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TRANSPORTATION SOLUTIONS LIMITED

**1949 Gerber Road,
Wellesley, ON
Transportation Impact
Study**

Paradigm Transportation Solutions Limited

2026-08
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Project Summary



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1949 Gerber Road, Wellesley, ON Transportation Impact Study



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Executive Summary

Content

James Gies Construction Limited retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study for a proposed development at 1949 Gerber Road in Wellesley, Ontario.

The purpose of this study is to identify and assess the potential transportation impact(s) of the development. This report includes an analysis of existing traffic conditions, a description of the proposed development, estimates of future traffic volumes five years after the full build-out of the site, an analysis of future traffic operations, and the identification of remedial measures to manage future traffic conditions, if applicable.

Development Concept

The subject site is on the northeast corner of Gerber Road and Greenwood Hill Road and is vacant. Development of the site proposes 115 to 185 residential units (comprising single detached and townhouse style units) and 3.051 hectares of commercial uses.

Vehicle access to the municipal road network is proposed via:

- ▶ A new municipal street connection to Greenwood Hill Road opposite Gerber Meadows Drive assumed to serve both the residential and commercial uses, and referred to as Street One in this study; and
- ▶ A new municipal street connection to Greenwood Hill Road opposite Parkview Drive assumed to serve the residential uses, referred to as Street Two in this study.

Full build-out of the site is assumed to be complete by 2028.

Findings

Based on the investigations carried out, the findings of this study are as follows:

- ▶ **Existing Conditions:** All study area intersections (Nafziger Road and Gerber Road, Gerber Road and Greenwood Hill Road, Greenwood Hill Road and Gerber Meadows Drive, Greenwood Hill Road and Parkview Drive, and Greenwood Hill Road and Queen Bush Road) are operating at acceptable levels



of service during the weekday AM peak hour and weekday PM peak hour with no critical movements noted.

- ▶ **Development Trip Generation:** The development is forecast to generate 223 new trips in the weekday AM peak hour and 308 new trips in the weekday PM peak hour.
- ▶ **Future Background Conditions:** The study intersections are forecast to operate at acceptable levels of service during the weekday AM peak hour and weekday PM peak hours with no critical movements noted.
- ▶ **Future Total Traffic Conditions:** The study intersections are forecast to operate at acceptable levels of service during the weekday AM peak hour and weekday PM peak hours with no critical movements noted.
- ▶ **Sight Distance Assessment:** The proposed locations of both Street One (opposite Gerber Meadows Drive) and Street Two (opposite Parkview Drive) meet the minimum sight distances defined by the Transportation Association of Canada.
- ▶ **Left-Turn Lane Warrant:** An eastbound left-turn lane is not warranted at the intersection of Gerber Road and Greenwood Hill Road. Southbound left-turn lanes are also not warranted along Greenwood Hill Road at the intersections with Street One and Street Two.
- ▶ **Pedestrian Improvements:** A Level 2 Type D pedestrian crossover is warranted at the intersection of Greenwood Hill Road and Queens Bush Road.

Conclusions

Based on the findings of this study, it is concluded that development of the site can be accommodated by the existing transportation network. The proposed locations of both Street One and Street Two provide sufficient intersection sight distance and stopping sight distance in accordance with guidance published by TAC. No remedial measures are considered necessary to accommodate the site generated traffic.

Recommendations

Based on the findings and conclusions of this study, it is recommended that the development be considered for approval. It is also recommended that:

- ▶ The Region monitor the need for exclusive right-turn lanes at:
 - Gerber Road and Greenwood Hill Road (to support the westbound right-turn movement); and



- Greenwood Hill Road and Gerber Meadows Drive/Street One (to support the northbound right-turn movement).
- ▶ The Region monitor the intersection of Gerber Road and Nafziger Road for any traffic operational deficiencies, and review the need and timing for remedial measures; and
- ▶ The Region and developer consider the provision of a Level 2 Type D pedestrian crossover (PXO) at Greenwood Hill Road and Queens Bush Road to support pedestrian travel across Greenwood Hill Road. It is recommended this crossing treatment be provided on the north leg of the intersection to connect with the existing sidewalks on the north side of Queens Bush Road and the west side of Greenwood Hill Road.



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1 Introduction

1.1 Overview

James Gies Construction Limited retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study for a proposed development at 1949 Gerber Road in Wellesley, Ontario. **Figure 1.1** illustrates the site location on the northeast corner of Gerber Road and Greenwood Hill Road.

The purpose of this study is to identify and assess the potential transportation impact(s) of the development. Paradigm met virtually with staff from the Region of Waterloo and the Township's transportation consultant on Tuesday March 31, 2026 to review and confirm the scope of this study, which comprises:

- ▶ An assessment of current traffic and site conditions within the study area described in **Section 1.2**;
- ▶ Estimates of future non-development (background) traffic growth;
- ▶ Estimates of the site-generated traffic;
- ▶ An analysis of future traffic impacts on the surrounding road network for five years after the full build-out (with and without the development); and
- ▶ The identification and recommendation of any mitigation measures to manage future traffic conditions, if applicable.

Appendix A contains the pre-study consultation material shared with the Region and Township, as well as their comments and feedback on the scope and assumptions of this study.

1.2 Study Area

The intersections assessed in this study include:

- ▶ Nafziger Road and Gerber Road (unsignalized);
- ▶ Gerber Road and Greenwood Hill Road (unsignalized);
- ▶ Greenwood Hill Road and Gerber Meadows Drive/Proposed Street One (unsignalized);
- ▶ Greenwood Hill Road and Parkview Drive/Proposed Street Two (unsignalized); and
- ▶ Greenwood Hill Road and Queen Bush Road (unsignalized).





2 Existing Conditions

2.1 Road Characteristics

The roads of interest in the study area include Gerber Road, Nafziger Road, Greenwood Hill Road, Gerber Meadows Drive, Parkview Drive, and Queens Bush Road. Each road is generally described as follows¹:

- ▶ **Gerber Road** is an east-west road with a two-lane cross-section. East of Nafziger Road, the road is under Waterloo Region jurisdiction as Regional Road 12, and the speed limit is 60 km/h. East of Greenwood Hill Drive, the road operates with a posted speed limit of 80 km/h. West of Nafziger Road, the road is under Township jurisdiction and operates with a speed limit of 50 km/h.

East of the Wellesley Home Hardware, the road has a mix of urban and rural cross-sections with a curb provided on the north side of the road. West of the Wellesley Home Hardware, the road has a rural cross-section. Between Greenwood Hill Road and Parkview Drive, a multi-use path is provided along the north side of the roadway. A multi-use path is also provided along the north side of the road between David Street and Lawrence Street;

- ▶ **Nafziger Road** is a north-south two-lane road that operates under Waterloo Region jurisdiction as Regional Road 5. North of Queen's Bush Road, the road operates under the jurisdiction of the Township. Between Gerber Road and Queen's Bush Road, the road has an urban cross-section with a posted speed limit of 50 km/h. South of Gerber Road, the road has a rural cross-section with a posted speed limit of 80 km/h.

A sidewalk is provided on the west side of the road between Henry Street and 3592 Nafziger Road. A sidewalk is also provided on the east side of the road between Henry Street and 3599 Nafziger Road; as well as between Lawrence Street and Henry Street. A gap in the sidewalk network exists between Doering Street and Lawrence Street.

- ▶ **Greenwood Hill Road** is a north-south two-lane that operates under township jurisdiction and features a rural cross-section with a posted speed limit of 50 km/h. Between Gerber Road and Galena Street, a multi-use path is provided on the west side of the road, with a small portion of sidewalk provided between Queens Bush Road and Ferris Drive.

¹ Township of Wellesley, *Official Plan Map 6A Transportation*, (St. Clements: Township of Wellesley, 2015).



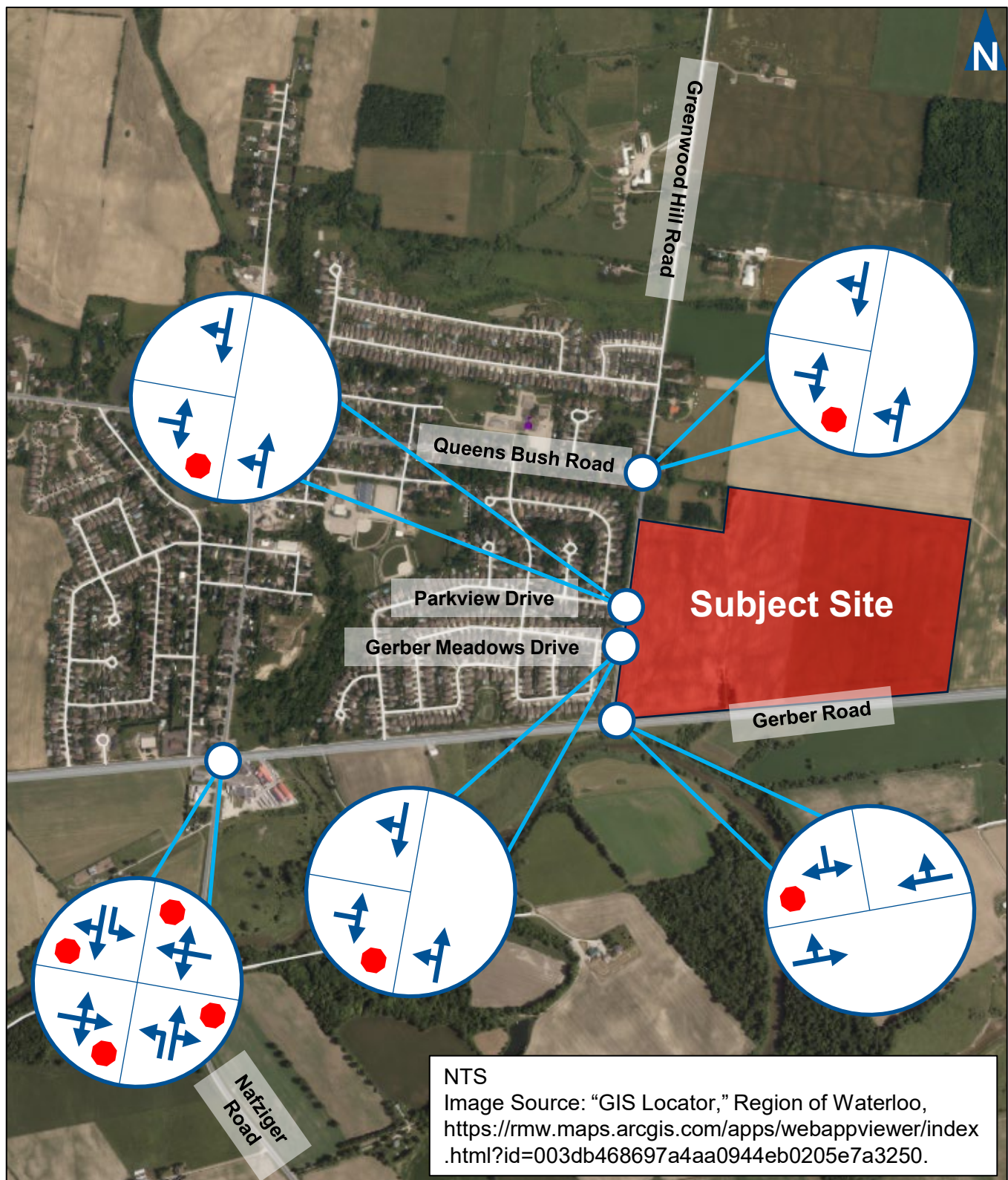
- ▶ **Gerber Meadows Drive** is an east-west to north-south two-lane road that operates under township jurisdiction with an urban cross-section. The speed limit is not posted and is assumed to be 50 km/h. Sidewalks are provided on both sides of the road between Greenwood Hill Road and Village Road; however, a sidewalk is only provided on the north side of the road west of Village Road.
- ▶ **Parkview Drive** is an east-west to north-south two-lane road that operates under township with an urban cross-section. The speed limit is not posted and is assumed to be 50 km/h. Sidewalk is provided on the north and west side of the entire length of the road; and

Queens Bush Road is an east-west two-lane road with an urban cross-section. West of Nafziger Road, the road operates under Waterloo Region jurisdiction as Regional Road 5. East of Nafziger Road, the road is under township jurisdiction. The speed limit is unposted and assumed to be 50 km/h, except for the segment between 1025 Queens Bush Road and 1126 Queens Bush Road, which operates with a posted speed limit of 40 km/h.

East of Village Road, a sidewalk is only provided on the north side of the road. West of Water Street, a sidewalk is only provided on the south side of the road. Between Village Road and Water Street, sidewalks are provided on both sides of the road.

Figure 2.1 details the existing traffic control and lane configurations at the study area intersections.





2.2 Active Transportation

Figure 2.2 and **Figure 2.3** illustrate the existing and future cycling networks, respectively, as illustrated in the Waterloo Region *Transportation Master Plan*.² Existing infrastructure includes a multi-use path on the west side of Greenwood Hill Road and paved shoulders on Gerber Road (east of Nafziger Road), and Nafziger Road (south of Gerber Road).

Future improvements to the cycling network as indicated by the Region of Waterloo *Transportation Master Plan* and the Township's transportation consultant (during pre-study consultation) include:

- ▶ Continuous cycle lanes on Queen's Bush Road between Hutchison Road and Nafziger Road; and
- ▶ Cycle lanes on Nafziger Road between Queens Bush Road and Gerber Road.

2.3 Public Transit Service

Public transit services are not offered in the Township of Wellesley; however, at the time of writing it is understood the Township is exploring a specific transit route to connect the urban communities of Wellesley Township with locations in Kitchener-Waterloo, and on-demand transit for locations in Wellesley Township outside of its urban communities.³

2.4 Traffic Volumes

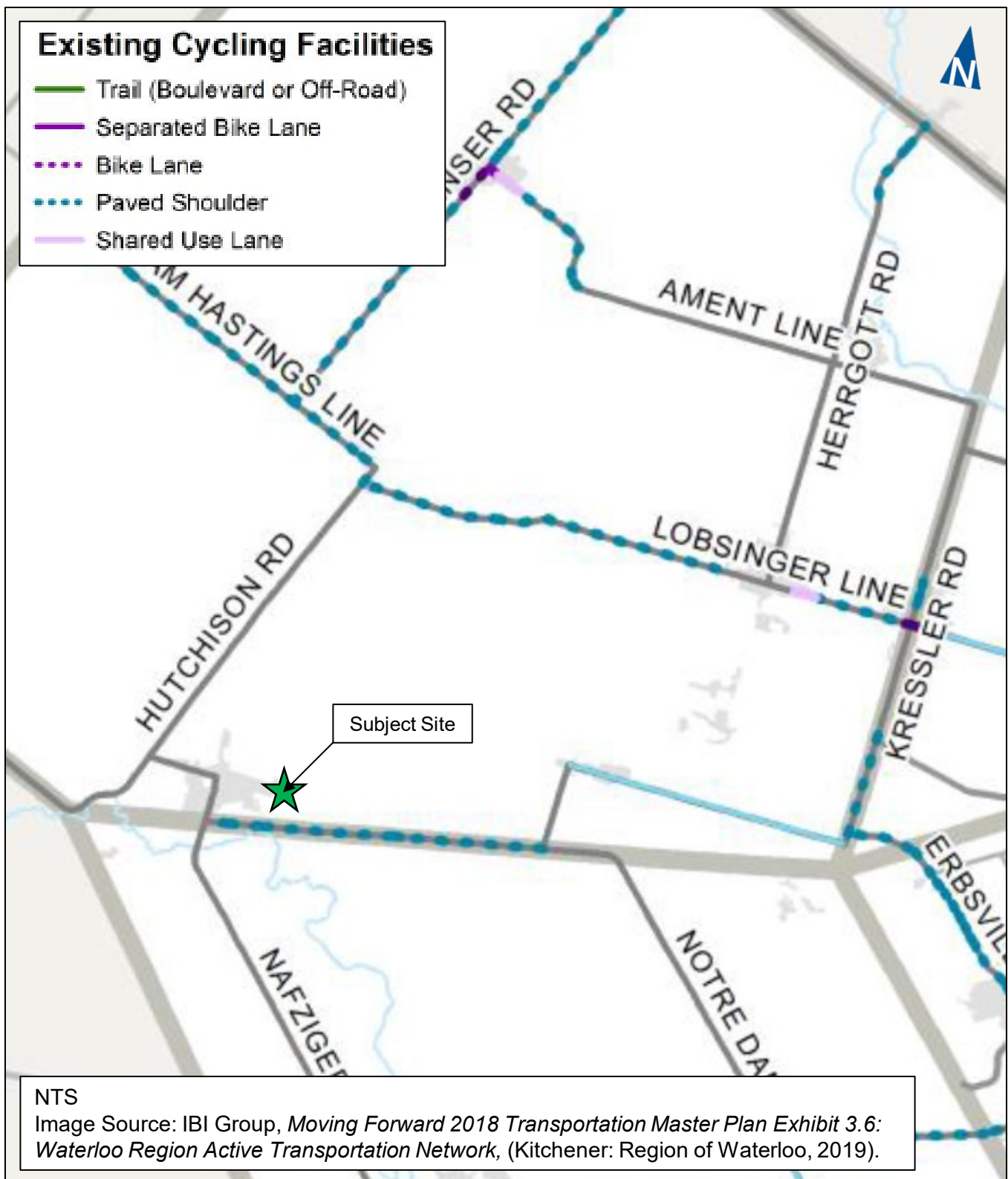
Paradigm conducted eight-hour turning movement counts (TMCs) at the study area intersections on Thursday April 9, 2026 from 7:00 AM to 10:00 AM, 11:30 AM to 1:30 PM, and 3:00 PM to 6:00 PM. Due to technical difficulties with the data collection equipment at Gerber Road and Greenwood Hill Road, Paradigm recounted this intersection on Tuesday April 14, 2026, during the same eight-hours. **Appendix B** contains the observed traffic counts for the study area intersections.

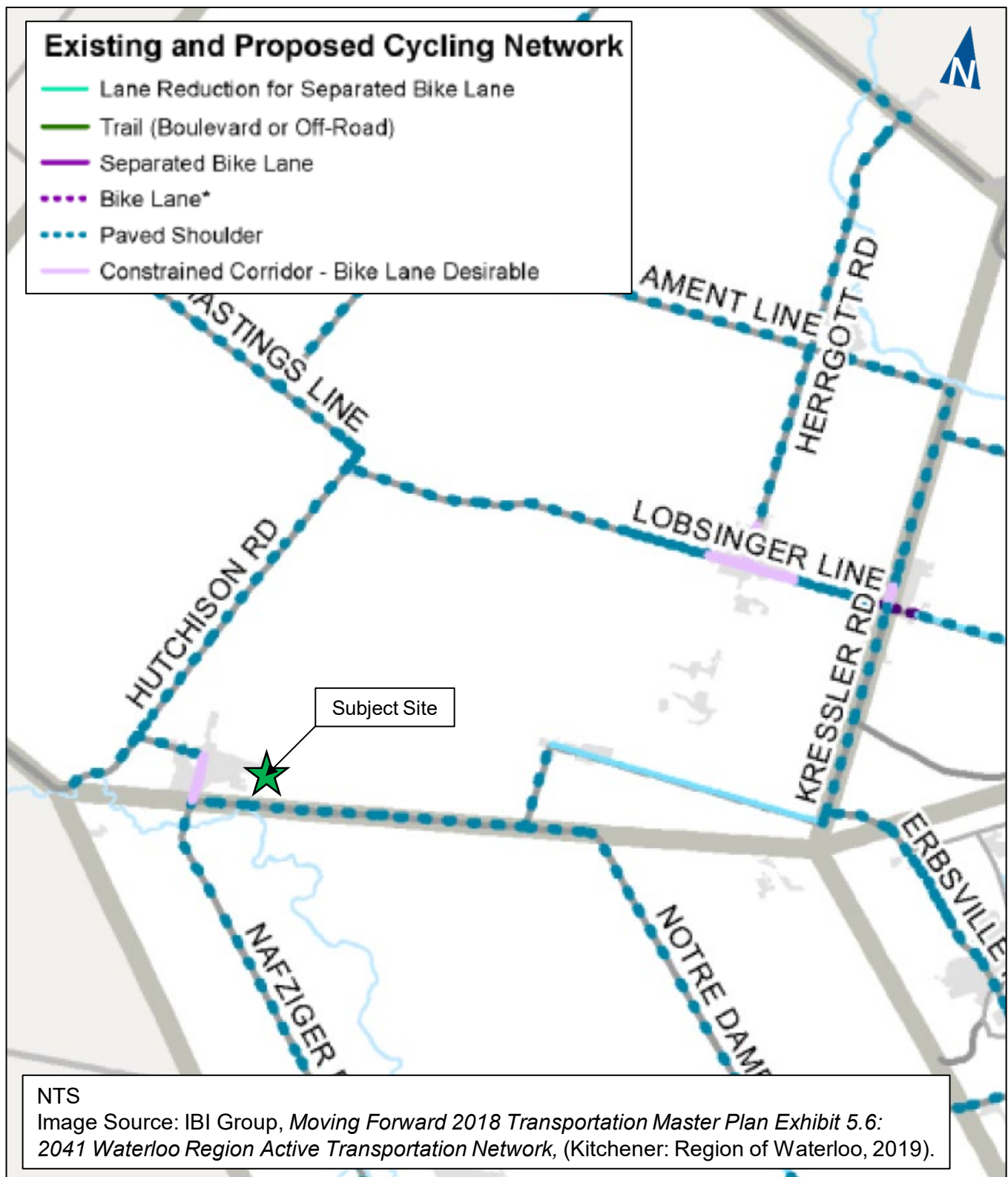
Figure 2.4 illustrates the base year weekday AM peak hour and weekday PM peak hour traffic volumes. Volumes along Greenwood Hill Road between Gerber Road and Queens Bush Road have been balanced given the consistent peak hour between each intersection and lack of intersecting roads or driveways.

² *Moving Forward 2018 Transportation Master Plan, Exhibit 3.6: Waterloo Region Active Transportation Network*, (Kitchener, Region of Waterloo, 2019).

³ "Wellesley Township Transit Service," Township of Wellesley, 2024, <https://www.wellesley.ca/news/posts/wellesley-township-transit-service/>.

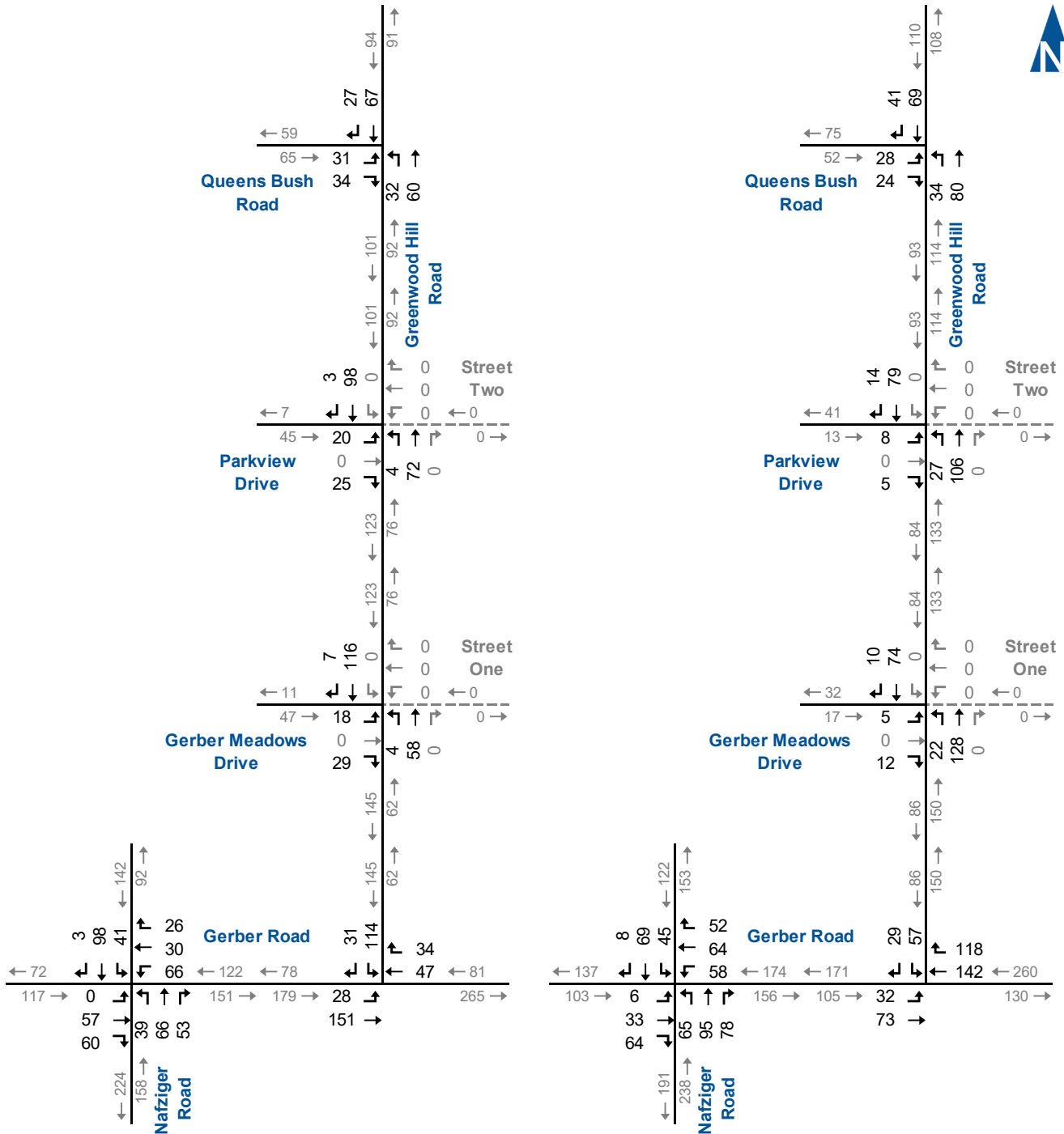






AM Peak Hour

PM Peak Hour



2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections, or when the volume to capacity (v/c) ratio is greater than 1.00, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations of the study intersections have been evaluated using Synchro 12 with the existing lane configurations, traffic control, and the adjusted base year traffic peak hour volumes. The analyses also reflect model parameters as specified in the *Region of Waterloo Transportation Impact Study Requirements for Capacity Analysis, Roundabouts, and Signal Warrants*.⁴

Under *Region of Waterloo Transportation Impact Study Guidelines*, movements are considered critical where:

- ▶ The average control delay for individual movements is greater than 55 seconds;
- ▶ The estimated 95th percentile queue length for an exclusive movement exceeds the available storage space;
- ▶ Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes;
- ▶ Estimated 95th percentile queue length for an individual movement will block an existing access; or
- ▶ There is a poor quality of service for non-auto modes.⁵

⁴ Region of Waterloo, *Transportation Impact Study Requirements for Capacity Analysis, Roundabouts, and Signal Warrants*, (Kitchener: Region of Waterloo, 2013).

