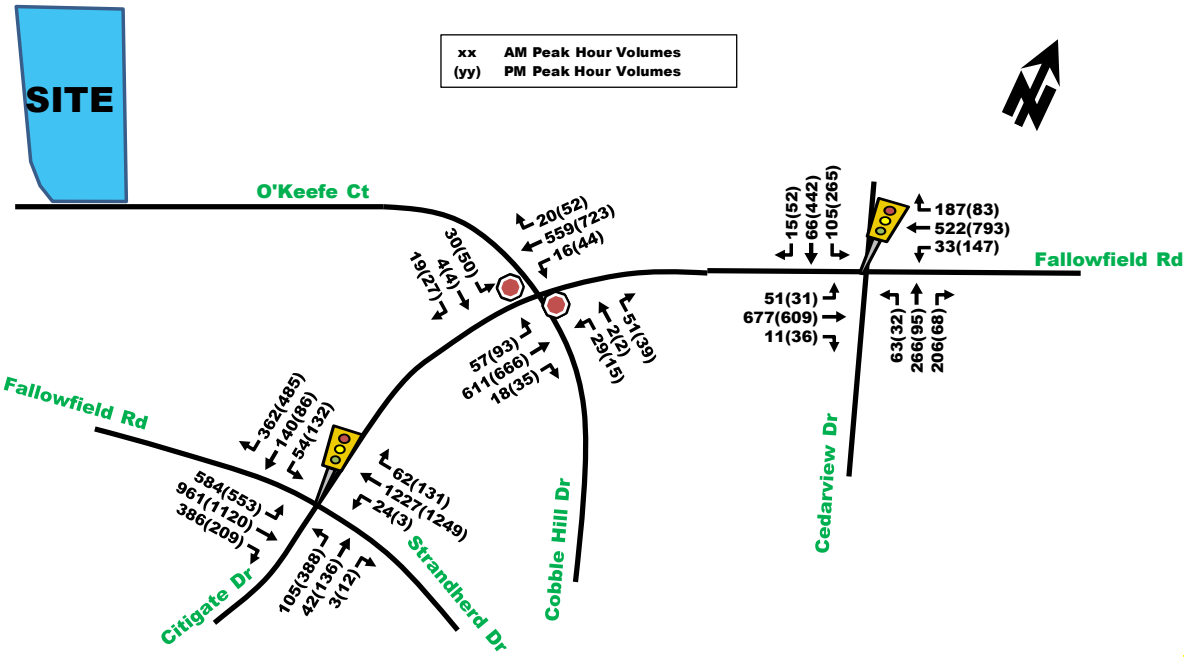


Figure 19: Future Background 2031 Traffic Volumes



3.3. Demand Rationalization

The following section indicates factors that may be used to rationalize the future travel demands in the study area and determine if there are potential capacity limitations and how they may be addressed.

The total projected 2026 and 2031 traffic volumes can be calculated by superimposing the site-generated traffic shown in Figure 17, onto the total future background traffic shown in Figure 18 and Figure 19.

Figure 20: Total Projected 2026 Traffic Volumes

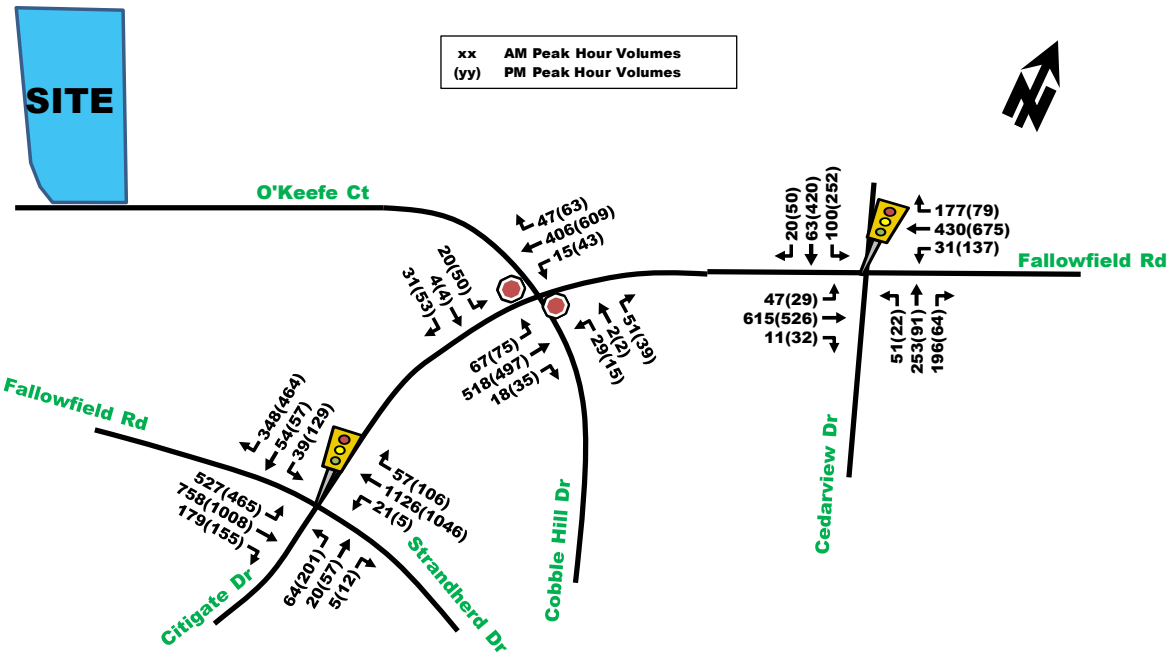
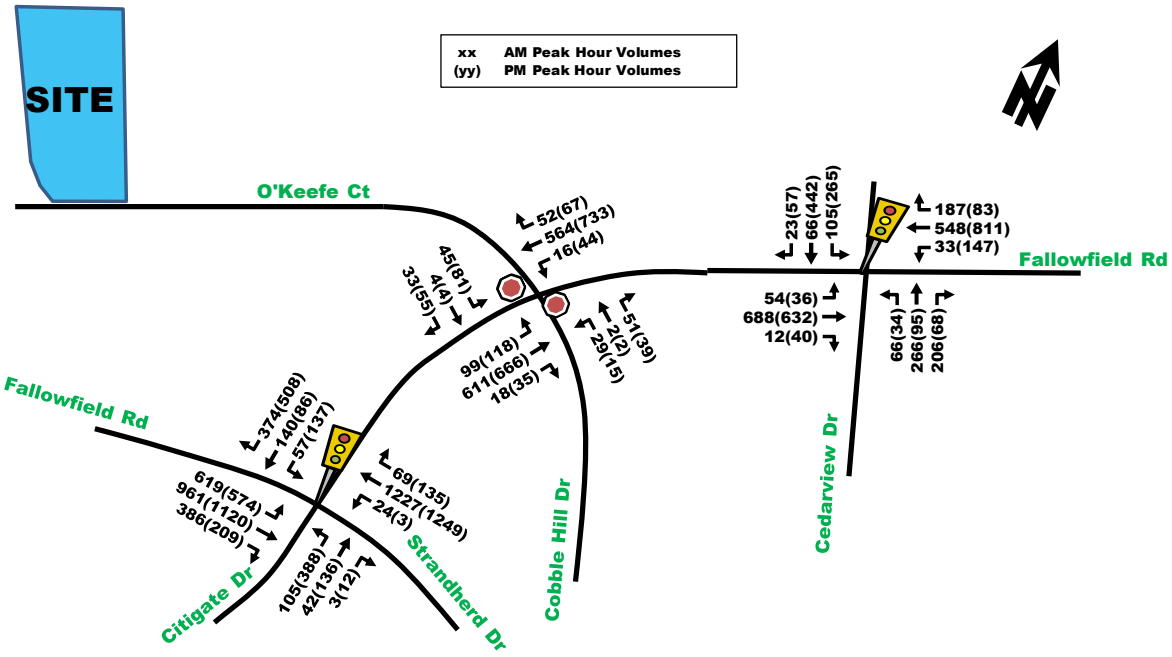


Figure 21: Total Projected 2031 Traffic Volumes



Site-Generated and Background Traffic Volumes

The proposed development is anticipated to add 95 and 80 'new' two-way vehicle trips (approximately 1 to 1.5 vehicles per minute) to the O'Keefe/Fallowfield intersection and the surrounding road network during peak hours. The additional trips entering/exiting the O'Keefe/Fallowfield intersection will be a very small fraction of the arterial road volumes (Fallowfield Rd) and the overall intersection volumes.

Future traffic volumes account for a 1% annual growth rate on arterial and collector through movements plus individually layering on various other area developments which are unlikely to all be built by the future study horizon years. The background traffic growth indicate that traffic along Fallowfield Rd between Cedarview Rd and

Strandherd Dr may reach approximately 650 to 700 veh/h in the peak direction, which is considered normal for an arterial road. Additionally, the total projected traffic along Strandherd Dr may reach approximately 1,200 to 1,250 veh/h in the peak direction, which is also considered typical for a major arterial road.

Over time, it is forecasted that these background volumes may reduce with improvements to transit such as potential Stage 3 LRT extension and Chapman Mills BRT extension, improvements to active transportation facilities and new roadway and highway connections such as the Barnsdale interchange, Greenbank realignment and widening and Barnsdale widening.

Overall, the site-generated traffic volumes are not expected to result in any notable impact to the study area intersections, relative to future background volumes and sufficient capacity to support the development is forecasted.

4.0 ANALYSIS

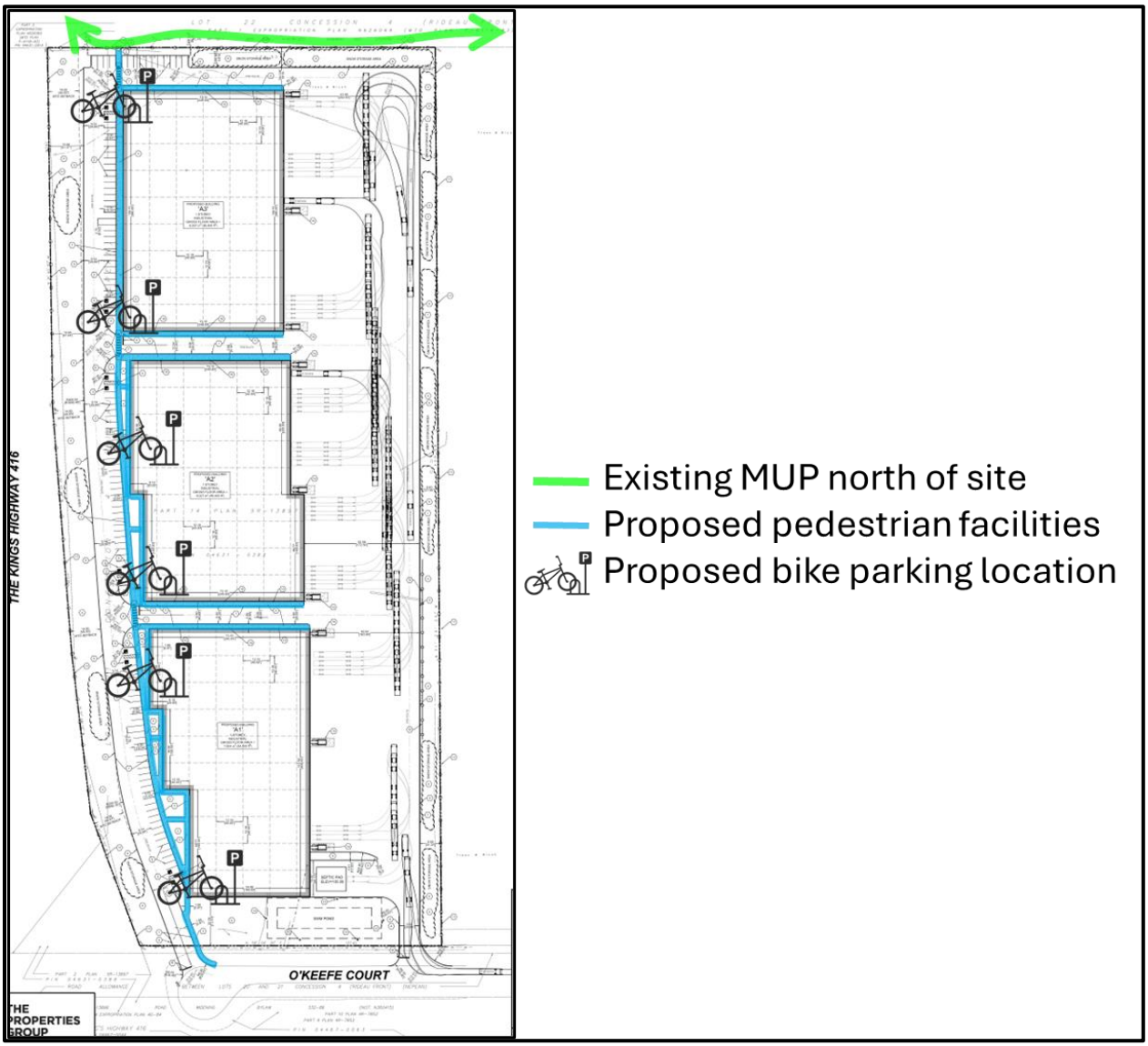
4.1. Development Design

4.1.1. Design for Sustainable Modes

The site is proposing pedestrian facilities internal to the site which connect the three blocks and provides zebra striped crosswalks linking the buildings. The pedestrian facilities are proposed as 3m wide or wider and are located on the east side of the buildings where personal vehicle parking is proposed, for both staff and visitors to the warehouse (potentially picking up items or shopping depending on what tenants set up). Based on conversations with the client, some of the tenants could include a plumbing warehouse with potential client pick-up uses or displays, etc). The west side of the site is proposed for trucking operations and pedestrians/active users are encouraged to stay away from that area.

The proposed internal facilities will extend from O'Keefe Ct to the gravel multi-use pathway (MUP) directly north of the site. It is believed that these facilities may be located directly north of the site property line, but not within the site. The client intends to leave the MUP facilities in their current state without providing any modifications to them. The sidewalk facilities are not proposed to be extended along the site frontage as there are no meaningful connections or city infrastructure to connect to. O'Keefe Ct is also a dead-end street with low traffic volumes and has gravel shoulders. The client has stressed that there is a preference to dissuade active transportation movements in front of the site accesses which will have large trucks turning in and out. While the client is open to allowing the public to use the internal sidewalk facilities from O'Keefe Ct to the MUP to the north, the more attractive route is for people to access that MUP via the paved pathway facilities on Lytle Park that connect to the gravel extension directly north of the site. It is noted that the Mattamy development directly north of the subject site proposes cycle-tracks and active transportation facilities through this site, however, no formal agreement has been reached, and the client does not intend to provide those facilities given the site land uses and context. Bike parking is proposed on 6 racks of 2 bikes each, located on the north and south ends of each of the three buildings. **Figure 22** illustrates the active transportation facilities proposed and location of bike parking.

Figure 22: Active Transportation Facilities Proposed and Bike Parking Locations



4.1.2. Circulation and Access

The site will be accessible via two driveways located on the north side of O'Keefe Ct approximately 95m apart along the southern site boundary. The east access has been designed to provide trucks access to the loading bays of each building and will provide ample space for trucks to enter and exit the site without obstructions, as well as turnaround internally to the site. Although the garbage pickup and drop off locations have not been finalized, it is assumed the garbage trucks will utilize the east access and circulate the site between the loading bays and parking areas to pick up garbage from each building. The west access has been designed to accommodate entry and exit to staff parking areas. Additional details of each access will be discussed in detail in Section 4.4.

Truck turning checks were also prepared for the site access and at O'Keefe/Fallowfield intersection. The site has been designed to accommodate trucks as large as WB20 (typical 18-wheeler) but it is acknowledged that most trucks will be smaller trucks such as single unit trucks. For the purpose of truck turning templates, the largest WB20 truck was used.

The truck turning templates demonstrated that circulation into the site and within the site performs well, with ample manouver room. At O'Keefe/Fallowfield intersection, left turning movements can be accommodated with ease, but right turning movements may encroach on opposing traffic lanes. Specifically, southbound left-turning WB20 trucks from O'Keefe Ct would need to utilize the eastbound left-turning lane, while trucks turning westbound right from Fallowfield Rd would overtake the southbound lane on O'Keefe Ct. While this is not an ideal situation, O'Keefe Ct has limited traffic to and from, and encroaching on to the eastbound left-turn lane on Fallowfield Rd or the southbound lane on O'Keefe Ct is anticipated to have minimal impacts to vehicle circulation. Should a vehicle arrive to the eastbound left-turn lane or the southbound lane, then a truck performing a right turn should yield to those vehicles. When it is time for this intersection to be signalized, it is encouraged to be designed to accommodate WB20s without encroachment.

Truck turning templates have been provided in **Appendix G.**

4.2. Parking

4.2.1. Parking Supply

Based on the City of Ottawa Parking Provisions, the proposed development is located in "Area D", where off-street motor vehicle parking must be provided, and bicycle parking is not mandatory. Based on Section 101 and Table 101 within the parking provisions, the minimum required parking was determined in **Table 8** below.

Table 8: Minimum Required Vehicle Parking

Land Use	GFA		Parking Space Rate	Minimum Required Parking
N95 (Warehouse)	23,858 m²	5,000 m²	0.8/100 m² for the first 5,000 m² of GFA	40
		18,858 m²	0.4/100 m² above 5,000 m² of GFA	75
			Total	**115**

As shown in Table 6, the minimum parking requirement for the proposed development is 115 spaces. As previously mentioned in **Section 2.1.1**, the development proposes approximately 119 parking spaces resulting in an additional 4 parking spaces and therefore providing a sufficient parking supply. The site is proposing 12 barrier free parking spaces which have been shown in the latest site plan. Since the site is providing a surplus of parking spaces and adequate loading and circulation space for trucks, there is no concern regarding off-site parking due to the proposed development.

In addition, the bike parking by-laws were reviewed. Based on the land use (warehouse), a rate of 1 bike parking per 2,000 m² is required, which would equate to approximately 12 bike parking spaces. The client intends to provide 12 bike parking spaces, located on 2 bike space racks on the north and south edges of the three buildings as shown in **Figure 22**.

4.3. Boundary Street Design

The New 2025 MMLOS Tool has been adopted by the city, and it will be used for this report.

4.3.1. Existing and Future Conditions

The boundary street for the development is O'Keefe Ct. There are no planned roadway modifications in the future. The existing and future roadway geometries consist of the following features:

- *Existing O'Keefe Ct:*
  - 1 vehicle travel lane in each direction
  - No sidewalks or cycling facilities
  - Less than 3,000 vehicles per day
  - Unposted speed limit assumed 50km/h

- Classified as local roadway
- Not part of a transit priority corridor or Crosstown Bikeway Network

Multi-modal Level of Service analysis for the subject road segment adjacent to the site is summarized in **Table 9** with detail analysis provided in **Appendix H**. Note that the truck level of service is no longer calculated, but rather confirmed as part of the geometrics checks and truck turning templates.

Table 9: MMLOS – Boundary Street Segment Existing and Future Conditions

O'Keefe Court	Level of Service							
	Pedestrian		Bicycle		Transit		Public Realm	
	PLoS	Target	BLoS	Target	TLoS	Target	PR	Target
Existing and future (Both Sides)	F	D	D	D	-	N/A	C	N/A

Pedestrian

- O'Keefe Ct does not meet the pedestrian LoS given the lack of pedestrian facilities. Should a 1.5m wide pedestrian facility be provided (recommended at least 1.8m wide), then the target would be met.

Bicycle

- The desired bike LoS for existing and future conditions has been met.

Transit

- There are no transit routes operating on O'Keefe Ct.

Public Realm

The public realm scored LoS C. Providing a sidewalk facility would improve the public realm score to a B.

4.4. Access Intersection Design

Two site accesses are proposed along O'Keefe Ct where the west access will primarily serve employees and visitors while the east access will provide access for trucks to the loading bays. The employee access will be located at the end of the cul-de-sac on O'Keefe Ct while the truck access will be approximately 95m east of the employee access. Both accesses are anticipated to be STOP controlled upon exit of the site.

Additionally, the City of Ottawa Private Approach by laws were reviewed with the following notes:

- Section 25 (1) (a) (iv) – The site provides approximately 130m of frontage and is permitted to have two two-way private approaches.
- Section 25 (1) (c) – The employee access abides by the maximum 9m private approach width (proposed access approximately 8.5m wide).
- Section 25 (1) (e) – The east access has a wide flared radii to accommodate the access's primary use as a transport loading area. The extra wide radii narrows down to approximately 9m in width 14m from the street line, considered adequate.
- Section 25 (1) (g) – The distance between the nearest limits of the two private approaches to the same property exceed the 9m minimum.

Therefore, the access designs are in conformance with the City of Ottawa Private Approach By-law 2003-447.

4.5. Transportation Demand Management

4.5.1. Context for TDM

Due to the developments land-use as a warehouse building, it is expected that all the site generated trips are work-based or clients and will occur during typical AM and PM peak hours, where AM trips will be employees and

visitors entering the site and PM trips will be employees or visitors exiting the site. Based on other similar nearby developments, it is understood that trucking activity normally takes place throughout the day, outside of the normal AM and PM peak hours of the adjacent streets. It is assumed the development will operate during typical working hours between 9:00am and 5:00pm. **Sections 3.1.1** and **3.1.2** describe the anticipated site generated trips per travel mode and predicts the destinations of travelers based on the 2011 OD-Survey for Ottawa.

4.5.2. Need and Opportunity

Considering the nature of the development and the generally high auto-driver mode share of the study area and lack of nearby transit facilities, it will be hard to accommodate many TDM measures.

4.5.3. TDM Program

Both the TDM Supportive Design and Infrastructure Checklist and the TDM Measures Checklist have been provided in **Appendix I**. Note that this development is meant to function as a warehouse/light industrial building which normally relies on motorized vehicles and trucks. The development is not located within 600m of any major transit station.

The proposed measures are as follows:

TDM Supportive Development Design and Infrastructure Checklist

- Some of the ten (10) required measures related to Walking and Cycling (facilities and bicycle parking) and Vehicle Parking have been satisfied, while others were not applicable.
- Three (3) of the fourteen (14) basic measures related to Walking and Cycling, Parking and Ridesharing have been satisfied, namely:
    - Locating building close to street with no parking areas between entrance and street and to minimize walking distances.
    - Provide wayfinding signage for site accesses.

TDM Measures Checklist

- Two (2) of the seven (7) basic measures related to the Walking and Cycling, Transit, Parking, and TDM Marketing & Communications have been recommended and are as follows:
    - Display local area maps with walking/cycling access routes.
    - Provide a multimodal travel option information package to new residents.
- None of the better measures have been proposed at this time.

4.6. Neighbourhood Traffic Calming

Exempt – see **Table 2**.

4.7. Transit

Exempt – see **Table 2**.

4.8. Review of Network Concept

Exempt – see **Table 2**.

4.9. Intersection Design

4.9.1. Intersection Control

Due to significant growth with the study area, the City envisions the conversion of the O'Keefe/Fallowfield intersection from two-way stop controlled to signalized when it is found to be warranted. A traffic signal warrant was conducted for the intersection under the 2031 total projected conditions and was found to not be

warranted (60% of warrant met). A sensitivity analysis was completed layering on the site generated traffic from the Mattamy Development on O'Keefe Ct as per the TIA by CGH and the traffic signal was then met (100% of warrant met). See **Appendix J** for the detailed traffic signal warrant analysis for O'Keefe Ct/Fallowfield Rd.

4.9.2. Intersection Design

Multi-Modal Level of Service

The New 2025 MMLOS Tool has been adopted by the city, and it will be used for this report. Only signalized intersections are considered for the intersection Level of Service measures in the MMLOS Guidelines. Note that truck level of service has been removed and rather tested as part of the truck turning checks. The MMLOS analysis is summarized in **Table 10**, with detailed analyses provided in **Appendix K**. Note that O'Keefe/Fallowfield has been identified by the city as a future signalized intersection, however no plans have been found online and was therefore not included in the analysis.

Table 10: MMLOS – Existing and Future Signalized Intersections

Intersection	Level of Service					
	Pedestrian		Bicycle		Transit	
	PLoS	Target	BLoS	Target	TLoS	Target
Strandherd/Fallowfield	D	C	D	B	C	E
Cedarview/Fallowfield	B	B	E	C	-	N/A

Pedestrian

- Cedarview/Fallowfield intersection met the pedestrian LoS. Strandherd/Fallowfield did not. Fully protecting the right-turn movements which exceed 300 veh/h would achieve the desired LoS.

Bicycle

- Neither of the signalized intersections met the cyclist LoS due to missing cycling infrastructure on at least 2 of the 4 approaches. Should cycling facilities be provided and protected left turns where volumes exceed 50 turns per hour, then the targets could be met.

Transit

- The transit target LoS is met at Strandherd Dr and not applicable at Cedarview Rd intersections with Fallowfield.

Existing Conditions

The existing traffic volumes were illustrated in **Figure 7** with projected operation outputs in **Table 12**. The detailed Synchro results can be found in **Appendix L**.

Table 11: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Strandherd/Fallowfield (S)	D(F)	0.85(1.06)	WBT(WBT)	31.3(43.8)	D(E)	0.82(0.91)
Cedarview/Fallowfield (S)	B(D)	0.67(0.88)	NBT(SBT)	16.8(26.5)	A(C)	0.60(0.80)
O'Keefe/Fallowfield (U)	C(D)	21(29)	NB(NB)	2(3)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane. S = Signalized , U = Unsignalized						

As seen in **Table 12**, the intersections of Cedarview/Fallowfield and O'Keefe/Fallowfield operate within City of Ottawa acceptable performance. The intersection of Strandherd/Fallowfield however shows congestion

particularly during the PM peak hour, with the intersection having the critical westbound through movement at v/c 1.06. Although it exceeds capacity, this intersection is a large arterial to arterial road and processes a large portion of Barrhaven commuter traffic. Within the TMP, Greenbank Rd is proposed to be widened and extended, along with Barnsdale Rd widening and a new Highway 416 interchange at Barnsdale Rd. This new link is anticipated to shift a large number of commuters currently using Strandherd Dr to get to the highway and may in eventuality reduce traffic demands at the Strandherd/Fallowfield intersection.

Background Conditions 2031

As discussed in **Section 2.1.3 Planned Conditions**, Mattamy Homes is proposing a major plan of subdivision consisting of 1,500 new homes which assumes a new collector road through the subject development. No agreement has been reached, and the client is proposing a development which does not account for a new collector road into the site north of them. As such, traffic generated by the Mattamy Homes in the CGH TIA Report will not be added to O'Keefe Ct (assumed the connection is not granted). Should an agreement occur, then this background analysis and future full buildout would need to be revised.

Since 2026 background has the same intersection layouts as 2031 and is the more critical of the two scenarios, only 2031 will be analyzed. The future projected 2031 background volumes were illustrated in **Figure 19** with projected operation outputs in **Table 12**. The detailed Synchro results can be found in **Appendix M**.

Table 12: 2031 Background Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Strandherd/Fallowfield (S)	F(F)	1.14(1.63)	WBT(WBT)	54.0(112.0)	E(F)	0.96(1.19)
Cedarview/Fallowfield (S)	B(D)	0.67(0.86)	NBT(WBT)	16.7(27.9)	B(D)	0.61(0.83)
O'Keefe/Fallowfield (U)	D(F)	30(54)	NB(SB)	3(5)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. S = Signalized, U = Unsignalized						

As seen in **Table 12**, the intersection of Strandherd/Fallowfield continues to get more congested with other area developments layered on and additional 1% background growth rate per year. The O'Keefe/Fallowfield intersection also experiences further delays due to increased traffic on Fallowfield Rd, reducing available gaps for left turning traffic.

Future Conditions 2031 – Full Buildout + 5 Years

To provide a sensitivity scenario, the intersection of O'Keefe/Fallowfield will be tested with and without the trip generated volumes from the CGH TIA for the Mattamy Homes Development located just north of the site; however, at this time, it is understood that no agreement has been reached and that the added traffic from Mattamy Homes will not travel via O'Keefe Ct.

Since 2026 background has the same intersection layouts as 2031 and is the more critical of the two scenarios, only 2031 will be analyzed. Heavy vehicle percentages were adjusted based on the percentages shown on **Figure 16**. The percentage of heavy vehicles was based on the number of trucks forecasted divided by the movement volume plus 2%. Signal timings were optimized for this scenario. The future projected 2031 volumes were illustrated in **Figure 21** with projected operation outputs in **Table 13**. The detailed Synchro results can be found in **Appendix N**.

Table 13: 2031 Full Build-out Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Strandherd/Fallowfield (S)	F(F)	1.33(1.38)	WBT(WBT)	77.1(89.1)	F(F)	1.04(1.19)
Cedarview/Fallowfield (S)	C(E)	0.71(0.94)	NBT(SBT)	16.8(29.7)	B(D)	0.63(0.85)
O'Keefe/Fallowfield (U)	E(F)	40.7(107.7)	NB(SB)	4.7(10.8)	A(B)	-
O'Keefe/Fallowfield (S)	A(A)	0.41(0.54)	WBT(WBT)	6.1(7.2)	A(A)	0.37(0.48)
O'Keefe/Fallowfield Sensitivity (S)	A(B)	0.59(0.64)	SBL(SBL)	9.3(9.7)	A(A)	0.44(0.58)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. S = Signalized, U = Unsignalized. O'Keefe/Fallowfield sensitivity assumes the trip generation forecasted by CGH for Mattamy Homes.						

Table 13 highlights that several intersections within the study area experience increased delays and higher v/c ratios compared to existing conditions, but generally consistent with background conditions. Notably, the O'Keefe/Fallowfield intersection sees a significant rise in southbound critical movement delay compared to background conditions, although it was already operating at a LoS 'F' predominantly due to background growth. The Strandherd/Fallowfield intersection exceeds theoretical capacity during the peak hours.

Congestion and queueing was noted at Strandherd/Fallowfield intersection which are both major arterial roads and act as key routes in and out of Barrhaven. The site generated traffic had minimal impacts to queues and performance, indicating that the majority of the changes to performance were a function of background growth assumptions and other area developments. As the network matures and new roads are built/widened such as the new Barnsdale Highway 416 interchange, the Greenbank Rd realignment and widening, Stage 3 LRT and Chapman Mills transit priority to name a few, then a reduction in queues and improvement in performance is anticipated at this intersection.

O'Keefe/Fallowfield Sensitivity

The O'Keefe/Fallowfield intersection was analyzed as a signalized intersection under two scenarios: with and without the forecasted traffic from Mattamy Homes. The analysis showed that converting the intersection to a signalized configuration results in overall performance and critical movements operating well below capacity. When the Mattamy Homes traffic volumes are added, the intersection experiences a notable increase in southbound traffic, leading to minor increases in the v/c ratio for the southbound left-turn critical movement, which still remains well within available capacity.

Further sensitivity analysis was performed for the northbound and southbound approaches at the O'Keefe/Fallowfield intersection assuming the control type remains a two-way stop-control under projected 2031 conditions. The following volume thresholds were identified to achieve a LoS rating of 'E' or better which is considered acceptable performance for the City of Ottawa:

- AM Peak
  - Reducing the southbound left-turn (SBL) volume from 45 veh/hr to 25 veh/hr, LoS improves the LoS to 'E'.
- PM Peak
  - Reducing the northbound left-turn (NBL) volume from 15 veh/hr to 10 veh/hr improves the LoS 'E'. It is noted that the community directly south of Fallowfield Rd has alternative routes available via Helene-Campbell Rd if they choose to adjust their routes due to delays.
  - The SBL results in a LoS 'F' regardless of movement volume based on background traffic growth.
  - A critical LoS 'E' can be achieved if background volume growth is removed and the site generated traffic is kept.

Since the SBL movement already has a critical movement of LoS 'F' under future background conditions, the longer delays can be attributed to very conservative assumptions for background traffic growth, including the completion of multiple other area developments by 2031 and a 1% annual growth rate along Fallowfield Drive.

As described in **Section 2.1.3**, all other area developments were layered on to the 2031 buildout year, including developments that do not have a projected buildout year likely because they are not going to happen for many years. A final test was done without background growth and the intersection showed to operate within city standards. Given the uncertainty of when other area developments will be built and when the city invests in infrastructure projects will take place, it is unclear of when or if background traffic volumes will ever reach the forecasted numbers. For this reason, based on the existing traffic volumes plus the layering trips from this development, it is forecasted that operating the intersection as a two-way-stop-control is appropriate interim until proven congestion recommends the intersection to be upgraded to a traffic signal.

5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results summarized herein, the following transportation related conclusions are offered:

Proposed Development

- O'Keefe Court Properties Ltd. is proposing the development of three warehouse buildings totaling 23,850 m^2 of GFA that will be located at 4497 O'Keefe Court. The development is anticipated to be constructed in a single phase by 2026.
- Approximately 119 vehicle parking spaces will be provided in an at-grade parking lot west of the warehouses. The development will provide 5 spaces above the minimum required parking bylaw for this site and does not exceed the maximum parking allowed. Twelve bike parking spaces are proposed.
- The development is anticipated to generate approximately 120 and 105 person trips, which comprises of 95 and 85 new vehicle trips, 20 and 15 passenger trips, 0 transit trips and 5 to 10 active transport (walking and cycling) trips for the AM and PM peaks respectively. Of the vehicle trips, 35 and 25 are assumed to be trucks entering and leaving the site during the AM and PM peak hours respectively.
- Two site accesses will be provided on the south boundary of the site on O'Keefe Ct. The west access will function primarily as an employee entrance/exit while the east access will primarily service trucks utilizing the loading bays. Both accesses will be STOP controlled on the southbound approach from the site. The access locations and design were found to meet the requirements of the City of Ottawa's Private Approach By-Law and internal circulation.
- Given the site context as a warehousing unit, minimal TDM measures are proposed.

Existing and Future Background Conditions

- A background traffic growth rate of 1% per year was applied to the study area intersections based on anticipated future traffic trends, where numerous adjacent developments were considered to be constructed within the 2031 horizon year.
- The 2031 future background conditions anticipate a significant increase of traffic volume due to number of adjacent developments within the study area which were layered on individually. The Strandherd/Fallowfield and O'Keefe/Fallowfield intersections both showed some critical movements approaching or exceeding capacity.
- Mattamy Homes is proposing a plan of subdivision directly north of this development and proposes a new collector road through this site, along with new active transportation facilities and a new transit route. However, the client has advised that no formal agreement has been reached, and the current site plan for this site does not include a new collector road through their site. Further coordination between

the sites will need to be had. For the purpose of this assessment, it will be assumed that the Mattamy Homes development will not have a direct access to O'Keefe Ct.

Projected Conditions

- The 2031 total projected conditions are expected to operate similar to background conditions, demonstrating that the bulk on congestion is a result of background traffic growth and not so much the proposed development.
- When operating O'Keefe/Fallowfield intersection as a signal, it showed to operate very well. A sensitivity analysis was carried out layering on the proposed volumes from the Mattamy Development directly north of this development. This intersection continued to have residual capacity as traffic signal and could accommodate the traffic of both developments.

Future Study Area Modifications

- The O'Keefe/Fallowfield intersection is expected to be converted into a signalized intersection once found to be warranted. A traffic signal warrant determined that by the 2031 full buildout conditions, that a traffic signal is not warranted. Should Mattamy Homes directly north of this site provide a connection to O'Keefe Ct, then the traffic signal warrant would be met. The Synchro analysis indicated that traffic signals may be required if the background traffic volumes are achieved, but would not be required should the proposed development trip generation be layered on to existing volumes (and recently completed/under construction developments included). Since the background traffic volumes depend on various factors which may not all come to fruition, it is therefore not recommended to upgrade the intersection control to signals until it is actually proven to be needed. The City should periodically review the needs and warrants to signalize this intersection.
- The site will provide new pedestrian facilities from O'Keefe Ct to the northern terminus of the site, where it will connect to the existing gravel MUP understood to be directly north of the site. No modifications to the MUP are proposed.
- No additional off-site roadway modifications are currently proposed or triggered by the proposed development.

Overall, the proposed development will have minimal impact to the adjacent road network and is suitable to proceed from a transportation perspective.

Prepared By:

Juan Lavin, P.Eng.
Transportation Engineer

Reviewed By:

Austin Shih, P.Eng.
Senior Transportation Engineer

Appendix A:

Screening Form

Office: +1 613.738.4160
1223 Michael Street, Suite 100|Ottawa, ON K1J 7T2

City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	21-Jun-23
Project	4497 O'Keefe Court TIA
Project Number	478714

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

Module 1.1 - Description of Proposed Development	
Municipal Address	4497 O'Keefe Crt
Description of location	Greenfield site located east of Highway 416 and north of O'Keefe Court
Land Use	Light Industrial buildings
Development Size	23,850 m2
Number of Accesses and Locations	2
Development Phasing	One Phase
Buildout Year	Assumed 2025
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Industrial	
Development Size	23850	sq. m
Trip Generation Trigger Met?	Yes	

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

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	No	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No	
The development includes a drive-thru facility	No	
Safety Trigger Met?	No	

LOT 22 CONCESSION 4 (RIDEAU FRONT) (NEPEAN)

PART 1 EXPROPRIATION PLAN N626069 (MTO PLAN P-6118-83) PIN 04631 - 0413

PART 3 EXPROPRIATION PLAN N626069 (MTO PLAN P-6118-83) PIN 04631-0414

PART 1 PLAN 4R-15617 (MTO PLAN P-6118-107) EASEMENT INST. LT1319761

THE KINGS HIGHWAY 416

O'KEEFE COURT

BETWEEN LOTS 20 AND 21 CONCESSION 4 (RIDEAU FRONT) (NEPEAN)

ROAD ALLOWANCE BETWEEN LOTS 20 AND 21 CONCESSION 4 (RIDEAU FRONT) (NEPEAN)

PART 2 PLAN 5R-13897 PIN 04631-0388

PART 14 PLAN 5R-13897 PIN 04631-0383

PART 10 PLAN 4R-7852 PART 9 PLAN 4R-7852 PIN 04467-0063

LOT 20 CONCESSION 4 (RIDEAU FRONT) (NEPEAN)

BLOCK 113 REGISTERED PLAN M-284 PIN 04631-0317

PROPOSED BUILDING 'A3' 1-STOREY INDUSTRIAL GROSS FLOOR AREA = 8,027 m² (86,400 ft²)

PROPOSED BUILDING 'A2' 1-STOREY INDUSTRIAL GROSS FLOOR AREA = 8,027 m² (86,400 ft²)

PROPOSED BUILDING 'A1' 1-STOREY INDUSTRIAL GROSS FLOOR AREA = 7,804 m² (84,000 ft²)

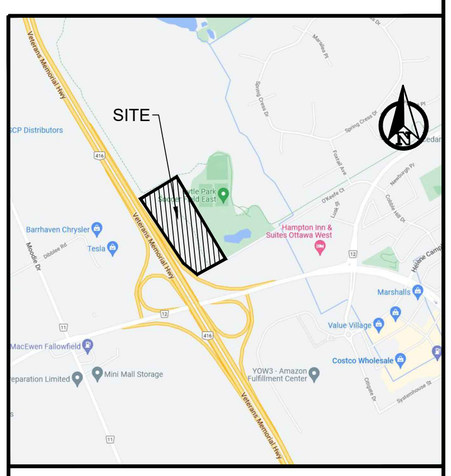
SEPTIC PAD ELEV=105.80

SWM POND

SNOW STORAGE AREA

FIRE ROUTE

Trees & Brush



LEGAL INFORMATION DERIVED FROM:

TOPOGRAPHICAL PLAN OF

PART OF LOT 21
CONCESSION 4 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
CITY OF OTTAWA

PREPARED BY
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

JOB # 7332-06 PILON PT LOT 21 CON 4 RF NEPEAN TOPO D2

CONSTRUCTION NOTES

1. BARRIER CURB (AS PER OPSD 600.110)
2. 90° PARKING STRIPE (WHITE - 0.15m STRIPES - TYP)
3. BARRIER FREE PAVEMENT MARKING AND Rb-93 SIGN
4. LANDSCAPED AREA (REFER TO LANDSCAPE DRAWINGS)
5. CONCRETE SIDEWALK (PER OPSD 310.010)
6. SIDEWALK RAMP (TO INCLUDE TACTILE ATTENTION MATS PER: OPSD - 310.039 - REFER TO SP-D1 FOR DETAIL)
7. PEDESTRIAN CROSSING (WHITE ZEBRA STRIPING - 0.60m AT 1.20m O.C.)
8. STOP BAR (WHITE) AND STOP SIGN (SEE DETAILS ON SP-D1)
9. FREESTANDING 'NO PARKING - FIRE ROUTE' SIGN
10. WALL MOUNTED 'NO PARKING - FIRE ROUTE' SIGN
11. PROPOSED 1.8m CHAIN-LINK FENCE (REFER TO LANDSCAPE DETAILS)
12. PROPOSED 2.4m CHAIN-LINK FENCE (REFER TO LANDSCAPE DETAILS)
13. POND WARNING SIGN
14. WASTE COMPACTOR ON CONCRETE PAD
15. PEDESTRIAN CROSSING SIGN
16. PROPOSED BIKE RACKS (x2) - 12 TOTAL

LEGEND

- PROPERTY LINE
- BUILDING OUTLINE
- CONCRETE SIDEWALK
- BARRIER CURB
- 1.8m CHAIN-LINK FENCE (REFER TO LANDSCAPE PLANS)
- 2.4m CHAIN-LINK FENCE (REFER TO LANDSCAPE PLANS)
- FIRE ROUTE (MIN 12.0m CENTRELINE RADIUS)

SITE STATISTICS:

EXISTING SITE AREA:	68,844 m² (17.01 ACRES)
BUILDING AREA:	
A1	7,804 m² (84,000 ft²)
A2	8,027 m² (86,400 ft²)
A3	8,027 m² (86,400 ft²)
TOTAL	23,858 m² (256,800 ft²)
PARKING REQUIRED:	0.80/100m² / FIRST 5,000m² (40 CARS) 0.40/100m² / THEREAFTER (75 CARS) TOTAL: 115 CARS
PARKING PROVIDED:	119 CARS

D07-1 2-25-0085 AND PLAN#19335

THE PROPERTIES GROUP

KWA SITE DEVELOPMENT CONSULTING
KWA SITE DEVELOPMENT CONSULTING INC.
2453 Auckland Drive
Burlington, ON L7L 7A9

REVISION BLOCK

#	DATE	DESCRIPTION
1.	06/11/2025	ISSUED FOR SITE PLAN APPROVAL
2.	09/18/2025	ISSUED FOR COORDINATION

CONCEPTUAL SITE PLAN

THE PROPERTIES GROUP
4497 O'KEEFE COURT (NEPEAN)
NEPEAN, ONTARIO

PROJECT No: 21684 | DRAWN BY: BH | CHECKED BY: TF

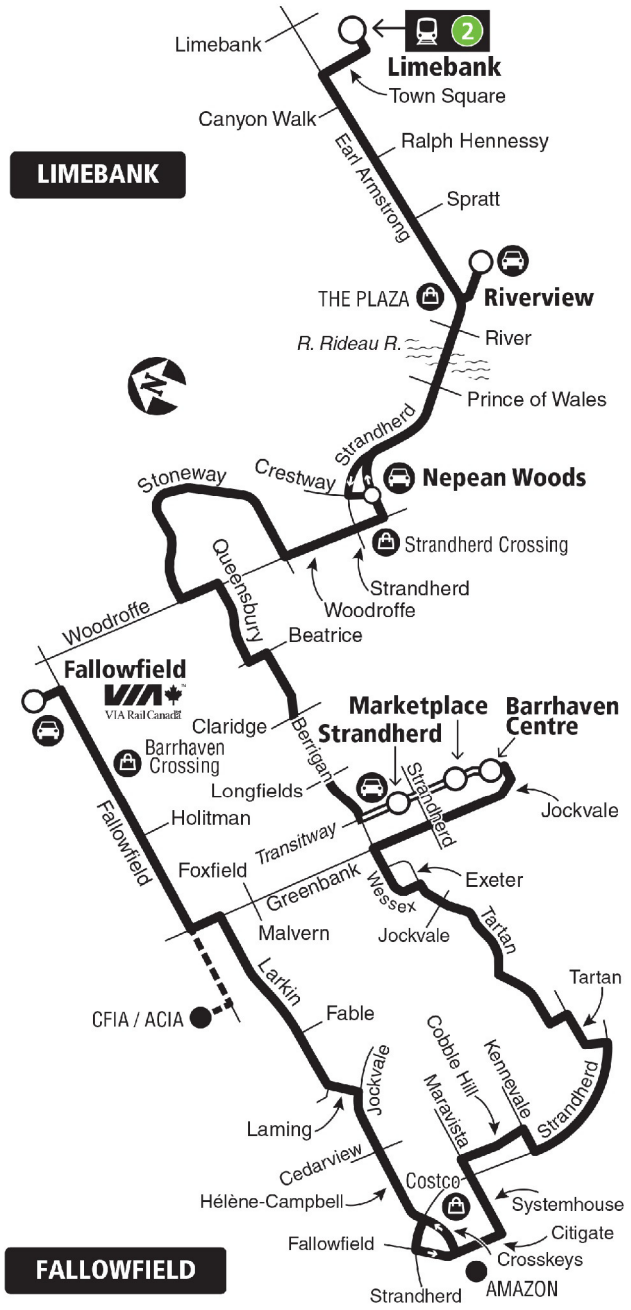
NORTH ARROW

GRAPHIC SCALE
0m 10m 20m 30m
1:600

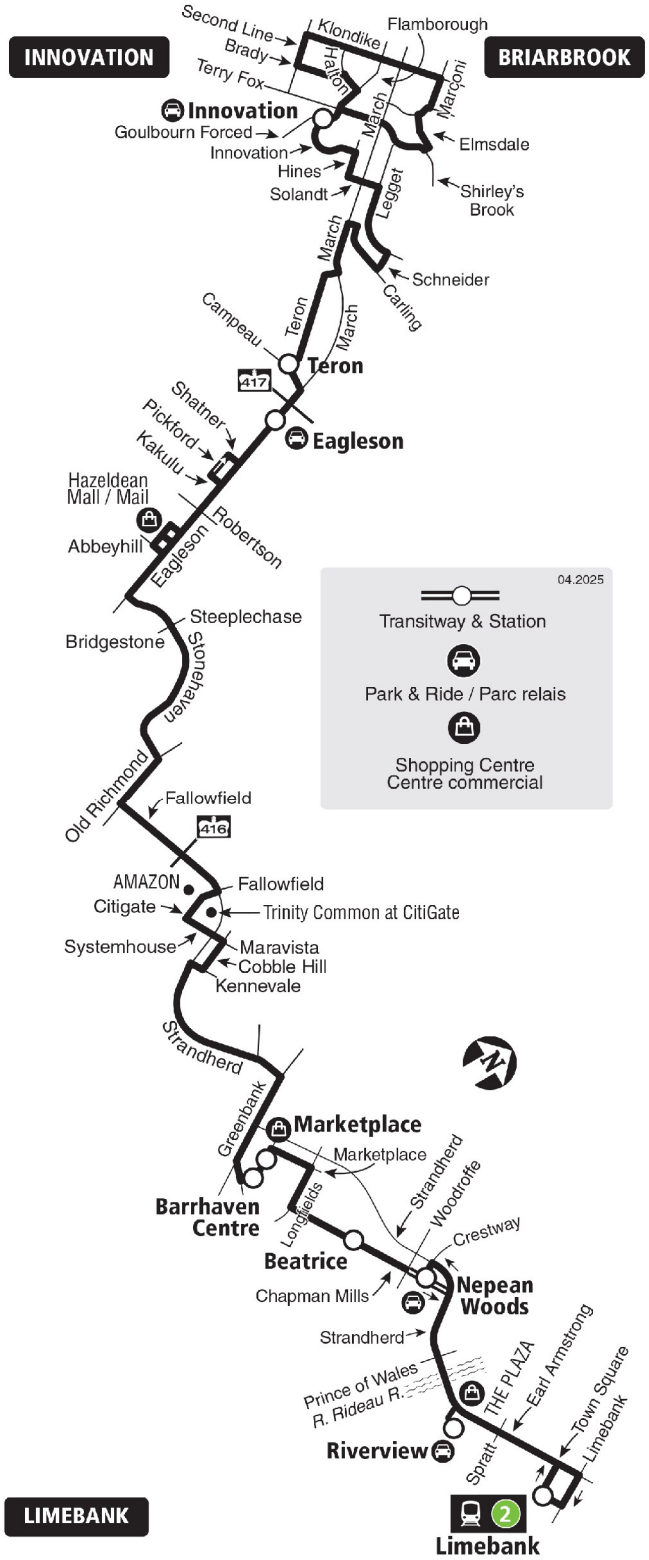
SA-001 r2

Appendix B:

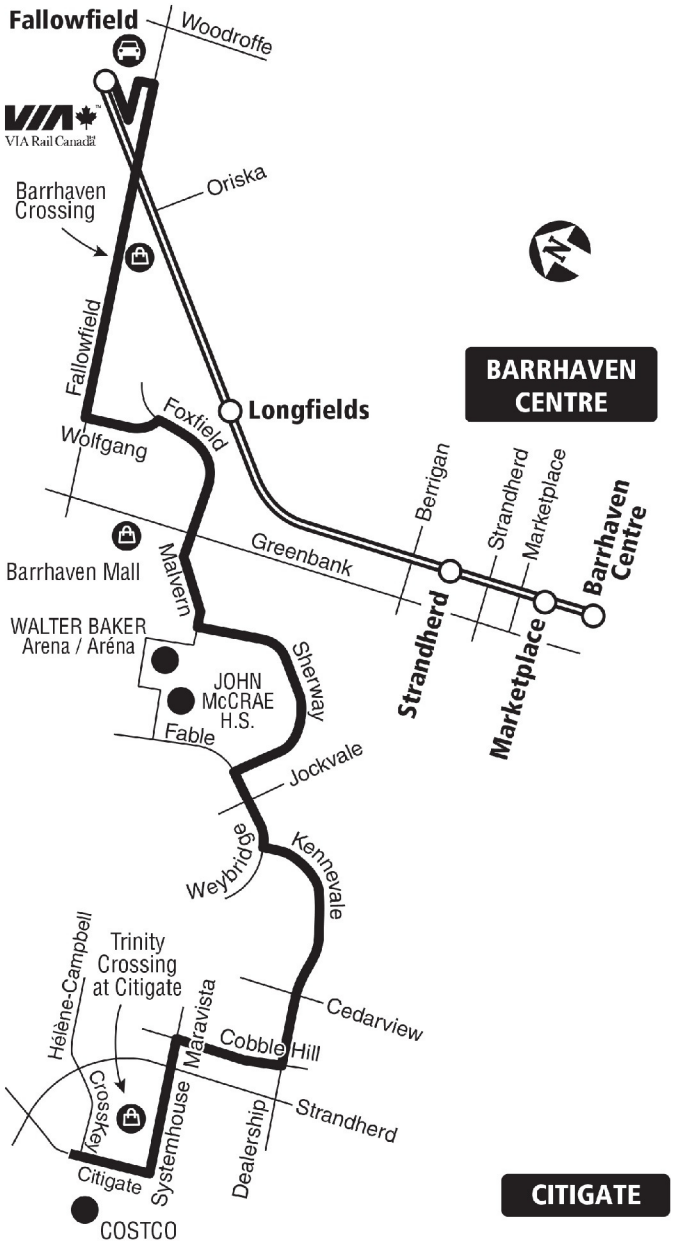
Transit Route Maps


Limebank
2
Limebank
Town Square
Canyon Walk
Earl Armstrong
Ralph Hennessy
LIMEBANK
Spratt
THE PLAZA
Riverview
R. Rideau R.
River
Prince of Wales
Strandherd
Stoneway
Crestway
Nepean Woods
Strandherd Crossing
Queensbury
Strandherd
Woodroffe
Woodroffe
Beatrice
Fallowfield
VIA Rail Canada
Claridge
Barrhaven Crossing
Marketplace
Strandherd
Barrhaven Centre
Berrigan
Longfields
Strandherd
Jockvale
Fallowfield
Holitman
Transitway
Foxfield
Greenbank
Wessex
Exeter
Malvern
Jockvale
Tartan
Tartan
Larkin
CFIA / ACIA
Fable
Cobble Hill
Kennevale
Maravista
Strandherd
Jockvale
Laming
Cedarview
Costco
Hélène-Campbell
Systemhouse
Citigate
Fallowfield
Crosskeys
Strandherd
AMAZON
FALLOWFIELD
05.2025
Transitway & Station
Some trips / Quelques trajets
Park & Ride / Parc relais
Shopping Centre / Centre commercial

2025.05


INNOVATION
BRIARBROOK
Second Line
Brady
Terry Fox
Klondike
Flamborough
Hazeldean
March
Marconi
Innovation
Goulbourn Forced
Innovation
Hines
Solandt
Elmsdale
Shirley's Brook
Legget
March
Schneider
Carling
Campeau
Teron
March
Teron
417
Shatner
Pickford
Kakulu
Eagleson
Hazeldean Mall / Mail
Abbeyhill
Eagleson
Robertson
Steeplechase
Bridgestone
Shenaravon
Old Richmond
Fallowfield
416
AMAZON
Citigate
Systemhouse
Fallowfield
Trinity Common at CitiGate
Maravista
Cobble Hill
Kennevale
Strandherd
Greenbank
Marketplace
Barrhaven Centre
Marketplace
Strandherd
Woodroffe
Longfields
Crestway
Beatrice
Chapman Mills
Nepean Woods
Strandherd
Prince of Wales
R. Rideau R.
THE PLAZA
Earl Armstrong
Town Square
Limebank
Riverview
Spratt
LIMEBANK
2
Limebank
04.2025
Transitway & Station
Park & Ride / Parc relais
Shopping Centre
Centre commercial

2025.05


Fallowfield
Woodroffe
VIA Rail Canada
Barrhaven Crossing
Oriska
Fallowfield
Longfields
Foxfield
Wolfgang
BARRHAVEN CENTRE
Berrigan
Strandherd
Marketplace
Barrhaven Centre
Greenbank
Barrhaven Mall
Malvern
WALTER BAKER Arena / Aréna
JOHN McCRAE H.S.
Fable
Sherway
Strandherd
Marketplace
Jockvale
Weybridge
Kennevale
Trinity Crossing at Citigate
Hélène-Campbell
Maravista
Cedarview
Cobble Hill
Crosskey
Systemhouse
Strandherd
Dealership
Citigate
COSTCO
CITIGATE
04.2025
Station
Park & Ride / Parc relais
Shopping Centre / Centre commercial

2025.04

Appendix C:

Traffic Data

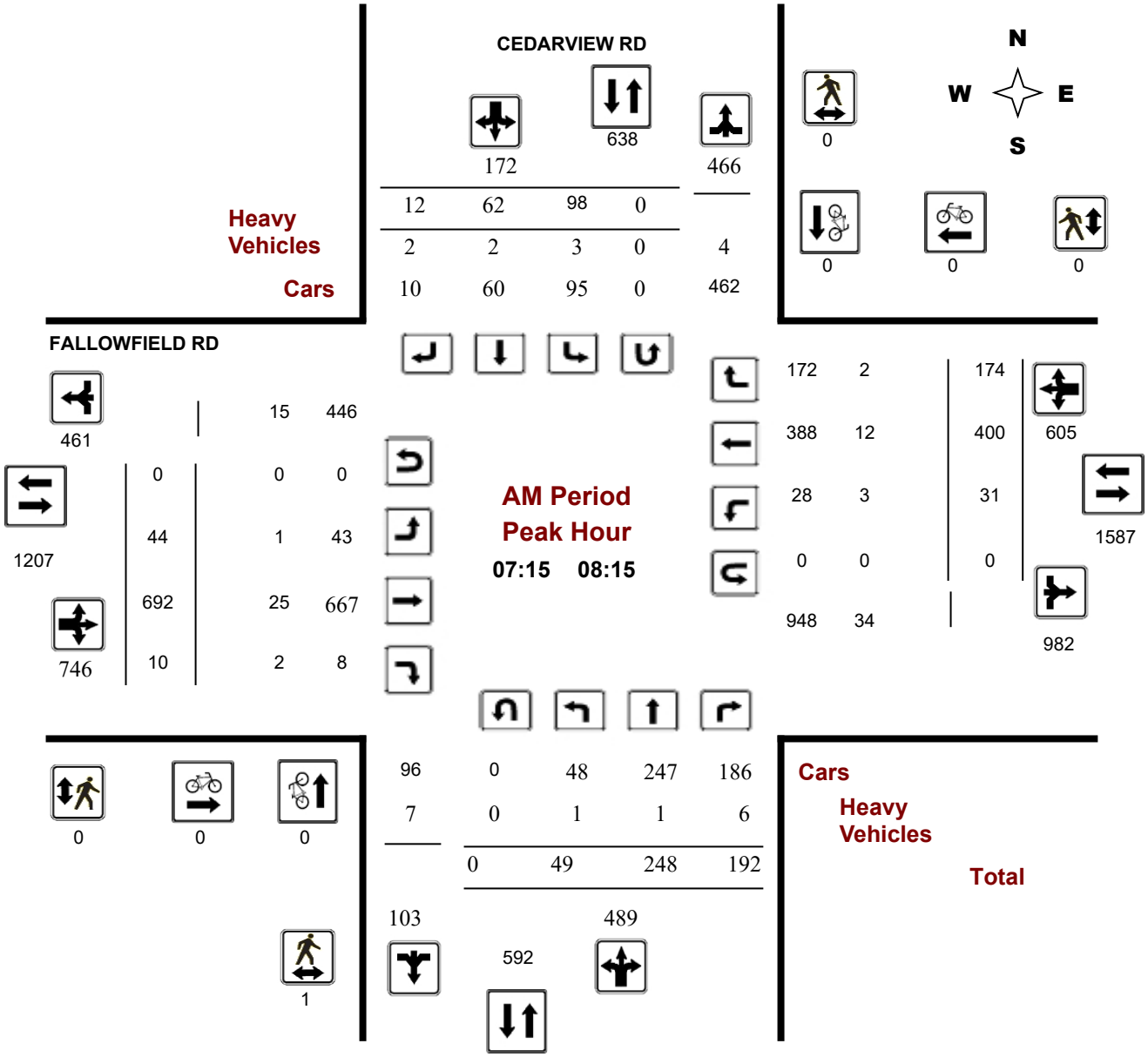
Transportation Services - Traffic Services

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

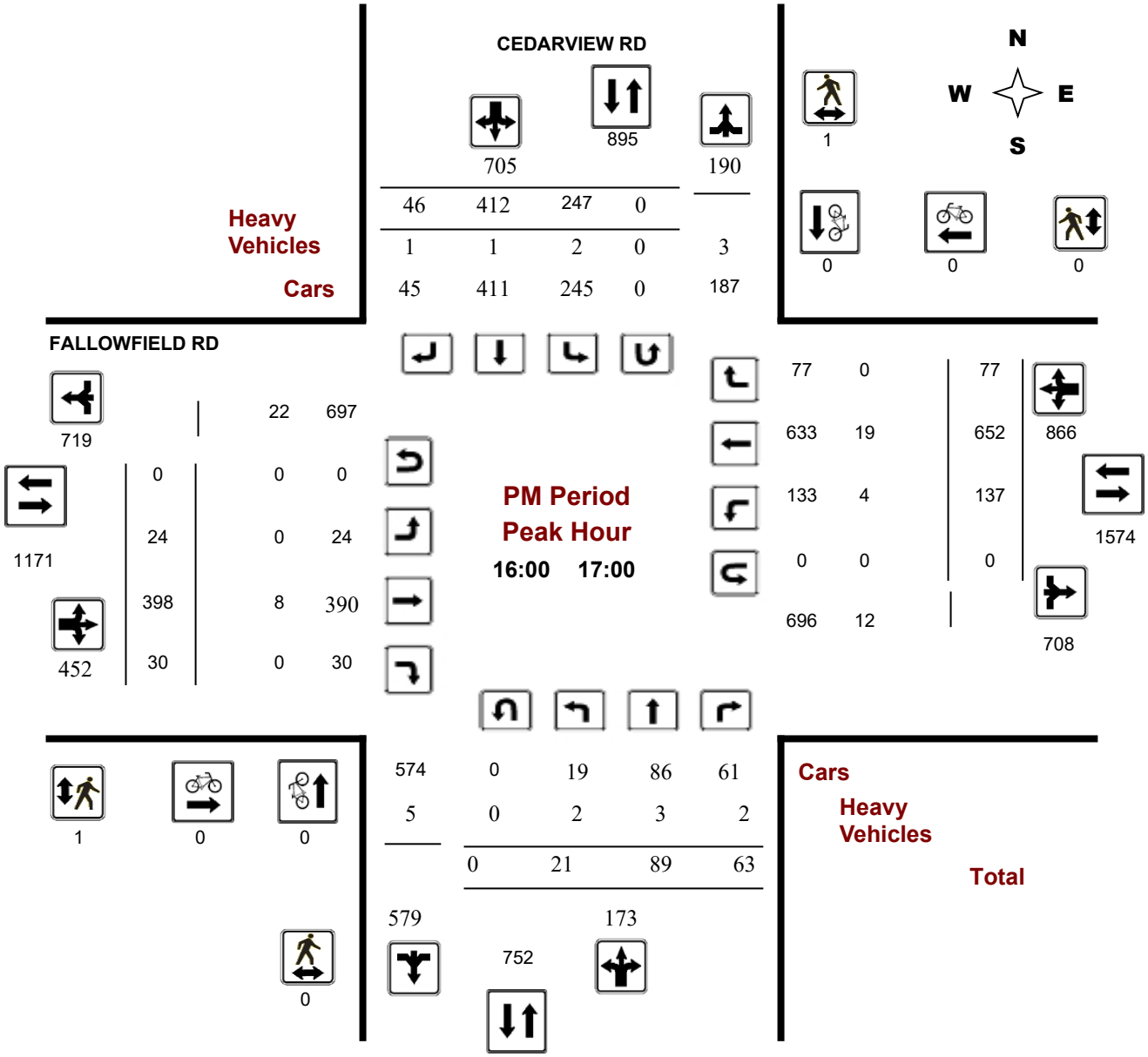
Transportation Services - Traffic Services

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

FALLOWFIELD RD @ O'KEEFE CRT

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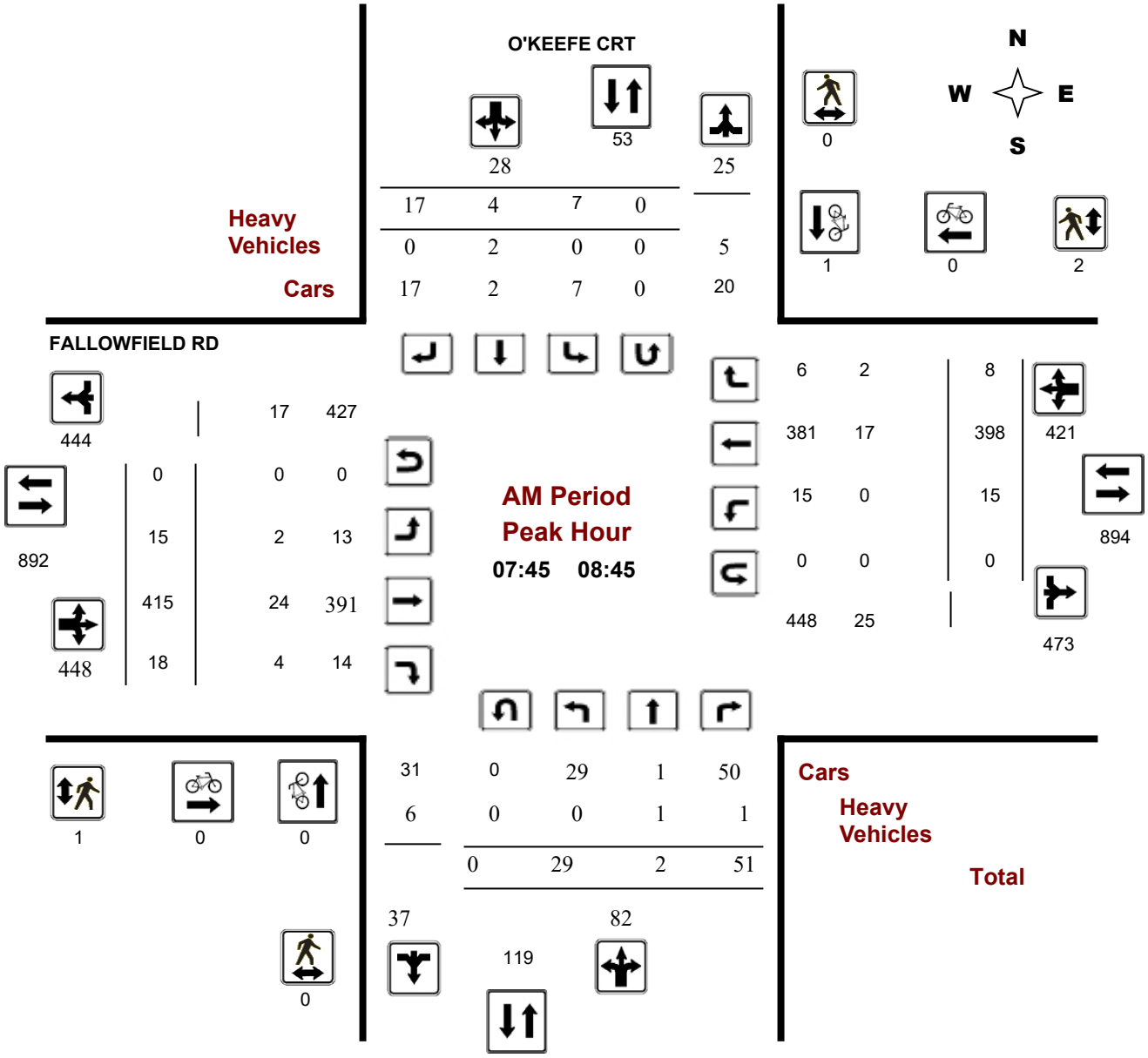
Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Tuesday, October 25, 2022 **WO No:** 40639

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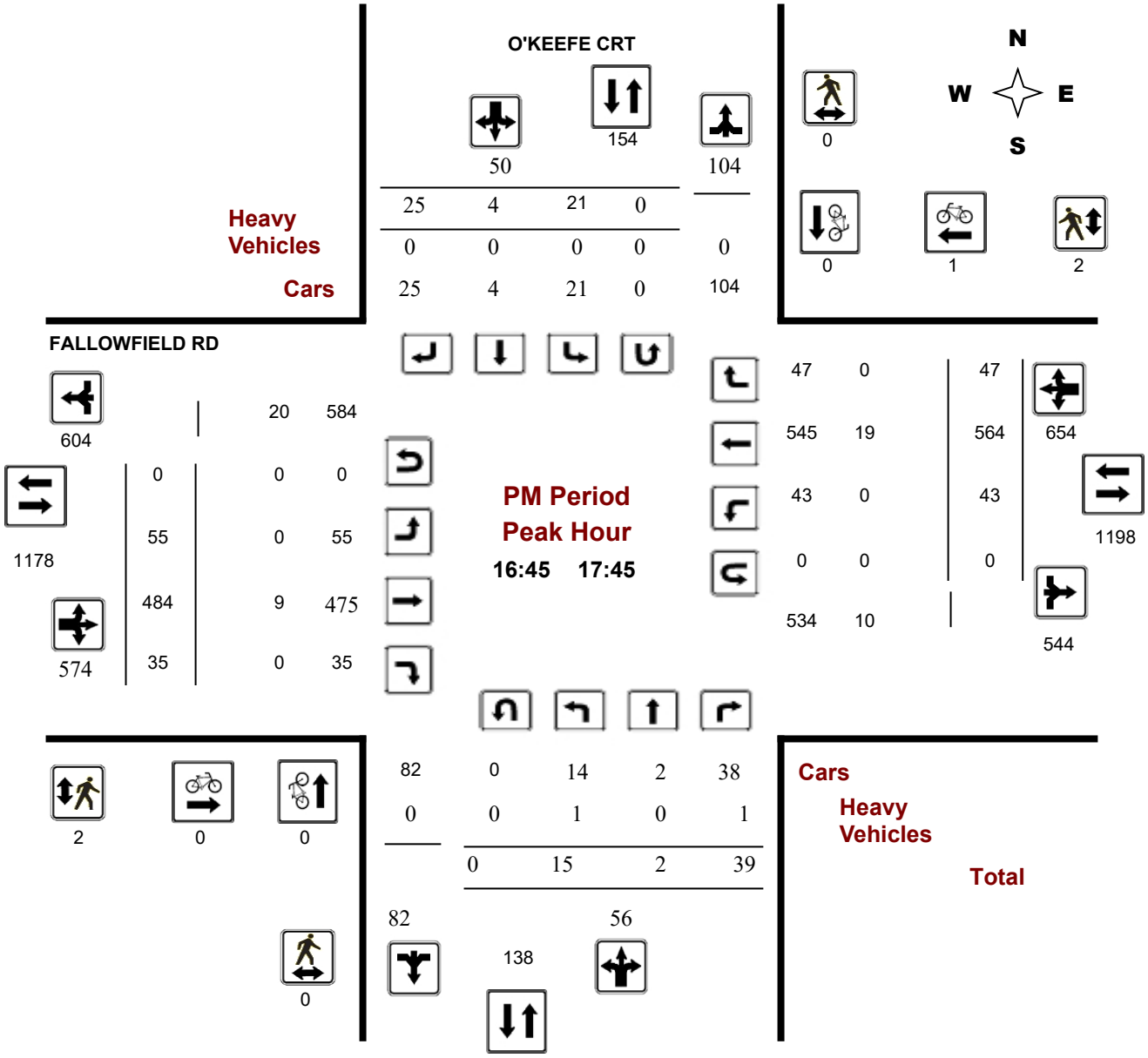


Comments

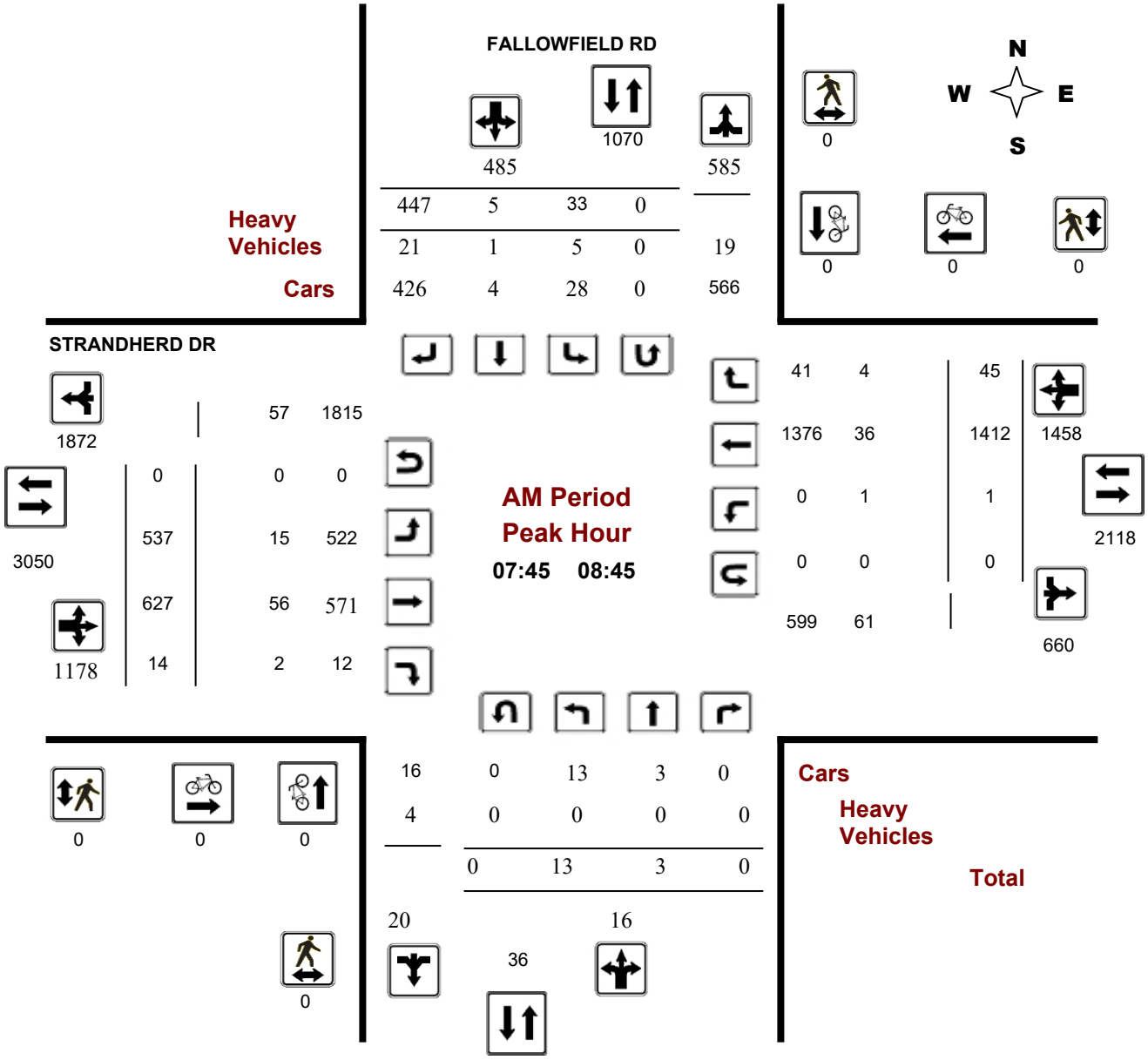
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ STRANDHERD DR