⁵ Region of Waterloo, *Transportation Impact Study Guidelines*, (Kitchener: Region of Waterloo, 2014).



Intersections are considered critical when:

- ▶ an unsignalized intersection has an average control delay greater than 35 seconds (LOS E or F); and when
- ▶ a signalized intersection has an average control delay greater than 55 seconds (LOS E or F).

Table 2.1 and **Table 2.2** summarize the existing intersection operations in the weekday AM peak hour and weekday PM peak hour, respectively. The entries in the table summarize the level of service (LOS), volume to capacity ratio (V/C), and 95th percentile queues for each movement. All study area intersections are operating at acceptable levels of service in both the weekday AM peak hour and weekday PM peak hour with no critical movements noted. **Appendix C** contains the detailed Synchro reports.



TABLE 2.1: BASE YEAR OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Stor. Avail.	< < < < <	A 8 0.15 4 - -	> > > > >	A 8	< < < < <	A 9 0.17 4 - -	> > > > >	A 9	A 9 0.06 2 20 18	A 9 0.17 4 - -	> > > > >	A 9	A 9 0.07 2 15 13	A 9 0.15 4 - -	> > > > >	A 9	
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.02 1	A 0 0.00 0		A 1		A 0 0.00 0	A 0 0.00 0	A 0					B 11 0.19 5		> > > > >	B 11	
	Greenwood Hill Road & Gerber Meadows Drive	TWSC	LOS Delay V/C Q	A 9 0.05 2		> > > >	A 9					A 0	A 0 0.00 0		A 0		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Parkview Drive	TWSC	LOS Delay V/C Q	A 9 0.05 2		> > > >	A 9					A 0	A 0 0.00 0		A 0		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	A 10 0.08 2		> > > >	A 10					A 3	A 0 0.02 1		A 0		A 0 0.00 0	A 0 0.00 0	A 0	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

< / > - Shared Movement



TABLE 2.2: BASE YEAR OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Stor. Avail.	< < < < <	A 8 0.14 4 - -	> > > > >	A 8	< < < < <	A 9 0.24 7 - -	> > > > >	A 9	A 9 0.11 3 20 17	A 9 0.24 7 - -	> > > > >	A 9	A 9 0.07 2 15 13	A 9 0.12 3 - -	> > > > >	A 9	
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.02 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0					B 11 0.12 3		> > > > >	B 11	
	Greenwood Hill Road & Gerber Meadows Drive	TWSC	LOS Delay V/C Q	A 9 0.02 1		> > > >	A 9					A 7 0.01 0	A 0 0.00 0		A 1		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Parkview Drive	TWSC	LOS Delay V/C Q	A 10 0.02 0		> > > >	A 10					A 8 0.02 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	A 10 0.07 2		> > > >	A 10					A 8 0.02 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0	

MOE - Measure of Effectiveness

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Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

< / > - Shared Movement



3 Development Concept

3.1 Development Description

The subject site is located at 1949 Gerber Road in Wellesley and is vacant. The surrounding lands to the west comprise low-density residential development with the lands to the east vacant and used for agricultural purposes.

Redevelopment of the site proposes approximately 115 to 185 residential units (comprising single detached homes and townhouses) and 3.051 hectares of commercial uses. The breakdown of residential unit types remains unknown, as does the scale of the commercial development on the commercial block. Preliminary concepts for the commercial block include a combination of a gas station, a grocery store, a restaurant, and three multi-unit retail building. The total floor area of the conceptual commercial uses is approximately 5,776 m² (62,172 sq. ft.).

Vehicle access to the municipal road network is proposed via:

- ▶ A new municipal street connection to Greenwood Hill Road opposite Gerber Meadows Drive assumed to serve both the residential and commercial uses, and referred to as Street One in this study; and
- ▶ A new municipal street connection to Greenwood Hill Road opposite Parkview Drive assumed to serve the residential uses, and referred to as Street Two in this study.

Figure 3.1 illustrates the proposed concept plan. Full build-out is assumed by 2028; however, this is subject to market conditions.

It is acknowledged that the concept plan illustrates additional lands to the east which are owned by the applicant (and which are intended for future development) but which are outside of the urban boundary. Through discussions with staff during pre-study consultation, it is understood development of these lands would require a boundary expansion, and that specific information on the type and scale of development remains unknown. Therefore, it has been assumed these lands would be subject to a future application, and have not been included in this study.





3.2 Sight Distance Assessment

Paradigm has assessed the available sight distance at the proposed municipal street connections along Greenwood Hill Road opposite of Gerber Meadows Drive (Street One) and Parkview Drive (Street Two) in accordance with guidance published in the Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads* (TAC *GDGCR*).⁶

The TAC *GDGCR* defines minimum sight distances based on the design speed of the road; typically 10 km/h to 20 km/h above the speed limit. TAC publishes both stopping sight distance (representing that for vehicles on Greenwood Hill Road approaching either Street One or Street Two) and intersection sight distance (for vehicles exiting the site via Street One or Street Two). Intersection sight distances are based on applicable time gaps for both the specific movement (left-turn, right-turn, crossing road) and the design vehicle (passenger car, single unit truck, and combination truck).

Table 3.1 summarizes the minimum sight distances published by TAC (at a design speed of 60 km/h) 10 km/h above the posted speed limit on Greenwood Hill Road.

TABLE 3.1: MINIMUM SIGHT DISTANCES – TAC

Sight Distance Measurement	Minimum Sight Distance
Minimum Stopping Sight Distance ⁷	85 metres
Intersection Sight Distance ⁸ (Left Turn from Stop)	130 metres
Intersection Sight Distance ⁹ (Right Turn from Stop)	110 metres

Paradigm staff conducted a site visit on Thursday, April 9, 2026 to determine the profile of Greenwood Hill Road and document the available sight distance at Street One and Street Two. The assessments reflect following parameters as defined by TAC:

- Object Height (vehicle tail or brake light): 0.60 metres

⁶ TAC, “Intersections,” Chap. 9 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017).

⁷ Ibid. Table 2.5.2: Stopping Sight Distance on Level Roadways for Automobiles.

⁸ Ibid. Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn from Stop.

⁹ Ibid. Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop.



- ▶ Driver Eye Height (Passenger Car): 1.08 metres; and
- ▶ Top of (Passenger) Car: 1.30 metres

Greenwood Hill Road is relatively straight; however, a slight vertical curve is present along the road as the road elevation decreases from Queens Bush Road southerly to Gerber Road.

Appendix D contains the sight distance profiles for the Street One and Street Two connections to Greenwood Hill Road. The analyses indicate the proposed locations for both Street One and Street Two meet the minimum sight distances defined in the TAC *GDGCR*.



4 Future Conditions

4.1 Forecast Background Traffic

The assessment of the future traffic conditions reflects an analysis year of 2033, representative of five years from the date of build-out. Future background traffic volumes reflect a per annum growth rate of 2.0% applied to the base year volumes as directed by Township and Region staff during pre-study consultation.

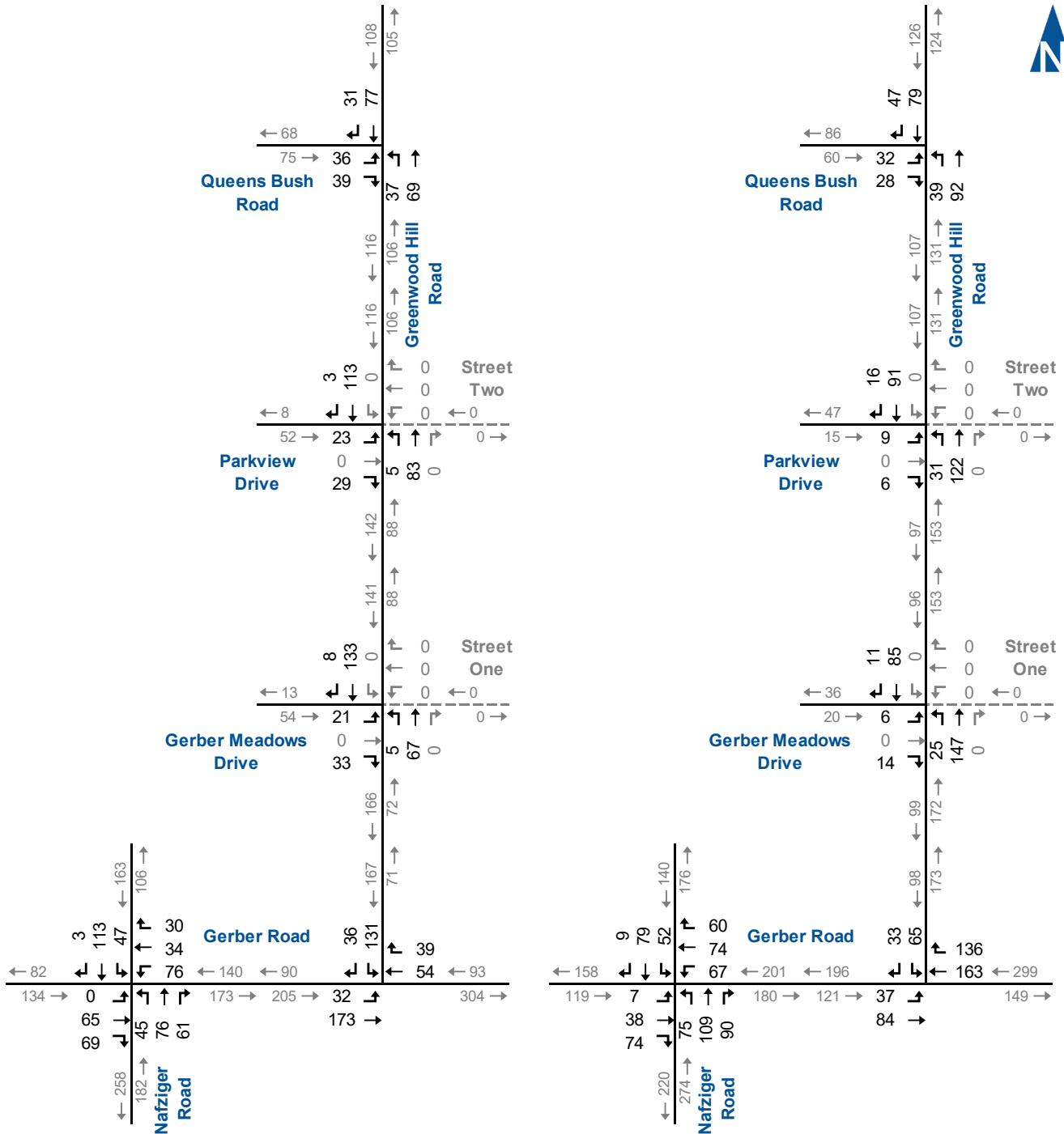
Township and Region staff did not identify any specific background developments to be included above and beyond the per annum growth rate, such that the growth rate is assumed to capture traffic from any possible future developments in or adjacent to the study area.

Figure 4.1 illustrates the forecast background traffic volumes for the weekday AM peak hour and weekday PM peak hour.



AM Peak Hour

PM Peak Hour



4.2 Forecast Site Traffic

4.2.1 Trip Generation

The site trip generation reflects information in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*¹⁰ for land use codes (LUCs) 210 (Single-Family Detached Housing) and 821 (Shopping Plaza (40k – 150k GLA)). The base trip generation for the subject lands has been developed using the regression equations or average rates for each LUC following the methodologies in the ITE *Trip Generation Handbook*.¹¹

The residential component is assumed to consist of both single-detached and townhouse style units; however, the specific composition is unknown. To present a conservative estimate, Paradigm has assumed the residential component is entirely single-detached homes.

To estimate the trip generation for the commercial block, Paradigm has relied on LUC 821, which is defined as “an integrated group of commercial establishments planned, developed, owned, and managed as a unit.” Use of LUC 821 (as opposed to specific land use codes for each potential land use) is intended to capture the internal trip interaction between each use on the commercial block (for example, a motorist stopping for gas and groceries in one trip).

ITE notes that the “presence or absence of a supermarket in a shopping plaza has a measurable effect on site trip generation,” and provides different trip generation rates depending on the presence of a supermarket. Different rates are also provided for the locational context of the plaza (for example, general urban/suburban versus rural). For the purposes of this study, it is assumed that the commercial block aligns with the definition of a rural setting, and will attract residents from the surrounding rural communities. Therefore, the trip generation rates for a shopping plaza with a supermarket in a rural setting have been used to estimate the trip generation of the commercial block.

Given the mixed-use nature of the development, the trip generation calculations include an estimate of trips internal to the site. These are trips completed between the residential and commercial land uses, but which remain within the site. An example is a resident walking to the grocery store. These trips do not add traffic to the surrounding road network. Estimates of internal trips is based on the National Cooperative Highway Research Program (NCHRP) 8-51 Internal

¹⁰ Institute of Transportation Engineers, *Trip Generation Manual*, 12th ed., (Washington DC: ITE, 2025).

¹¹ Institute of Transportation Engineers, *Trip Generation Handbook*, 3rd ed., (Washington, DC: ITE, 2017).



Capture Estimation Tool. **Appendix E** contains the internal capture worksheets for the development. The internal capture estimates do not explicitly account for internal trips within the commercial block (for example a motorist stopping for gas and groceries in the same trip) because this internal trip making activity is already captured in the trip generation rates for LUC 821.

The trip generation estimates also include a calculation of pass-by trips, which are a subset of trip generation that only apply to commercial and retail land uses. Pass-by trips represent a portion of the existing traffic using a road that may stop at a business along a route, for example, a motorist driving home from work and stopping for groceries. They do not load additional traffic onto the road network, but represent a reassignment of existing traffic on a road. ITE does not define pass-by rates for LUC 821 in a rural setting, but does provide an estimate for a general urban/suburban setting. In the absence of a pass-by rate for a rural setting, a pass-by trip reduction of 40% has been applied to the PM peak hour estimates based on ITE pass-by rates published for LUC 821 for a general urban/suburban setting.

Table 4.1 summarizes the forecast trip generation and indicates the site is forecast to generate 223 new trips in the weekday AM peak hour and 308 new trips in the weekday PM peak hour.

TABLE 4.1: FORECAST SITE-GENERATED TRIPS

LUC	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
210	185 Units	35	95	130 ^[1]	105	64	169 ^[2]
821	62,172 ft ²	65	32	97 ^[3]	192	163	355 ^[4]
Total Trip Generation		100	127	227	297	227	524
<i>Internal Capture</i>		-2	-2	-4	-61	-61	-122
<i>Pass-by Trips</i>		0	0	0	-47	-47	-94
Net Trip Generation		98	125	223	189	119	308

Notes:

1. LUC 210 (AM): $T = 0.67(X) + 5.59$

2. LUC 210 (PM): $\ln(T) = 0.92 \ln(X) + 0.33$

3. LUC 821 (AM): Average Rate of 1.56 trips per 1,000 sq. ft. GFA

4. LUC 821 (PM): Average Rate of 5.71 trips per 1,000 sq. ft. GFA



4.2.2 Trip Distribution and Assignment

The trip distribution used for this study is based on the existing travel patterns illustrated in **Figure 2.4**. Use of existing travel patterns is considered appropriate because the proposed development is generally consistent with the existing land uses adjacent to the site, and the existing travel patterns are reflective of general commuter travel patterns in Wellesley.

It is assumed that many of the future residents of the site will be travelling to and from Kitchener/Waterloo because it is the largest urban centre near Wellesley. It is also assumed that Queens Bush Road (as opposed to Gerber Road and Nafziger Road) would provide the most direct travel route between the Wellesley Urban Growth Centre and the site. Queens Bush Road also provides the most direct route between the site and Wellesley Public School.

Based on these assumptions, Paradigm has adjusted the trip distribution by reallocating a portion of trips to/from the north (via both Nafziger Road and Greenwood Hill Road) onto Queens Bush Road.

Table 4.2 summarizes the estimated trip distribution.

TABLE 4.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Greenwood Hill Road	10%	10%	10%	10%
North via Nafziger Road	5%	5%	5%	5%
South via Nafziger Road	20%	20%	20%	20%
East via Gerber Road	20%	40%	35%	25%
West via Gerber Road	15%	10%	10%	15%
West via Queens Bush Road	30%	15%	20%	25%
Total	100%	100%	100%	100%

The assignment of residential trips between Street One and Street Two is based on the estimated proportion of residential units served by each street. For the commercial block, Paradigm has assigned all trips to Street One. **Figure 4.2** illustrates the estimated trip assignment in the weekday AM peak hour and weekday PM peak hour, inclusive of pass-by trips.



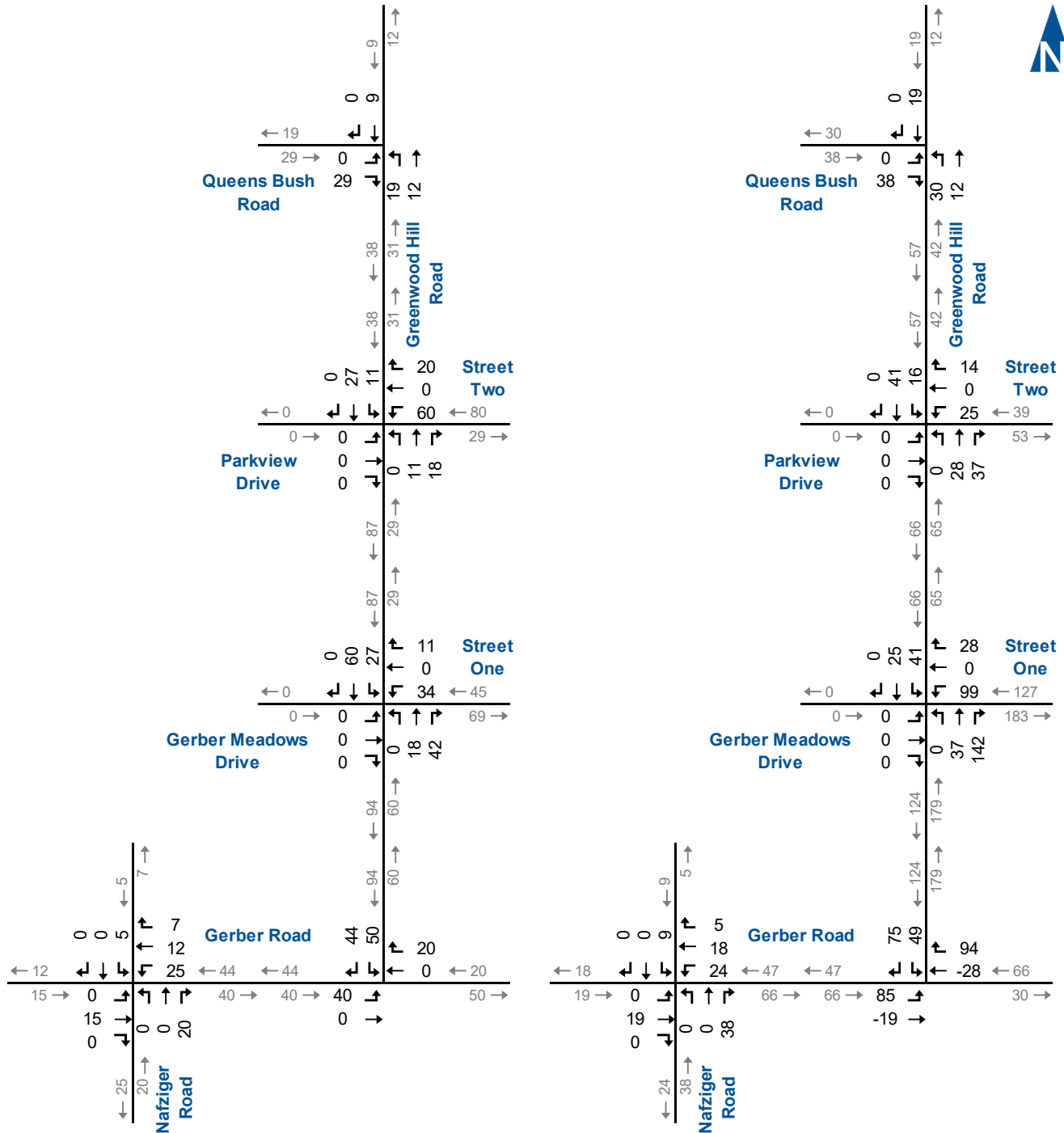
4.3 Future Total Traffic

The future total traffic volumes represent the summation of the site generated traffic volumes (illustrated in **Figure 4.2**) and the background traffic volumes (illustrated in **Figure 4.1**). **Figure 4.3** illustrates the estimated future total traffic volumes.



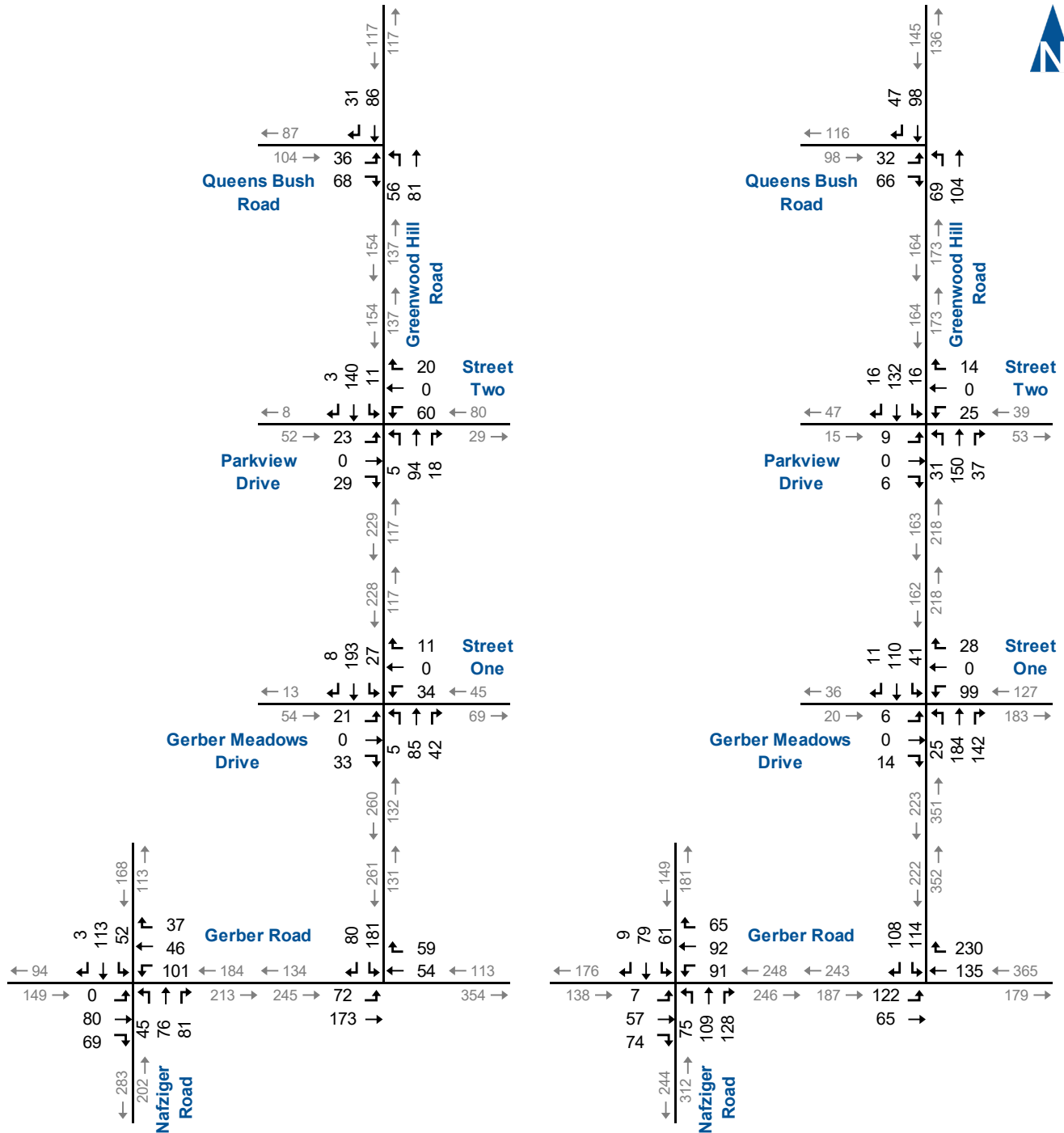
AM Peak Hour

PM Peak Hour



AM Peak Hour

PM Peak Hour



5 Traffic Operations Assessment

5.1 Background Traffic Operations

Analysis of background traffic conditions uses the same methodology as existing traffic conditions. **Table 5.1** and **Table 5.2** summarize the five-year background traffic level of service conditions and indicates the study intersections are forecast to operate at acceptable levels of service, and within capacity, during both the weekday AM peak hour and weekday PM peak hour. **Appendix F** contains the detailed Synchro reports.