Survey Date: Thursday, March 08, 2018 **WO No:** 37594

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



Comments

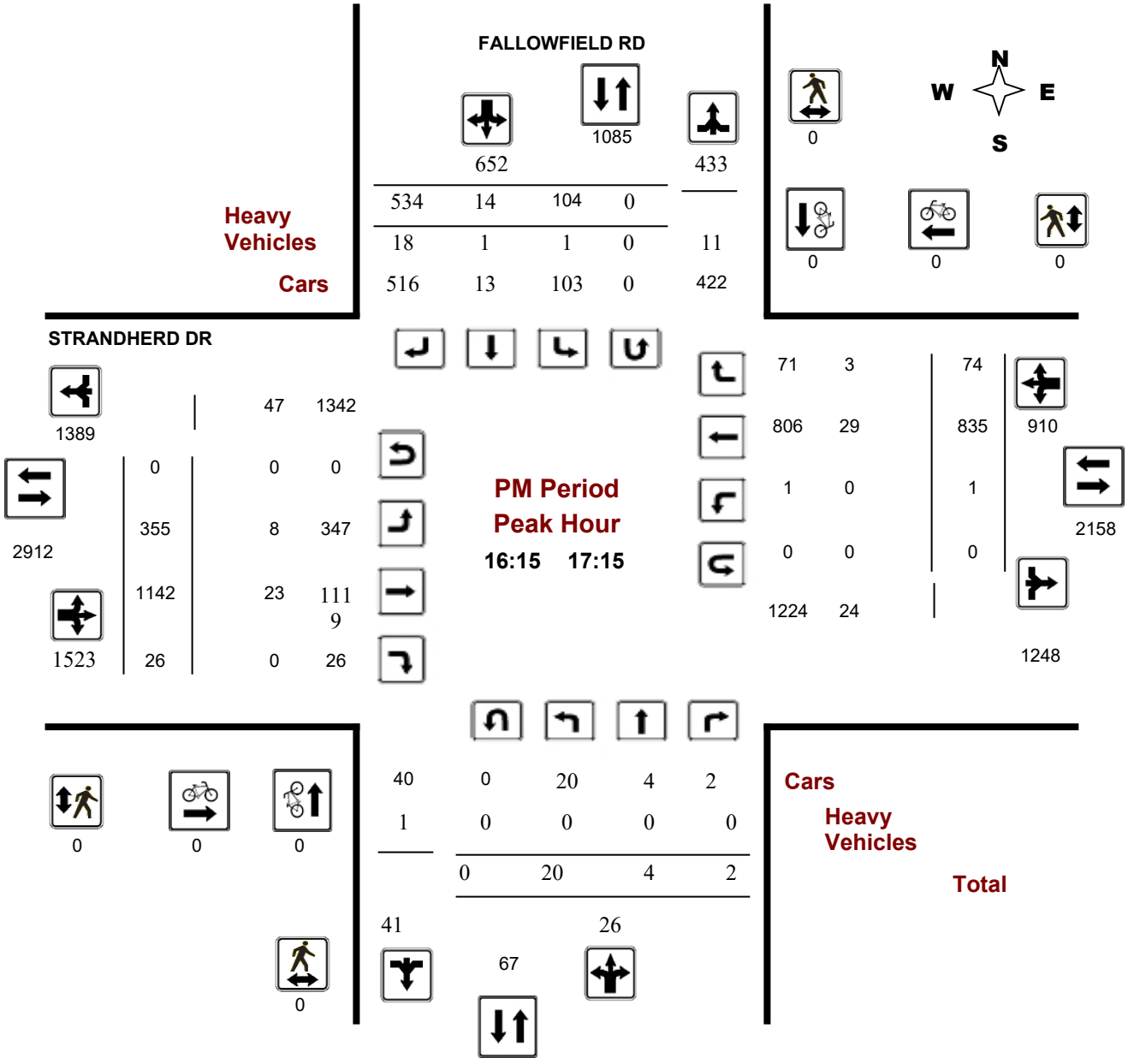
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ STRANDHERD DR

Survey Date: Thursday, March 08, 2018 **WO No:** 37594

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



Comments

Appendix D:

Collision Data

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	39	7	8	4	1	5	0	1	65	79%
Non-fatal injury	5	2	1	5	0	4	0	0	17	21%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**44**	**9**	**9**	**9**	**1**	**9**	**0**	**1**	**82**	100%
	#1 or 54%	#2 or 11%	#2 or 11%	#2 or 11%	#6 or 1%	#2 or 11%	#8 or 0%	#6 or 1%		

O'KEEFE CRT, END to FOXTAIL AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	1	0	0	1	50%
Non-fatal injury	0	0	0	0	0	1	0	0	1	50%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	100%
	0%	0%	0%	0%	0%	100%	0%	0%		

FALLOWFIELD RD/O'KEEFE CRT

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	12,778	1825	**0.09**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	1	0	0	1	50%
Non-fatal injury	0	0	0	0	0	1	0	0	1	50%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	100%
	0%	0%	0%	0%	0%	100%	0%	0%		

FALLOWFIELD RD/STRANDHERD DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	52	36,211	1825	**0.79**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	29	2	8	1	1	2	0	0	43	83%
Non-fatal injury	4	0	0	4	0	1	0	0	9	17%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**33**	**2**	**8**	**5**	**1**	**3**	**0**	**0**	**52**	100%
	63%	4%	15%	10%	2%	6%	0%	0%		

FALLOWFIELD RD, CEDARVIEW RD to O'KEEFE CRT

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	1	0	0	1	50%
Non-fatal injury	0	0	0	0	0	1	0	0	1	50%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	100%
	0%	0%	0%	0%	0%	100%	0%	0%		

CEDARVIEW RD/FALLOWFIELD RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	24	25,793	1825	**0.51**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	10	5	0	3	0	0	0	1	19	79%
Non-fatal injury	1	2	1	1	0	0	0	0	5	21%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**11**	**7**	**1**	**4**	**0**	**0**	**0**	**1**	**24**	100%
	46%	29%	4%	17%	0%	0%	0%	4%		

Appendix E:

Proxy Site Observations

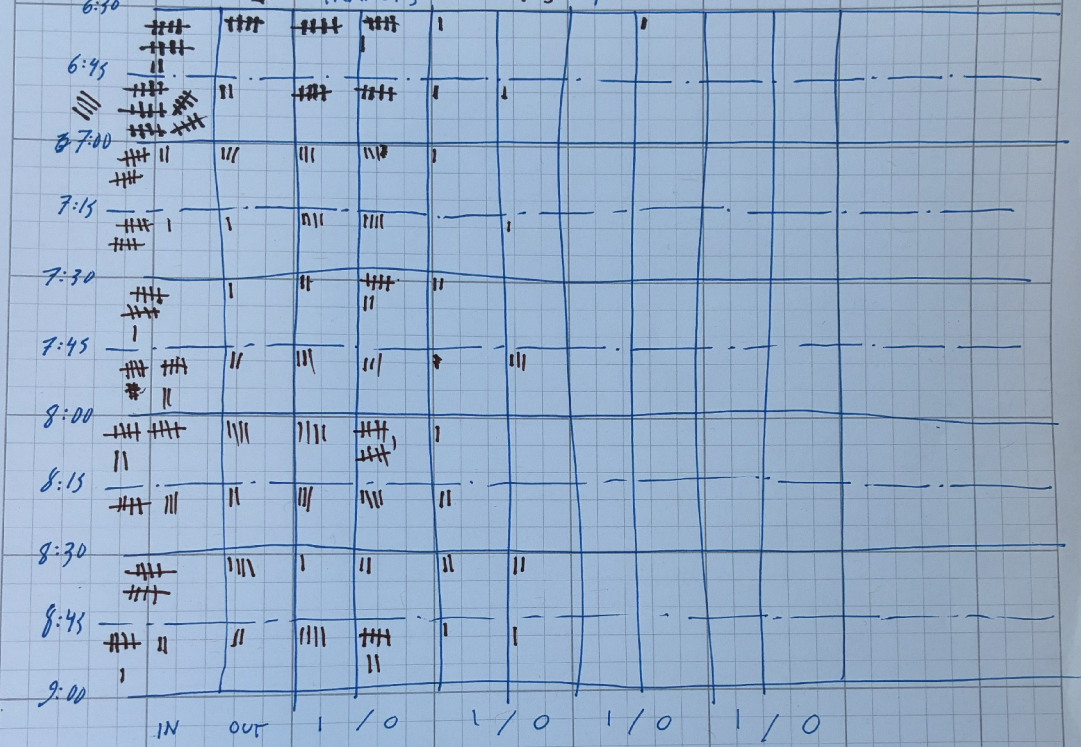
PARSONS

SUBJECT _____ JOB NO. _____

SHEET NO. _____ OF _____

MADE BY _____ DATE _____ CHECKED BY _____ DATE _____

MORNING OF SEPT 16 2025



	PVs In	PVs out	Singles In	Singles out	TTs in	TTs out	Cyc out
6:30-6:45	12	5	5	6	1	0	1
6:45-7:00	29	2	5	5	1	1	—
7:00-7:15	12	3	3	3	1	0	—
7:15-7:30	11	1	4	4	0	1	—
7:30-7:45	11	1	2	7	2	0	—
7:45-8:00	12	2	3	3	0	3	—
8:00-8:15	12	4	4	5	1	0	—
8:15-8:30	8	2	3	4	2	0	—
8:30-8:45	10	4	1	2	2	2	—
8:45-9:00	8	2	4	7	1	1	—

Directional Traffic Flow

Intersection: Logistics / Russell
Date: Tuesday, Sep 16, 2025
Time: 3:30PM to 6:00PM

TRUCK TRAILERS

Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	15-Minute Total	1-Hour Total
3:30PM - 3:45PM													0	0
3:45PM - 4:00PM													0	0
4:00PM - 4:15PM													0	0
4:15PM - 4:30PM													0	0
4:30PM - 4:45PM													0	0
4:45PM - 5:00PM													0	0
5:00PM - 5:15PM													0	0
5:15PM - 5:30PM													0	0
5:30PM - 5:45PM		1											1	**1**
5:45PM - 6:00PM													0	**1**
2.5 Hour Total	0	1	0	0	0	0	0	0	0	0	0	0	1	
Peak Hour Total (4:45PM - 5:45PM)	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

SINGLE UNIT TRUCKS

Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	15-Minute Total	1-Hour Total
3:30PM - 3:45PM		2			2								4	4
3:45PM - 4:00PM		2			0								2	6
4:00PM - 4:15PM		5			0								5	11
4:15PM - 4:30PM		12			1								13	24
4:30PM - 4:45PM		8			0								8	28
4:45PM - 5:00PM		3			1								4	**30**
5:00PM - 5:15PM		5			0								5	**30**
5:15PM - 5:30PM		5			0								5	22
5:30PM - 5:45PM		1			0								1	15
5:45PM - 6:00PM		2			0								2	13
2.5 Hour Total	0	45	0	0	4	0	0	0	0	0	0	0	49	
Peak Hour Total (4:45PM - 5:45PM)	**0**	**28**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	

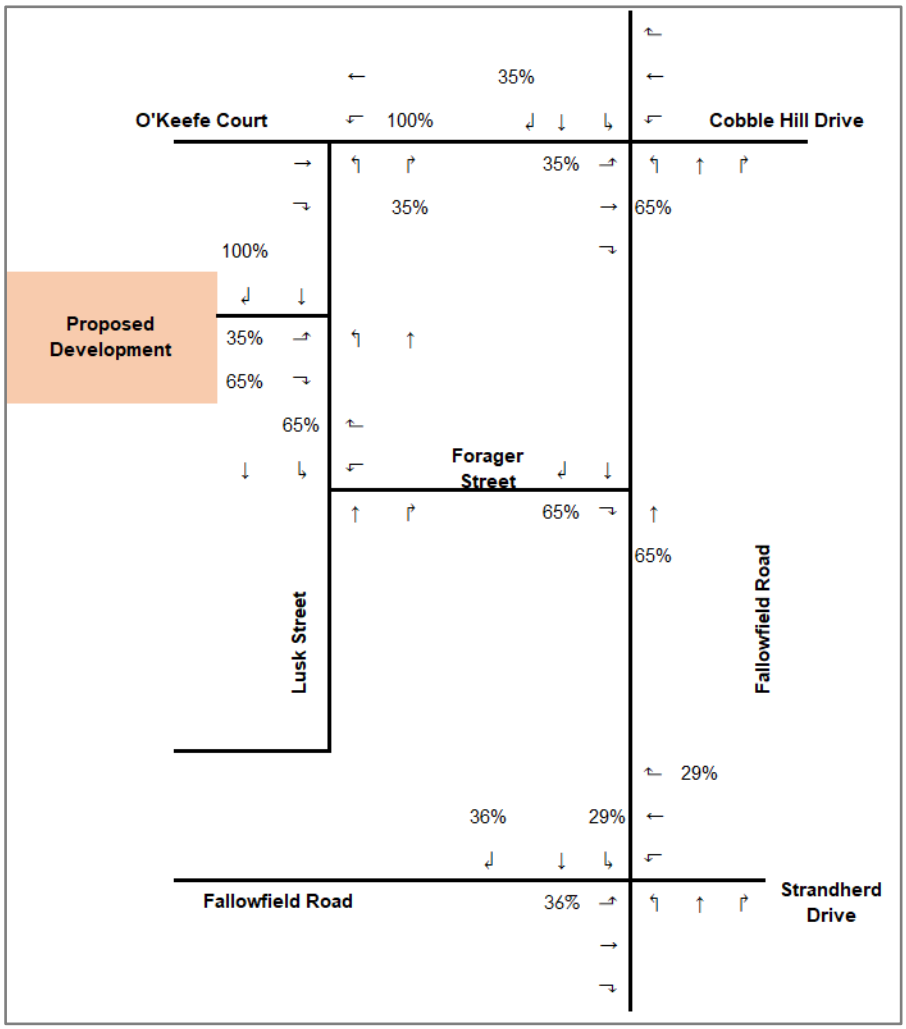
PERSONAL VEHICLES

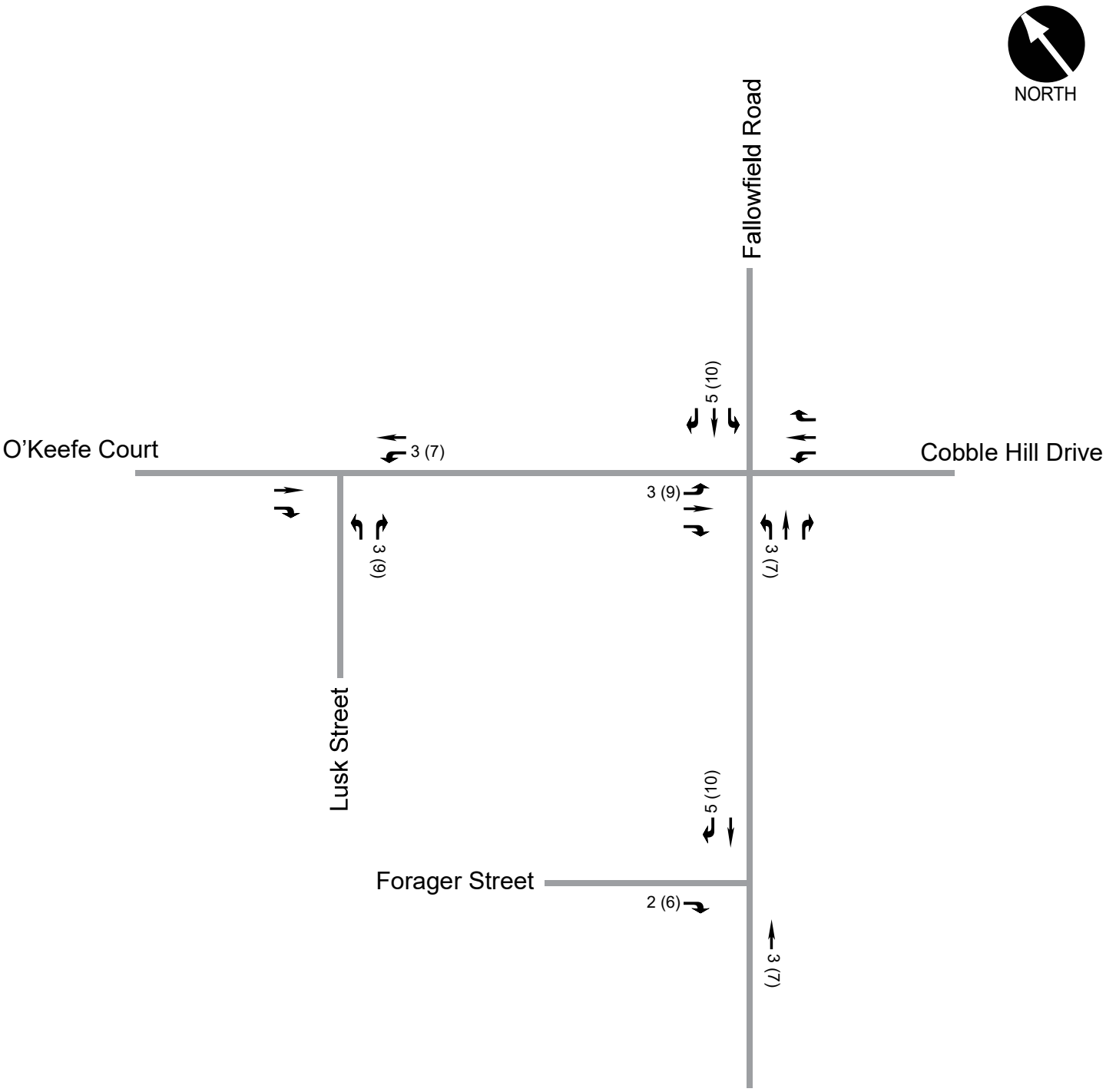
Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	15-Minute Total	1-Hour Total
3:30PM - 3:45PM		7			14								21	21
3:45PM - 4:00PM		9			4								13	34
4:00PM - 4:15PM		6			10								16	50
4:15PM - 4:30PM		11			9								20	70
4:30PM - 4:45PM		10			14								24	73
4:45PM - 5:00PM		11			18								29	89
5:00PM - 5:15PM		16			12								28	101
5:15PM - 5:30PM		41			27								68	149
5:30PM - 5:45PM		14			40								54	**179**
5:45PM - 6:00PM		7			9								16	166
2.5 Hour Total	0	132	0	0	157	0	0	0	0	0	0	0	289	
Peak Hour Total (4:45PM - 5:45PM)	**0**	**82**	**0**	**0**	**97**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**179**	

Appendix F:

Adjacent Development Site Generated Traffic Volumes

Figure 7 - Site Traffic Assignment

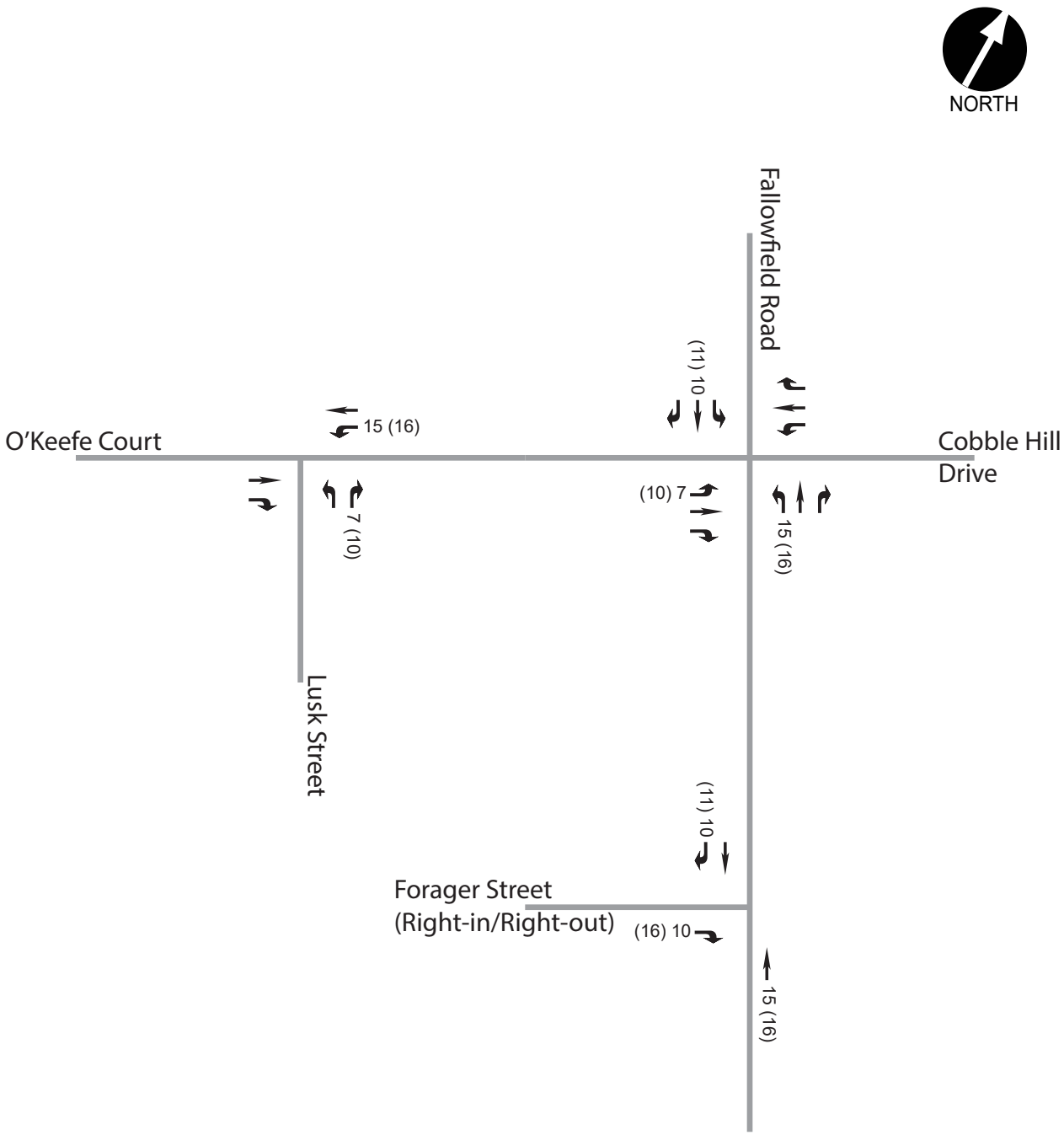




115 Lusk Street
Transportation Impact Assessment

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

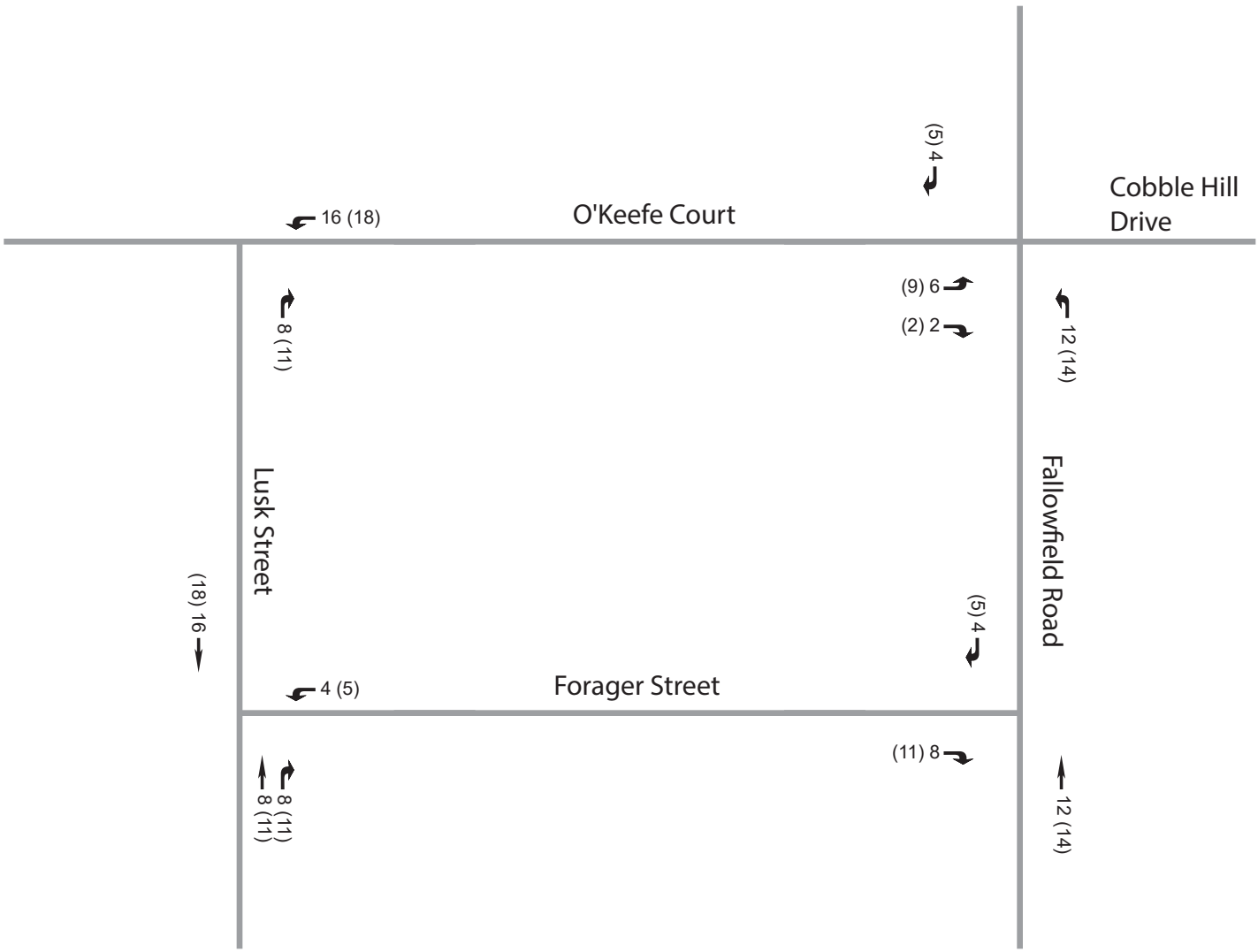
PROJECT No. 122508
DATE: January 2021
SCALE: N.T.S.