5.2 Total Traffic Operations

Analysis of total traffic conditions generally uses the same methodology as existing and background traffic conditions. **Table 5.3** and **Table 5.4** summarize the five-year total traffic level of service conditions and indicates the study intersections are forecast to operate at acceptable levels of service in both the weekday AM peak hour and the weekday PM peak hour.

With the addition of the site generated traffic volumes, the approach delays at the study area intersections are forecast to increase by no more than four seconds during the weekday AM and weekday PM peak hours, as compared to background traffic conditions.

Appendix G contains the detailed Synchro reports.



TABLE 5.1: BACKGROUND TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Stor. Avail.	< < < < <	A 9 0.18 4 - -	> > > > >	A 9 A 9 0.20 5 - -	< < < < <	A 9 A 9 0.20 5 - -	> > > > >	A 9 A 9 0.07 2 20 18	< < < < <	A 9 A 9 0.08 2 15 13	> > > > >	A 9 A 9 0.18 4 - -	< < < < <	A 9 A 9 0.23 7	> > > > >	A 9 A 9 0.00 0 0 0	
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.02 1	A 0 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	> > > > >	A 1 A 1 0.00 0	
	Greenwood Hill Road & Gerber Meadows Drive	TWSC	LOS Delay V/C Q	A 10 0.06 2	A 0 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	
	Greenwood Hill Road & Parkview Drive	TWSC	LOS Delay V/C Q	A 10 0.06 2	A 0 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	A 10 0.09 2	A 0 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	> > > > >	A 10 A 10 0.00 0	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

< / > - Shared Movement



TABLE 5.2: BACKGROUND TRAFFIC OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	A 9 0.16 4 -	> > > > >	A 9	< < < < <	B 10 0.28 9 -	> > > > >	B 10	A 10 0.13 3 20 17	A 10 0.29 9 -	> > > > >	A 10	A 10 0.09 2 15 13	> > > > >	A 10		
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.03 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0					B 12 0.15 4	> > > >	B 12		
	Greenwood Hill Road & Gerber Meadows Drive	TWSC	LOS Delay V/C Q	A 9 0.02 1		> > >	A 9					A 7 0.02 1	A 0 0.00 0		A 1		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Parkview Drive	TWSC	LOS Delay V/C Q	A 10 0.02 1		> > >	A 10					A 8 0.02 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0	
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	B 10 0.08 2		> > >	B 10						A 8 0.03 1	A 0 0.00 0		A 2		A 0 0.00 0	A 0 0.00 0	A 0

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

< / > - Shared Movement



TABLE 5.3: TOTAL TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Q Stor. Avail.	< < < 9 < 0.20 < 5 < - < -	A 9 0.20 5 - -	> > > > > > > > > > > >	A 9 - - - -	< < < 10 < 0.26 < 8 < - < -	A 10 0.26 8 - -	> > > > > > > > > > > >	A 10 - - - -	A 9 0.08 2 20 18	A 10 0.24 7 - -	> > > > > > > > > > > >	A 10 0.09 2 15 13	A 10 0.18 5 - -	> > > > > > > > > > > >	A 10 - - - -		
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.05 2	A 0 0.00 0	> > > > > > > >	A 2 - -	< < < < < < < <	A 0 0.00 0	A 0 0.00 0	> > > > > > > >					B 14 0.40 14	> > > > > > > >	B 14 - -		
	Greenwood Hill Road & Gerber Meadows Drive/Street One	TWSC	LOS Delay V/C Q	< < < 10 < 0.08 < 2	B 10 0.08 2	> > > > > > > >	B 10 - -	< < < 11 < 0.07 < 2	B 11 0.07 2	> > > > > > > >	B 11 - -	A 8 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 0.02 1	A 0 0.00 0	A 0 0.00 0	A 1 - -		
	Greenwood Hill Road & Parkview Drive/Street Two	TWSC	LOS Delay V/C Q	< < < 10 < 0.07 < 2	B 10 0.07 2	> > > > > > > >	B 10 - -	< < < 11 < 0.11 < 3	B 11 0.11 3	> > > > > > > >	B 11 - -	A 8 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 0.01 0	A 0 0.00 0	A 0 0.00 0	A 1 - -		
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	B 10 0.13 3	> > > > > > > >	B 10 - -	< < < < < < < <					A 8 0.04 1	A 0 0.00 0		A 3 - -		A 0 0.00 0	A 0 0.00 0	A 0 - -	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement



TABLE 5.4: TOTAL TRAFFIC OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Nafziger Road & Gerber Road	AWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	A 10 0.20 5 - -	> > > > >	A 10 10	< < < < <	B 11 0.37 13 - -	> > > > >	B 11 11	A 10 0.13 4 20 16	B 11 0.36 12 - -	> > > > >	B 11 11	B 10 0.11 3 15 12	A 10 0.15 4 - -	> > > > >	A 10 10	
	Gerber Road & Greenwood Hill Road	TWSC	LOS Delay V/C Q	A 8 0.10 2	A 0 0.00 0		A 5 5		A 0 0.00 0	A 0 0.00 0	A 0 0					C 16 0.40 14		> > > >	C 16 16	
	Greenwood Hill Road & Gerber Meadows Drive/Street One	TWSC	LOS Delay V/C Q	< < < <	B 10 0.03 1	> > > >	B 10 10	< < < <	B 15 0.26 8	> > > >	B 15 15	A 8 0.02 1	A 0 0.00 0	A 0 0.00 0	A 1 1	A 8 0.03 1	A 0 0.00 0	A 0 0.00 0	A 2 2	
	Greenwood Hill Road & Parkview Drive/Street Two	TWSC	LOS Delay V/C Q	< < < <	B 11 0.02 1	> > > >	B 11 11	< < < <	B 11 0.06 2	> > > >	B 11 11	A 8 0.02 1	A 0 0.00 0	A 0 0.00 0	A 1 1	A 8 0.01 0	A 0 0.00 0	A 0 0.00 0	A 1 1	
	Greenwood Hill Road & Queens Bush Road	TWSC	LOS Delay V/C Q	B 10 0.13 3		> > > >	B 10 10					A 8 0.05 2	A 0 0.00 0		A 3 3		A 0 0.00 0	A 0 0.00 0	A 0 0	

MOE - Measure of Effectiveness

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Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement



6 Remedial Measures

The results of the analysis in **Section 5** indicate redevelopment of the site is forecast to have a negligible impact on traffic operations at the study intersections.

To address feedback from Township and Region staff during pre-study consultation, Paradigm has assessed the need for auxiliary left- and right-turn lanes at the study intersections. Paradigm has also reviewed the need for improvements at Gerber Road and Nafziger Road within the context of the Township *Transportation Master Plan*, and conducted a more detailed analysis of the net impact of site traffic on Queen's Bush Road.

6.1 Left-Turn Lane Warrants

The following intersections have been assessed to determine if the projected traffic volumes warrant installation of a left-turn lane:

- ▶ Gerber Road and Greenwood Hill Road;
- ▶ Greenwood Hill Road and Gerber Meadows Drive/Street One; and
- ▶ Greenwood Hill Road and Parkview Drive/Proposed Street Two.

The warrants for left-turn lanes follow the guidelines published in the Ontario Ministry of Transportation (MTO) *Design Supplement* to the Transportation Association of Canada (TAC) *Geometric Design Guide for Canadians Roads*.¹² The warrants reflect the nomographs for a two-lane road and reflect a design speed of 70 km/h (for Gerber Road) and 60 km/h (for Greenwood Hill Road), which are 10 km/h above the posted speed limit on each road.

The percentages of left-turning vehicles in the approaching volume have been rounded to the nearest 5%, because nomographs are only provided for 5% increments. Left-turn lanes are typically not warranted when the left turning volume is less than 5% of the advancing volume.

Table 6.1 summarizes the left-turn lane warrants analysis and **Appendix H** contains the left-turn lane warrant nomographs. The warrant analysis indicates that an eastbound left-turn lane is not warranted at the intersection of Gerber Road and Greenwood Hill Road. Southbound left-turn lanes are also not warranted on Greenwood Hill Road at either Street One or Street Two.

¹² Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: King's Printer for Ontario, 2023).



TABLE 6.1: LEFT-TURN LANE WARRANT SUMMARY

Roadway	Gerber Road		Greenwood Hill Road			
Intersection	Greenwood Hill Road		Street One		Street Two	
Approach Direction	Eastbound		Southbound		Southbound	
Design Speed	70 km/h		60 km/h		60 km/h	
Horizon	Total 2033		Total 2033		Total 2033	
Peak Hour	AM	PM	AM	PM	AM	PM
Advancing Volume	245	187	228	162	154	164
Opposing Volume	113	365	132	351	117	218
Left Turning Traffic	72	122	27	41	11	16
% of Left Turning Traffic	29%	65%	12%	25%	7%	10%
Figure Used*	9A-13	9A-14	9A-7	9A-9	9A-7	9A-7
Warranted	No	No	No	No	No	No
Storage Length Required	-	-	-	-	-	-

*Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Kings Printer for Ontario, 2023).

6.2 Right-Turn Lane Warrant

Although right-turn movements are generally made more efficiently than left-turn movements, exclusive right-turn lanes are often provided for many of the same reasons that left-turn lanes are provided. Consistent with the analysis for left-turn lanes, the following intersections have been assessed to determine if the projected traffic volumes warrant installation of right-turn lanes:

- ▶ Gerber Road and Greenwood Hill Road;
- ▶ Greenwood Hill Road and Gerber Meadows Drive/Street One; and
- ▶ Greenwood Hill Road and Parkview Drive/Proposed Street Two.

The *MTO Design Supplement* to the Transportation Association of Canada *Geometric Design Guide for Canadian Roads*¹³ suggests “the use of a right-turn auxiliary lane on urban and rural roads, when the volume of decelerating or accelerating vehicles compared to the through traffic volume causes undue hazard.”¹⁴ Neither the *Design Supplement* or the TAC Guide specify a vehicle volume threshold that constitutes or creates a hazard.

Under total traffic conditions, the northbound right turn movement on Greenwood Hill Road at Street One is forecast to accommodate 142 vehicles in the weekday PM peak hour. This right-turn volume (142) is approximately 70% of the combined left-turn and through movement volumes (209) and represents approximately two to three right-turns per minute. The movement is forecast to operate at LOS A and based

¹³ Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: King's Printer for Ontario, 2023).

¹⁴ Transportation Association of Canada, “Tapers and Auxiliary Lanes,” chap 9.14 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 99.



on the analyses in **Section 3.2**, a northbound motorist on Greenwood Hill Road is provided sufficient stopping sight distance to discern a vehicle slowing down to turn left or right.

Under background and total traffic conditions, the westbound right turn movement on Gerber Road at Greenwood Hill Road is forecast to serve in excess of 130 and 200 vehicles respectively during the weekday PM peak hour. These volumes represent approximately two to three right-turning vehicles per minute (under background traffic conditions) and three to four vehicles per minute (under total traffic conditions). Under both scenarios, the movement is forecast to operate at LOS A. Sufficient stopping sight distance is also provided for westbound motorists on Gerber Road (at a design speed of 70 km/h) to discern a vehicle slowing down to turn right at Greenwood Hill Road.¹⁵

The reader is cautioned that the traffic volume projections reflect a commercial block that is still conceptual. Independent of the proposed development, it is recommended the Region monitor the need for a westbound right-turn lane on Gerber Road at Greenwood Hill Road as the volume of right-turning traffic is forecast to exceed 130 vph with or without the proposed development.

6.3 Gerber Road at Nafziger Road

During pre-study consultation the Township's transportation consultant indicated that a westbound left-turn lane may be warranted on Gerber Road at Nafziger Road under 2051 traffic conditions. This finding stems from ongoing work related to the Township's draft *Transportation & Mobility Master Plan* which was underway at the time of writing this transportation impact study.

The analyses of 2033 background and 2033 total traffic conditions in this study indicate that the intersection (and more specifically the westbound approach) are forecast to operate at acceptable levels of service with and without the proposed development.

It recommended that the Township and Region continue to monitor the intersection for traffic operational deficiencies and the need for improvements. It is noted that the intersection previously operated under two-way stop control, but was converted to all-way stop control in late 2025.

¹⁵ At a design speed of 70 km/h (10 km/h above the posted speed limit on Gerber Road), TAC defines a stopping sight distance of 150 metres.



6.4 Greenwood Hill Road and Queens Bush Road

Under 2033 total traffic conditions, traffic related to the site is forecast to account for approximately 25% of the traffic volumes on Queens Bush Road in the weekday AM peak hour and 32% in the weekday PM peak hour. Given the various institutional uses along Queens Bush Road and direction from the Township's transportation consultant during pre-study consultation, Paradigm has reviewed the need for improvements to pedestrian crossing treatments at Queens Bush Road and Greenwood Hill Road. The review is based on guidance published in Ontario Traffic Manual (OTM) Book 15 *Pedestrian Crossing Treatments*.¹⁶

Based on the two-lane cross-section of Greenwood Hill Road, in combination with a speed limit of 50 km/h, and forecast 8-hour and 4-hour vehicle traffic volumes of 1,654 and 1,013 respectively, a Level 2 Type D pedestrian crossover (PXO) is warranted.

Because Wellesley Public School is on the north side of Queens Bush Road, it is recommended the Type D pedestrian crossover be installed on the north leg of the intersection. To further improve the pedestrian connectivity to Queens Bush Road, it is recommended a sidewalk be installed on the east side of Greenwood Hill Road to connect the pedestrian crossover to Street Two.

¹⁶ Ontario Ministry of Transportation, *Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments*, (Toronto: Queen's Printer for Ontario, 2016).



7 Findings, Conclusions, and Recommendations

7.1 Findings

Based on the investigations carried out, the findings of this study are as follows:

- ▶ **Existing Conditions:** All study area intersections (Nafziger Road and Gerber Road, Gerber Road and Greenwood Hill Road, Greenwood Hill Road and Gerber Meadows Drive, Greenwood Hill Road and Parkview Drive, and Greenwood Hill Road and Queen Bush Road) are operating at acceptable levels of service during the weekday AM peak hour and weekday PM peak hour with no critical movements noted.
- ▶ **Development Trip Generation:** The development is forecast to generate 223 new trips in the weekday AM peak hour and 308 new trips in the weekday PM peak hour.
- ▶ **Future Background Conditions:** The study intersections are forecast to operate at acceptable levels of service during the weekday AM peak hour and weekday PM peak hours with no critical movements noted.
- ▶ **Future Total Traffic Conditions:** The study intersections are forecast to operate at acceptable levels of service during the weekday AM peak hour and weekday PM peak hours with no critical movements noted.
- ▶ **Sight Distance Assessment:** The proposed locations of both Street One (opposite Gerber Meadows Drive) and Street Two (opposite Parkview Drive) meet the minimum sight distances defined by the Transportation Association of Canada.
- ▶ **Left-Turn Lane Warrant:** An eastbound left-turn lane is not warranted at the intersection of Gerber Road and Greenwood Hill Road. Southbound left-turn lanes are also not warranted along Greenwood Hill Road at the intersections with Street One and Street Two.
- ▶ **Pedestrian Improvements:** A Level 2 Type D pedestrian crossover is warranted at the intersection of Greenwood Hill Road and Queens Bush Road.

7.2 Conclusions

Based on the findings of this study, it is concluded that development of the site can be accommodated by the existing transportation network.



The proposed locations of both Street One and Street Two provide sufficient intersection sight distance and stopping sight distance in accordance with guidance published by TAC. No remedial measures are considered necessary to accommodate the site generated traffic.

7.3 Recommendations

Based on the findings and conclusions of this study, it is recommended that the development be considered for approval. It is also recommended that:

- ▶ The Region monitor the need for exclusive right-turn lanes at:
 - Gerber Road and Greenwood Hill Road (to support the westbound right-turn movement); and
 - Greenwood Hill Road and Gerber Meadows Drive/Street One (to support the northbound right-turn movement).
- ▶ The Region monitor the intersection of Gerber Road and Nafziger Road for any traffic operational deficiencies, and review the need and timing for remedial measures; and
- ▶ The Region and developer consider the provision of a Level 2 Type D pedestrian crossover (PXO) at Greenwood Hill Road and Queens Bush Road to support pedestrian travel across Greenwood Hill Road. It is recommended this crossing treatment be provided on the north leg of the intersection to connect with the existing sidewalks on the north side of Queens Bush Road and the west side of Greenwood Hill Road.



Appendix A

Pre-Study Correspondence Material



From: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>
Sent: April 1, 2026 2:51 PM
To: 'Paula Sawicki'; Andrew Steinsky; Chris Clary-Lemon; Andrew Orr
Cc: Geoffrey Keyworth; Bobby Soosaar
Subject: RE: TIS PSC - 1949 Gerber Road, Wellesley

Good afternoon all,

To close the loop on the Region's outstanding items for this study:

- Please use a 2% AGR for background traffic along Regional Roads.
- Within the scope of this study, the Region will be completing a resurfacing of Queen's Bush Road between Nafziger and Hutchinson, and Nafziger Road between Gerber and Queen's Bush.
- To maintain consistency with the Region's TIS Guidelines, an initial screening of roundabout feasibility will be required at the intersection of Gerber & Greenwood Hill if operational analysis indicates a need for a change in traffic control.

We would also just like to confirm the following in writing:

- Please include the intersection of Gerber/Nafziger in the list of intersections for analysis
- No private accesses will be supported along Gerber Road for the proposed development

Cheers,

Josh Beech Falshaw (he/him)

Transportation Planner | Corridor Development
Planning, Development, and Legislative Services | Region of Waterloo
150 Frederick Street, 8th Floor, Kitchener, ON
Phone: 519-897-1309
Email: jbeechfalshaw@regionofwaterloo.ca

From: Paula Sawicki <paula@salviniconsulting.com>
Sent: April 1, 2026 12:48 PM
To: Andrew Steinsky <asteinsky@ptsl.com>; Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Andrew Orr <aorr@ptsl.com>
Cc: Geoffrey Keyworth <GKeyworth@regionofwaterloo.ca>; Bobby Soosaar <bsoosaar@wellesley.ca>
Subject: Re: TIS PSC - 1949 Gerber Road, Wellesley

Some people who received this message don't often get email from paula@salviniconsulting.com. [Learn why this is important](#)

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- A commentary on the number of site trips as compared to existing volumes on Queen's Bush would be sufficient, unless you find that the number of trips may make a difference.

I found some other info in the draft TMP for your own background information. Likely by the time you submit your study the TMP will have gone to the Township Council for approval.

-
- Background Material from the Draft TMP:
-
- Nafziger Rd & Gerber Rd: This intersection was projected to operate over capacity in the PM peak period by 2051, including its shared westbound left/through/right lane and northbound approach. A detailed signal warrant analysis was conducted for this location which found that signalization of this intersection is not warranted by 2051. A westbound left-turn auxiliary lane is recommended to mitigate the observed operational issues at the westbound approach by 2051.
- Many public comments focused on road safety issues, particularly unsafe intersections. The corner of Gerber Road and Nafziger Road was the most common location where safety issues were identified.
- The draft TMP plan also includes recommendations to work with Regional staff to assess off-road cycling routes in the Township, and to "monitor the timing for the expansion of the cycling lane on Queen's Bush Road to ensure timely linkage to the Township of Wellesley Recreation Complex."
- The draft plan says: Queens Bush Road - Nafziger Road to Hutchison Road, Wellesley Village, Needs Sidewalks / Multi-use paths
- The village of Wellesley includes the Township's only designated urban growth centre, a commercial area centred around the intersection of Queen's Bush Road and Nafziger Road.
- The Township will work with Waterloo Region to advance their planned active transportation network in Wellesley, including:
 - Rural cycling routes along
 - Regional Roads;
 - Facilities along Queens Bush Road and Nafziger Road through Wellesley Village; and,
 - Exploring a multi-use trail between St. Clements and Heidelberg.

From: Andrew Steinsky <asteinsky@ptsl.com>

Sent: Wednesday, April 01, 2026 08:37

To: Paula Sawicki <paula@salviniconsulting.com>; Joshua Beech Falshaw

<jbeechfalshaw@regionofwaterloo.ca>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Andrew Orr <aorr@ptsl.com>

Cc: Geoffrey Keyworth <GKeyworth@regionofwaterloo.ca>; Bobby Soosaar <bsoosaar@wellesley.ca>

Subject: RE: TIS PSC - 1949 Gerber Road, Wellesley

Hi Paula,

Pleasure chatting yesterday.

With respect to comment 2, can you confirm if operational (Synchro) analysis/turning movement counts are required at Nafzinger and Queen's Bush? Or would a commentary on the number of site trips as compared to existing volumes on Queen's Bush be sufficient?

With the TMC we complete at Queen's Bush and Greenwood Hill, we will have an idea of east-west volumes on Queen's Bush.

Thanks,

Andrew Steinsky, P.Eng., PTOE, PTP, RSP1

Operations Principal, Southwestern Ontario (he/him)



Paradigm Transportation Solutions Limited

5A-150 Pinebush Road, Cambridge ON N1R 8J8

asteinsky@ptsl.com | 416.316.0654 | www.ptsl.com

Office Hours: 07:30 – 17:30 Eastern Daylight Time (EDT) Monday to Thursday. Paradigm's offices are closed on Fridays.

From: Paula Sawicki <paula@salviniconsulting.com>

Sent: March 31, 2026 4:20 PM

To: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Andrew Orr <aorr@ptsl.com>

Cc: Geoffrey Keyworth <GKeyworth@regionofwaterloo.ca>; Andrew Steinsky <asteinsky@ptsl.com>; Bobby Soosaar <bsoosaar@wellesley.ca>

Subject: Re: TIS PSC - 1949 Gerber Road, Wellesley

Hey folks, great to see everyone today. I know virtual is convenient, but I miss the good ol' days when we met in person! Here are my comments I mentioned during the meeting. Take Care!

1. **Secondary Plan coordination:** Please keep up to date on the progress of the secondary plan in the area.

2. **Study area / network context:** The review appears limited to immediate intersections. Please include impacts along Queens Bush Road towards the Village core including (Nafziger and Queens Bush).
3. **Future Development:** What happens to the street ends that may connect to future development to the east? Should they be shown as "future" connections?
4. **Active transportation:** Expand the assessment to reflect connections to key destinations (schools, Village core, Bill Gies Recreation Centre), including the Queens Bush Road corridor and Nafziger intersection. Also, how are the existing residents going to access the new commercial block including crossing Greenwood Hill Road.
5. **Greenwood Hill Road:** Provide comment on the expected transition from a rural road to an urban local street, including the ultimate cross-section and right-of-way including the completion of sidewalks on both sides towards Gerber.
6. **Commercial block access:** Clarify the access strategy for the corner site (Gerber / Greenwood Hill), including whether access to Gerber Road is contemplated and any associated operational or safety considerations (e.g., turn lanes, sightlines, speeds). Or is the commercial access going to be limited to Greenwood Hill only?
7. **Safety considerations:** Include a brief qualitative review of sightlines, speeds, and new access points given the rural-to-urban transition.

Paula Sawicki, P.Eng.

Principal Transportation Engineer

paula@salviniconsulting.com

M: 519-778-1289



From: Joshua Beech Falshaw

Sent: March 25, 2026 15:04

To: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Paula Sawicki <paula@salviniconsulting.com>; 'Andrew Orr' <aorr@ptsl.com>

Cc: Geoffrey Keyworth <GKeyworth@regionofwaterloo.ca>; Andrew Steinsky <asteinsky@ptsl.com>; Bobby Soosaar <bsoosaar@wellesley.ca>

Subject: TIS PSC - 1949 Gerber Road, Wellesley

When: March 31, 2026 3:00 PM-4:00 PM.

Where: Microsoft Teams Meeting

Good afternoon everyone,

Please find a Microsoft Teams meeting link for a Transportation Impact Study Pre-Study Conference for 1949 Gerber Road in Wellesley. Please feel free to forward as necessary. I look forward to meeting with you all

Cheers,

Josh Beech Falshaw (he/him)

Transportation Planner | Corridor Development

Planning, Development, and Legislative Services | Region of Waterloo

150 Frederick Street, 8th Floor, Kitchener, ON

Phone: 519-897-1309

Email: jbeechfalshaw@regionofwaterloo.ca

Microsoft Teams meeting

Join:

<https://teams.microsoft.com/meet/26250917775624?p=EzoePzsGaJq3vFbrxH>

Meeting ID: 262 509 177 756 24

Passcode: Rs9T8Mz9

[Need help?](#) | [System reference](#)

For organizers: [Meeting options](#)

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From: Paula Sawicki <paula@salviniconsulting.com>
Sent: March 25, 2026 2:54 PM
To: Bobby Soosaar; Andrew Orr; Joshua Beech Falshaw
Cc: Andrew Steinsky; Chris Clary-Lemon
Subject: Re: 260152 (1949 Gerber Road, Wellesley) TIS

This is my availability. If there is a time in there you really want other than what I list below let me know and I can shift something likely.