LEGEND

Permitted Movements

xxx (xx) — Weekday AM (PM) Peak Hour Vehicular Volume



LEGEND

Permitted Movements

xxx (xxx) — Weekday AM (PM) Peak Hour Vehicular Volume

ARCADIS IBI GROUP

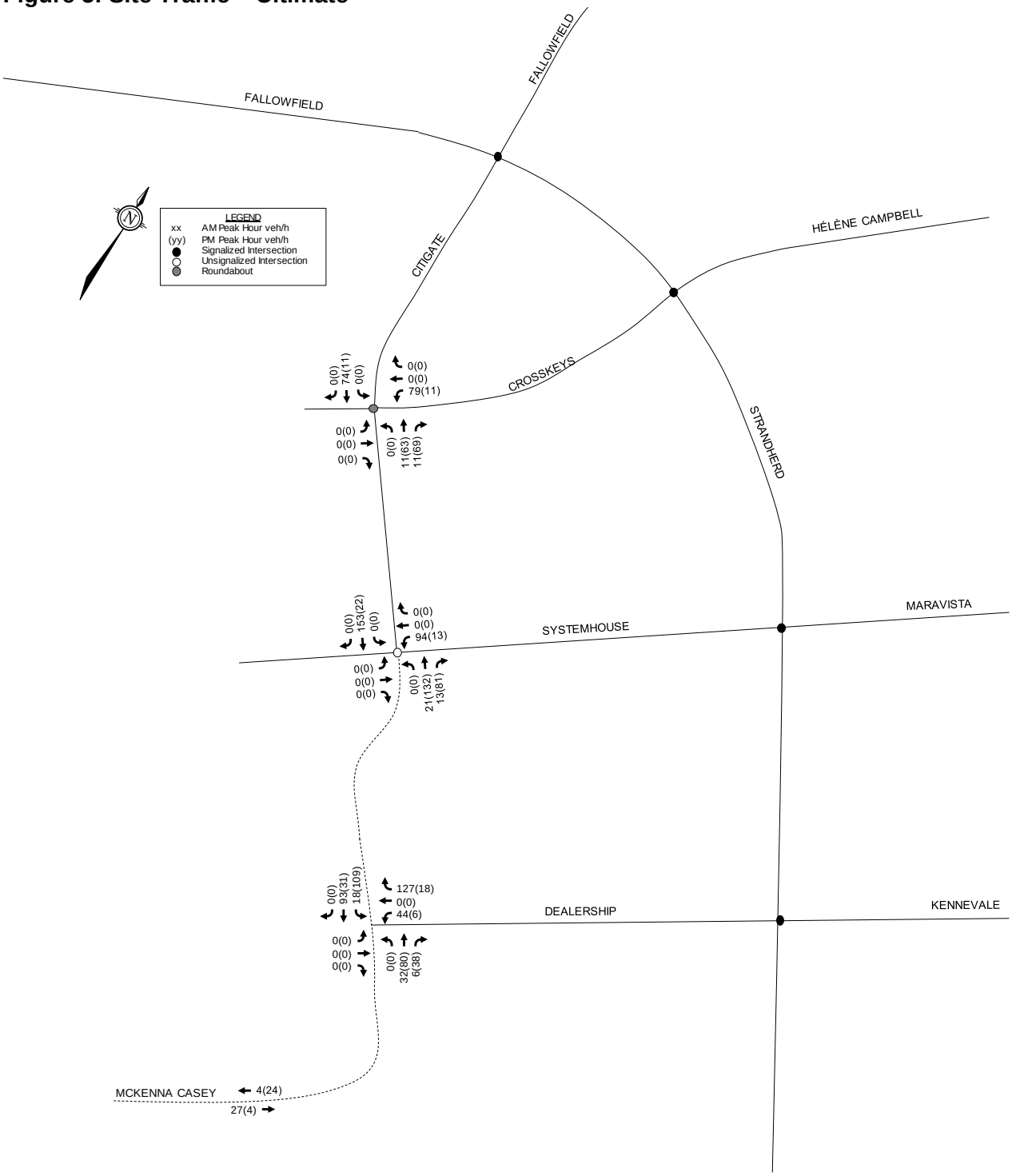
140 Lusk Street Transportation Impact Assessment

Exhibit 6: Site-Generated Traffic

PROJECT No. 140895

SCALE: N.T.S.

Figure 5: Site Traffic – Ultimate



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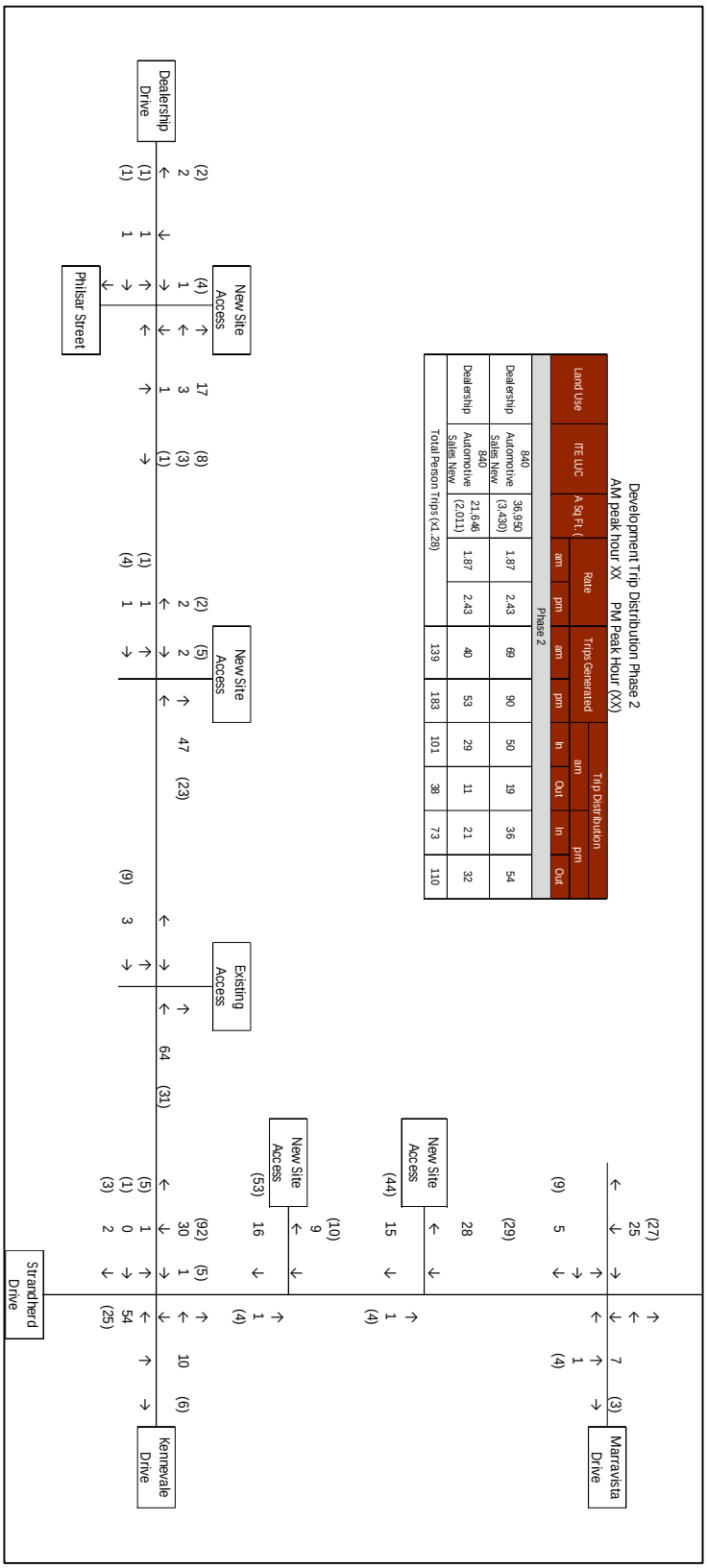
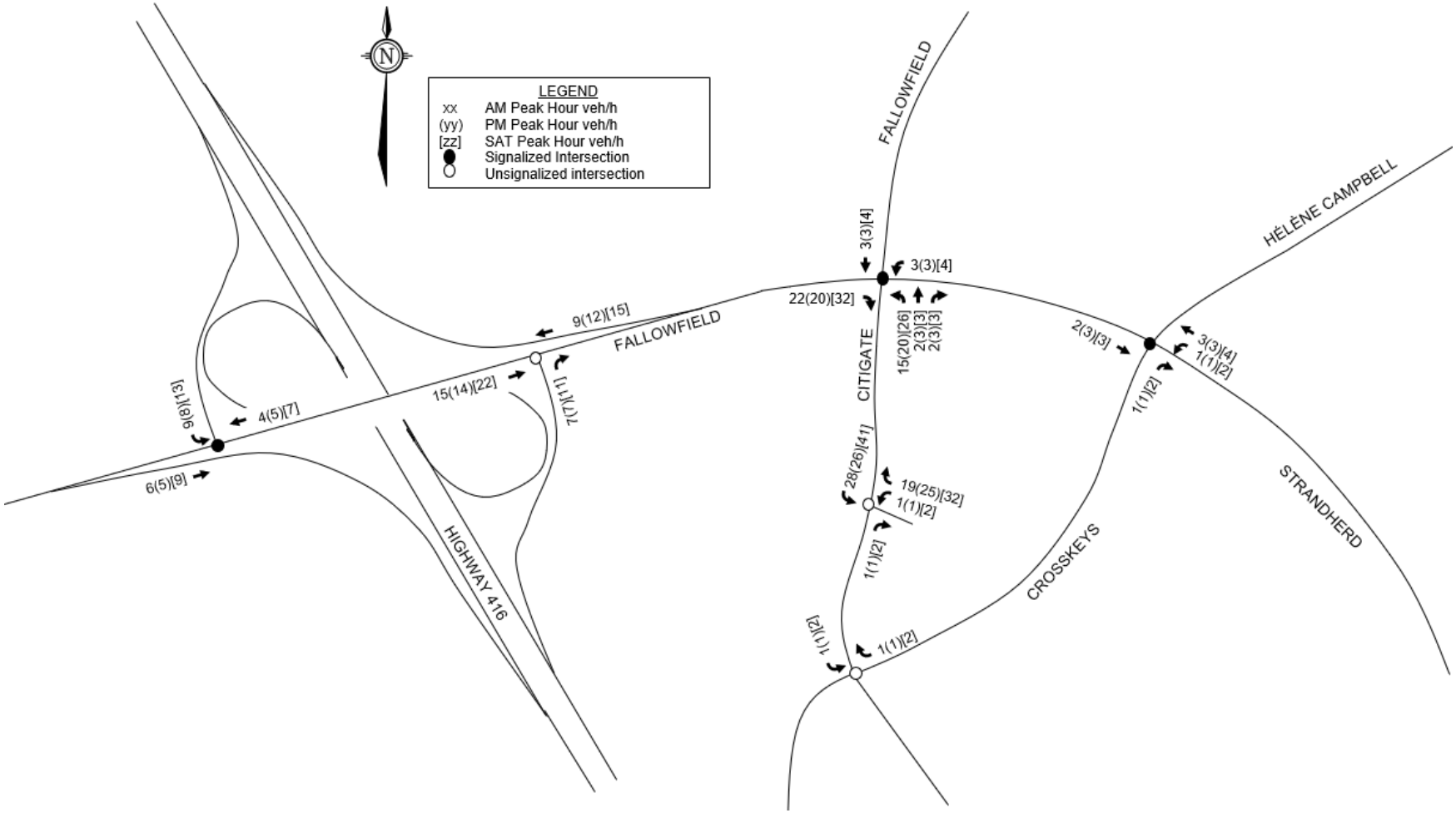


Figure 7.2 Phase Two Development Generated traffic

Figure 4: Site Generated Traffic Volumes



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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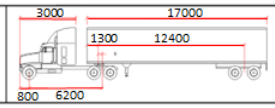
Appendix G:

Truck Turning Templates

PARSONS

Note: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall provide the location of utilities and shall be responsible for adequate protection from damage.

N

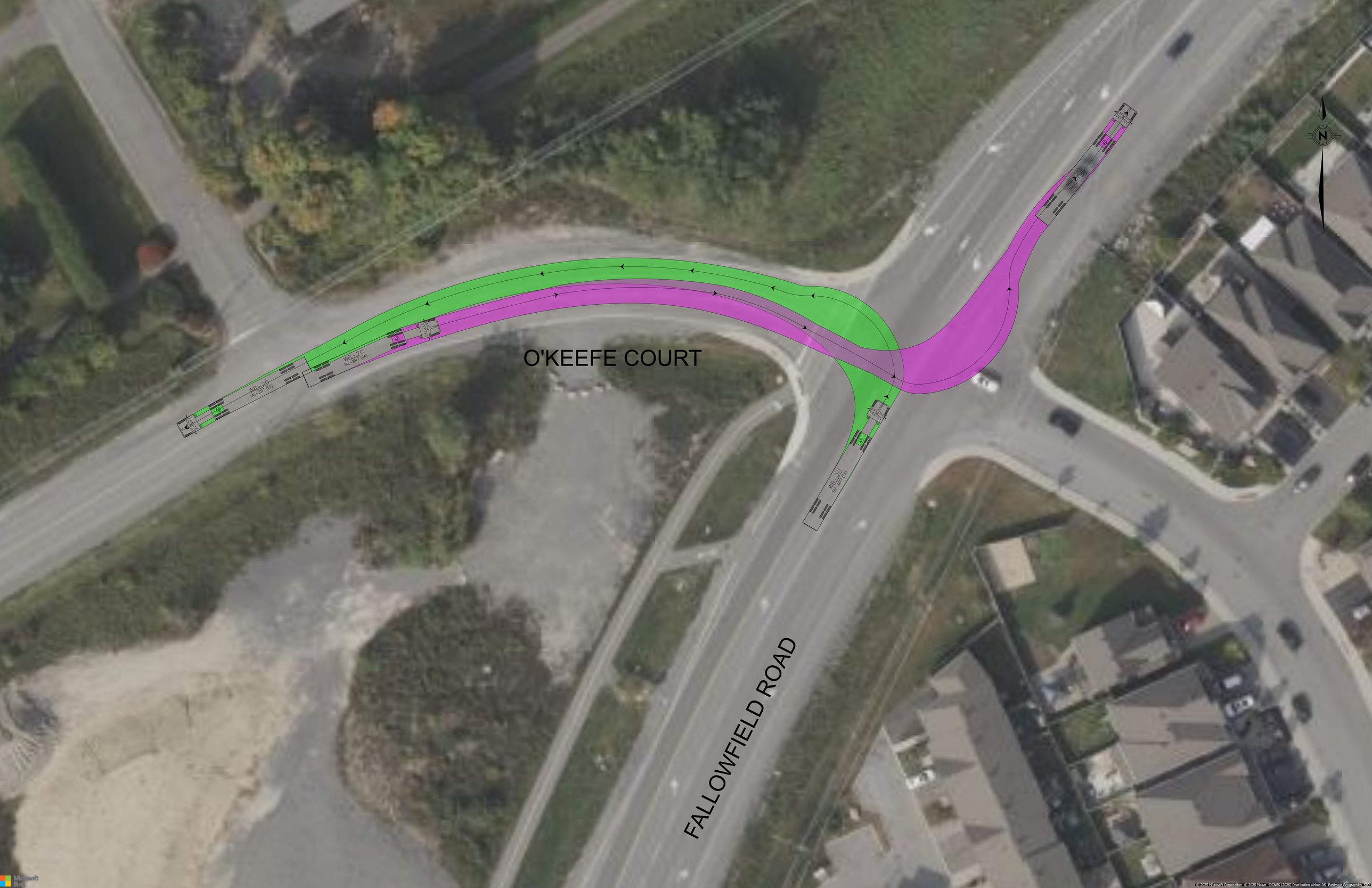


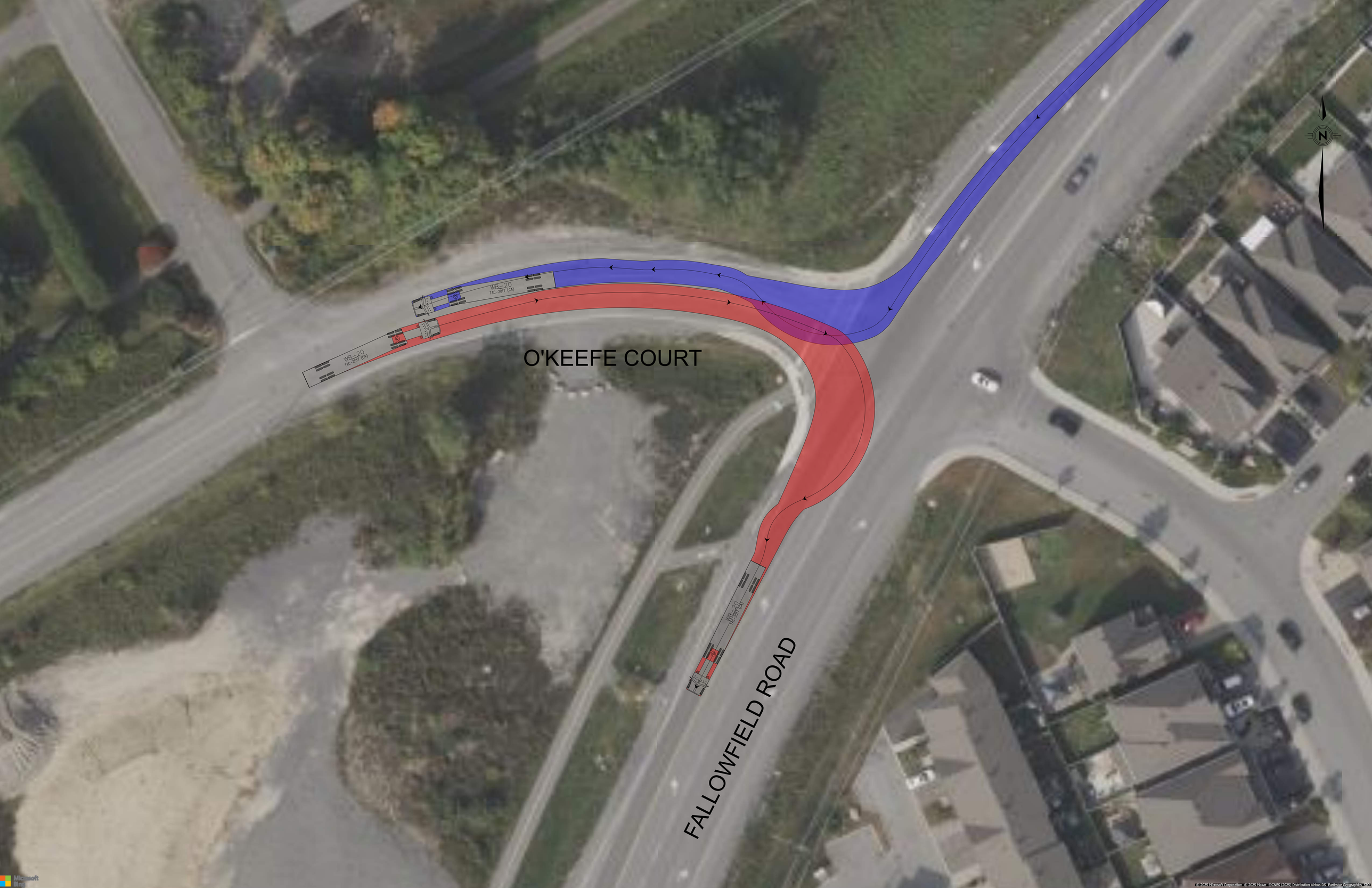
WB-20 Not to Scale

mm

Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 28.2

Drawing Description	WB-20 Truck Circulation		
Client	4497 O'Keefe Ct	Date Sept 2025	Figure Number 1/3
Project Number	478714	Project Description	


O'KEEFE COURT
FALLOWFIELD ROAD
WB-20
TAC-20/7 (CA)
WB-20
TAC-20/7 (CA)
WB-20
TAC-20/7 (CA)
WB-20
TAC-20/7 (CA)
N


O'KEEFE COURT
FALLOWFIELD ROAD
WB-20
TAC-2017 (CA)
WB-20
TAC-2017 (CA)
WB-20
TAC-2017 (CA)
N
© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS Earthstar Geographics SIO

Appendix H:

MMLOS Analysis: Segments

Multi-Modal Level of Service - Segments Form

Project: 4497 O'Keefe Ct
Consultant: Parsons
Date: Sep 18, 2025
Scenario: 478714

	Segment Name	**O'Keefe Ct (both sides, existing and future)**				**O'Keefe Ct (both sides, existing and future)**			
	OP Transect / Policy Area	**Industrial and Logistics or Mixed Industrial**				**Industrial and Logistics or Mixed Industrial**			
	Segment Component	**Majority (>50%)**		**Critical**		**Majority (>50%)**		**Critical**	
	Side of Street	**W or N**	**E or S**	**W or N**	**E or S**	**W or N**	**E or S**	**W or N**	**E or S**
Pedestrian	**PLOS Inputs**								
	Posted Speed (km/h)	50 km/h		50 km/h		50 km/h		50 km/h	
	Two-Way ADT	1,000		1,000		1,000		1,000	
	Pedestrian Facility	None	None			Sidewalk	None		
	Does the facility meet the TMP Sidewalk or MUP Policy? If not, for MUPs, does the location have a low volume of peak daily users AND are pedestrian volumes likely less than 20% of total users?	No	No			Yes	No		
	Facility Width (m)	-	-			1.50m	-		
	Offset from Motor Vehicle Travel Lanes (m)	-	-			-	-		
	Presence of Adjacent Parking?	-	-			-	-		
	General Purpose Curb Lane ADT	-	-			-	-		
	Max. Distance between Controlled Crossings (m)	-	-	-	-	-	-	-	-
	Score	**0.00**	**0.00**	**-**	**-**	**2.00**	**0.00**	**-**	**-**
	PLOS	**F**	**F**	**-**	**-**	**D**	**F**	**-**	**-**
	Target PLOS	**D**				**D**			
Bicycle	**BLOS Inputs**								
	Cycling Route Classification	**Elsewhere**				**Elsewhere**			
	Cycling Facility	Shared Operating Space	Shared Operating Space	Input PLOS First	Input PLOS First	Shared Operating Space	Shared Operating Space	Input PLOS First	Input PLOS First
	Is the minimum level of separation provided according to OTM Book 18 Pre-Selection Nomograph - Rural Context (Figure 5.6)? (for paved shoulders)	-	-			-	-		
	Facility Operation	-	-			-	-		
	Pedestrian/Cyclist Volume	-	-			-	-		
	Facility Width	-	-			-	-		
	Boulevard/Buffer Width (excluding curb)	-	-			-	-		
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)	None	None			None	None		
	Number of Travel Lanes at Crossing	-	-			-	-		
	Crossing includes Median Refuge (≥ 2.7m)	-	-			-	-		
	Cross-street Posted Speed (km/h)	-	-			-	-		
	Cycling Path Blockages (e.g. bus stops and/or loading zones)	Rare	Rare			Rare	Rare		
	Score	**1.60**	**1.60**	**-**	**-**	**1.60**	**1.60**	**-**	**-**
	BLOS	**D**	**D**	**-**	**-**	**D**	**D**	**-**	**-**
	Target BLOS	**D**				**D**			
Transit	**TLOS Inputs**								
	Transit Facility	**Select Transit Designation**				**Select Transit Designation**			
	Facility Type								
	Expected Transit Running Time								
	Transit Travel Speed (if available)								
	TLOS	**-**	**-**			**-**	**-**		
	Target TLOS	**-**				**-**			
Public Realm	**PRLOS Inputs**								
	Context	Other Streets	Other Streets			Other Streets	Other Streets		
	Inner Boulevard Width	≤ 0.6m	≤ 0.6m			≤ 0.6m	≤ 0.6m		
	Middle Boulevard Width	≤ 0.5m	≤ 0.5m			≤ 0.5m	≤ 0.5m		
	Outer Boulevard (Frontage) Width	≥ 3.0m	≥ 3.0m			≥ 3.0m	≥ 3.0m		
	Transit Route on Segment?	No	No			No	No		
	Bus Stop Elements	-	-			-	-		
	Number of Midblock Traffic Lanes (both travel directions)	≤ 2				≤ 2			
	Score	**18.60**	**18.60**			**21.60**	**18.60**		
	PRLOS	**C**	**C**			**B**	**C**		
		C				**C**			

Appendix I:

TDM Checklists

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

Legend

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑ *parking provided to sides of building*
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑ *Internal sidewalks connect front entrances*
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐ *Development proposed as warehouse/light industrial.*
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐ *No transit trips forecasted since the nearest active stop is now 1.3kms away.*
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☐ *internal sidewalks proposed. O'Keefe fronting the site has a rural cross-section with no facilities to receive pedestrians from this site. The site will provide a connection to the MUP north of the site which connects to the municipal AT network.*

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑ *Racks provided by front entrances*
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑ *12 bike parking spaces provided, meets bylaw.*
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑ *Meets bylaw.*
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑ *Less than 50 spaces required.*
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑ *Minimum parking requirement met, no maximum parking restriction.*
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

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	☑ though noted that the nearest bus stop is 1.3kms away.
BASIC		3.1.2 Provide online links to OC Transpo and STO information	☑ though noted that the nearest bus stop is 1.3kms away.
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: *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	☐

Appendix J:

O'Keefe/Fallowfield Intersection Traffic Signal Warrant Analysis

O'Keefe/Fallowfield - (2031 peak hour signal warrant)

Signal Warrant		Description		Minimum Requirement for Two Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	720	118%	54%	**60% No**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	170	54%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	720	105%	60%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	60%		

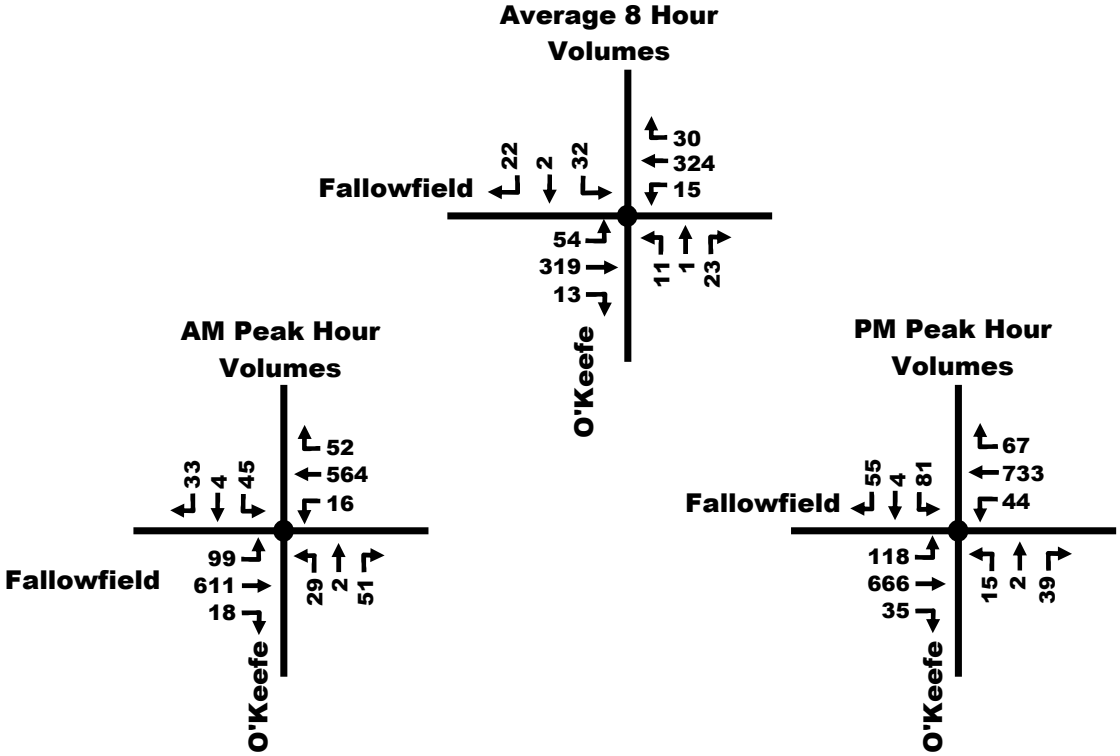
Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above* **No**

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)* **No**



O'Keefe/Fallowfield - (2031 w Mattamy Dev peak hour signal warrant)

Signal Warrant		Description		Minimum Requirement for Two Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	720	135%	92%	**100% Yes**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	170	92%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	720	113%	107%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	107%		

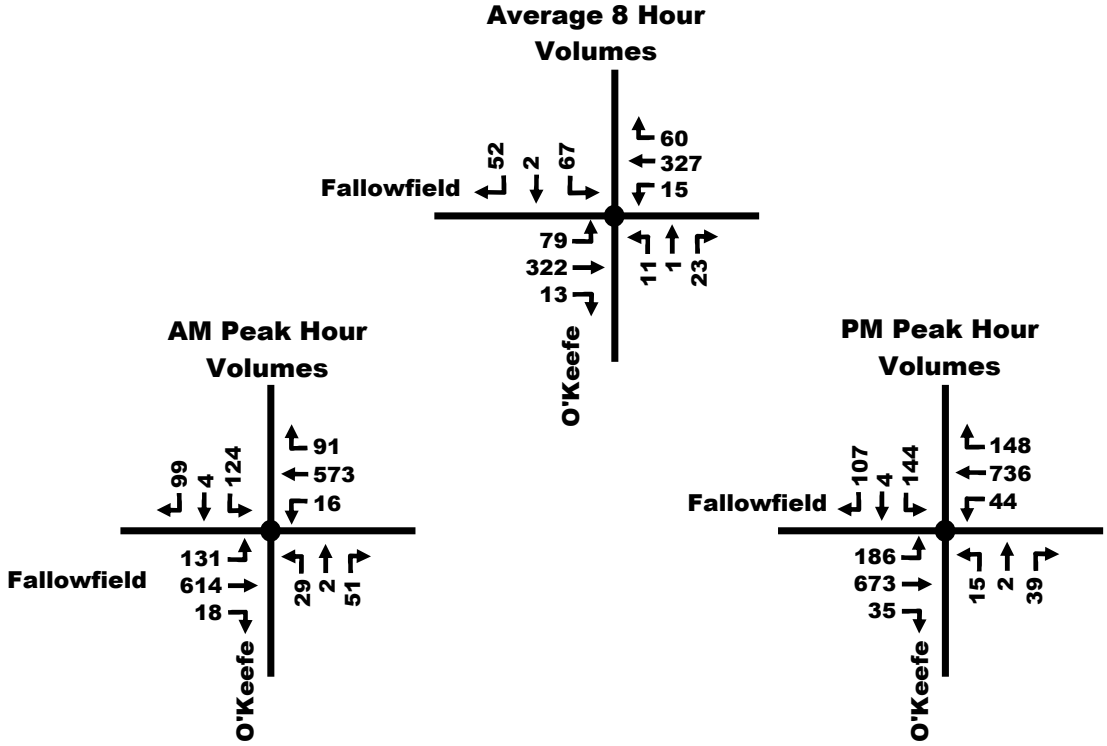
Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above* — **No**

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)* — **No**



Appendix K:

MMLOS Analysis: Intersections

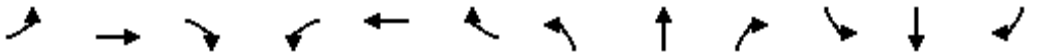
Multi-Modal Level of Service - Intersections Form

Project: 4497 O'Keefe Ct
Consultant: Parsons
Date: Sep 18, 2025
Scenario: 478714

	Intersection Name	Strandherd/Fallowfield				Cedarview/Fallowfield				Strandherd/Fallowfield			
	OP Transect / Policy Area	Outer Urban or Suburban				Within 300m of school				Outer Urban or Suburban			
Pedestrian	PLOS Inputs												
	Pedestrians Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Number of Travel Lanes Crossed	6	4	6	8	1-3	4	4	4	6	4	6	8
	Median Refuge (≥2.7m)	Yes	No	No	No	No	No	No	No	Yes	No	No	No
	Crosswalk Treatment	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings
	Signal Cycle Length (sec)	130.0				85.0				130.0			
	Effective Walk Time (sec)	26.1	35.1	6.9	6.9	20.3	20.3	16.2	16.2	26.1	35.1	6.9	6.9
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Conventional Right-Turn Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel
	Right-Turn Signal Phasing	Permissive	Protected-Permissive	Permissive	-	Permissive	Permissive	Permissive	Permissive	Permissive	Fully Protected	Permissive	Fully Protected
	Right-Turn Volume	≤ 150 veh/h	> 300 veh/h	≤ 150 veh/h	> 300 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	-	≤ 150 veh/h	-
	Right-Turn Effective Corner Radius	≤ 8m	≤ 8m	≤ 8m	-	≤ 8m	≤ 8m	≤ 8m	≤ 8m	≤ 8m	-	≤ 8m	-
	Cross-street Posted Speed (km/h)	60 km/h			70 km/h	40 km/h			60 km/h	60 km/h			70 km/h
	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL
	Left-Turn Signal Phasing	Fully Protected	Fully Protected	Fully Protected	Fully Protected	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Fully Protected	Fully Protected	Fully Protected	Fully Protected
	Left-Turn Volume	-	-	-	-	≤ 50 veh/h	> 100 veh/h	> 100 veh/h	> 50 to 100 veh/h	-	-	-	-
	Left-Turn Opposing Lanes	-	-	-	-	-	-	-	≤ 1	-	-	-	-
	Score	2.95	3.25	2.35	0.55	4.30	3.65	3.50	3.70	2.95	3.85	2.35	1.30
	PLOS	C	C	D	E	B	B	B	B	C	B	D	E
		D				B				C			
	Target PLOS	C				B				C			
Bicycle	BLOS Inputs												
	Cycling Route Classification	Cross-Town Bikeway				Elsewhere				Cross-Town Bikeway			
	Cyclists Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Type of Cycling Facility Across Leg	Crossride	Crossride	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Crossride	Crossride	Mixed Traffic	Mixed Traffic
	Two-Way ADT (in Cyclist Travel Direction)	14,500		9,500		16,300		9,500		14,500		9,500	
	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	No	No	No	No	No	No	No	No	No	No	No	No
	Crossride Operation	Unidirectional	Unidirectional	-	-	-	-	-	-	Unidirectional	Unidirectional	-	-
	Target Crossride Setback Met?	Yes	Yes	-	-	-	-	-	-	Yes	Yes	-	-
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-	-	-	-	-
	Cyclist Left-Turn Operation	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL
	Cyclist Left-Turn Treatment Type	General Purpose Through-Left or Single Left-Turn Lane	One-Stage Bike Box	General Purpose Dual Left-Turn Lanes	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	One-Stage Bike Box	General Purpose Dual Left-Turn Lanes	General Purpose Through-Left or Single Left-Turn Lane
	Vehicle Lanes Crossed by Cyclists	Two or More Lanes Crossed	-	-	Two or More Lanes Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	One Lane Crossed	Two or More Lanes Crossed	-	-	Two or More Lanes Crossed
	Score	90	90	40	0	30	0	-10	40	90	Input PLOS First	40	50
	BLOS	C	C	D	F	E	F	F	D	C	-	D	D
		D				E				D			
	Target BLOS	B				C				B			
Transit	TLOS Inputs												
	Transit Facility	Mixed Traffic				Mixed Traffic				Mixed Traffic			
	Vehicles Travelling	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound
	Average Transit Delay (if available)			56-80 sec	≤ 10 sec								
	Example Transit Priority Treatment			-	-								
	TLOS	-	-	E	A	-	-	-	-	-	-	-	-
		C				-				-			
	Target TLOS	E (D for frequent transit routes)				E (D for frequent transit routes)				E (D for frequent transit routes)			
Auto	AutoLOS Inputs												
	Overall Intersection Volume to Capacity Ratio												
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table				See Separate Traffic Operations Table			
	AutoLOS	-				-				-			
	Target AutoLOS	E				E				E			

Appendix L:

Synchro Analysis: Existing Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	743	157	18	1104	43	49	18	3	35	51	328
Future Volume (vph)	478	743	157	18	1104	43	49	18	3	35	51	328
Satd. Flow (prot)	3288	3390	1517	1695	3390	1517	3288	1749	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3390	1517	1695	3390	1497	3288	1749	0	1695	1784	1517
Satd. Flow (RTOR)			174			225		3				364
Lane Group Flow (vph)	531	826	174	20	1227	48	54	23	0	39	57	364
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	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	
Total Split (%)	23.3%	38.3%	38.3%	10.8%	25.8%	25.8%	10.8%	40.0%		10.8%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	23.7	77.9	77.9	6.4	51.2	51.2	7.0	18.8		7.2	16.3	120.0
Actuated g/C Ratio	0.20	0.65	0.65	0.05	0.43	0.43	0.06	0.16		0.06	0.14	1.00
v/c Ratio	0.82	0.38	0.17	0.22	0.85	0.06	0.28	0.08		0.39	0.24	0.24
Control Delay	57.3	16.9	4.0	60.5	40.6	0.2	57.7	35.9		65.3	44.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.3	16.9	4.0	60.5	40.6	0.2	57.7	35.9		65.3	44.8	0.4
LOS	E	B	A	E	D	A	E	D		E	D	A
Approach Delay		29.4			39.4			51.2			11.4	
Approach LOS		C			D			D			B	
Queue Length 50th (m)	60.7	39.1	0.0	4.6	139.2	0.0	6.3	4.4		9.0	12.9	0.0
Queue Length 95th (m)	#95.6	114.2	15.1	12.7	#270.4	0.0	13.0	8.9		20.6	18.6	0.0
Internal Link Dist (m)		673.6			661.0			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	652	2199	1045	91	1446	768	197	599		104	609	1517
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	0.81	0.38	0.17	0.22	0.85	0.06	0.27	0.04		0.38	0.09	0.24

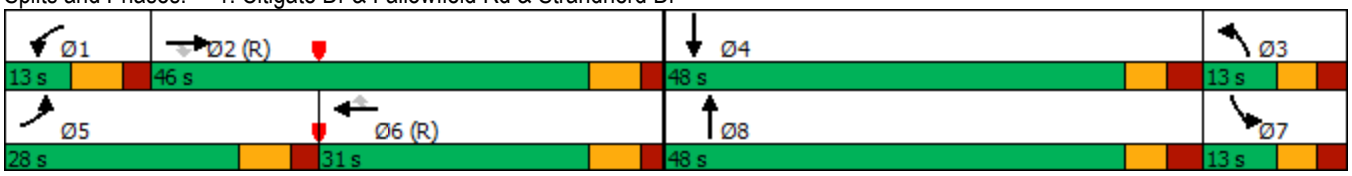
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

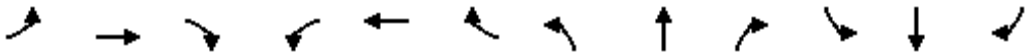
Maximum v/c Ratio: 0.85

Intersection Signal Delay: 31.3	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	592	10	31	400	174	49	248	192	98	62	12
Future Volume (vph)	44	592	10	31	400	174	49	248	192	98	62	12
Satd. Flow (prot)	1695	1784	1517	1695	1784	1517	1695	1784	1517	1695	1741	0
Flt Permitted	0.465			0.316			0.704			0.438		
Satd. Flow (perm)	830	1784	1517	564	1784	1517	1256	1784	1517	782	1741	0
Satd. Flow (RTOR)			49			193			184		12	
Lane Group Flow (vph)	49	658	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			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
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)	51.9	51.9	51.9	51.9	51.9	51.9	19.6	19.6	19.6	19.6	19.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61	0.61	0.23	0.23	0.23	0.23	0.23	
v/c Ratio	0.10	0.60	0.01	0.10	0.41	0.19	0.19	0.67	0.43	0.61	0.20	
Control Delay	9.5	14.7	0.0	10.0	11.3	2.1	25.3	37.3	8.3	42.3	21.7	
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	9.5	14.7	0.0	10.0	11.3	2.1	25.3	37.3	8.3	42.3	21.7	
LOS	A	B	A	A	B	A	C	D	A	D	C	
Approach Delay		14.1			8.6			24.7			33.5	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	3.0	59.3	0.0	2.1	33.6	0.0	7.1	41.1	3.7	15.9	9.2	
Queue Length 95th (m)	9.7	118.7	0.0	7.6	68.2	9.3	14.3	57.2	17.7	28.8	17.6	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	506	1090	945	344	1090	1002	446	633	657	277	626	
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	0.60	0.01	0.10	0.41	0.19	0.12	0.44	0.32	0.39	0.13	

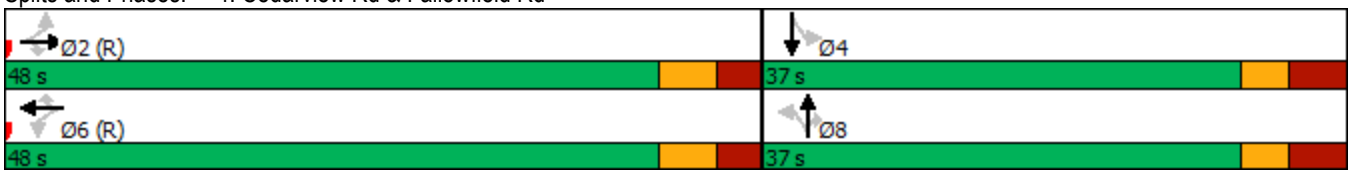
Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 75.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Cedarview Rd & Fallowfield Rd



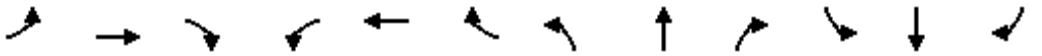
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	506	18	15	398	8	29	2	51	7	4	17
Future Vol, veh/h	15	506	18	15	398	8	29	2	51	7	4	17
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	562	20	17	442	9	32	2	57	8	4	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	453	0	0	583	0	0	1099	1094	292	794	1095	444
Stage 1	-	-	-	-	-	-	607	607	-	478	478	-
Stage 2	-	-	-	-	-	-	492	487	-	316	617	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1106	-	-	989	-	-	178	213	705	292	213	613
Stage 1	-	-	-	-	-	-	451	485	-	567	555	-
Stage 2	-	-	-	-	-	-	558	550	-	670	480	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1104	-	-	988	-	-	165	206	704	259	206	612
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	206	-	259	206	-
Stage 1	-	-	-	-	-	-	443	477	-	557	544	-
Stage 2	-	-	-	-	-	-	527	540	-	604	472	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	20.8	15
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	318	1104	-	-	988	-	-	259	445
HCM Lane V/C Ratio	0.287	0.015	-	-	0.017	-	-	0.03	0.052
HCM Control Delay (s)	20.8	8.3	-	-	8.7	-	-	19.3	13.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0.1	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	988	135	2	1025	100	181	54	9	118	54	426
Future Volume (vph)	440	988	135	2	1025	100	181	54	9	118	54	426
Satd. Flow (prot)	3288	3390	1517	1695	3390	1517	3288	1742	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3281	3390	1473	1694	3390	1489	3288	1742	0	1686	1784	1517
Satd. Flow (RTOR)			160			160		8				473
Lane Group Flow (vph)	489	1098	150	2	1139	111	201	70	0	131	60	473
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	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	
Total Split (%)	20.0%	28.3%	28.3%	20.0%	28.3%	28.3%	11.7%	40.0%		11.7%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	24.3	66.8	66.8	5.8	38.1	38.1	17.1	16.5		17.0	16.4	120.0
Actuated g/C Ratio	0.20	0.56	0.56	0.05	0.32	0.32	0.14	0.14		0.14	0.14	1.00
v/c Ratio	0.73	0.58	0.17	0.02	1.06	0.19	0.43	0.29		0.55	0.25	0.31
Control Delay	52.7	22.4	3.8	55.0	84.9	2.4	51.6	40.6		58.6	45.1	0.5
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	52.7	22.4	3.8	55.0	84.9	2.4	51.6	40.6		58.6	45.1	0.5
LOS	D	C	A	D	F	A	D	D		E	D	A
Approach Delay		29.3			77.5			48.7			16.0	
Approach LOS		C			E			D			B	
Queue Length 50th (m)	55.1	77.1	0.0	0.5	~154.2	0.0	22.3	14.1		28.7	13.7	0.0
Queue Length 95th (m)	#97.8	#186.8	12.6	3.2	#236.2	4.7	#48.8	20.4		#77.5	19.3	0.0
Internal Link Dist (m)		673.6			661.0			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	666	1887	891	238	1075	581	468	600		240	609	1517
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	0.73	0.58	0.17	0.01	1.06	0.19	0.43	0.12		0.55	0.10	0.31

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

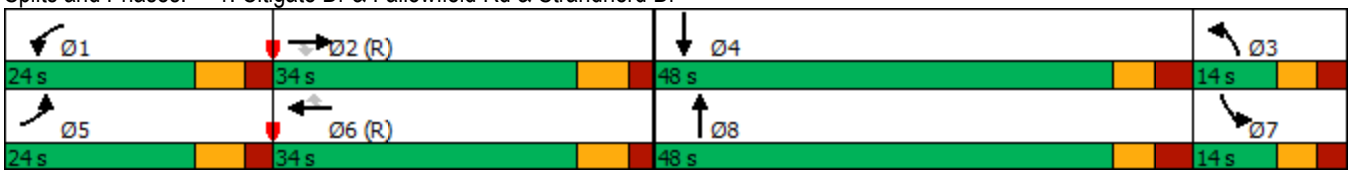
Maximum v/c Ratio: 1.06

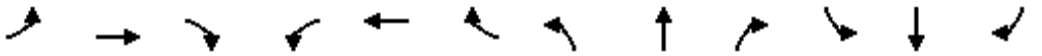
Intersection Signal Delay: 43.8	Intersection LOS: D
Intersection Capacity Utilization 77.4%	ICU Level of Service D
Analysis Period (min) 15	