- Tuesday, March 31st from 9:00 AM to 4:00 PM
 - 9-10:30 or 3 - 5
- Wednesday, April 1st from 10:00 AM to 4:00 PM
 - 3:30 - 5
- Thursday, April 2nd from 9:00 AM to 4:00 PM
 - 10:30 -1 or 2-5
- Monday, April 6th from 9:00 AM to 10:30 AM and 12:00 PM to 4:00 PM
 - Gov't Holiday
- Tuesday, April 7th from 9:00 AM to 12:30 PM and 2:30 PM to 4:00 PM
 - 2- 4:30
- Wednesday, April 8th from 10:00 AM to 4:00 PM
 - 10-4
- Thursday, April 9th from 9:00 AM to 4:00 PM
 - 9-10:30

Paula Sawicki, P.Eng.
Principal Transportation Engineer

paula@salviniconsulting.com
M: 519-778-1289



From: Bobby Soosaar <bsoosaar@wellesley.ca>
Sent: Wednesday, March 25, 2026 14:29
To: Andrew Orr <aorr@ptsl.com>; Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Paula Sawicki <paula@salviniconsulting.com>
Cc: Andrew Steinsky <asteinsky@ptsl.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>
Subject: RE: 260152 (1949 Gerber Road, Wellesley) TIS

Hi all,

I'm looping Paula Sawicki in on this email thread. Paula is the township peer reviewer; she will be attending the meeting.

Paula, I will leave it with you to find a that works with your schedule.

Thanks,

Bobby Soosaar
Senior Planner
Township of Wellesley
519-699-3964



The Township of Wellesley has adopted a compressed work week schedule. As a result, I may not be available at all times, but I will respond at my earliest availability. For all staff schedules please visit the [Township website](#). For in-person service, we are recommending that you make an appointment to ensure the staff member you wish to see is in the office. If you require immediate assistance during office hours, please call the office at 519-699-4611 and another staff member would be happy to assist you.

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From: Andrew Orr <aorr@ptsl.com>

Sent: Wednesday, March 25, 2026 10:21 AM

To: Bobby Soosaar <bsoosaar@wellesley.ca>; Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>

Cc: Andrew Steinsky <asteinsky@ptsl.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>

Subject: RE: 260152 (1949 Gerber Road, Wellesley) TIS

You don't often get email from aorr@ptsl.com. [Learn why this is important](#)

Hi Josh and Bobby,

I have attached the pre-study conference form along with the pre-con notes provided by the township for 1949 Gerber Road. At this point, the unit count is unknown however, I can pass this information along once I receive it.

As for scheduling a meeting, myself and my colleague Andrew Steinsky are available as follows:

- Tuesday, March 31st from 9:00 AM to 4:00 PM
- Wednesday, April 1st from 10:00 AM to 4:00 PM
- Thursday, April 2nd from 9:00 AM to 4:00 PM
- Monday, April 6th from 9:00 AM to 10:30 AM and 12:00 PM to 4:00 PM
- Tuesday, April 7th from 9:00 AM to 12:30 PM and 2:30 PM to 4:00 PM
- Wednesday, April 8th from 10:00 AM to 4:00 PM
- Thursday, April 9th from 9:00 AM to 4:00 PM

Best Regards,

Andrew Orr, M.A.Sc., EIT
Transportation Consultant (he/him)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON, N1R 8J8
aorr@ptsl.com | 289.808.8997 | www.ptsl.com

From: Bobby Soosaar <bsoosaar@wellesley.ca>
Sent: March 24, 2026 3:57 PM
To: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Andrew Orr <aorr@ptsl.com>
Cc: Andrew Steinsky <asteinsky@ptsl.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>
Subject: RE: 260152 (1949 Gerber Road, Wellesley) TIS

Hi Andrew,

We typically work with a peer reviewer on projects like these. I am going to get in touch with them as they will likely want to review these terms and attend a PSC. I will follow up with you on this.

Also, I have provided confirmation to the two items below in red text.

Thanks,

Bobby Soosaar
Senior Planner
Township of Wellesley
519-699-3964



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From: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>
Sent: Tuesday, March 24, 2026 1:55 PM
To: 'Andrew Orr' <aorr@ptsl.com>; Bobby Soosaar <bsoosaar@wellesley.ca>
Cc: Andrew Steinsky <asteinsky@ptsl.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>
Subject: RE: 260152 (1949 Gerber Road, Wellesley) TIS

Good afternoon all,

Yes, the Region would like to be involved in this TIS. Andrew, can you please prepare a PSC form and advise when you are available over the next two weeks for a PSC meeting? Bobby, could you please advise of the availability for any Township staff attending the meeting as well, again for the next two weeks.

Cheers,

Josh Beech Falshaw (he/him)

Transportation Planner | Corridor Development
Planning, Development, and Legislative Services | Region of Waterloo
150 Frederick Street, 8th Floor, Kitchener, ON
Phone: 519-897-1309
Email: jbeechfalshaw@regionofwaterloo.ca

From: Andrew Orr <aorr@ptsl.com>

Sent: March 19, 2026 12:50 PM

To: Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; Bobby Soosaar <bsoosaar@wellesley.ca>

Cc: Andrew Steinsky <asteinsky@ptsl.com>

Subject: 260152 (1949 Gerber Road, Wellesley) TIS

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Hi Josh and Bobby,

Paradigm Transportation Solutions Limited (Paradigm) has been retained to conduct this Transportation Impact Study (TIS) for a proposed development located at 1949 Gerber Road in Wellesley, ON. The subject site is proposed to be developed with 4.364 hectares of residential uses (single detached and street townhouses), 3.048 hectares of commercial uses, and 0.415 hectares of park land. Vehicle access is proposed via new municipal street connections to Greenwood Hill Road, opposite of Gerber Meadows Drive, Parkview Drive, and Queens Bush Road (concept plan attached).

We'd like to prepare our report based on the following scope, subject to your comments. If the Region is interested in this study, a pre-study conference (PSC) form will be issued:

PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- Gerber Road and Greenwood Hill Road (unsignalized);
- Greenwood Hill Road and Gerber Meadows Drive/Future Street (unsignalized);
- Greenwood Hill Road and Parkview Drive/Future Street (unsignalized); and
- Greenwood Hill Road and Queen Bush Road/Future Street (unsignalized).

Analysis Periods:

- Weekday AM peak hour; and
- Weekday PM peak hour.

Existing Data:

- Traffic data collected by Paradigm in March/April 2026.

Horizon Year:

- Five years from the date the study is commissioned (Year – 2031).

Analysis:

- Synchro 12, HCM 7 analysis.

Background Traffic:

- Background traffic annual growth rate **Please Confirm 2%**
- Any future background developments to include?

Future Road Improvements:

- **Please confirm No Planned Improvements**

Trip Generation:

- ITE Trip Generation Data 12th Edition.

Trip Distribution:

- Existing Distribution.

Best Regards,

Andrew Orr, M.A.Sc., EIT

Transportation Consultant (he/him)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON, N1R 8J8
aorr@ptsl.com | 289.808.8997 | www.ptsl.com

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1949 Gerber Road, Wellesley

PRE-STUDY CONFERENCE FORM

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	To be determined
INTRODUCTION		
2	Nature of application (Attach a drawing)	- Official Plan Amendment - Zoning Amendment - Site Plan Control Application - Plan of Subdivision
3	TIS process, and relevant policies, procedures and approvals	- Guidelines for the preparation of Transportation Impact Studies in Support of Development Applications - Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes - Policy and Procedures for Access onto Regional Roads
4	Public Meeting	Unknown if required
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	Gerber Road and Greenwood Hill Road
		Greenwood Hill Road and Gerber Meadows Drive / Future Street
		Greenwood Hill Road and Parkview Drive / Future Street
		Greenwood Hill Road and Queen Bush Road / Future Street
6	Size and number of phases of development	Number of units and phasing to be determined
7	Approved and pending approval development applications	To be determined by the Region and/or Township
8	Planned transportation system improvements	None identified within the Region's TMP
TRAVEL DEMAND		
9	Horizon years	5 years from date of TIS

Item	Description	Details
10	Peak hour determination	○ AM weekday peak hour of adjacent roadway ○ PM weekday peak hour of adjacent roadway
11	Background	○ Turning movement counts collected by Paradigm ○ Approved and pending approval development applications
12	Trip generation	○ ITE average rates ○ ITE fitted equation
13	Trip reductions (TDM, internal, pass-by)	○ ITE internal capture reductions for mixed-use developments ○ ITE pass-by reductions
14	Trip distribution	○ ITE trip distribution IN/OUT split
15	Trip assignment	○ Local traffic pattern ○ Site layout and access design
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	○ Unsignalized intersections ○ left turn warrant analysis ○ signal warrant analysis ○ LOS, v/c, delay, queuing ○ ROW saturation flow rates ○ Queuing analysis

Item	Description	Details
17	Roundabout feasibility (Use approved software)	○ To be determined by the Region and/or Township
18	Transit assessment	○ Not applicable under existing conditions
19	Pedestrian assessment	○ Existing network ○ Future network connectivity
20	Cycling assessment	○ Existing network ○ Future network connectivity
21	Safety analysis	○ Assumed not to be required
22	Site access and circulation	○ To be determined
23	Submission format	○ Three hard copies of main report including appendices (other than analysis results/output e.g. Synchro reports) ○ Minimum one original hard copy must be sealed by a professional engineer ○ Electronic copy of complete report and all appendices ○ Electronic copy of operational analysis files (e.g. Synchro, Arcady) ○ Electronic copy of all signal warrant calculation files

Appendix B

Turning Movement Count Data





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Greenwood Hill
Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 1

Turning Movement Data

Start Time	Gerber Road Eastbound					Gerber Road Westbound					Greenwood Hill Road Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	2	31	0	0	33	12	5	0	0	17	27	1	0	0	28	78
7:15 AM	2	25	0	0	27	14	5	0	0	19	20	3	0	0	23	69
7:30 AM	3	52	0	0	55	6	7	0	0	13	33	9	0	0	42	110
7:45 AM	9	30	0	0	39	18	6	0	0	24	26	5	0	0	31	94
Hourly Total	16	138	0	0	154	50	23	0	0	73	106	18	0	0	124	351
8:00 AM	7	35	0	0	42	13	6	0	0	19	31	14	0	0	45	106
8:15 AM	5	34	0	0	39	10	10	0	0	20	24	3	0	0	27	86
8:30 AM	10	27	0	0	37	18	23	0	0	41	18	7	0	0	25	103
8:45 AM	7	17	0	0	24	21	9	0	0	30	22	9	0	0	31	85
Hourly Total	29	113	0	0	142	62	48	0	0	110	95	33	0	0	128	380
9:00 AM	4	18	0	0	22	14	16	0	0	30	12	4	0	0	16	68
9:15 AM	4	25	0	0	29	22	9	0	0	31	16	4	0	0	20	80
9:30 AM	7	17	0	0	24	10	2	0	0	12	7	5	0	0	12	48
9:45 AM	6	12	0	0	18	18	5	0	0	23	8	2	0	0	10	51
Hourly Total	21	72	0	0	93	64	32	0	0	96	43	15	0	0	58	247
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	3	14	0	0	17	13	5	0	0	18	5	5	0	0	10	45
11:45 AM	2	18	0	0	20	9	5	0	0	14	5	1	0	0	6	40
Hourly Total	5	32	0	0	37	22	10	0	0	32	10	6	0	0	16	85
12:00 PM	8	19	0	0	27	14	6	0	0	20	9	4	0	0	13	60
12:15 PM	2	14	0	0	16	16	6	0	0	22	5	2	0	0	7	45
12:30 PM	6	25	0	0	31	18	13	0	0	31	7	4	0	0	11	73
12:45 PM	2	24	0	0	26	19	9	0	0	28	6	5	0	0	11	65
Hourly Total	18	82	0	0	100	67	34	0	0	101	27	15	0	0	42	243
1:00 PM	4	21	0	0	25	23	6	0	0	29	9	5	0	0	14	68
1:15 PM	2	20	0	0	22	18	6	0	0	24	8	6	0	0	14	60
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	6	41	0	0	47	41	12	0	0	53	17	11	0	0	28	128
3:00 PM	7	18	0	0	25	19	15	0	0	34	10	4	0	0	14	73
3:15 PM	11	12	0	0	23	26	19	0	0	45	18	11	0	0	29	97
3:30 PM	8	12	0	0	20	33	22	0	0	55	14	3	0	0	17	92
3:45 PM	6	11	0	0	17	23	25	0	0	48	14	12	0	0	26	91
Hourly Total	32	53	0	0	85	101	81	0	0	182	56	30	0	0	86	353
4:00 PM	4	11	0	0	15	40	22	0	0	62	18	4	0	0	22	99
4:15 PM	8	21	0	0	29	41	18	0	0	59	17	8	0	0	25	113
4:30 PM	5	13	0	0	18	46	28	0	0	74	18	7	0	0	25	117

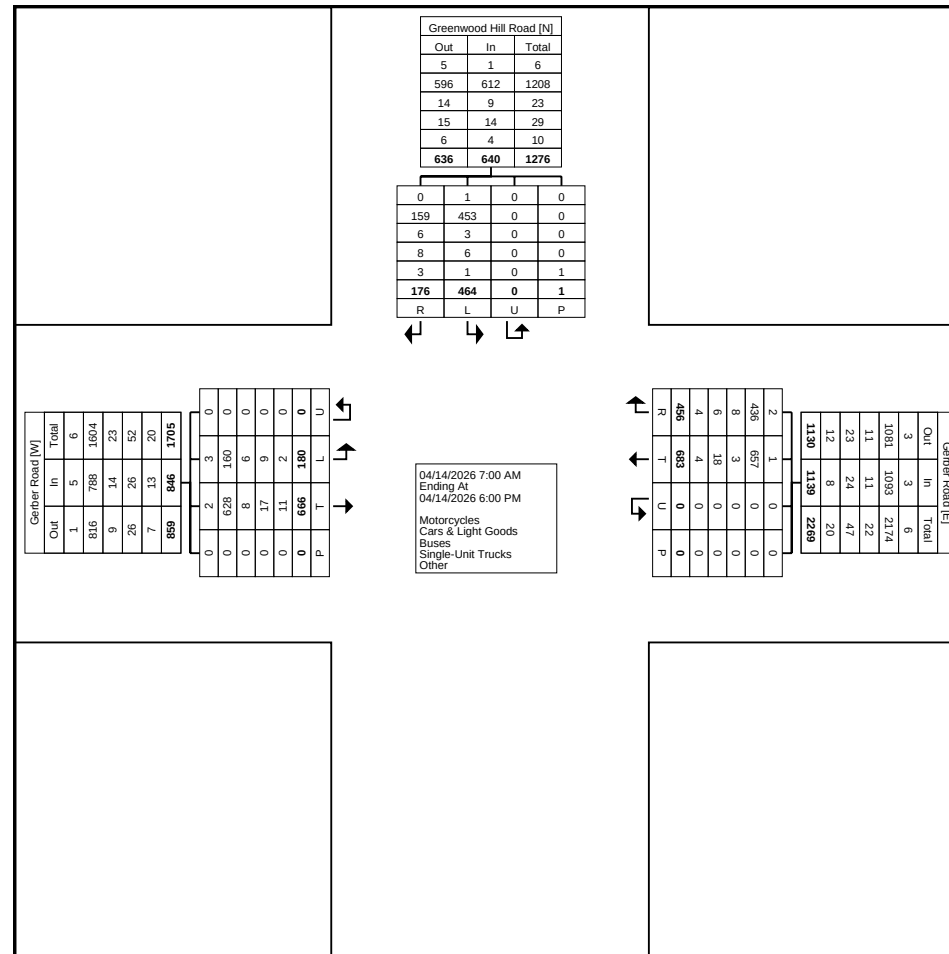
4:45 PM	7	18	0	0	25	25	33	0	0	58	9	4	0	1	13	96
Hourly Total	24	63	0	0	87	152	101	0	0	253	62	23	0	1	85	425
5:00 PM	11	21	0	0	32	33	29	0	0	62	11	5	0	0	16	110
5:15 PM	9	21	0	0	30	38	28	0	0	66	12	9	0	0	21	117
5:30 PM	3	19	0	0	22	33	34	0	0	67	12	7	0	0	19	108
5:45 PM	6	11	0	0	17	20	24	0	0	44	13	4	0	0	17	78
Hourly Total	29	72	0	0	101	124	115	0	0	239	48	25	0	0	73	413
Grand Total	180	666	0	0	846	683	456	0	0	1139	464	176	0	1	640	2625
Approach %	21.3	78.7	0.0	-	-	60.0	40.0	0.0	-	-	72.5	27.5	0.0	-	-	-
Total %	6.9	25.4	0.0	-	32.2	26.0	17.4	0.0	-	43.4	17.7	6.7	0.0	-	24.4	-
Motorcycles	3	2	0	-	5	1	2	0	-	3	1	0	0	-	1	9
% Motorcycles	1.7	0.3	-	-	0.6	0.1	0.4	-	-	0.3	0.2	0.0	-	-	0.2	0.3
Cars & Light Goods	160	628	0	-	788	657	436	0	-	1093	453	159	0	-	612	2493
% Cars & Light Goods	88.9	94.3	-	-	93.1	96.2	95.6	-	-	96.0	97.6	90.3	-	-	95.6	95.0
Buses	6	8	0	-	14	3	8	0	-	11	3	6	0	-	9	34
% Buses	3.3	1.2	-	-	1.7	0.4	1.8	-	-	1.0	0.6	3.4	-	-	1.4	1.3
Single-Unit Trucks	9	17	0	-	26	18	6	0	-	24	6	8	0	-	14	64
% Single-Unit Trucks	5.0	2.6	-	-	3.1	2.6	1.3	-	-	2.1	1.3	4.5	-	-	2.2	2.4
Articulated Trucks	2	9	0	-	11	4	3	0	-	7	0	3	0	-	3	21
% Articulated Trucks	1.1	1.4	-	-	1.3	0.6	0.7	-	-	0.6	0.0	1.7	-	-	0.5	0.8
Bicycles on Road	0	2	0	-	2	0	1	0	-	1	1	0	0	-	1	4
% Bicycles on Road	0.0	0.3	-	-	0.2	0.0	0.2	-	-	0.1	0.2	0.0	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Greenwood Hill
Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 3



Turning Movement Data Plot

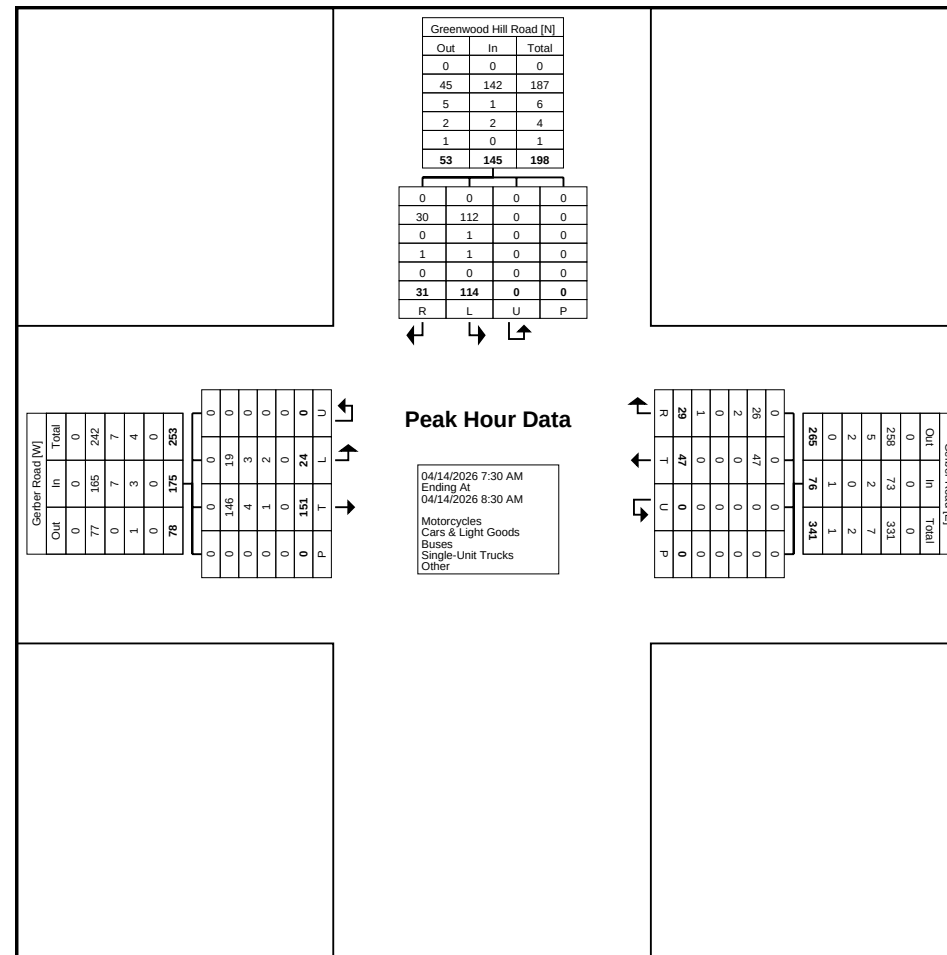
[illegible]



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsil.com

Count Name: Gerber Road & Greenwood Hill
Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 5



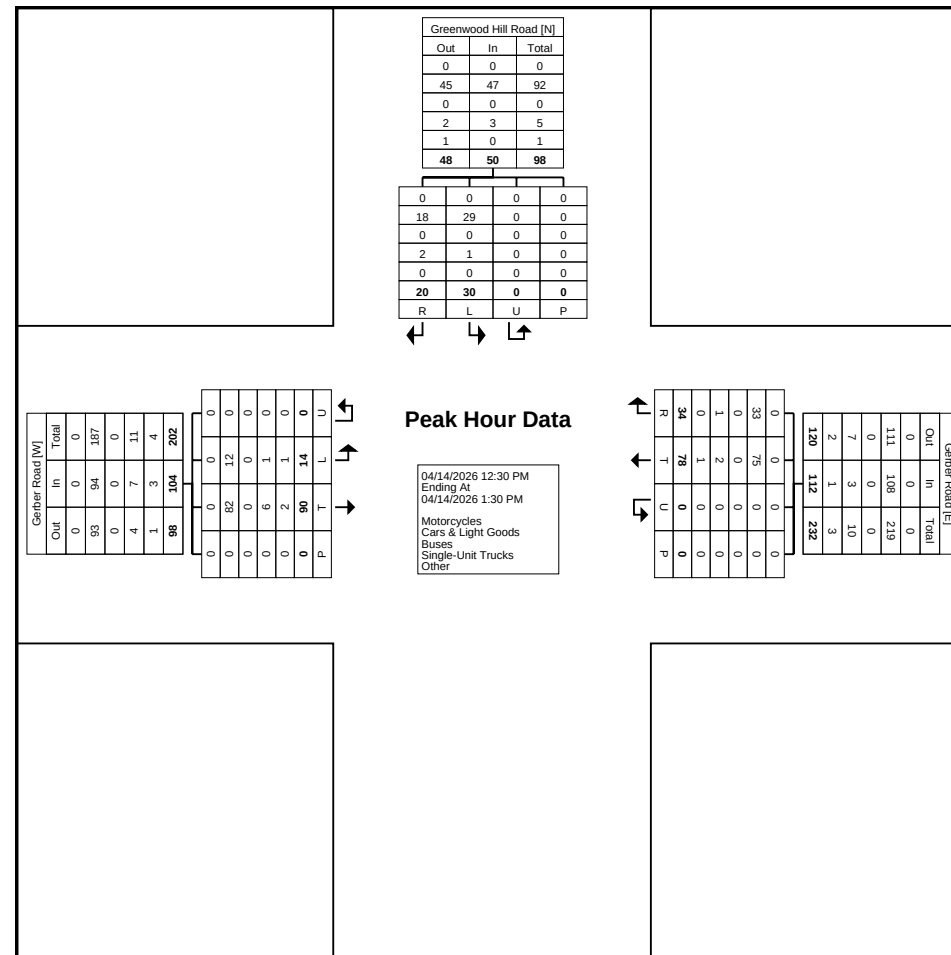
[illegible]



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Greenwood Hill
Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 7



Turning Movement Peak Hour Data Plot (12:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Greenwood Hill Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 8

Turning Movement Peak Hour Data (4:30 PM)