~ 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: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	490	30	137	652	77	21	89	63	247	412	46
Future Volume (vph)	24	490	30	137	652	77	21	89	63	247	412	46
Satd. Flow (prot)	1695	1784	1517	1695	1784	1517	1695	1784	1517	1695	1758	0
Flt Permitted	0.201			0.342			0.208			0.693		
Satd. Flow (perm)	359	1784	1517	610	1784	1517	371	1784	1517	1237	1758	0
Satd. Flow (RTOR)			49			86			70		7	
Lane Group Flow (vph)	27	544	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			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
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)	43.6	43.6	43.6	43.6	43.6	43.6	27.9	27.9	27.9	27.9	27.9	
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	0.59	0.04	0.49	0.79	0.10	0.19	0.17	0.13	0.68	0.88	
Control Delay	14.7	18.6	2.4	21.2	26.0	3.2	23.8	20.2	5.7	33.5	44.0	
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	14.7	18.6	2.4	21.2	26.0	3.2	23.8	20.2	5.7	33.5	44.0	
LOS	B	B	A	C	C	A	C	C	A	C	D	
Approach Delay		17.6			23.2			15.3			40.3	
Approach LOS		B			C			B			D	
Queue Length 50th (m)	2.3	62.3	0.0	16.1	97.0	0.0	2.5	10.8	0.0	36.3	72.7	
Queue Length 95th (m)	7.6	95.2	2.9	35.2	#163.4	6.8	8.4	21.3	8.0	62.3	#123.3	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	184	915	802	313	915	820	131	633	584	439	629	
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	0.59	0.04	0.49	0.79	0.10	0.18	0.16	0.12	0.62	0.81	

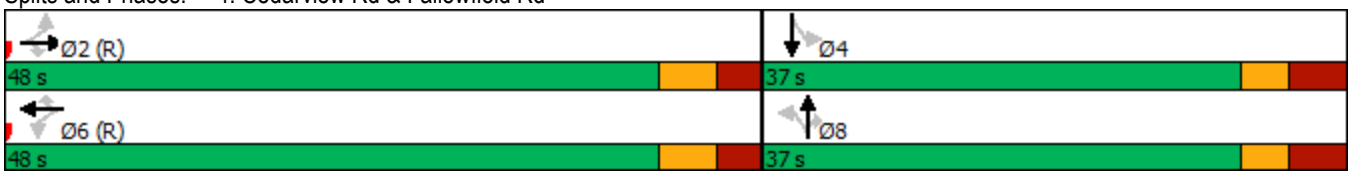
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 83.1%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Cedarview Rd & Fallowfield Rd



Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	484	35	43	597	47	15	2	39	21	4	25
Future Vol, veh/h	55	484	35	43	597	47	15	2	39	21	4	25
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	538	39	48	663	52	17	2	43	23	4	28

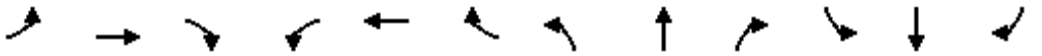
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	717	0	0	579	0	0	1483	1495	291	1153	1462	665
Stage 1	-	-	-	-	-	-	682	682	-	761	761	-
Stage 2	-	-	-	-	-	-	801	813	-	392	701	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	882	-	-	993	-	-	95	122	706	163	128	459
Stage 1	-	-	-	-	-	-	407	449	-	397	413	-
Stage 2	-	-	-	-	-	-	377	391	-	605	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	880	-	-	991	-	-	79	108	704	137	113	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	108	-	137	113	-
Stage 1	-	-	-	-	-	-	378	417	-	369	392	-
Stage 2	-	-	-	-	-	-	333	371	-	526	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.6	28.9	25.5
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	212	880	-	-	991	-	-	137	322
HCM Lane V/C Ratio	0.294	0.069	-	-	0.048	-	-	0.17	0.1
HCM Control Delay (s)	28.9	9.4	-	-	8.8	-	-	36.6	17.4
HCM Lane LOS	D	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	1.2	0.2	-	-	0.2	-	-	0.6	0.3

Appendix M:

Synchro Analysis: Future Background



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	584	961	386	24	1227	62	105	42	3	54	140	362
Future Volume (vph)	584	961	386	24	1227	62	105	42	3	54	140	362
Satd. Flow (prot)	3288	3390	1517	1695	3390	1517	3288	1766	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3390	1517	1695	3390	1497	3288	1766	0	1695	1784	1517
Satd. Flow (RTOR)			386			225		3				362
Lane Group Flow (vph)	584	961	386	24	1227	62	105	45	0	54	140	362
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	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	
Total Split (%)	23.3%	38.3%	38.3%	10.8%	25.8%	25.8%	10.8%	40.0%		10.8%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	27.2	63.9	63.9	6.5	38.0	38.0	8.1	18.8		10.9	19.1	120.0
Actuated g/C Ratio	0.23	0.53	0.53	0.05	0.32	0.32	0.07	0.16		0.09	0.16	1.00
v/c Ratio	0.78	0.53	0.39	0.26	1.14	0.10	0.47	0.16		0.35	0.49	0.24
Control Delay	52.3	23.4	3.9	61.5	113.2	0.3	61.2	40.7		57.7	49.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	52.3	23.4	3.9	61.5	113.2	0.3	61.2	40.7		57.7	49.6	0.4
LOS	D	C	A	E	F	A	E	D		E	D	A
Approach Delay		28.3			106.9			55.0			18.4	
Approach LOS		C			F			E			B	
Queue Length 50th (m)	65.6	78.3	0.0	5.5	~172.5	0.0	12.3	9.5		11.8	31.8	0.0
Queue Length 95th (m)	#110.0	#140.7	21.5	14.5	#270.4	0.0	21.9	15.0		#30.4	39.1	0.0
Internal Link Dist (m)		673.6			661.0			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	746	1805	988	93	1074	628	223	605		155	609	1517
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	0.78	0.53	0.39	0.26	1.14	0.10	0.47	0.07		0.35	0.23	0.24

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

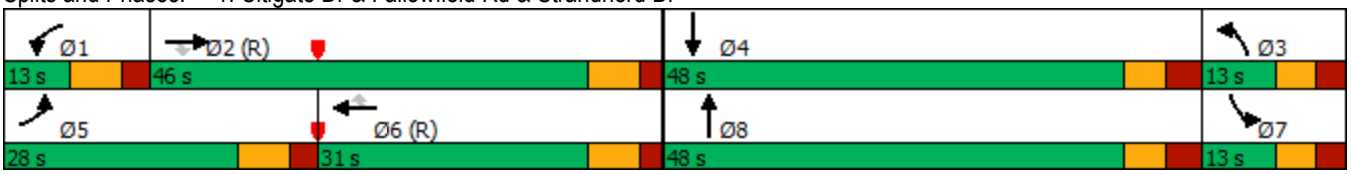
Maximum v/c Ratio: 1.14

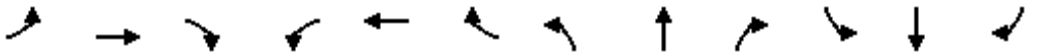
Intersection Signal Delay: 54.0	Intersection LOS: D
Intersection Capacity Utilization 88.8%	ICU Level of Service E
Analysis Period (min) 15	

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

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

Splits and Phases: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





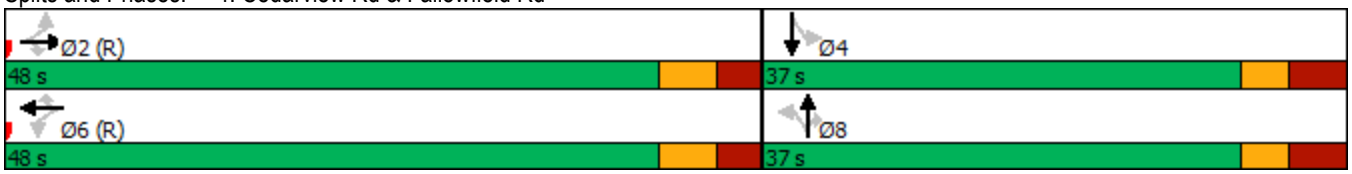
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	677	11	33	522	187	63	266	206	105	66	15
Future Volume (vph)	51	677	11	33	522	187	63	266	206	105	66	15
Satd. Flow (prot)	1695	1784	1517	1695	1784	1517	1695	1784	1517	1695	1734	0
Flt Permitted	0.411			0.307			0.704			0.451		
Satd. Flow (perm)	733	1784	1517	548	1784	1517	1256	1784	1517	805	1734	0
Satd. Flow (RTOR)			49			187			175		15	
Lane Group Flow (vph)	51	677	11	33	522	187	63	266	206	105	81	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
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	0.11	0.62	0.01	0.10	0.47	0.19	0.22	0.67	0.43	0.58	0.20	
Control Delay	9.5	14.7	0.0	9.8	12.0	2.1	26.4	37.4	8.8	41.1	21.3	
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	9.5	14.7	0.0	9.8	12.0	2.1	26.4	37.4	8.8	41.1	21.3	
LOS	A	B	A	A	B	A	C	D	A	D	C	
Approach Delay		14.1			9.4			25.1			32.5	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	3.1	61.0	0.0	2.0	41.2	0.0	8.4	39.7	4.0	15.3	8.7	
Queue Length 95th (m)	9.9	122.1	0.0	7.4	82.7	9.0	16.3	55.8	18.0	27.9	17.1	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	452	1100	954	337	1100	1007	446	633	651	286	625	
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	0.11	0.62	0.01	0.10	0.47	0.19	0.14	0.42	0.32	0.37	0.13	

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: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 82.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedarview Rd & Fallowfield Rd



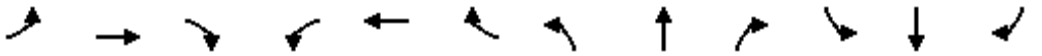
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	611	18	16	559	20	29	2	51	30	4	19
Future Vol, veh/h	57	611	18	16	559	20	29	2	51	30	4	19
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	611	18	16	559	20	29	2	51	30	4	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	581	0	0	630	0	0	1348	1348	316	1014	1337	561
Stage 1	-	-	-	-	-	-	735	735	-	593	593	-
Stage 2	-	-	-	-	-	-	613	613	-	421	744	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	991	-	-	950	-	-	118	150	681	205	153	526
Stage 1	-	-	-	-	-	-	378	425	-	491	493	-
Stage 2	-	-	-	-	-	-	479	482	-	581	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	989	-	-	949	-	-	105	138	680	177	141	525
Mov Cap-2 Maneuver	-	-	-	-	-	-	105	138	-	177	141	-
Stage 1	-	-	-	-	-	-	356	400	-	462	484	-
Stage 2	-	-	-	-	-	-	450	473	-	504	396	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	30.1	23.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	224	989	-	-	949	-	-	177	356
HCM Lane V/C Ratio	0.366	0.058	-	-	0.017	-	-	0.169	0.065
HCM Control Delay (s)	30.1	8.9	-	-	8.9	-	-	29.4	15.8
HCM Lane LOS	D	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	1.6	0.2	-	-	0.1	-	-	0.6	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	553	1120	209	3	1249	131	388	136	12	132	86	485
Future Volume (vph)	553	1120	209	3	1249	131	388	136	12	132	86	485
Satd. Flow (prot)	3288	3390	1517	1695	3390	1517	3288	1760	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3282	3390	1473	1694	3390	1489	3288	1760	0	1687	1784	1517
Satd. Flow (RTOR)			195			160		4				485
Lane Group Flow (vph)	553	1120	209	3	1249	131	388	148	0	132	86	485
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	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	
Total Split (%)	20.0%	28.3%	28.3%	20.0%	28.3%	28.3%	11.7%	40.0%		11.7%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	25.1	56.6	56.6	5.8	27.1	27.1	26.7	19.4		20.9	17.0	120.0
Actuated g/C Ratio	0.21	0.47	0.47	0.05	0.23	0.23	0.22	0.16		0.17	0.14	1.00
v/c Ratio	0.80	0.70	0.26	0.04	1.63	0.28	0.53	0.52		0.45	0.34	0.32
Control Delay	55.4	29.4	5.2	55.0	322.3	4.7	46.8	48.8		52.5	47.0	0.6
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	55.4	29.4	5.2	55.0	322.3	4.7	46.8	48.8		52.5	47.0	0.6
LOS	E	C	A	D	F	A	D	D		D	D	A
Approach Delay		34.4			291.6			47.3			16.0	
Approach LOS		C			F			D			B	
Queue Length 50th (m)	61.9	95.3	1.5	0.7	~223.3	0.0	42.2	32.7		27.9	19.7	0.0
Queue Length 95th (m)	#115.5	#193.5	19.3	3.9	#264.8	9.7	#102.6	40.4		#77.9	25.8	0.0
Internal Link Dist (m)		673.6			661.0			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	687	1598	797	238	765	460	730	603		295	609	1517
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	0.70	0.26	0.01	1.63	0.28	0.53	0.25		0.45	0.14	0.32

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

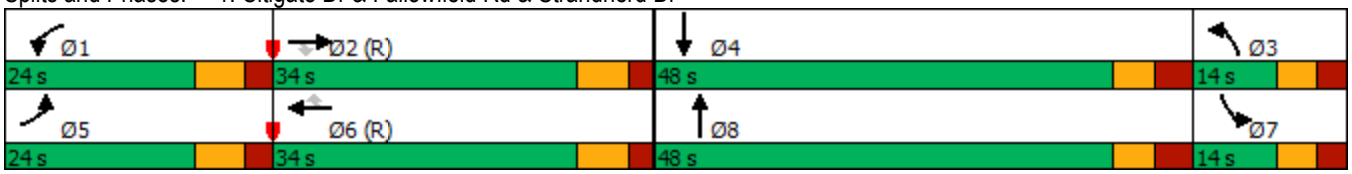
Maximum v/c Ratio: 1.63

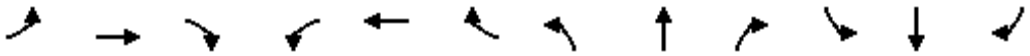
Intersection Signal Delay: 112.0	Intersection LOS: F
Intersection Capacity Utilization 97.5%	ICU Level of Service F
Analysis Period (min) 15	

~ 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: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	609	36	147	793	83	32	95	68	265	442	52
Future Volume (vph)	31	609	36	147	793	83	32	95	68	265	442	52
Satd. Flow (prot)	1695	1784	1517	1695	1784	1517	1695	1784	1517	1695	1756	0
Flt Permitted	0.153			0.293			0.220			0.695		
Satd. Flow (perm)	273	1784	1517	523	1784	1517	393	1784	1517	1240	1756	0
Satd. Flow (RTOR)			49			83			68		8	
Lane Group Flow (vph)	31	609	36	147	793	83	32	95	68	265	494	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
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)	44.0	44.0	44.0	44.0	44.0	44.0	27.5	27.5	27.5	27.5	27.5	
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.32	0.32	0.32	0.32	0.32	
v/c Ratio	0.22	0.66	0.04	0.54	0.86	0.10	0.25	0.16	0.13	0.66	0.86	
Control Delay	17.7	20.3	2.7	24.6	30.8	3.3	25.7	20.2	5.7	32.9	42.3	
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	17.7	20.3	2.7	24.6	30.8	3.3	25.7	20.2	5.7	32.9	42.3	
LOS	B	C	A	C	C	A	C	C	A	C	D	
Approach Delay		19.2			27.7			16.0			39.0	
Approach LOS		B			C			B			D	
Queue Length 50th (m)	2.8	73.6	0.0	16.3	113.8	0.0	3.6	10.3	0.0	34.7	69.6	
Queue Length 95th (m)	9.3	111.9	3.4	37.9	#188.8	6.7	11.0	20.5	7.8	59.8	#117.2	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	141	922	808	270	922	824	139	633	582	440	629	
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	0.22	0.66	0.04	0.54	0.86	0.10	0.23	0.15	0.12	0.60	0.79	

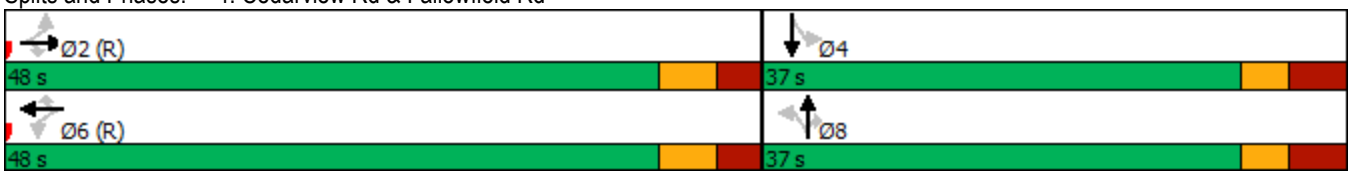
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 27.9	Intersection LOS: C
Intersection Capacity Utilization 93.1%	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 Rd & Fallowfield Rd



Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	93	666	35	44	723	52	15	2	39	50	4	27
Future Vol, veh/h	93	666	35	44	723	52	15	2	39	50	4	27
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	666	35	44	723	52	15	2	39	50	4	27

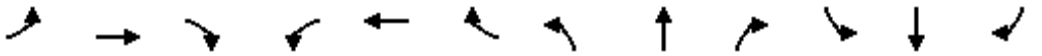
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	777	0	0	703	0	0	1725	1737	353	1333	1702	725
Stage 1	-	-	-	-	-	-	872	872	-	813	813	-
Stage 2	-	-	-	-	-	-	853	865	-	520	889	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	837	-	-	892	-	-	63	87	644	121	91	424
Stage 1	-	-	-	-	-	-	313	367	-	371	391	-
Stage 2	-	-	-	-	-	-	353	370	-	508	361	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	835	-	-	890	-	-	50	73	642	98	77	423
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	73	-	98	77	-
Stage 1	-	-	-	-	-	-	277	326	-	329	371	-
Stage 2	-	-	-	-	-	-	311	351	-	421	320	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.5	45.1	54
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	144	835	-	-	890	-	-	98	268
HCM Lane V/C Ratio	0.389	0.111	-	-	0.049	-	-	0.51	0.116
HCM Control Delay (s)	45.1	9.9	-	-	9.3	-	-	75	20.2
HCM Lane LOS	E	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	1.7	0.4	-	-	0.2	-	-	2.3	0.4

Appendix N:

Synchro Analysis: Future Buildout Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	619	961	386	24	1227	69	105	42	3	57	140	374
Future Volume (vph)	619	961	386	24	1227	69	105	42	3	57	140	374
Satd. Flow (prot)	3257	3390	1517	1695	3390	1473	3288	1766	0	1631	1784	1488
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3257	3390	1517	1695	3390	1454	3288	1766	0	1631	1784	1488
Satd. Flow (RTOR)			386			225		3				374
Lane Group Flow (vph)	619	961	386	24	1227	69	105	45	0	57	140	374
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	
Total Split (s)	21.0	48.4	48.4	12.1	39.5	39.5	11.5	48.0		11.5	48.0	
Total Split (%)	17.5%	40.3%	40.3%	10.1%	32.9%	32.9%	9.6%	40.0%		9.6%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	32.6	64.0	64.0	6.4	32.6	32.6	8.2	16.2		14.5	19.1	120.0
Actuated g/C Ratio	0.27	0.53	0.53	0.05	0.27	0.27	0.07	0.14		0.12	0.16	1.00
v/c Ratio	0.70	0.53	0.39	0.27	1.33	0.12	0.47	0.19		0.29	0.49	0.25
Control Delay	45.5	23.0	3.8	62.4	193.4	0.4	61.3	41.2		55.4	49.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.5	23.0	3.8	62.4	193.4	0.4	61.3	41.2		55.4	49.6	0.4
LOS	D	C	A	E	F	A	E	D		E	D	A
Approach Delay		26.3			180.9			55.2			18.0	
Approach LOS		C			F			E			B	
Queue Length 50th (m)	65.3	78.9	0.0	5.5	~197.6	0.0	12.3	9.5		12.4	31.8	0.0
Queue Length 95th (m)	#144.0	134.1	20.5	14.6	#239.4	0.0	#27.4	15.0		#38.7	39.1	0.0
Internal Link Dist (m)		673.6			1740.3			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	885	1809	989	89	920	558	224	605		196	609	1488
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.70	0.53	0.39	0.27	1.33	0.12	0.47	0.07		0.29	0.23	0.25

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

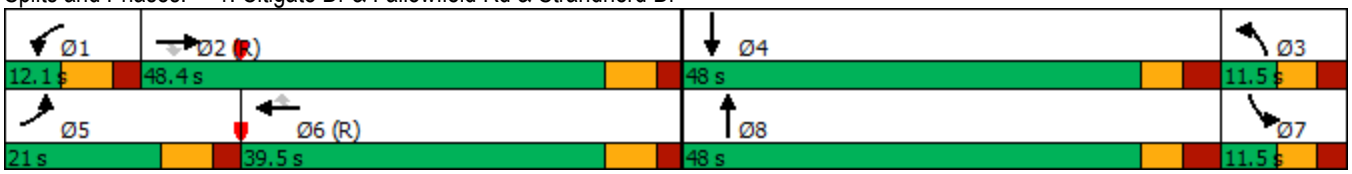
Maximum v/c Ratio: 1.33

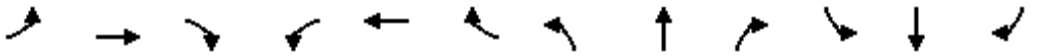
Intersection Signal Delay: 77.1	Intersection LOS: E
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	

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

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

Splits and Phases: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	688	12	33	548	187	66	266	206	105	66	23
Future Volume (vph)	54	688	12	33	548	187	66	266	206	105	66	23
Satd. Flow (prot)	1631	1767	1517	1695	1767	1517	1695	1784	1517	1695	1676	0
Flt Permitted	0.399			0.308			0.699			0.434		
Satd. Flow (perm)	685	1767	1517	550	1767	1517	1247	1784	1517	774	1676	0
Satd. Flow (RTOR)			49			187			206		20	
Lane Group Flow (vph)	54	688	12	33	548	187	66	266	206	105	89	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
Total Split (s)	56.0	56.0	56.0	56.0	56.0	56.0	29.0	29.0	29.0	29.0	29.0	
Total Split (%)	65.9%	65.9%	65.9%	65.9%	65.9%	65.9%	34.1%	34.1%	34.1%	34.1%	34.1%	
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)	53.6	53.6	53.6	53.6	53.6	53.6	17.9	17.9	17.9	17.9	17.9	
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.63	0.21	0.21	0.21	0.21	0.21	
v/c Ratio	0.12	0.62	0.01	0.10	0.49	0.18	0.25	0.71	0.43	0.65	0.24	
Control Delay	8.5	13.5	0.0	8.4	11.2	1.8	28.8	41.4	6.9	48.4	22.3	
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	8.5	13.5	0.0	8.4	11.2	1.8	28.8	41.4	6.9	48.4	22.3	
LOS	A	B	A	A	B	A	C	D	A	D	C	
Approach Delay		13.0			8.8			26.6			36.4	
Approach LOS		B			A			C			D	
Queue Length 50th (m)	3.2	62.1	0.0	2.0	43.8	0.0	8.9	39.9	0.0	15.5	9.2	
Queue Length 95th (m)	9.1	108.0	0.0	6.3	76.0	7.7	18.6	61.2	15.4	31.1	19.9	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	432	1114	975	347	1114	1025	325	465	548	202	452	
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	0.13	0.62	0.01	0.10	0.49	0.18	0.20	0.57	0.38	0.52	0.20	

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: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 85.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Cedarview Rd & Fallowfield Rd