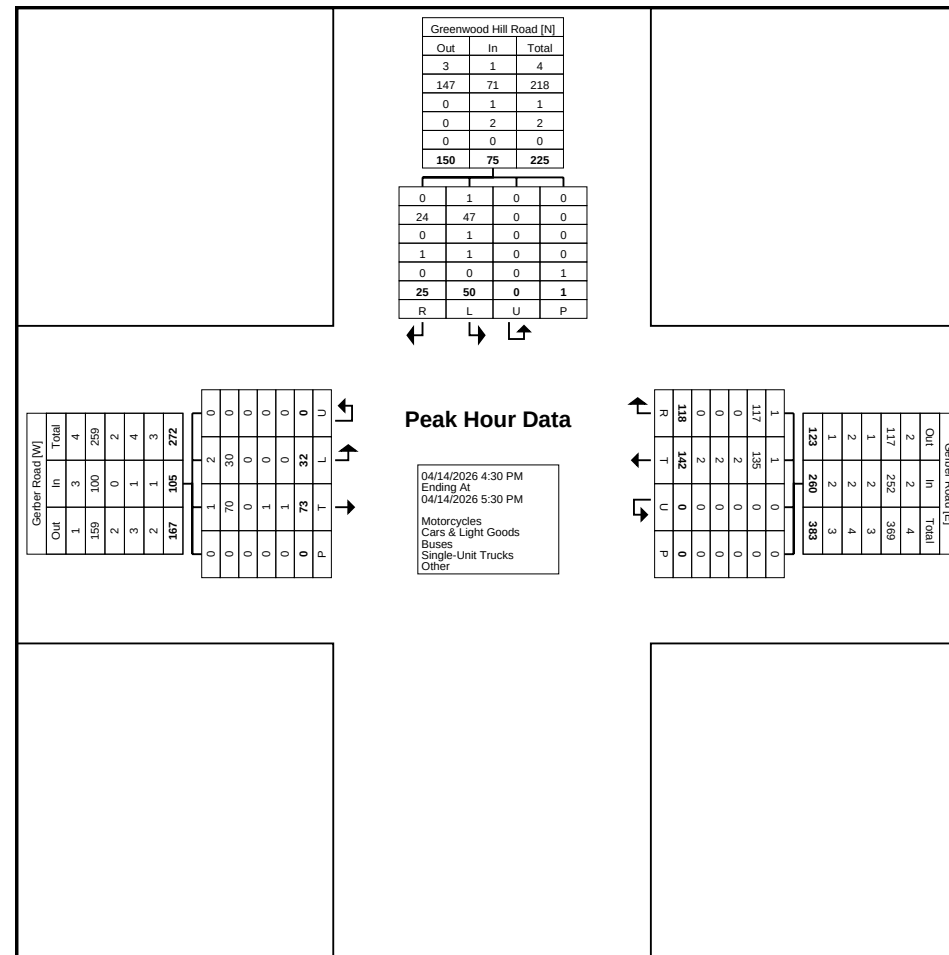
Start Time	Gerber Road Eastbound					Gerber Road Westbound					Greenwood Hill Road Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:30 PM	5	13	0	0	18	46	28	0	0	74	18	7	0	0	25	117
4:45 PM	7	18	0	0	25	25	33	0	0	58	9	4	0	1	13	96
5:00 PM	11	21	0	0	32	33	29	0	0	62	11	5	0	0	16	110
5:15 PM	9	21	0	0	30	38	28	0	0	66	12	9	0	0	21	117
Total	32	73	0	0	105	142	118	0	0	260	50	25	0	1	75	440
Approach %	30.5	69.5	0.0	-	-	54.6	45.4	0.0	-	-	66.7	33.3	0.0	-	-	-
Total %	7.3	16.6	0.0	-	23.9	32.3	26.8	0.0	-	59.1	11.4	5.7	0.0	-	17.0	-
PHF	0.727	0.869	0.000	-	0.820	0.772	0.894	0.000	-	0.878	0.694	0.694	0.000	-	0.750	0.940
Motorcycles	2	1	0	-	3	1	1	0	-	2	1	0	0	-	1	6
% Motorcycles	6.3	1.4	-	-	2.9	0.7	0.8	-	-	0.8	2.0	0.0	-	-	1.3	1.4
Cars & Light Goods	30	70	0	-	100	135	117	0	-	252	47	24	0	-	71	423
% Cars & Light Goods	93.8	95.9	-	-	95.2	95.1	99.2	-	-	96.9	94.0	96.0	-	-	94.7	96.1
Buses	0	0	0	-	0	2	0	0	-	2	1	0	0	-	1	3
% Buses	0.0	0.0	-	-	0.0	1.4	0.0	-	-	0.8	2.0	0.0	-	-	1.3	0.7
Single-Unit Trucks	0	1	0	-	1	2	0	0	-	2	1	1	0	-	2	5
% Single-Unit Trucks	0.0	1.4	-	-	1.0	1.4	0.0	-	-	0.8	2.0	4.0	-	-	2.7	1.1
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	-	-	0.0	1.4	0.0	-	-	0.8	0.0	0.0	-	-	0.0	0.5
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	1.4	-	-	1.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Greenwood Hill
Road
Site Code: 260152
Start Date: 04/14/2026
Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 1

Turning Movement Data

Start Time	Gerber Road Eastbound						Gerber Road Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	3	13	0	1	16	3	6	5	0	0	14	5	5	13	0	0	23	14	25	0	0	0	39	92
7:15 AM	3	10	15	0	0	28	8	8	5	0	0	21	11	8	5	0	0	24	10	20	0	0	0	30	103
7:30 AM	0	20	16	0	0	36	20	0	2	0	0	22	9	19	7	0	0	35	15	39	1	0	0	55	148
7:45 AM	0	14	18	0	0	32	22	8	9	0	0	39	9	15	16	0	0	40	9	25	0	0	0	34	145
Hourly Total	3	47	62	0	1	112	53	22	21	0	0	96	34	47	41	0	0	122	48	109	1	0	0	158	488
8:00 AM	0	9	17	0	0	26	16	10	9	0	0	35	7	16	12	0	0	35	9	18	0	0	0	27	123
8:15 AM	0	14	9	0	0	23	8	12	6	0	0	26	14	16	18	0	0	48	8	16	2	0	1	26	123
8:30 AM	2	13	21	0	0	36	9	5	5	0	0	19	11	14	6	0	0	31	10	22	1	0	0	33	119
8:45 AM	0	12	16	0	0	28	11	8	6	0	0	25	11	16	5	0	0	32	14	26	1	0	0	41	126
Hourly Total	2	48	63	0	0	113	44	35	26	0	0	105	43	62	41	0	0	146	41	82	4	0	1	127	491
9:00 AM	2	11	12	0	0	25	12	4	12	0	0	28	9	13	7	0	0	29	11	23	2	0	0	36	118
9:15 AM	1	10	6	0	0	17	6	3	11	0	0	20	11	13	13	0	0	37	6	20	1	0	0	27	101
9:30 AM	0	10	8	0	0	18	9	5	7	0	0	21	3	16	13	0	0	32	8	12	0	0	2	20	91
9:45 AM	2	9	5	0	0	16	12	6	3	0	0	21	10	20	5	0	0	35	9	18	2	0	1	29	101
Hourly Total	5	40	31	0	0	76	39	18	33	0	0	90	33	62	38	0	0	133	34	73	5	0	3	112	411
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	2	7	12	0	0	21	11	9	4	0	0	24	10	17	6	0	0	33	5	16	4	0	0	25	103
11:45 AM	2	8	12	0	0	22	13	8	7	0	0	28	8	18	6	0	0	32	8	17	2	0	0	27	109
Hourly Total	4	15	24	0	0	43	24	17	11	0	0	52	18	35	12	0	0	65	13	33	6	0	0	52	212
12:00 PM	1	8	6	0	0	15	7	11	10	0	0	28	10	27	12	0	0	49	9	25	2	0	0	36	128
12:15 PM	1	5	2	0	0	8	9	6	7	0	0	22	10	15	16	0	0	41	8	17	2	0	1	27	98
12:30 PM	0	4	3	0	0	7	6	5	9	0	0	20	5	15	5	0	0	25	10	20	1	0	0	31	83
12:45 PM	0	9	12	0	0	21	8	5	5	0	0	18	16	18	9	0	0	43	6	19	1	0	0	26	108
Hourly Total	2	26	23	0	0	51	30	27	31	0	0	88	41	75	42	0	0	158	33	81	6	0	1	120	417
1:00 PM	1	5	6	0	0	12	3	9	8	0	0	20	15	23	19	0	0	57	7	16	3	0	0	26	115
1:15 PM	0	4	6	0	0	10	18	7	3	0	0	28	13	15	7	0	0	35	8	18	1	0	1	27	100
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	1	9	12	0	0	22	21	16	11	0	0	48	28	38	26	0	0	92	15	34	4	0	1	53	215
3:00 PM	0	6	17	0	0	23	9	5	6	0	0	20	9	17	11	0	2	37	6	22	3	0	0	31	111
3:15 PM	0	4	18	0	0	22	16	11	9	0	3	36	11	22	10	0	0	43	9	26	2	0	0	37	138
3:30 PM	2	6	12	0	0	20	15	11	8	0	1	34	10	26	9	0	0	45	14	19	5	0	0	38	137
3:45 PM	1	9	8	0	0	18	21	19	14	0	0	54	13	30	13	0	0	56	4	18	0	0	1	22	150
Hourly Total	3	25	55	0	0	83	61	46	37	0	4	144	43	95	43	0	2	181	33	85	10	0	1	128	536
4:00 PM	2	10	12	0	0	24	10	14	10	0	0	34	27	25	16	0	0	68	5	18	1	0	2	24	150
4:15 PM	2	7	14	0	0	23	14	13	13	0	0	40	18	29	17	0	0	64	9	15	3	0	0	27	154

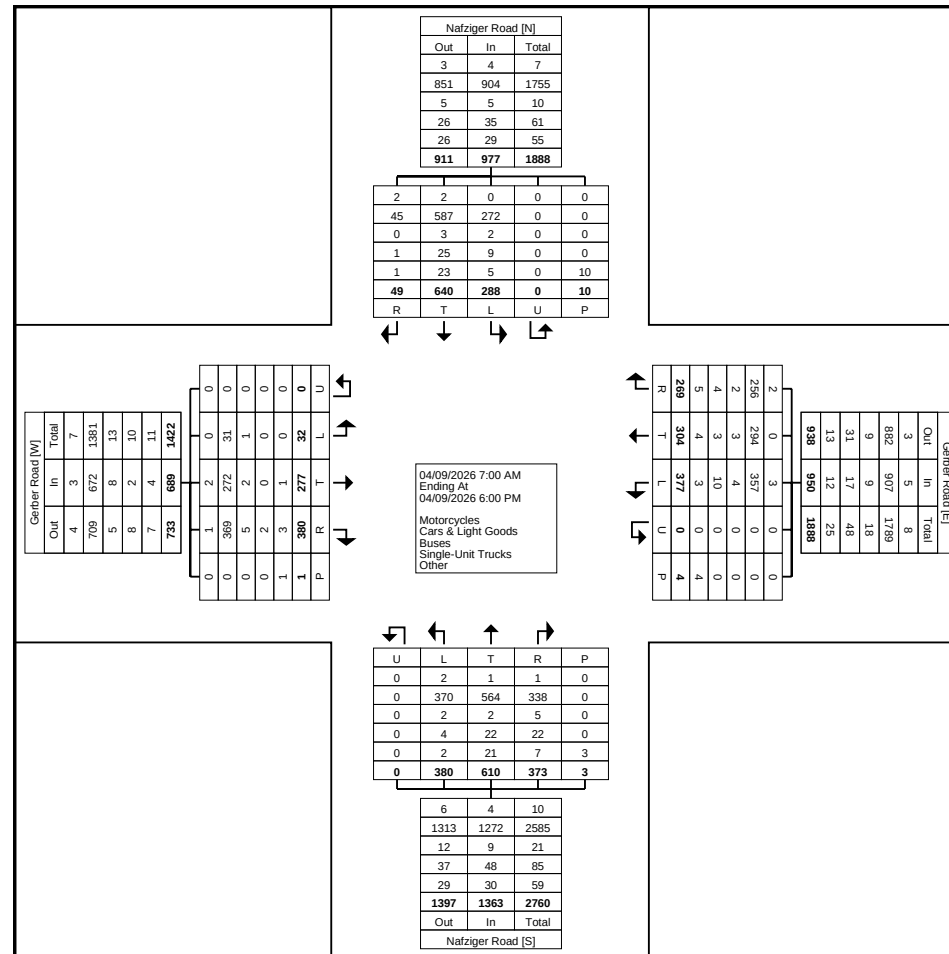
4:30 PM	1	8	16	0	0	25	17	24	20	0	0	61	19	18	20	0	0	57	9	23	1	0	0	33	176
4:45 PM	2	10	20	0	0	32	15	15	11	0	0	41	13	20	16	0	0	49	11	17	3	0	1	31	153
Hourly Total	7	35	62	0	0	104	56	66	54	0	0	176	77	92	69	0	0	238	34	73	8	0	3	115	633
5:00 PM	1	8	14	0	0	23	12	12	8	0	0	32	15	28	25	0	0	68	16	14	1	0	0	31	154
5:15 PM	1	5	14	0	0	20	14	18	8	0	0	40	21	25	13	0	0	59	3	17	1	0	0	21	140
5:30 PM	2	5	12	0	0	19	15	18	14	0	0	47	19	30	11	0	0	60	9	17	1	0	0	27	153
5:45 PM	1	14	8	0	0	23	8	9	15	0	0	32	8	21	12	0	1	41	9	22	2	0	0	33	129
Hourly Total	5	32	48	0	0	85	49	57	45	0	0	151	63	104	61	0	1	228	37	70	5	0	0	112	576
Grand Total	32	277	380	0	1	689	377	304	269	0	4	950	380	610	373	0	3	1363	288	640	49	0	10	977	3979
Approach %	4.6	40.2	55.2	0.0	-	-	39.7	32.0	28.3	0.0	-	-	27.9	44.8	27.4	0.0	-	-	29.5	65.5	5.0	0.0	-	-	-
Total %	0.8	7.0	9.6	0.0	-	17.3	9.5	7.6	6.8	0.0	-	23.9	9.6	15.3	9.4	0.0	-	34.3	7.2	16.1	1.2	0.0	-	24.6	-
Motorcycles	0	2	1	0	-	3	3	0	2	0	-	5	2	1	1	0	-	4	0	2	2	0	-	4	16
% Motorcycles	0.0	0.7	0.3	-	-	0.4	0.8	0.0	0.7	-	-	0.5	0.5	0.2	0.3	-	-	0.3	0.0	0.3	4.1	-	-	0.4	0.4
Cars & Light Goods	31	272	369	0	-	672	357	294	256	0	-	907	370	564	338	0	-	1272	272	587	45	0	-	904	3755
% Cars & Light Goods	96.9	98.2	97.1	-	-	97.5	94.7	96.7	95.2	-	-	95.5	97.4	92.5	90.6	-	-	93.3	94.4	91.7	91.8	-	-	92.5	94.4
Buses	1	2	5	0	-	8	4	3	2	0	-	9	2	2	5	0	-	9	2	3	0	0	-	5	31
% Buses	3.1	0.7	1.3	-	-	1.2	1.1	1.0	0.7	-	-	0.9	0.5	0.3	1.3	-	-	0.7	0.7	0.5	0.0	-	-	0.5	0.8
Single-Unit Trucks	0	0	2	0	-	2	10	3	4	0	-	17	4	22	22	0	-	48	9	25	1	0	-	35	102
% Single-Unit Trucks	0.0	0.0	0.5	-	-	0.3	2.7	1.0	1.5	-	-	1.8	1.1	3.6	5.9	-	-	3.5	3.1	3.9	2.0	-	-	3.6	2.6
Articulated Trucks	0	0	3	0	-	3	3	3	5	0	-	11	2	20	6	0	-	28	5	23	1	0	-	29	71
% Articulated Trucks	0.0	0.0	0.8	-	-	0.4	0.8	1.0	1.9	-	-	1.2	0.5	3.3	1.6	-	-	2.1	1.7	3.6	2.0	-	-	3.0	1.8
Bicycles on Road	0	1	0	0	-	1	0	1	0	0	-	1	0	1	1	0	-	2	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.4	0.0	-	-	0.1	0.0	0.3	0.0	-	-	0.1	0.0	0.2	0.3	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 3



Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Gerber Road Eastbound						Gerber Road Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	0	20	16	0	0	36	20	0	2	0	0	22	9	19	7	0	0	35	15	39	1	0	0	55	148
7:45 AM	0	14	18	0	0	32	22	8	9	0	0	39	9	15	16	0	0	40	9	25	0	0	0	34	145
8:00 AM	0	9	17	0	0	26	16	10	9	0	0	35	7	16	12	0	0	35	9	18	0	0	0	27	123
8:15 AM	0	14	9	0	0	23	8	12	6	0	0	26	14	16	18	0	0	48	8	16	2	0	1	26	123
Total	0	57	60	0	0	117	66	30	26	0	0	122	39	66	53	0	0	158	41	98	3	0	1	142	539
Approach %	0.0	48.7	51.3	0.0	-	-	54.1	24.6	21.3	0.0	-	-	24.7	41.8	33.5	0.0	-	-	28.9	69.0	2.1	0.0	-	-	-
Total %	0.0	10.6	11.1	0.0	-	21.7	12.2	5.6	4.8	0.0	-	22.6	7.2	12.2	9.8	0.0	-	29.3	7.6	18.2	0.6	0.0	-	26.3	-
PHF	0.000	0.713	0.833	0.000	-	0.813	0.750	0.625	0.722	0.000	-	0.782	0.696	0.868	0.736	0.000	-	0.823	0.683	0.628	0.375	0.000	-	0.645	0.910
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	56	60	0	-	116	64	30	26	0	-	120	38	57	42	0	-	137	39	93	3	0	-	135	508
% Cars & Light Goods	-	98.2	100.0	-	-	99.1	97.0	100.0	100.0	-	-	98.4	97.4	86.4	79.2	-	-	86.7	95.1	94.9	100.0	-	-	95.1	94.2
Buses	0	1	0	0	-	1	0	0	0	0	-	0	0	2	4	0	-	6	0	2	0	0	-	2	9
% Buses	-	1.8	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	3.0	7.5	-	-	3.8	0.0	2.0	0.0	-	-	1.4	1.7
Single-Unit Trucks	0	0	0	0	-	0	2	0	0	0	-	2	0	4	4	0	-	8	0	2	0	0	-	2	12
% Single-Unit Trucks	-	0.0	0.0	-	-	0.0	3.0	0.0	0.0	-	-	1.6	0.0	6.1	7.5	-	-	5.1	0.0	2.0	0.0	-	-	1.4	2.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	2	3	0	-	6	2	1	0	0	-	3	9
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	2.6	3.0	5.7	-	-	3.8	4.9	1.0	0.0	-	-	2.1	1.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.5	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	1	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-

Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 6

Turning Movement Peak Hour Data (11:30 AM)

Start Time	Gerber Road Eastbound						Gerber Road Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:30 AM	2	7	12	0	0	21	11	9	4	0	0	24	10	17	6	0	0	33	5	16	4	0	0	25	103
11:45 AM	2	8	12	0	0	22	13	8	7	0	0	28	8	18	6	0	0	32	8	17	2	0	0	27	109
12:00 PM	1	8	6	0	0	15	7	11	10	0	0	28	10	27	12	0	0	49	9	25	2	0	0	36	128
12:15 PM	1	5	2	0	0	8	9	6	7	0	0	22	10	15	16	0	0	41	8	17	2	0	1	27	98
Total	6	28	32	0	0	66	40	34	28	0	0	102	38	77	40	0	0	155	30	75	10	0	1	115	438
Approach %	9.1	42.4	48.5	0.0	-	-	39.2	33.3	27.5	0.0	-	-	24.5	49.7	25.8	0.0	-	-	26.1	65.2	8.7	0.0	-	-	-
Total %	1.4	6.4	7.3	0.0	-	15.1	9.1	7.8	6.4	0.0	-	23.3	8.7	17.6	9.1	0.0	-	35.4	6.8	17.1	2.3	0.0	-	26.3	-
PHF	0.750	0.875	0.667	0.000	-	0.750	0.769	0.773	0.700	0.000	-	0.911	0.950	0.713	0.625	0.000	-	0.791	0.833	0.750	0.625	0.000	-	0.799	0.855
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	6	28	31	0	-	65	39	34	26	0	-	99	36	73	38	0	-	147	28	66	9	0	-	103	414
% Cars & Light Goods	100.0	100.0	96.9	-	-	98.5	97.5	100.0	92.9	-	-	97.1	94.7	94.8	95.0	-	-	94.8	93.3	88.0	90.0	-	-	89.6	94.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	2	2	2	0	-	6	1	4	1	0	-	6	12
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	5.3	2.6	5.0	-	-	3.9	3.3	5.3	10.0	-	-	5.2	2.7
Articulated Trucks	0	0	1	0	-	1	1	0	2	0	-	3	0	2	0	0	-	2	1	5	0	0	-	6	12
% Articulated Trucks	0.0	0.0	3.1	-	-	1.5	2.5	0.0	7.1	-	-	2.9	0.0	2.6	0.0	-	-	1.3	3.3	6.7	0.0	-	-	5.2	2.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	1	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-

Turning Movement Peak Hour Data Plot (11:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 8

Turning Movement Peak Hour Data (4:15 PM)

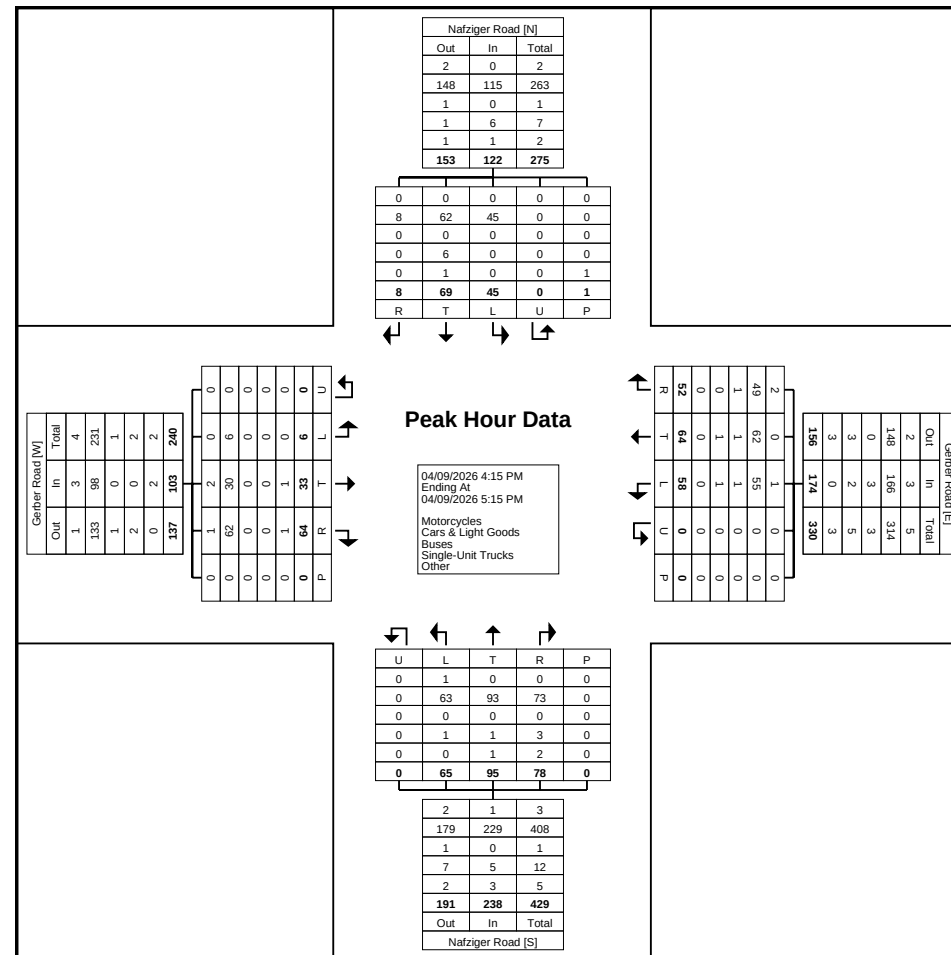
Start Time	Gerber Road Eastbound						Gerber Road Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	2	7	14	0	0	23	14	13	13	0	0	40	18	29	17	0	0	64	9	15	3	0	0	27	154
4:30 PM	1	8	16	0	0	25	17	24	20	0	0	61	19	18	20	0	0	57	9	23	1	0	0	33	176
4:45 PM	2	10	20	0	0	32	15	15	11	0	0	41	13	20	16	0	0	49	11	17	3	0	1	31	153
5:00 PM	1	8	14	0	0	23	12	12	8	0	0	32	15	28	25	0	0	68	16	14	1	0	0	31	154
Total	6	33	64	0	0	103	58	64	52	0	0	174	65	95	78	0	0	238	45	69	8	0	1	122	637
Approach %	5.8	32.0	62.1	0.0	-	-	33.3	36.8	29.9	0.0	-	-	27.3	39.9	32.8	0.0	-	-	36.9	56.6	6.6	0.0	-	-	-
Total %	0.9	5.2	10.0	0.0	-	16.2	9.1	10.0	8.2	0.0	-	27.3	10.2	14.9	12.2	0.0	-	37.4	7.1	10.8	1.3	0.0	-	19.2	-
PHF	0.750	0.825	0.800	0.000	-	0.805	0.853	0.667	0.650	0.000	-	0.713	0.855	0.819	0.780	0.000	-	0.875	0.703	0.750	0.667	0.000	-	0.924	0.905
Motorcycles	0	2	1	0	-	3	1	0	2	0	-	3	1	0	0	0	-	1	0	0	0	0	-	0	7
% Motorcycles	0.0	6.1	1.6	-	-	2.9	1.7	0.0	3.8	-	-	1.7	1.5	0.0	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	1.1
Cars & Light Goods	6	30	62	0	-	98	55	62	49	0	-	166	63	93	73	0	-	229	45	62	8	0	-	115	608
% Cars & Light Goods	100.0	90.9	96.9	-	-	95.1	94.8	96.9	94.2	-	-	95.4	96.9	97.9	93.6	-	-	96.2	100.0	89.9	100.0	-	-	94.3	95.4
Buses	0	0	0	0	-	0	1	1	1	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Buses	0.0	0.0	0.0	-	-	0.0	1.7	1.6	1.9	-	-	1.7	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	0	0	0	0	-	0	1	1	0	0	-	2	1	1	3	0	-	5	0	6	0	0	-	6	13
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	1.7	1.6	0.0	-	-	1.1	1.5	1.1	3.8	-	-	2.1	0.0	8.7	0.0	-	-	4.9	2.0
Articulated Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	1	1	0	-	2	0	1	0	0	-	1	4
% Articulated Trucks	0.0	0.0	1.6	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	1.1	1.3	-	-	0.8	0.0	1.4	0.0	-	-	0.8	0.6
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	2
% Bicycles on Road	0.0	3.0	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.3	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Gerber Road & Nafziger Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 9



Turning Movement Peak Hour Data Plot (4:15 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: Greenwood Hill Road & Gerber
Meadows Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 1

Turning Movement Data

Start Time	Gerber Meadows Drive Eastbound					Greenwood Hill Road Northbound					Greenwood Hill Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	4	0	0	5	0	8	0	0	8	21	0	0	0	21	34
7:15 AM	2	5	0	1	7	1	4	0	0	5	25	1	0	0	26	38
7:30 AM	2	8	0	3	10	3	6	0	0	9	26	1	0	0	27	46
7:45 AM	0	3	0	1	3	0	16	0	0	16	30	2	0	0	32	51
Hourly Total	5	20	0	5	25	4	34	0	0	38	102	4	0	0	106	169
8:00 AM	2	8	0	1	10	0	8	0	0	8	39	0	0	0	39	57
8:15 AM	5	8	0	1	13	0	14	0	0	14	11	1	0	0	12	39
8:30 AM	5	0	0	2	5	2	21	0	0	23	23	1	0	0	24	52
8:45 AM	6	8	0	4	14	2	14	0	0	16	22	5	0	0	27	57
Hourly Total	18	24	0	8	42	4	57	0	0	61	95	7	0	0	102	205
9:00 AM	1	9	0	0	10	2	7	0	0	9	20	3	0	0	23	42
9:15 AM	1	1	0	0	2	1	7	0	0	8	24	1	0	0	25	35
9:30 AM	1	4	0	0	5	2	11	0	0	13	17	0	0	0	17	35
9:45 AM	1	2	0	2	3	2	10	0	0	12	18	0	0	0	18	33
Hourly Total	4	16	0	2	20	7	35	0	0	42	79	4	0	0	83	145
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	3	0	0	3	0	15	1	0	16	9	0	0	0	9	28
11:45 AM	1	3	0	0	4	4	11	0	0	15	7	0	0	0	7	26
Hourly Total	1	6	0	0	7	4	26	1	0	31	16	0	0	0	16	54
12:00 PM	0	2	0	0	2	0	12	0	0	12	5	0	0	0	5	19
12:15 PM	2	5	0	0	7	4	9	0	0	13	10	2	0	0	12	32
12:30 PM	1	3	0	0	4	4	16	0	0	20	7	0	0	0	7	31
12:45 PM	3	4	0	0	7	1	9	0	0	10	11	1	0	0	12	29
Hourly Total	6	14	0	0	20	9	46	0	0	55	33	3	0	0	36	111
1:00 PM	0	3	0	0	3	2	10	0	0	12	8	2	0	0	10	25
1:15 PM	1	4	0	0	5	1	6	0	0	7	8	1	0	0	9	21
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	1	7	0	0	8	3	16	0	0	19	16	3	0	0	19	46
3:00 PM	7	2	0	3	9	3	12	0	0	15	8	2	0	0	10	34
3:15 PM	1	3	0	0	4	4	22	0	0	26	22	4	0	0	26	56
3:30 PM	0	5	0	1	5	8	26	0	0	34	18	2	0	0	20	59
3:45 PM	2	3	0	2	5	6	25	0	0	31	19	2	0	0	21	57
Hourly Total	10	13	0	6	23	21	85	0	0	106	67	10	0	0	77	206
4:00 PM	0	2	0	1	2	4	26	0	0	30	17	4	0	0	21	53
4:15 PM	0	5	0	2	5	8	25	0	0	33	11	3	0	0	14	52
4:30 PM	0	4	0	1	4	6	28	0	0	34	18	1	0	0	19	57

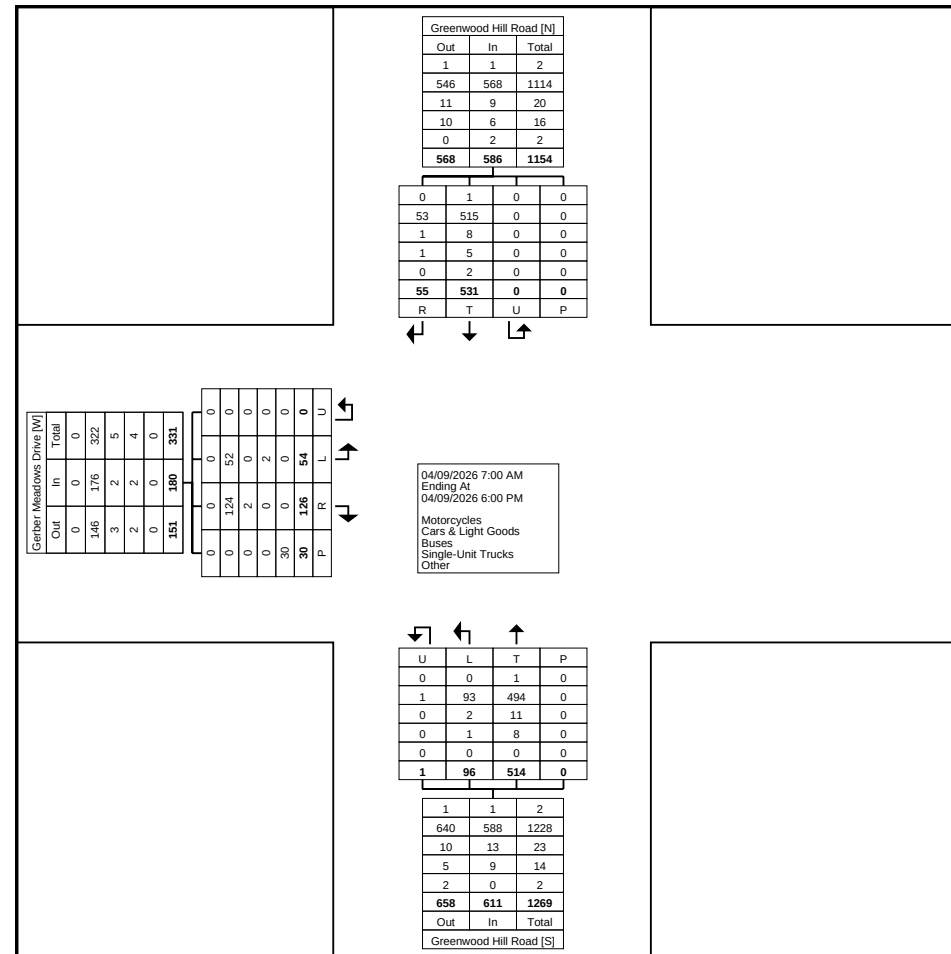
[illegible]



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Gerber
Meadows Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 3



Turning Movement Data Plot

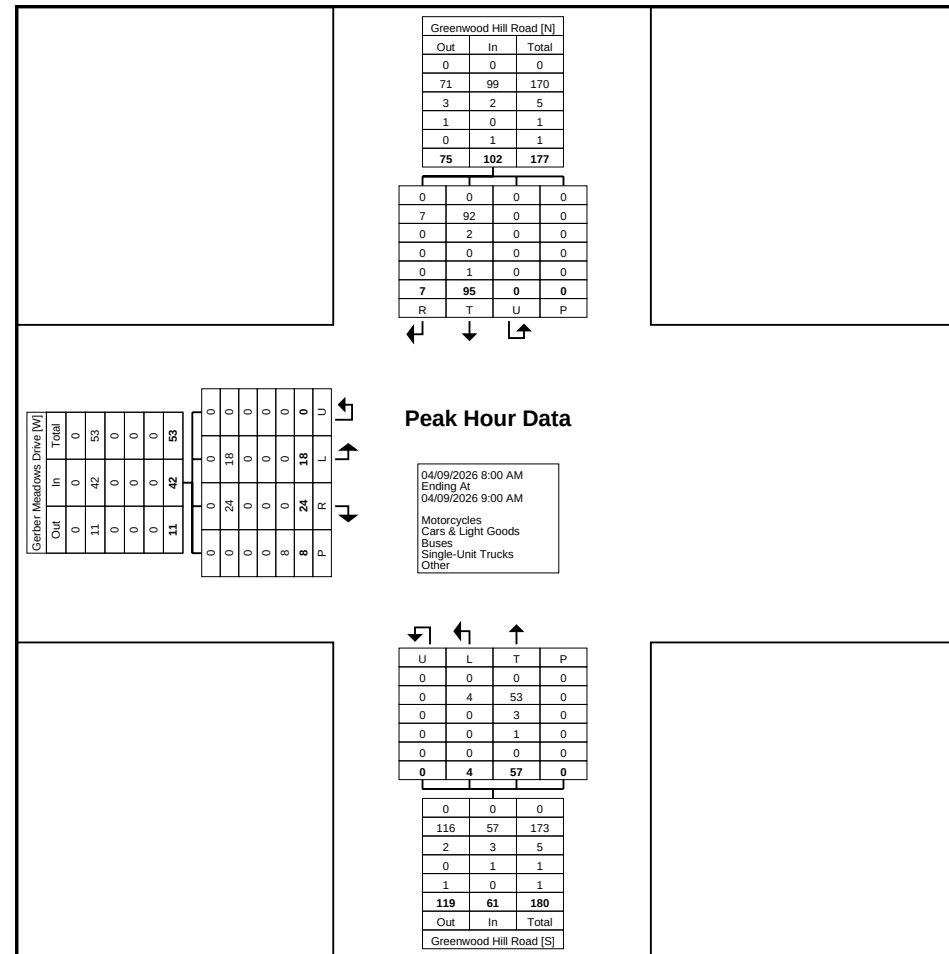
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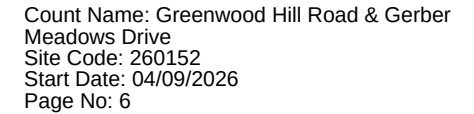
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Gerber
Meadows Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 5



Turning Movement Peak Hour Data Plot (8:00 AM)

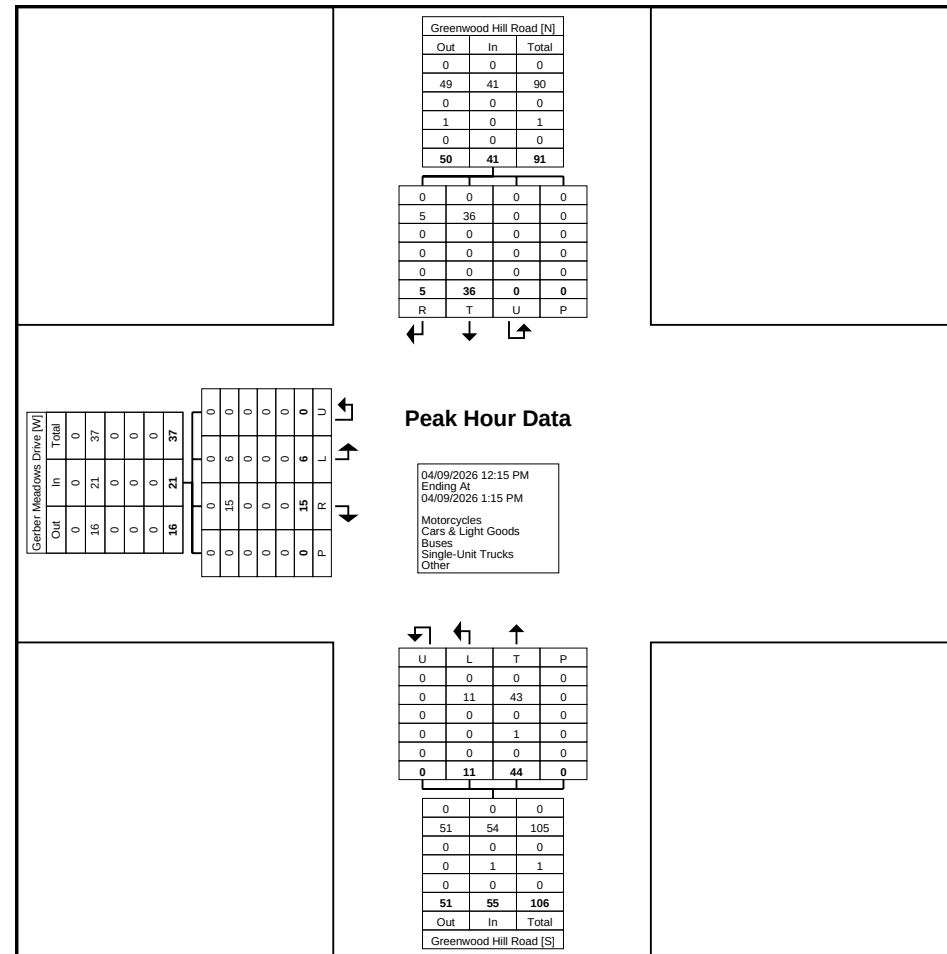
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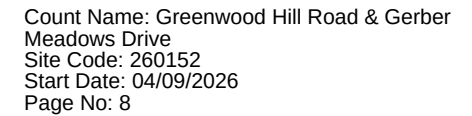
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Gerber
Meadows Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 7



Turning Movement Peak Hour Data Plot (12:15 PM)

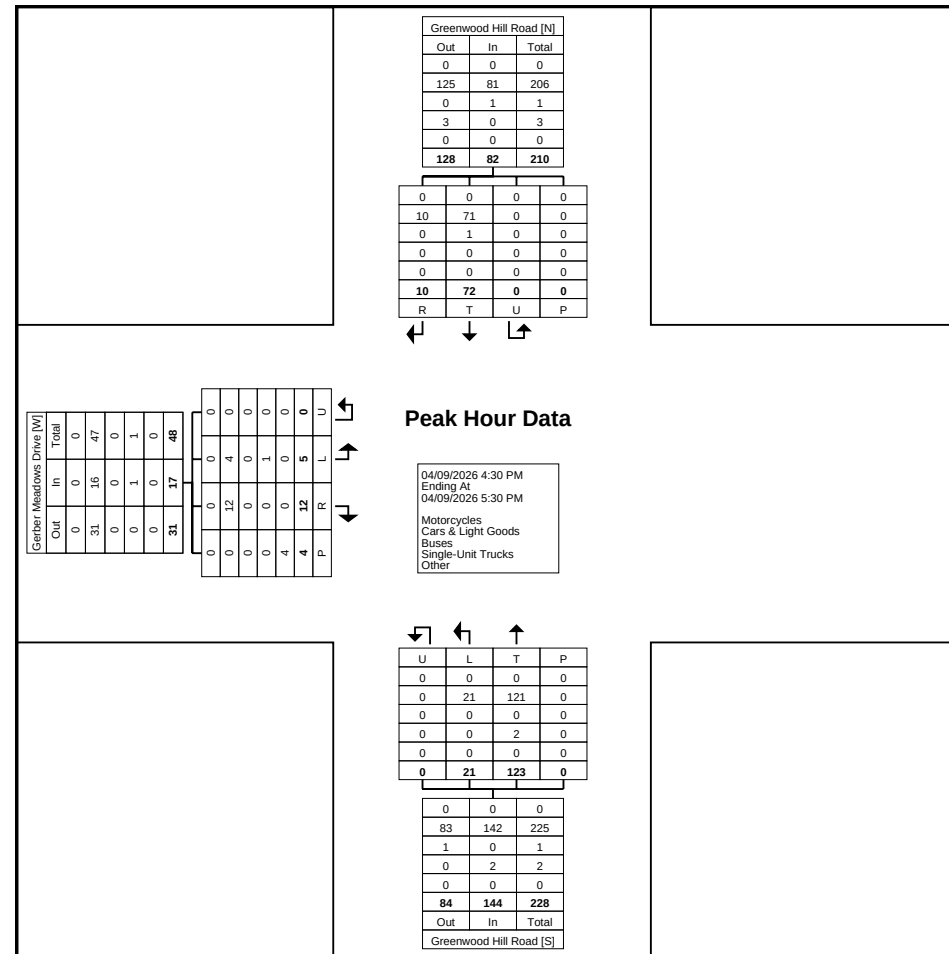
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Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Gerber
Meadows Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsll.com

Count Name: Greenwood Hill Road & Parkview Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 1

Turning Movement Data

Start Time	Parkview Drive Eastbound					Greenwood Hill Road Northbound					Greenwood Hill Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	5	0	1	8	0	9	0	0	9	16	1	0	0	17	34
7:15 AM	1	5	0	1	6	0	5	0	0	5	21	0	0	0	21	32
7:30 AM	2	5	0	3	7	0	8	0	0	8	20	0	0	0	20	35
7:45 AM	4	5	0	3	9	1	15	0	0	16	27	0	0	0	27	52
Hourly Total	10	20	0	8	30	1	37	0	0	38	84	1	0	0	85	153
8:00 AM	4	7	0	1	11	1	9	0	0	10	33	1	0	0	34	55
8:15 AM	3	2	0	2	5	0	18	0	0	18	10	1	0	0	11	34
8:30 AM	8	5	0	5	13	3	21	0	0	24	19	1	0	0	20	57
8:45 AM	5	7	0	2	12	0	21	0	0	21	22	0	0	0	22	55
Hourly Total	20	21	0	10	41	4	69	0	0	73	84	3	0	0	87	201
9:00 AM	1	9	0	0	10	1	7	0	0	8	13	1	0	0	14	32
9:15 AM	2	8	0	0	10	1	7	0	0	8	17	0	0	0	17	35
9:30 AM	1	6	0	0	7	1	11	0	0	12	14	1	0	0	15	34
9:45 AM	0	2	0	0	2	0	11	0	0	11	14	2	0	0	16	29
Hourly Total	4	25	0	0	29	3	36	0	0	39	58	4	0	0	62	130
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	3	3	0	0	6	0	15	0	0	15	6	2	0	0	8	29
11:45 AM	1	2	0	0	3	1	11	0	0	12	5	0	0	0	5	20
Hourly Total	4	5	0	0	9	1	26	0	0	27	11	2	0	0	13	49
12:00 PM	1	0	0	0	1	2	10	0	0	12	5	0	0	0	5	18
12:15 PM	0	3	0	0	3	2	10	0	0	12	8	1	0	0	9	24
12:30 PM	1	1	0	0	2	3	14	0	0	17	6	1	0	0	7	26
12:45 PM	2	5	0	0	7	3	9	0	0	12	7	1	0	0	8	27
Hourly Total	4	9	0	0	13	10	43	0	0	53	26	3	0	0	29	95
1:00 PM	1	1	0	0	2	0	8	0	0	8	9	0	0	0	9	19
1:15 PM	1	0	0	0	1	0	9	0	0	9	9	2	0	0	11	21
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	2	1	0	0	3	0	17	0	0	17	18	2	0	0	20	40
3:00 PM	2	0	0	4	2	1	18	0	0	19	10	2	0	0	12	33
3:15 PM	0	5	0	1	5	5	17	0	0	22	21	4	0	0	25	52
3:30 PM	1	1	0	1	2	4	22	0	0	26	19	1	0	0	20	48
3:45 PM	2	3	0	1	5	5	23	0	0	28	20	7	0	0	27	60
Hourly Total	5	9	0	7	14	15	80	0	0	95	70	14	0	0	84	193
4:00 PM	2	4	0	0	6	3	24	0	0	27	19	6	0	0	25	58
4:15 PM	3	0	0	3	3	1	23	0	0	24	14	2	0	0	16	43
4:30 PM	4	1	0	3	5	8	22	0	0	30	18	1	0	0	19	54

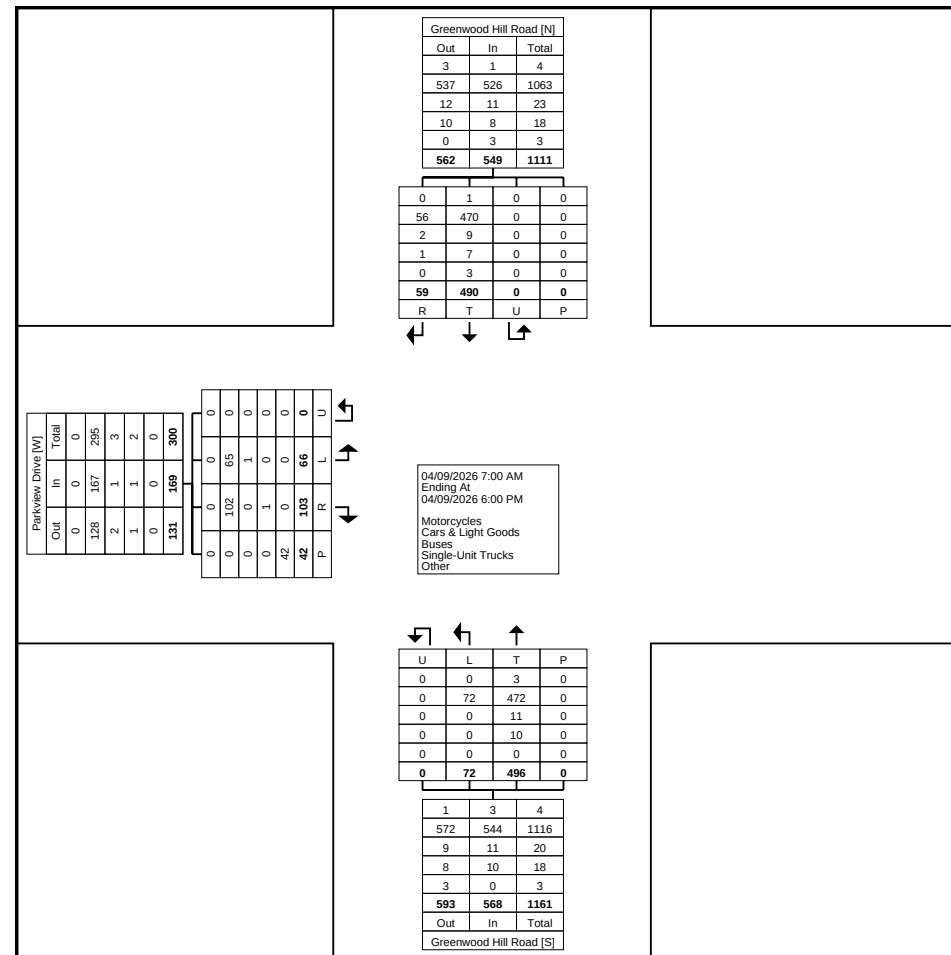
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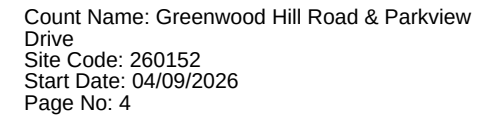
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5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Parkview
Drive
Site Code: 260152
Start Date: 04/09/2026
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Turning Movement Data Plot

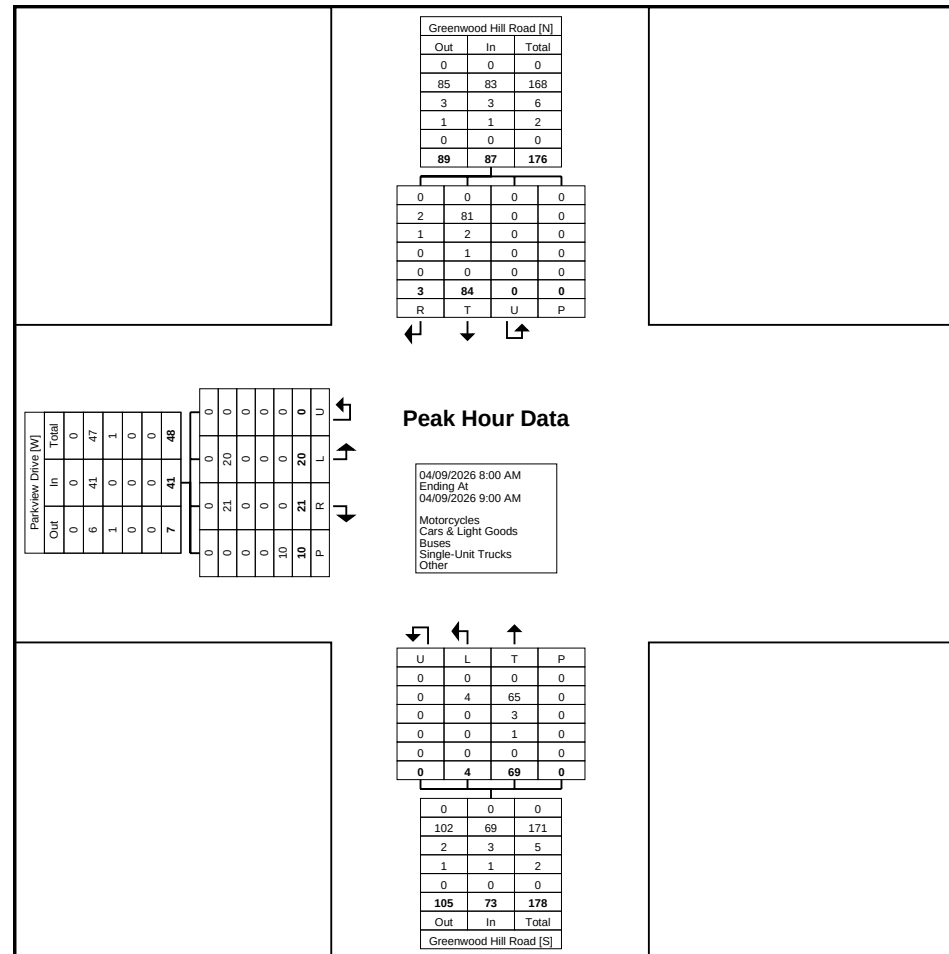
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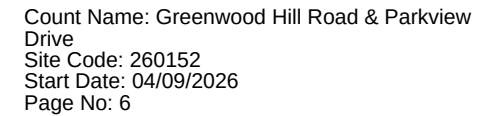
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Count Name: Greenwood Hill Road & Parkview
Drive
Site Code: 260152
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Turning Movement Peak Hour Data Plot (8:00 AM)