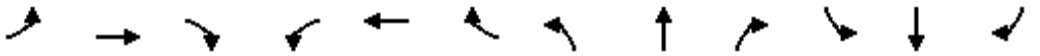
Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	99	611	18	16	564	52	29	2	51	45	4	33
Future Vol, veh/h	99	611	18	16	564	52	29	2	51	45	4	33
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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	2	2	2	2	17	2	2	2	20	2	29
Mvmt Flow	99	611	18	16	564	52	29	2	51	45	4	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	618	0	0	630	0	0	1460	1469	316	1103	1426	566
Stage 1	-	-	-	-	-	-	819	819	-	598	598	-
Stage 2	-	-	-	-	-	-	641	650	-	505	828	-
Critical Hdwy	4.265	-	-	4.13	-	-	7.33	6.53	6.93	7.6	6.53	6.635
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.4	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.8	5.53	-
Follow-up Hdwy	2.3045	-	-	2.219	-	-	3.519	4.019	3.319	3.69	4.019	3.5755
Pot Cap-1 Maneuver	910	-	-	950	-	-	98	127	681	159	135	464
Stage 1	-	-	-	-	-	-	337	388	-	451	490	-
Stage 2	-	-	-	-	-	-	462	464	-	481	385	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	908	-	-	949	-	-	80	111	680	131	118	463
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	111	-	131	118	-
Stage 1	-	-	-	-	-	-	300	345	-	401	481	-
Stage 2	-	-	-	-	-	-	418	455	-	394	343	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.2	40.7	32.8
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	180	908	-	-	949	-	-	131	352
HCM Lane V/C Ratio	0.456	0.109	-	-	0.017	-	-	0.344	0.105
HCM Control Delay (s)	40.7	9.4	-	-	8.9	-	-	46.2	16.4
HCM Lane LOS	E	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	2.1	0.4	-	-	0.1	-	-	1.4	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	611	18	16	564	52	29	2	51	45	4	33
Future Volume (vph)	99	611	18	16	564	52	29	2	51	45	4	33
Satd. Flow (prot)	1558	3374	0	1695	1784	1322	0	1801	0	1441	1250	0
Flt Permitted	0.425			0.413				0.868		0.807		
Satd. Flow (perm)	696	3374	0	736	1784	1289	0	1590	0	1224	1250	0
Satd. Flow (RTOR)		6						51			33	
Lane Group Flow (vph)	99	629	0	16	564	52	0	82	0	45	37	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	
Total Split (s)	56.0	56.0		56.0	56.0	56.0	29.0	29.0		29.0	29.0	
Total Split (%)	65.9%	65.9%		65.9%	65.9%	65.9%	34.1%	34.1%		34.1%	34.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min		C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	65.7	65.7		65.7	65.7	65.7		10.8		10.8	10.8	
Actuated g/C Ratio	0.77	0.77		0.77	0.77	0.77		0.13		0.13	0.13	
v/c Ratio	0.18	0.24		0.03	0.41	0.05		0.33		0.29	0.20	
Control Delay	6.1	4.5		3.3	3.8	3.1		17.9		35.5	13.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	6.1	4.5		3.3	3.8	3.1		17.9		35.5	13.9	
LOS	A	A		A	A	A		B		D	B	
Approach Delay		4.7			3.7			17.9			25.8	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	3.6	12.6		0.5	21.4	1.5		4.7		6.9	0.6	
Queue Length 95th (m)	14.9	32.7		m1.1	23.2	m3.3		14.2		13.8	7.5	
Internal Link Dist (m)		359.0			561.9			185.6			242.8	
Turn Bay Length (m)	150.0			70.0		30.0				40.0		
Base Capacity (vph)	537	2607		568	1378	995		467		331	362	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.18	0.24		0.03	0.41	0.05		0.18		0.14	0.10	

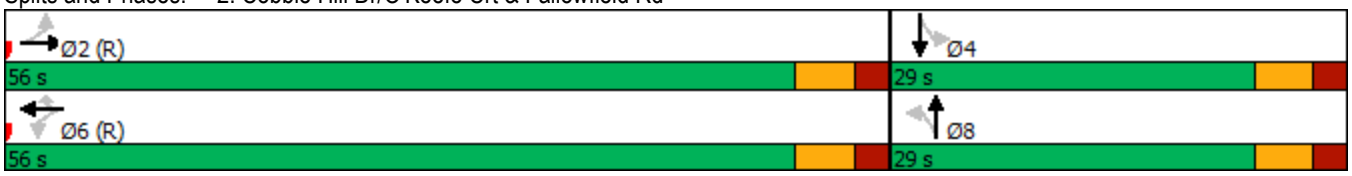
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

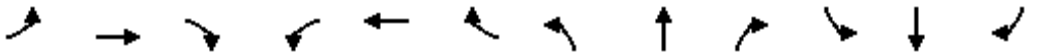
Maximum v/c Ratio: 0.41

Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 2: Cobble Hill Dr/O'Keefe Crt & Fallowfield Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	614	18	16	573	91	29	2	51	124	4	99
Future Volume (vph)	131	614	18	16	573	91	29	2	51	124	4	99
Satd. Flow (prot)	1558	3374	0	1695	1784	1322	0	1801	0	1441	1218	0
Flt Permitted	0.397			0.411				0.859		0.789		
Satd. Flow (perm)	650	3374	0	733	1784	1289	0	1574	0	1197	1218	0
Satd. Flow (RTOR)		6						51			99	
Lane Group Flow (vph)	131	632	0	16	573	91	0	82	0	124	103	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	
Total Split (s)	55.0	55.0		55.0	55.0	55.0	30.0	30.0		30.0	30.0	
Total Split (%)	64.7%	64.7%		64.7%	64.7%	64.7%	35.3%	35.3%		35.3%	35.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min		C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	57.9	57.9		57.9	57.9	57.9		15.1		15.1	15.1	
Actuated g/C Ratio	0.68	0.68		0.68	0.68	0.68		0.18		0.18	0.18	
v/c Ratio	0.30	0.27		0.03	0.47	0.10		0.26		0.59	0.35	
Control Delay	9.0	6.3		4.0	5.5	4.0		14.8		42.1	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	9.0	6.3		4.0	5.5	4.0		14.8		42.1	9.8	
LOS	A	A		A	A	A		B		D	A	
Approach Delay		6.8			5.3			14.8			27.5	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	7.3	18.0		0.6	28.2	3.3		4.3		18.7	0.5	
Queue Length 95th (m)	21.1	33.1		m1.0	23.4	5.3		14.2		32.2	11.9	
Internal Link Dist (m)		359.0			561.9			185.6			242.8	
Turn Bay Length (m)	150.0			70.0		30.0				40.0		
Base Capacity (vph)	442	2301		499	1216	878		481		337	414	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.30	0.27		0.03	0.47	0.10		0.17		0.37	0.25	

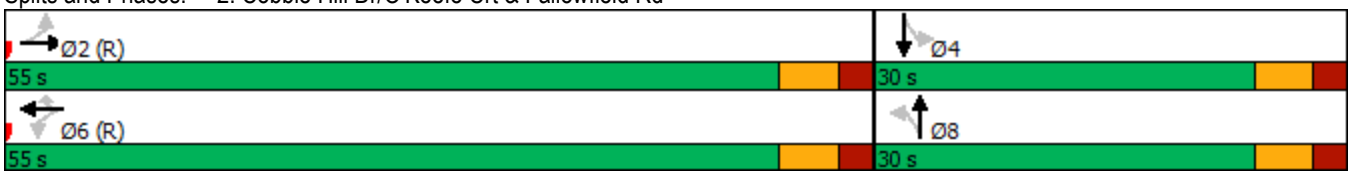
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Cobble Hill Dr/O'Keefe Crt & Fallowfield Rd



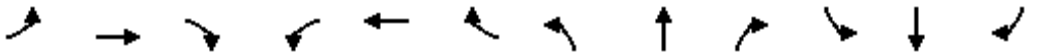
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	506	18	15	398	40	29	2	51	29	4	31
Future Vol, veh/h	54	506	18	15	398	40	29	2	51	29	4	31
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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	2	2	2	2	17	2	2	2	20	2	29
Mvmt Flow	54	506	18	15	398	40	29	2	51	29	4	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	525	0	0	1090	1094	263	792	1063	400
Stage 1	-	-	-	-	-	-	624	624	-	430	430	-
Stage 2	-	-	-	-	-	-	466	470	-	362	633	-
Critical Hdwy	4.265	-	-	4.13	-	-	7.33	6.53	6.93	7.6	6.53	6.635
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.4	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.8	5.53	-
Follow-up Hdwy	2.3045	-	-	2.219	-	-	3.519	4.019	3.319	3.69	4.019	3.5755
Pot Cap-1 Maneuver	1064	-	-	1040	-	-	181	213	736	268	222	584
Stage 1	-	-	-	-	-	-	441	477	-	562	583	-
Stage 2	-	-	-	-	-	-	576	559	-	589	472	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1062	-	-	1039	-	-	160	199	735	235	207	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	199	-	235	207	-
Stage 1	-	-	-	-	-	-	418	452	-	532	574	-
Stage 2	-	-	-	-	-	-	534	550	-	518	447	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.3	20.4	17.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	315	1062	-	-	1039	-	-	235	483
HCM Lane V/C Ratio	0.26	0.051	-	-	0.014	-	-	0.123	0.072
HCM Control Delay (s)	20.4	8.6	-	-	8.5	-	-	22.5	13
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.2	-	-	0	-	-	0.4	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	574	1120	209	3	1249	135	388	136	12	137	86	508
Future Volume (vph)	574	1120	209	3	1249	135	388	136	12	137	86	508
Satd. Flow (prot)	3225	3390	1517	1695	3390	1488	3288	1760	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3219	3390	1475	1694	3390	1461	3288	1760	0	1687	1784	1517
Satd. Flow (RTOR)			209			160		4				508
Lane Group Flow (vph)	574	1120	209	3	1249	135	388	148	0	137	86	508
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
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	
Minimum Split (s)	12.1	29.9	29.9	12.1	29.9	29.9	11.5	48.0		11.5	48.0	
Total Split (s)	18.0	44.9	44.9	12.1	39.0	39.0	15.0	49.2		13.8	48.0	
Total Split (%)	15.0%	37.4%	37.4%	10.1%	32.5%	32.5%	12.5%	41.0%		11.5%	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	
All-Red Time (s)	2.5	2.3	2.3	2.5	2.3	2.3	2.8	3.3		2.8	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	6.9	6.9	7.1	6.9	6.9	6.5	7.0		6.5	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	21.1	57.9	57.9	5.5	32.1	32.1	25.6	19.4		19.9	17.0	120.0
Actuated g/C Ratio	0.18	0.48	0.48	0.05	0.27	0.27	0.21	0.16		0.17	0.14	1.00
v/c Ratio	1.01	0.68	0.26	0.04	1.38	0.27	0.55	0.52		0.49	0.34	0.33
Control Delay	89.6	28.4	4.3	56.0	212.4	4.5	47.7	48.8		54.1	47.0	0.6
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	89.6	28.4	4.3	56.0	212.4	4.5	47.7	48.8		54.1	47.0	0.6
LOS	F	C	A	E	F	A	D	D		D	D	A
Approach Delay		44.2			191.8			48.0			16.1	
Approach LOS		D			F			D			B	
Queue Length 50th (m)	68.2	94.1	0.0	0.7	~205.1	0.0	42.5	32.7		29.3	19.7	0.0
Queue Length 95th (m)	#142.5	#191.6	16.5	4.0	#246.6	10.1	#99.1	40.4		#77.4	25.8	0.0
Internal Link Dist (m)		673.6			1740.3			251.8			359.0	
Turn Bay Length (m)	150.0		100.0	105.0		110.0	100.0			140.0		130.0
Base Capacity (vph)	568	1636	819	78	906	508	702	621		281	609	1517
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.01	0.68	0.26	0.04	1.38	0.27	0.55	0.24		0.49	0.14	0.33

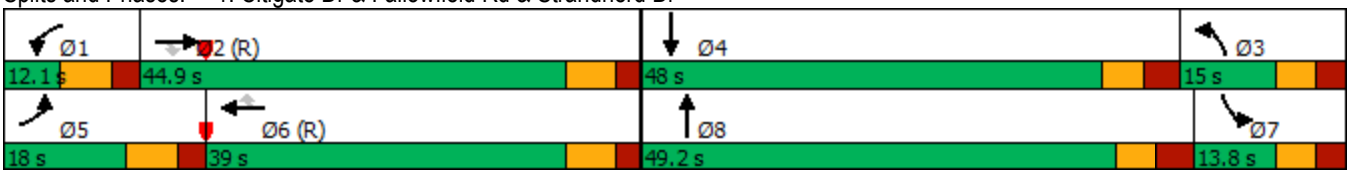
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

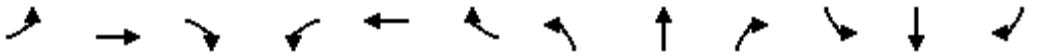
Maximum v/c Ratio: 1.38

Intersection Signal Delay: 85.1	Intersection LOS: F
Intersection Capacity Utilization 98.4%	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: 1: Citigate Dr & Fallowfield Rd & Strandherd Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	632	40	147	811	83	34	95	68	265	442	57
Future Volume (vph)	36	632	40	147	811	83	34	95	68	265	442	57
Satd. Flow (prot)	1695	1784	1517	1695	1767	1517	1695	1784	1517	1695	1746	0
Flt Permitted	0.161			0.291			0.181			0.695		
Satd. Flow (perm)	287	1784	1517	519	1767	1517	323	1784	1517	1240	1746	0
Satd. Flow (RTOR)			49			83			68		8	
Lane Group Flow (vph)	36	632	40	147	811	83	34	95	68	265	499	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	34.7	34.7	34.7	35.5	35.5	35.5	27.8	27.8	27.8	27.8	27.8	
Total Split (s)	52.0	52.0	52.0	52.0	52.0	52.0	33.0	33.0	33.0	33.0	33.0	
Total Split (%)	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	38.8%	38.8%	38.8%	38.8%	38.8%	
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)	45.9	45.9	45.9	45.9	45.9	45.9	25.6	25.6	25.6	25.6	25.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54	0.54	0.30	0.30	0.30	0.30	0.30	
v/c Ratio	0.23	0.66	0.05	0.53	0.85	0.10	0.35	0.18	0.13	0.71	0.94	
Control Delay	15.5	18.3	2.6	21.4	27.7	2.7	34.9	22.7	6.6	38.3	56.8	
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	15.5	18.3	2.6	21.4	27.7	2.7	34.9	22.7	6.6	38.3	56.8	
LOS	B	B	A	C	C	A	C	C	A	D	E	
Approach Delay		17.2			24.8			19.2			50.4	
Approach LOS		B			C			B			D	
Queue Length 50th (m)	2.9	69.7	0.0	14.6	106.7	0.0	4.2	11.2	0.0	37.6	76.5	
Queue Length 95th (m)	9.4	105.9	3.5	34.1	#182.5	6.0	13.1	22.2	8.4	#69.8	#134.2	
Internal Link Dist (m)		561.9			675.5			401.4			405.2	
Turn Bay Length (m)	65.0		65.0	85.0		70.0	175.0		95.0	65.0		
Base Capacity (vph)	154	963	841	280	954	857	99	549	514	382	543	
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	0.23	0.66	0.05	0.53	0.85	0.10	0.34	0.17	0.13	0.69	0.92	

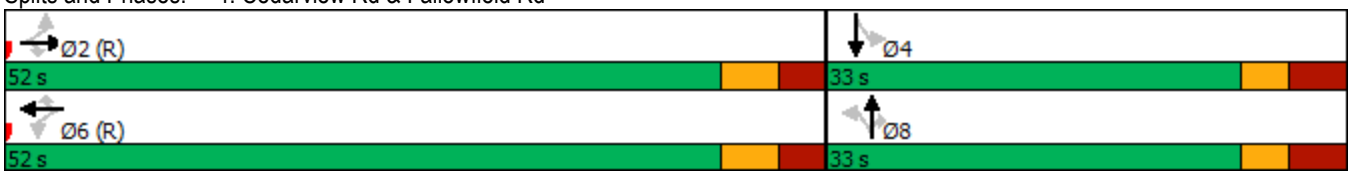
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 40 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 29.7	Intersection LOS: C
Intersection Capacity Utilization 95.9%	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 Rd & Fallowfield Rd



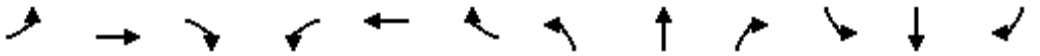
Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	666	35	44	733	67	15	2	39	81	4	55
Future Vol, veh/h	118	666	35	44	733	67	15	2	39	81	4	55
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	12	2	2	2	2	17	2	2	2	3	2	4
Mvmt Flow	118	666	35	44	733	67	15	2	39	81	4	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	802	0	0	703	0	0	1806	1812	353	1393	1762	735
Stage 1	-	-	-	-	-	-	922	922	-	823	823	-
Stage 2	-	-	-	-	-	-	884	890	-	570	939	-
Critical Hdwy	4.28	-	-	4.13	-	-	7.33	6.53	6.93	7.345	6.53	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.145	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.545	5.53	-
Follow-up Hdwy	2.314	-	-	2.219	-	-	3.519	4.019	3.319	3.5285	4.019	3.338
Pot Cap-1 Maneuver	767	-	-	892	-	-	55	78	644	109	84	414
Stage 1	-	-	-	-	-	-	292	348	-	365	387	-
Stage 2	-	-	-	-	-	-	339	360	-	472	342	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	766	-	-	890	-	-	39	62	642	85	67	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	62	-	85	67	-
Stage 1	-	-	-	-	-	-	246	294	-	308	367	-
Stage 2	-	-	-	-	-	-	276	342	-	372	289	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.5	61.2	107.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	117	766	-	-	890	-	-	85	306
HCM Lane V/C Ratio	0.479	0.154	-	-	0.049	-	-	0.953	0.193
HCM Control Delay (s)	61.2	10.6	-	-	9.3	-	-	171.9	19.6
HCM Lane LOS	F	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.1	0.5	-	-	0.2	-	-	5.3	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	666	35	44	733	67	15	2	39	81	4	55
Future Volume (vph)	118	666	35	44	733	67	15	2	39	81	4	55
Satd. Flow (prot)	1544	3362	0	1695	1784	1322	0	1762	0	1679	1507	0
Flt Permitted	0.327			0.385				0.899		0.720		
Satd. Flow (perm)	531	3362	0	686	1784	1290	0	1605	0	1272	1507	0
Satd. Flow (RTOR)		11						39			55	
Lane Group Flow (vph)	118	701	0	44	733	67	0	56	0	81	59	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	
Total Split (s)	57.0	57.0		57.0	57.0	57.0	28.0	28.0		28.0	28.0	
Total Split (%)	67.1%	67.1%		67.1%	67.1%	67.1%	32.9%	32.9%		32.9%	32.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min		C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	64.6	64.6		64.6	64.6	64.6		11.9		12.0	12.0	
Actuated g/C Ratio	0.76	0.76		0.76	0.76	0.76		0.14		0.14	0.14	
v/c Ratio	0.29	0.27		0.08	0.54	0.07		0.22		0.45	0.23	
Control Delay	8.3	5.0		2.7	5.2	2.5		15.4		39.4	11.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	8.3	5.0		2.7	5.2	2.5		15.4		39.4	11.1	
LOS	A	A		A	A	A		B		D	B	
Approach Delay		5.5			4.9			15.4			27.5	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	5.3	16.1		1.0	19.2	1.4		2.5		12.5	0.6	
Queue Length 95th (m)	20.8	36.9		m1.6	m117.0	m2.3		10.5		21.9	9.1	
Internal Link Dist (m)		359.0			561.9			185.6			242.8	
Turn Bay Length (m)	150.0			70.0		30.0				40.0		
Base Capacity (vph)	403	2556		520	1355	979		444		329	430	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.29	0.27		0.08	0.54	0.07		0.13		0.25	0.14	

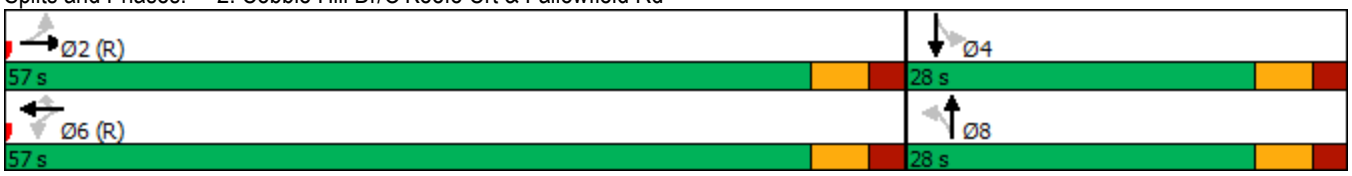
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

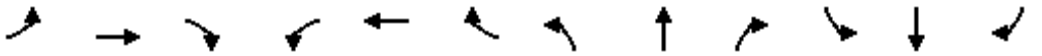
Maximum v/c Ratio: 0.54

Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Cobble Hill Dr/O'Keefe Crt & Fallowfield Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	673	35	44	736	148	15	2	39	144	4	107
Future Volume (vph)	186	673	35	44	736	148	15	2	39	144	4	107
Satd. Flow (prot)	1544	3362	0	1695	1784	1322	0	1762	0	1695	1497	0
Flt Permitted	0.302			0.376				0.902		0.720		
Satd. Flow (perm)	490	3362	0	670	1784	1290	0	1610	0	1285	1497	0
Satd. Flow (RTOR)		11						39			107	
Lane Group Flow (vph)	186	708	0	44	736	148	0	56	0	144	111	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	
Total Split (s)	57.0	57.0		57.0	57.0	57.0	28.0	28.0		28.0	28.0	
Total Split (%)	67.1%	67.1%		67.1%	67.1%	67.1%	32.9%	32.9%		32.9%	32.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min		C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	58.1	58.1		58.1	58.1	58.1		14.9		14.9	14.9	
Actuated g/C Ratio	0.68	0.68		0.68	0.68	0.68		0.18		0.18	0.18	
v/c Ratio	0.56	0.31		0.10	0.60	0.17		0.18		0.64	0.32	
Control Delay	17.0	6.4		2.5	5.9	2.5		13.9		44.5	8.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	17.0	6.4		2.5	5.9	2.5		13.9		44.5	8.7	
LOS	B	A		A	A	A		B		D	A	
Approach Delay		8.6			5.2			13.9			28.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	13.2	20.3		0.6	11.0	2.1		2.3		22.0	0.6	
Queue Length 95th (m)	#47.5	37.3		m1.4	m82.5	m5.2		10.5		36.4	12.2	
Internal Link Dist (m)		359.0			561.9			185.6			242.8	
Turn Bay Length (m)	150.0			70.0		30.0				40.0		
Base Capacity (vph)	334	2300		457	1218	881		445		332	466	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.56	0.31		0.10	0.60	0.17		0.13		0.43	0.24	

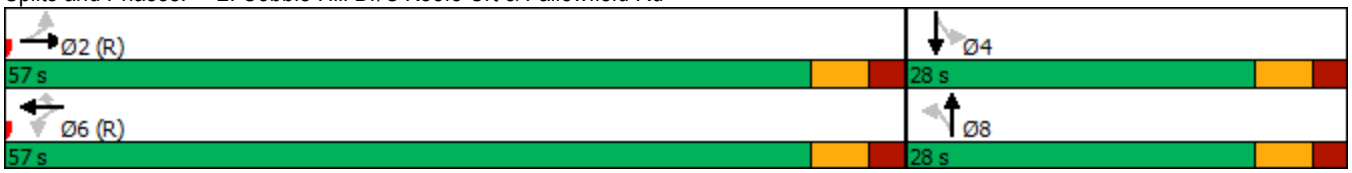
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 81.9%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobble Hill Dr/O'Keefe Crt & Fallowfield Rd



Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	484	35	43	597	62	15	2	39	43	4	53
Future Vol, veh/h	73	484	35	43	597	62	15	2	39	43	4	53
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	70	-	30	-	-	-	40	-	-
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, %	12	2	2	2	2	17	2	2	2	4	2	4
Mvmt Flow	73	484	35	43	597	62	15	2	39	43	4	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	661	0	0	521	0	0	1393	1397	262	1074	1352	599
Stage 1	-	-	-	-	-	-	650	650	-	685	685	-
Stage 2	-	-	-	-	-	-	743	747	-	389	667	-
Critical Hdwy	4.28	-	-	4.13	-	-	7.33	6.53	6.93	7.36	6.53	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.16	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.56	5.53	-
Follow-up Hdwy	2.314	-	-	2.219	-	-	3.519	4.019	3.319	3.538	4.019	3.338
Pot Cap-1 Maneuver	870	-	-	1043	-	-	110	140	737	183	149	496
Stage 1	-	-	-	-	-	-	425	464	-	433	447	-
Stage 2	-	-	-	-	-	-	406	419	-	603	456	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	868	-	-	1040	-	-	87	123	735	155	130	495
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	123	-	155	130	-
Stage 1	-	-	-	-	-	-	388	424	-	396	428	-
Stage 2	-	-	-	-	-	-	344	401	-	521	417	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.5	25.4	24.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	232	868	-	-	1040	-	-	155	414
HCM Lane V/C Ratio	0.241	0.084	-	-	0.041	-	-	0.277	0.138
HCM Control Delay (s)	25.4	9.5	-	-	8.6	-	-	36.9	15.1
HCM Lane LOS	D	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	0.9	0.3	-	-	0.1	-	-	1.1	0.5