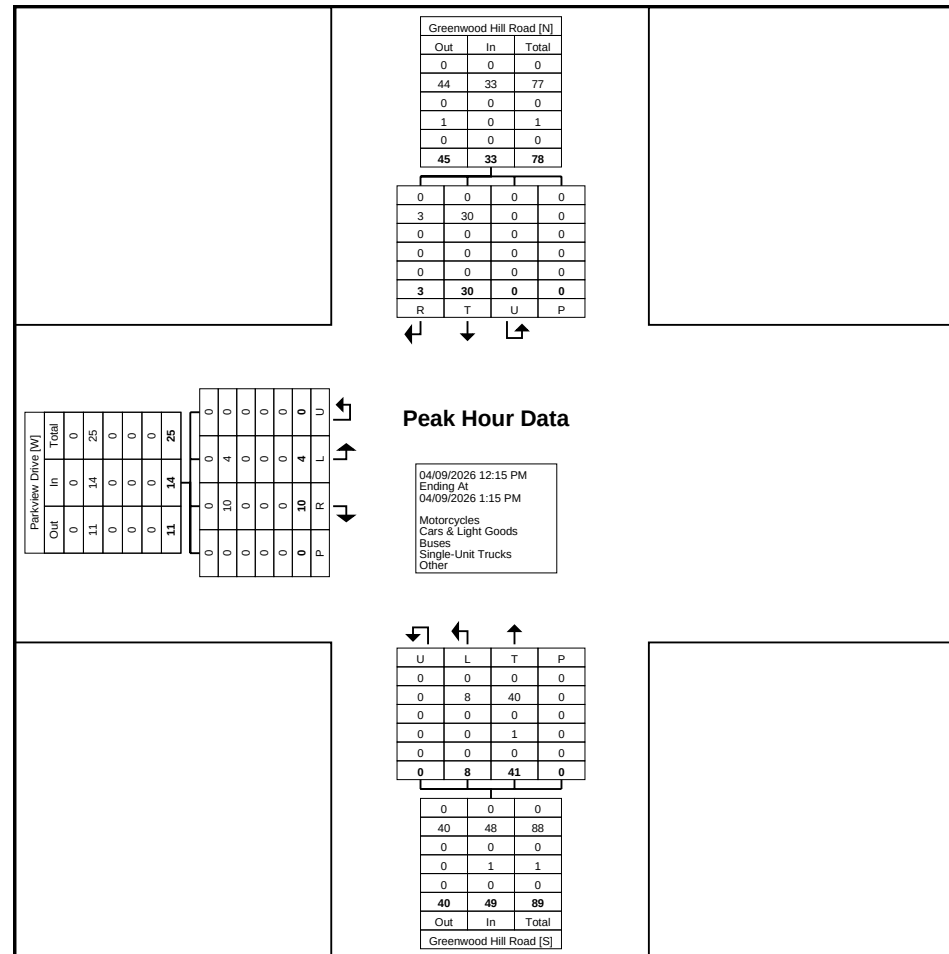
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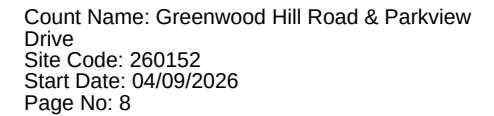
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Count Name: Greenwood Hill Road & Parkview
Drive
Site Code: 260152
Start Date: 04/09/2026
Page No: 7



Turning Movement Peak Hour Data Plot (12:15 PM)

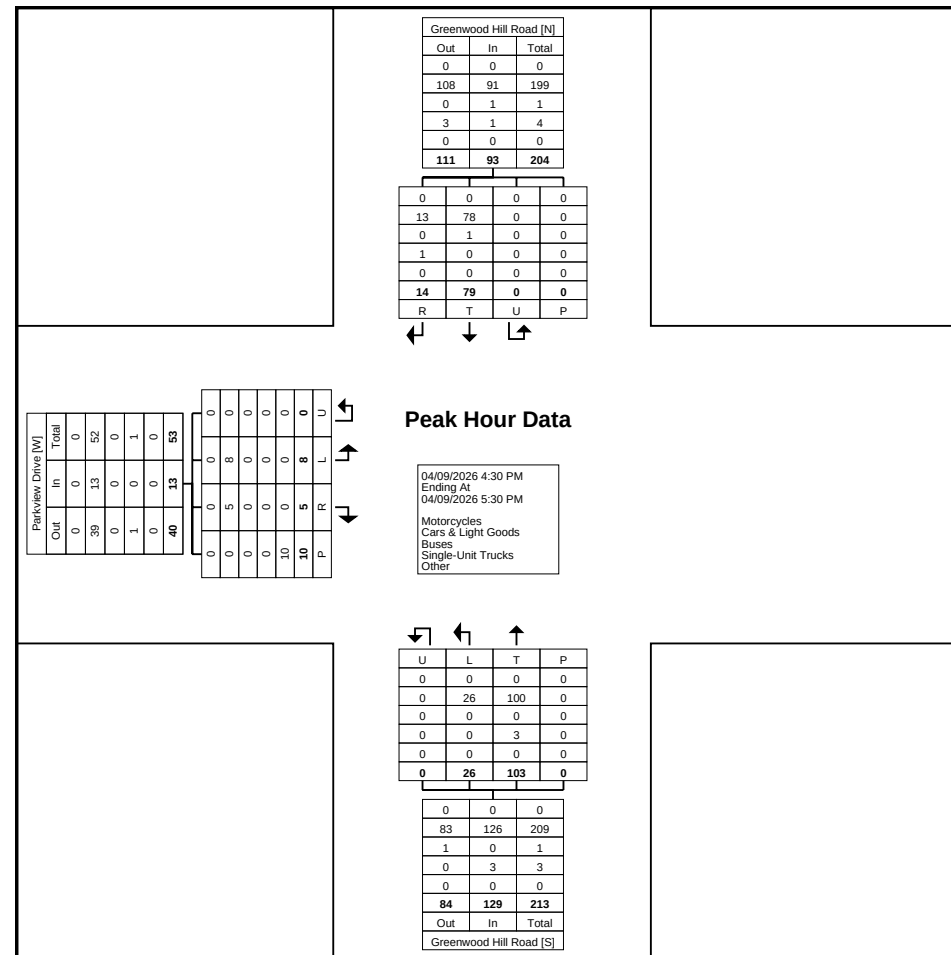
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Count Name: Greenwood Hill Road & Parkview
Drive
Site Code: 260152
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Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)



Paradigm Transportation Solutions Limited
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519-896-3163 cbowness@ptsI.com

Count Name: Greenwood Hill Road & Queen
Bush Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 1

Turning Movement Data

Start Time	Queen Bush Road Eastbound					Greenwood Hill Road Northbound					Greenwood Hill Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	3	0	2	7	2	11	0	0	13	12	5	0	0	17	37
7:15 AM	7	6	0	1	13	2	5	0	0	7	15	3	0	0	18	38
7:30 AM	13	6	0	3	19	3	8	0	0	11	15	3	0	0	18	48
7:45 AM	6	9	0	0	15	2	16	0	0	18	18	3	0	0	21	54
Hourly Total	30	24	0	6	54	9	40	0	0	49	60	14	0	0	74	177
8:00 AM	4	11	0	1	15	3	11	0	0	14	22	5	0	0	27	56
8:15 AM	7	6	0	1	13	5	16	0	0	21	6	11	0	0	17	51
8:30 AM	10	7	0	2	17	16	15	0	0	31	13	5	0	2	18	66
8:45 AM	10	6	0	4	16	8	18	0	0	26	17	6	0	0	23	65
Hourly Total	31	30	0	8	61	32	60	0	0	92	58	27	0	2	85	238
9:00 AM	7	4	0	0	11	1	6	0	0	7	9	3	0	0	12	30
9:15 AM	6	4	0	1	10	3	6	0	1	9	13	2	0	0	15	34
9:30 AM	3	4	0	1	7	2	9	0	0	11	12	2	0	0	14	32
9:45 AM	6	4	0	2	10	3	7	0	0	10	10	1	0	0	11	31
Hourly Total	22	16	0	4	38	9	28	0	1	37	44	8	0	0	52	127
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	9	2	0	0	11	2	17	0	0	19	6	5	0	0	11	41
11:45 AM	4	0	0	0	4	5	7	0	0	12	5	2	0	0	7	23
Hourly Total	13	2	0	0	15	7	24	0	0	31	11	7	0	0	18	64
12:00 PM	4	0	0	0	4	6	5	0	0	11	5	5	0	0	10	25
12:15 PM	5	1	0	0	6	0	10	0	0	10	9	6	0	0	15	31
12:30 PM	7	2	0	0	9	8	7	0	0	15	5	7	0	0	12	36
12:45 PM	1	2	0	1	3	0	10	0	2	10	6	6	0	1	12	25
Hourly Total	17	5	0	1	22	14	32	0	2	46	25	24	0	1	49	117
1:00 PM	5	4	0	0	9	7	3	0	0	10	6	3	0	0	9	28
1:15 PM	9	4	0	0	13	2	7	0	0	9	6	4	0	0	10	32
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	14	8	0	0	22	9	10	0	0	19	12	7	0	0	19	60
3:00 PM	3	1	0	1	4	9	11	0	0	20	11	4	0	0	15	39
3:15 PM	8	11	0	3	19	7	11	0	0	18	15	12	0	2	27	64
3:30 PM	11	8	0	0	19	6	16	0	0	22	11	8	0	1	19	60
3:45 PM	3	7	0	2	10	7	19	0	0	26	21	13	0	2	34	70
Hourly Total	25	27	0	6	52	29	57	0	0	86	58	37	0	5	95	233
4:00 PM	4	7	0	2	11	10	15	0	0	25	17	12	0	0	29	65
4:15 PM	4	5	0	2	9	8	18	0	0	26	11	8	0	0	19	54
4:30 PM	7	5	0	2	12	7	19	0	0	26	14	15	0	0	29	67

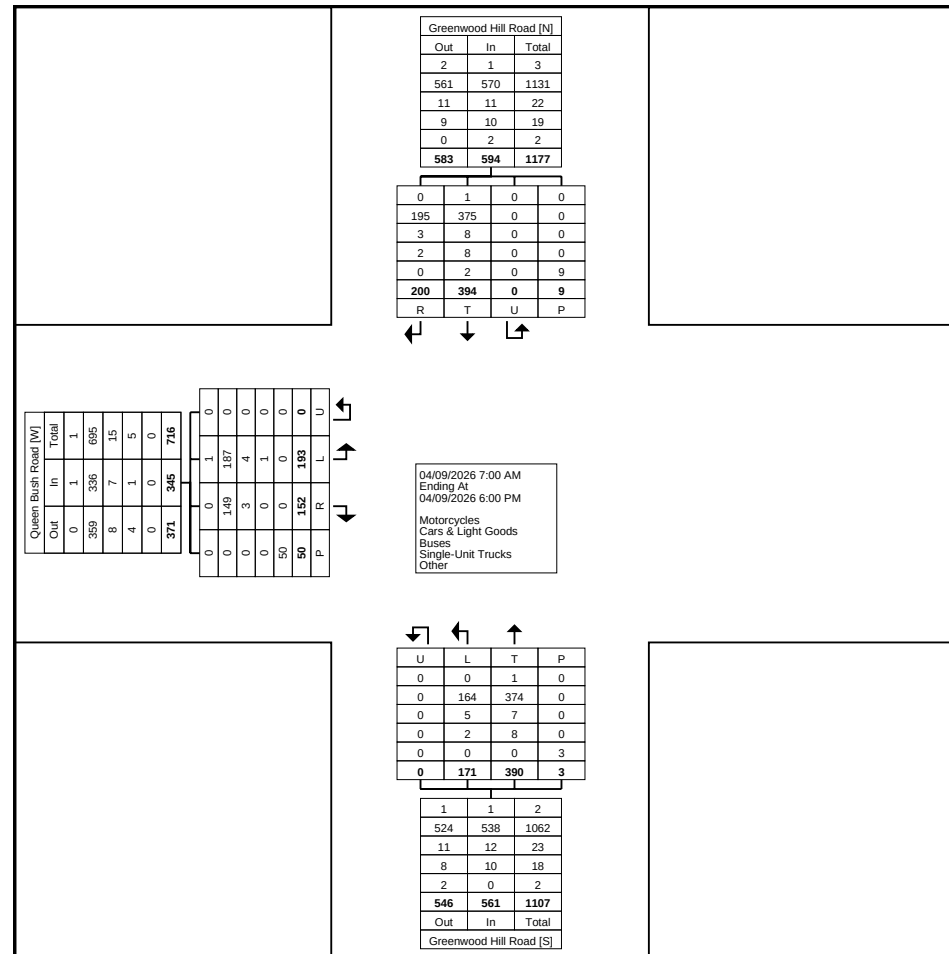
4:45 PM	9	5	0	5	14	10	22	0	0	32	23	8	0	0	31	77
Hourly Total	24	22	0	11	46	35	74	0	0	109	65	43	0	0	108	263
5:00 PM	9	4	0	6	13	8	20	0	0	28	19	9	0	0	28	69
5:15 PM	3	10	0	5	13	8	16	0	0	24	11	9	0	0	20	57
5:30 PM	2	1	0	2	3	8	14	0	0	22	19	9	0	1	28	53
5:45 PM	3	3	0	1	6	3	15	0	0	18	12	6	0	0	18	42
Hourly Total	17	18	0	14	35	27	65	0	0	92	61	33	0	1	94	221
Grand Total	193	152	0	50	345	171	390	0	3	561	394	200	0	9	594	1500
Approach %	55.9	44.1	0.0	-	-	30.5	69.5	0.0	-	-	66.3	33.7	0.0	-	-	-
Total %	12.9	10.1	0.0	-	23.0	11.4	26.0	0.0	-	37.4	26.3	13.3	0.0	-	39.6	-
Motorcycles	1	0	0	-	1	0	1	0	-	1	1	0	0	-	1	3
% Motorcycles	0.5	0.0	-	-	0.3	0.0	0.3	-	-	0.2	0.3	0.0	-	-	0.2	0.2
Cars & Light Goods	187	149	0	-	336	164	374	0	-	538	375	195	0	-	570	1444
% Cars & Light Goods	96.9	98.0	-	-	97.4	95.9	95.9	-	-	95.9	95.2	97.5	-	-	96.0	96.3
Buses	4	3	0	-	7	5	7	0	-	12	8	3	0	-	11	30
% Buses	2.1	2.0	-	-	2.0	2.9	1.8	-	-	2.1	2.0	1.5	-	-	1.9	2.0
Single-Unit Trucks	1	0	0	-	1	2	8	0	-	10	8	2	0	-	10	21
% Single-Unit Trucks	0.5	0.0	-	-	0.3	1.2	2.1	-	-	1.8	2.0	1.0	-	-	1.7	1.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.2	0.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	4	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	8.0	-	-	-	-	0.0	-	-	-	-	55.6	-	-
Pedestrians	-	-	-	46	-	-	-	-	3	-	-	-	-	4	-	-
% Pedestrians	-	-	-	92.0	-	-	-	-	100.0	-	-	-	-	44.4	-	-



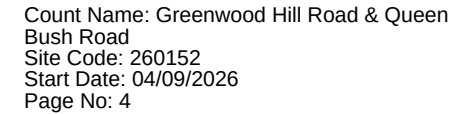
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519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Queen
Bush Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 3



Turning Movement Data Plot

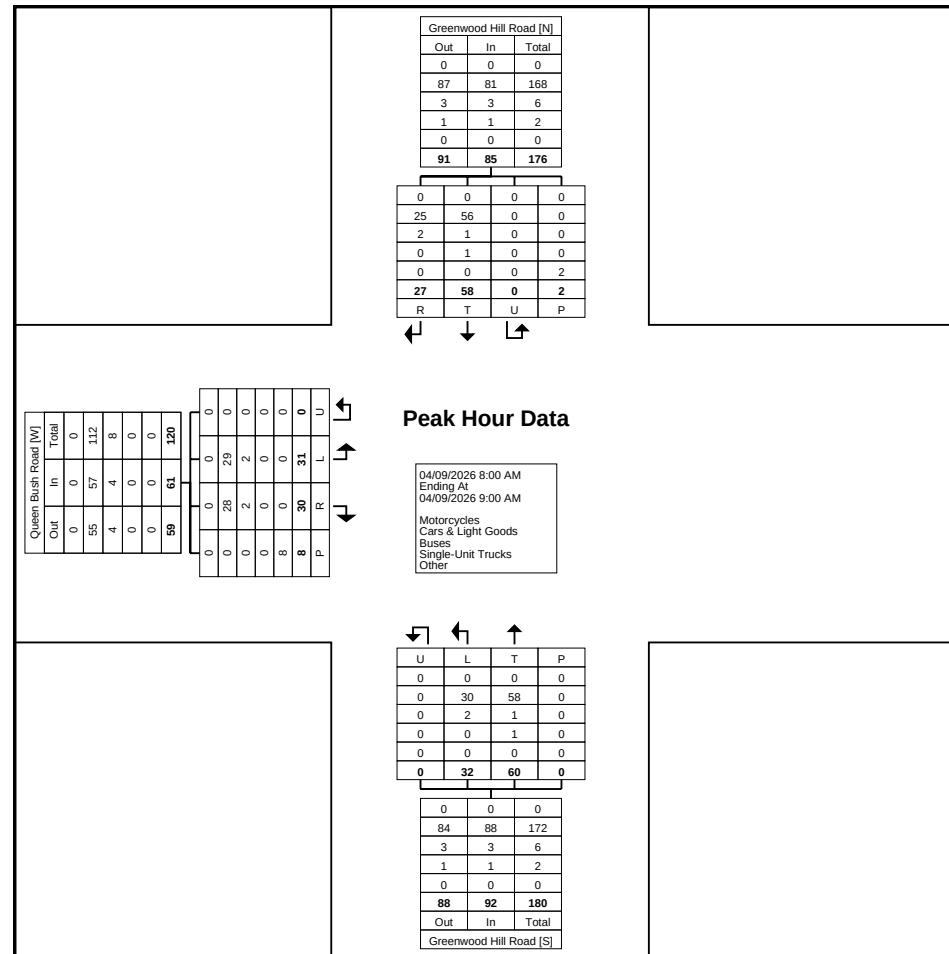
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Turning Movement Peak Hour Data Plot (8:00 AM)



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Bush Road
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Start Date: 04/09/2026
Page No: 6

Turning Movement Peak Hour Data (12:30 PM)

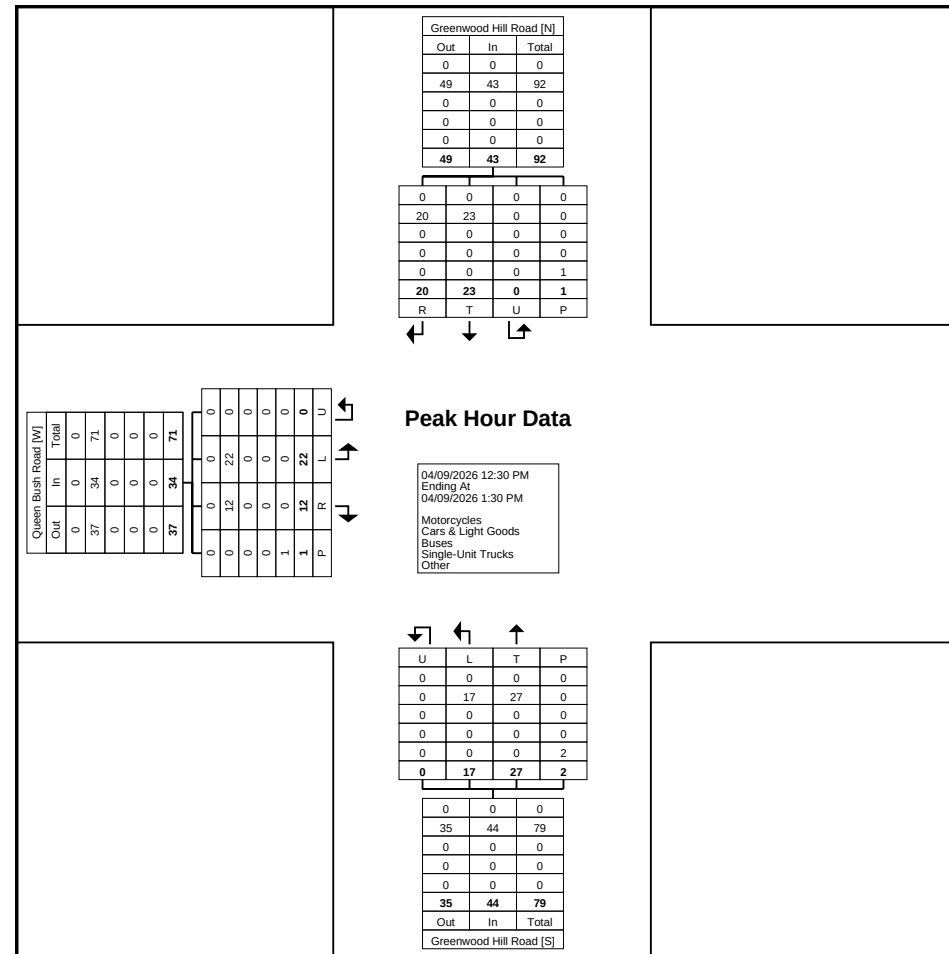
Start Time	Queen Bush Road Eastbound					Greenwood Hill Road Northbound					Greenwood Hill Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
12:30 PM	7	2	0	0	9	8	7	0	0	15	5	7	0	0	12	36
12:45 PM	1	2	0	1	3	0	10	0	2	10	6	6	0	1	12	25
1:00 PM	5	4	0	0	9	7	3	0	0	10	6	3	0	0	9	28
1:15 PM	9	4	0	0	13	2	7	0	0	9	6	4	0	0	10	32
Total	22	12	0	1	34	17	27	0	2	44	23	20	0	1	43	121
Approach %	64.7	35.3	0.0	-	-	38.6	61.4	0.0	-	-	53.5	46.5	0.0	-	-	-
Total %	18.2	9.9	0.0	-	28.1	14.0	22.3	0.0	-	36.4	19.0	16.5	0.0	-	35.5	-
PHF	0.611	0.750	0.000	-	0.654	0.531	0.675	0.000	-	0.733	0.958	0.714	0.000	-	0.896	0.840
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	22	12	0	-	34	17	27	0	-	44	23	20	0	-	43	121
% Cars & Light Goods	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



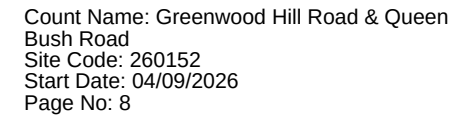
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Greenwood Hill Road & Queen
Bush Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 7



Turning Movement Peak Hour Data Plot (12:30 PM)

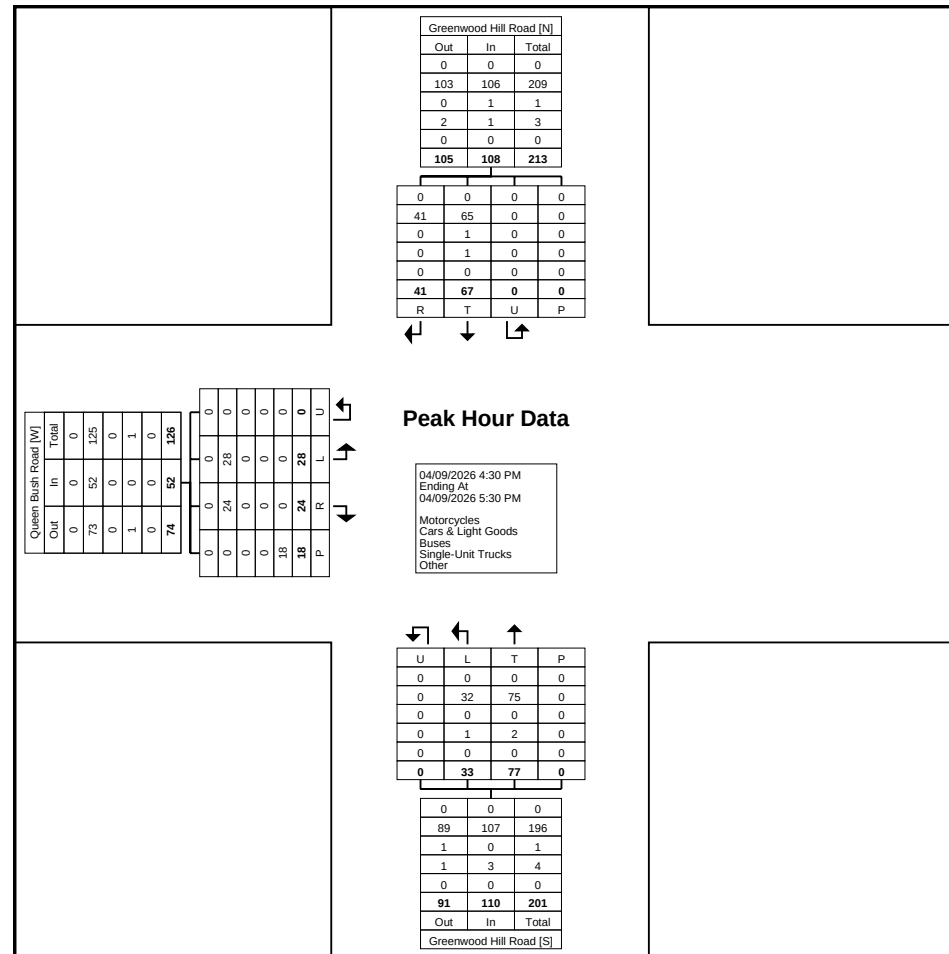
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Count Name: Greenwood Hill Road & Queen
Bush Road
Site Code: 260152
Start Date: 04/09/2026
Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)

Appendix C

Base Year Traffic Operations Reports



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	60	66	30	26	39	66	53	41	98	3
Future Volume (vph)	0	57	60	66	30	26	39	66	53	41	98	3
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.931			0.971			0.933			0.996	
Flt Protected					0.974		0.950			0.950		
Satd. Flow (prot)	0	1413	0	0	1426	0	1619	1312	0	1588	1550	0
Flt Permitted					0.974		0.950			0.950		
Satd. Flow (perm)	0	1413	0	0	1426	0	1619	1312	0	1588	1550	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	3%	0%	0%	3%	12%	21%	5%	5%	0%
Adj. Flow (vph)	0	57	60	66	30	26	39	66	53	41	98	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	117	0	0	122	0	39	119	0	41	101	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.8% ICU Level of Service A

Analysis Period (min) 15

Intersection

Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	57	60	66	30	26	39	66	53	41	98	3
Future Vol, veh/h	0	57	60	66	30	26	39	66	53	41	98	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	2	0	3	0	0	3	12	21	5	5	0
Mvmt Flow	0	57	60	66	30	26	39	66	53	41	98	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	8.4	8.8	8.9	9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	54%	100%	0%
Vol Thru, %	0%	55%	49%	25%	0%	97%
Vol Right, %	0%	45%	51%	21%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	119	117	122	41	101
LT Vol	39	0	0	66	41	0
Through Vol	0	66	57	30	0	98
RT Vol	0	53	60	26	0	3
Lane Flow Rate	39	119	117	122	41	101
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.063	0.169	0.148	0.164	0.066	0.148
Departure Headway (Hd)	5.772	5.108	4.543	4.833	5.818	5.293
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	619	700	786	741	614	675
Service Time	3.523	2.859	2.586	2.876	3.571	3.046
HCM Lane V/C Ratio	0.063	0.17	0.149	0.165	0.067	0.15
HCM Control Delay, s/veh	8.9	8.9	8.4	8.8	9	9
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.6	0.5	0.6	0.2	0.5

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	151	47	34	114	31
Future Volume (vph)	28	151	47	34	114	31
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.943		0.971	
Flt Protected		0.992			0.962	
Satd. Flow (prot)	0	1530	1477	0	1595	0
Flt Permitted		0.992			0.962	
Satd. Flow (perm)	0	1530	1477	0	1595	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	21%	3%	0%	10%	2%	3%
Adj. Flow (vph)	28	151	47	34	114	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	179	81	0	145	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	151	47	34	114	31
Future Vol, veh/h	28	151	47	34	114	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	21	3	0	10	2	3
Mvmt Flow	28	151	47	34	114	31

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	81	0	0 271 64
Stage 1	-	-	- 64 -
Stage 2	-	-	- 207 -
Critical Hdwy	4.31	-	- 6.42 6.23
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.389	-	- 3.518 3.327
Pot Cap-1 Maneuver	1405	-	- 718 998
Stage 1	-	-	- 959 -
Stage 2	-	-	- 828 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1405	-	- 703 998
Mov Cap-2 Maneuver	-	-	- 703 -
Stage 1	-	-	- 938 -
Stage 2	-	-	- 828 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	1.19	0	10.95
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	282	-	-	-	750
HCM Lane V/C Ratio	0.02	-	-	-	0.193
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	29	4	58	116	7
Future Volume (vph)	18	29	4	58	116	7
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.917				0.992	
Flt Protected	0.981			0.997		
Satd. Flow (prot)	1570	0	0	1527	1574	0
Flt Permitted	0.981			0.997		
Satd. Flow (perm)	1570	0	0	1527	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	149.0			196.7	93.5	
Travel Time (s)	10.7			14.2	6.7	
Confl. Peds. (#/hr)			8			8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	7%	3%	0%
Adj. Flow (vph)	18	29	4	58	116	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	0	0	62	123	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	29	4	58	116	7
Future Vol, veh/h	18	29	4	58	116	7
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	18	29	4	58	116	7

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	194	128	131
Stage 1	128	-	-
Stage 2	66	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	800	928	1467
Stage 1	903	-	-
Stage 2	962	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	792	922	1457
Mov Cap-2 Maneuver	792	-	-
Stage 1	895	-	-
Stage 2	962	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.39	0.48	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	116	-	867	-	-
HCM Lane V/C Ratio	0.003	-	0.054	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	25	4	72	98	3
Future Volume (vph)	20	25	4	72	98	3
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925				0.996	
Flt Protected	0.978			0.997		
Satd. Flow (prot)	1579	0	0	1539	1550	0
Flt Permitted	0.978			0.997		
Satd. Flow (perm)	1579	0	0	1539	1550	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	154.3			93.5	330.7	
Travel Time (s)	11.1			6.7	23.8	
Confl. Peds. (#/hr)			10			10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	6%	4%	33%
Adj. Flow (vph)	20	25	4	72	98	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	0	76	101	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	25	4	72	98	3
Future Vol, veh/h	20	25	4	72	98	3
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	6	4	33
Mvmt Flow	20	25	4	72	98	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	190	110	111
Stage 1	110	-	-
Stage 2	80	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	804	950	1492
Stage 1	920	-	-
Stage 2	948	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	795	941	1479
Mov Cap-2 Maneuver	795	-	-
Stage 1	910	-	-
Stage 2	948	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.36	0.39	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	95	-	870	-	-
HCM Lane V/C Ratio	0.003	-	0.052	-	-
HCM Ctrl Dly (s/v)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	34	32	60	67	27
Future Volume (vph)	31	34	32	60	67	27
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.929				0.961	
Flt Protected	0.977			0.983		
Satd. Flow (prot)	1481	0	0	1542	1506	0
Flt Permitted	0.977			0.983		
Satd. Flow (perm)	1481	0	0	1542	1506	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)	2		8			8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	6%	3%	3%	7%
Adj. Flow (vph)	31	34	32	60	67	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	92	94	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	34	32	60	67	27
Future Vol, veh/h	31	34	32	60	67	27
Conflicting Peds, #/hr	2	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	7	6	3	3	7
Mvmt Flow	31	34	32	60	67	27

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	215	89	102
Stage 1	89	-	-
Stage 2	126	-	-
Critical Hdwy	6.47	6.27	4.16
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.363	2.254
Pot Cap-1 Maneuver	763	956	1465
Stage 1	923	-	-
Stage 2	887	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	739	950	1455
Mov Cap-2 Maneuver	739	-	-
Stage 1	895	-	-
Stage 2	886	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.67	2.62	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	626	-	836	-	-
HCM Lane V/C Ratio	0.022	-	0.078	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	33	64	58	64	52	65	95	78	45	69	8
Future Volume (vph)	6	33	64	58	64	52	65	95	78	45	69	8
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.916			0.960			0.932			0.984	
Flt Protected		0.997			0.984		0.950			0.950		
Satd. Flow (prot)	0	1383	0	0	1410	0	1635	1471	0	1668	1474	0
Flt Permitted		0.997			0.984		0.950			0.950		
Satd. Flow (perm)	0	1383	0	0	1410	0	1635	1471	0	1668	1474	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	3%	3%	2%	2%	2%	5%	0%	10%	0%
Adj. Flow (vph)	6	33	64	58	64	52	65	95	78	45	69	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	174	0	65	173	0	45	77	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 43.2% ICU Level of Service A

Analysis Period (min) 15

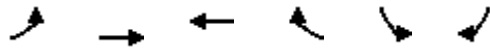
Intersection

Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	33	64	58	64	52	65	95	78	45	69	8
Future Vol, veh/h	6	33	64	58	64	52	65	95	78	45	69	8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	2	3	3	2	2	2	5	0	10	0
Mvmt Flow	6	33	64	58	64	52	65	95	78	45	69	8
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	8.5	9.4	9.4	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	6%	33%	100%	0%
Vol Thru, %	0%	55%	32%	37%	0%	90%
Vol Right, %	0%	45%	62%	30%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	173	103	174	45	77
LT Vol	65	0	6	58	45	0
Through Vol	0	95	33	64	0	69
RT Vol	0	78	64	52	0	8
Lane Flow Rate	65	173	103	174	45	77
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.105	0.241	0.133	0.235	0.074	0.118
Departure Headway (Hd)	5.838	5.016	4.664	4.859	5.922	5.516
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	611	711	763	736	601	645
Service Time	3.603	2.78	2.727	2.914	3.694	3.287
HCM Lane V/C Ratio	0.106	0.243	0.135	0.236	0.075	0.119
HCM Control Delay, s/veh	9.3	9.4	8.5	9.4	9.2	9
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.9	0.5	0.9	0.2	0.4



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	32	73	142	118	57	29
Future Volume (vph)	32	73	142	118	57	29
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.939		0.954	
Flt Protected		0.985			0.968	
Satd. Flow (prot)	0	1596	1499	0	1550	0
Flt Permitted		0.985			0.968	
Satd. Flow (perm)	0	1596	1499	0	1550	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	4%	4%
Adj. Flow (vph)	32	73	142	118	57	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	105	260	0	86	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.7% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	73	142	118	57	29
Future Vol, veh/h	32	73	142	118	57	29
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	4	0	4	4
Mvmt Flow	32	73	142	118	57	29

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	261	0	0 339 202
Stage 1	-	-	- 202 -
Stage 2	-	-	- 137 -
Critical Hdwy	4.1	-	- 6.44 6.24
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	2.2	-	- 3.536 3.336
Pot Cap-1 Maneuver	1315	-	- 653 834
Stage 1	-	-	- 827 -
Stage 2	-	-	- 885 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1314	-	- 636 833
Mov Cap-2 Maneuver	-	-	- 636 -
Stage 1	-	-	- 805 -
Stage 2	-	-	- 885 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	2.38	0	10.95
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	549	-	-	-	691
HCM Lane V/C Ratio	0.024	-	-	-	0.124
HCM Ctrl Dly (s/v)	7.8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	12	22	128	74	10
Future Volume (vph)	5	12	22	128	74	10
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.984	
Flt Protected	0.986			0.993		
Satd. Flow (prot)	1471	0	0	1593	1592	0
Flt Permitted	0.986			0.993		
Satd. Flow (perm)	1471	0	0	1593	1592	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	149.0			196.7	93.5	
Travel Time (s)	10.7			14.2	6.7	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	0%	0%	2%	1%	0%
Adj. Flow (vph)	5	12	22	128	74	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	150	84	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	25.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	12	22	128	74	10
Future Vol, veh/h	5	12	22	128	74	10
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	0	0	2	1	0
Mvmt Flow	5	12	22	128	74	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	255	83	88
Stage 1	83	-	-
Stage 2	172	-	-
Critical Hdwy	6.6	6.2	4.1
Critical Hdwy Stg 1	5.6	-	-
Critical Hdwy Stg 2	5.6	-	-
Follow-up Hdwy	3.68	3.3	2.2
Pot Cap-1 Maneuver	696	982	1520
Stage 1	897	-	-
Stage 2	816	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	683	979	1515
Mov Cap-2 Maneuver	683	-	-
Stage 1	880	-	-
Stage 2	816	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.23	1.09	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	264	-	868	-	-
HCM Lane V/C Ratio	0.015	-	0.02	-	-
HCM Ctrl Dly (s/v)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	5	27	106	79	14
Future Volume (vph)	8	5	27	106	79	14
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.980	
Flt Protected	0.970			0.990		
Satd. Flow (prot)	1605	0	0	1578	1569	0
Flt Permitted	0.970			0.990		
Satd. Flow (perm)	1605	0	0	1578	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	154.3			93.5	330.7	
Travel Time (s)	11.1			6.7	23.8	
Confl. Peds. (#/hr)			10			10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	3%	1%	7%
Adj. Flow (vph)	8	5	27	106	79	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	0	133	93	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	5	27	106	79	14
Future Vol, veh/h	8	5	27	106	79	14
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	3	1	7
Mvmt Flow	8	5	27	106	79	14

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	256	96	103
Stage 1	96	-	-
Stage 2	160	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	737	966	1502
Stage 1	933	-	-
Stage 2	874	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	717	958	1489
Mov Cap-2 Maneuver	717	-	-
Stage 1	907	-	-
Stage 2	874	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.61	1.51	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	365	-	794	-	-
HCM Lane V/C Ratio	0.018	-	0.016	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	34	80	69	41
Future Volume (vph)	28	24	34	80	69	41
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.938				0.950	
Flt Protected	0.974			0.985		
Satd. Flow (prot)	1595	0	0	1560	1521	0
Flt Permitted	0.974			0.985		
Satd. Flow (perm)	1595	0	0	1560	1521	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	3%	3%	0%
Adj. Flow (vph)	28	24	34	80	69	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	114	110	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	24	34	80	69	41
Future Vol, veh/h	28	24	34	80	69	41
Conflicting Peds, #/hr	0	0	18	0	0	18
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	3	3	0
Mvmt Flow	28	24	34	80	69	41

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	256	108	128
Stage 1	108	-	-
Stage 2	148	-	-
Critical Hdwy	6.4	6.2	4.13
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.227
Pot Cap-1 Maneuver	738	952	1452
Stage 1	922	-	-
Stage 2	884	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	708	937	1430
Mov Cap-2 Maneuver	708	-	-
Stage 1	885	-	-
Stage 2	884	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.82	2.26	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	537	-	798	-	-
HCM Lane V/C Ratio	0.024	-	0.065	-	-
HCM Ctrl Dly (s/v)	7.6	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

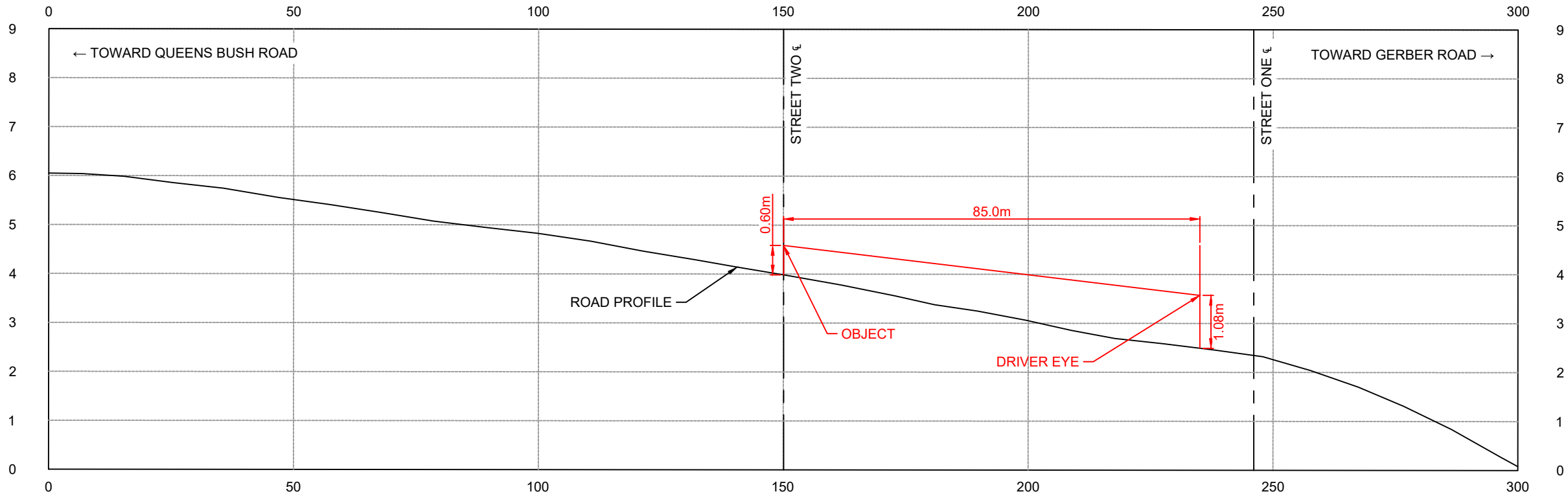
Appendix D

Sight Distance Profiles



THIS DRAWING HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

MINIMUM STOPPING SIGHT DISTANCE
NORTHBOUND - STREET TWO
(VEHICLE APPROACHING DRIVEWAY)



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

NO.	DATE	INITIAL	REVISION DETAIL

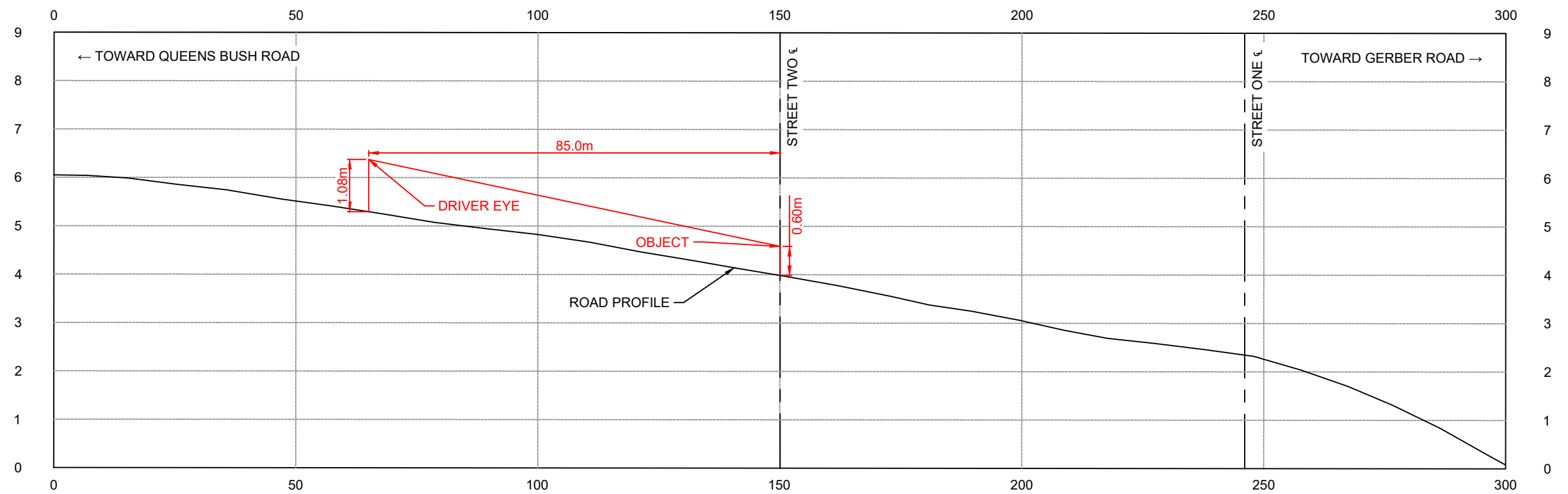
SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 01
DESIGN: DC	DRAWN: DC	CHECK: AS	

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MINIMUM STOPPING SIGHT DISTANCE
SOUTHBOUND - STREET TWO
(VEHICLE APPROACHING DRIVEWAY)



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

NO.	DATE	INITIAL	REVISION DETAIL

SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY

	PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 02
	DESIGN: DC	DRAWN: DC	CHECK: AS	

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INTERSECTION SIGHT DISTANCE
RIGHT-TURN FROM STOP - STREET TWO
(DRIVER LOOKING LEFT TO TURN RIGHT) - DIM CONDITIONS



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

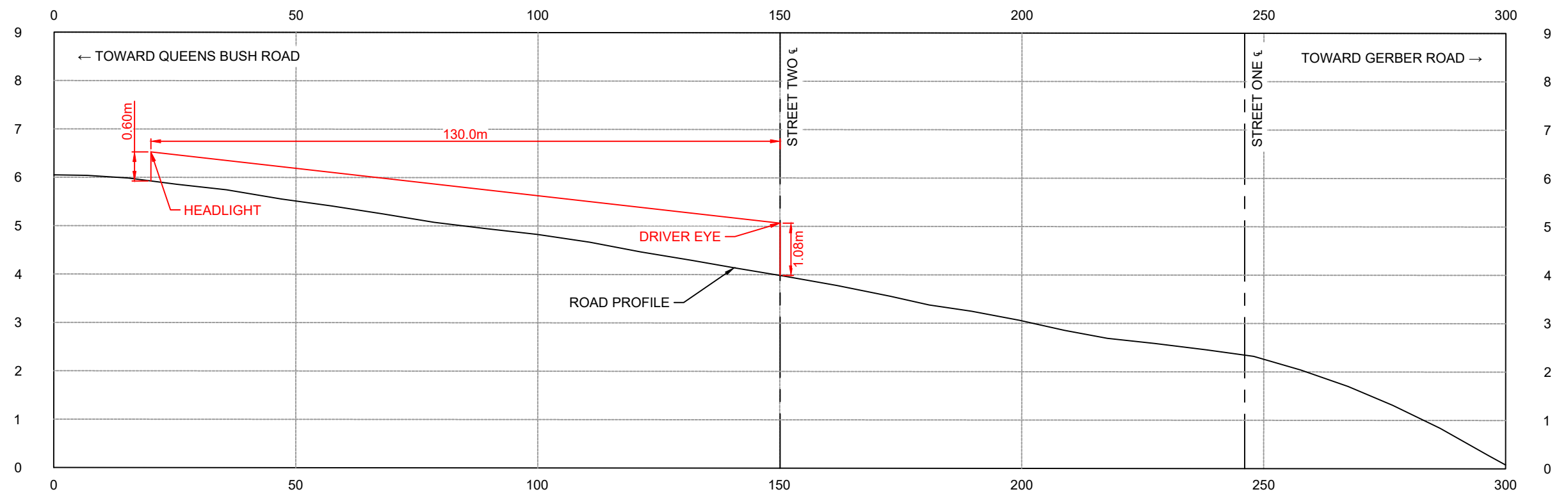
NO.	DATE	INITIAL	REVISION DETAIL

SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 03
DESIGN: DC	DRAWN: DC	CHECK: AS	

INTERSECTION SIGHT DISTANCE
LEFT-TURN FROM STOP - STREET TWO
(DRIVER LOOKING RIGHT TO TURN LEFT) - DIM CONDITIONS



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

NO.	DATE	INITIAL	REVISION DETAIL

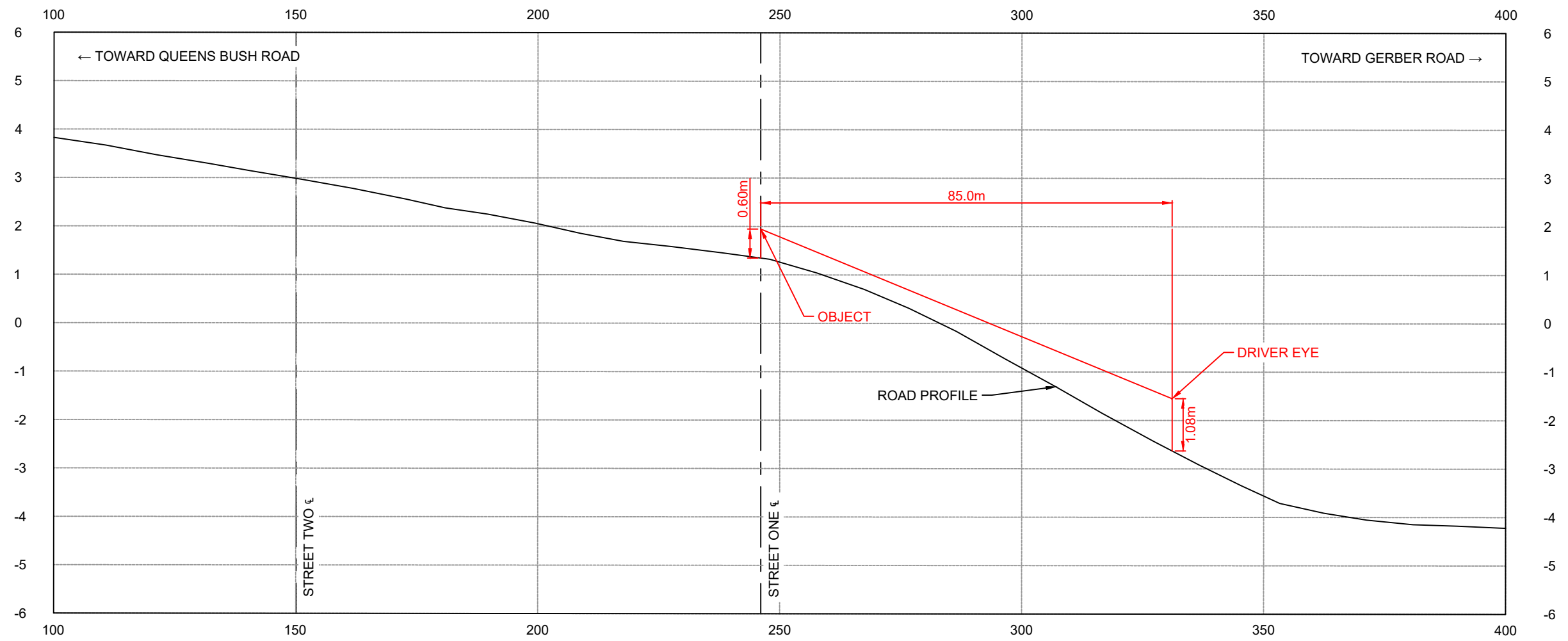
SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 04
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MINIMUM STOPPING SIGHT DISTANCE
NORTHBOUND - STREET ONE
(VEHICLE APPROACHING DRIVEWAY)



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

NO.	DATE	INITIAL	REVISION DETAIL

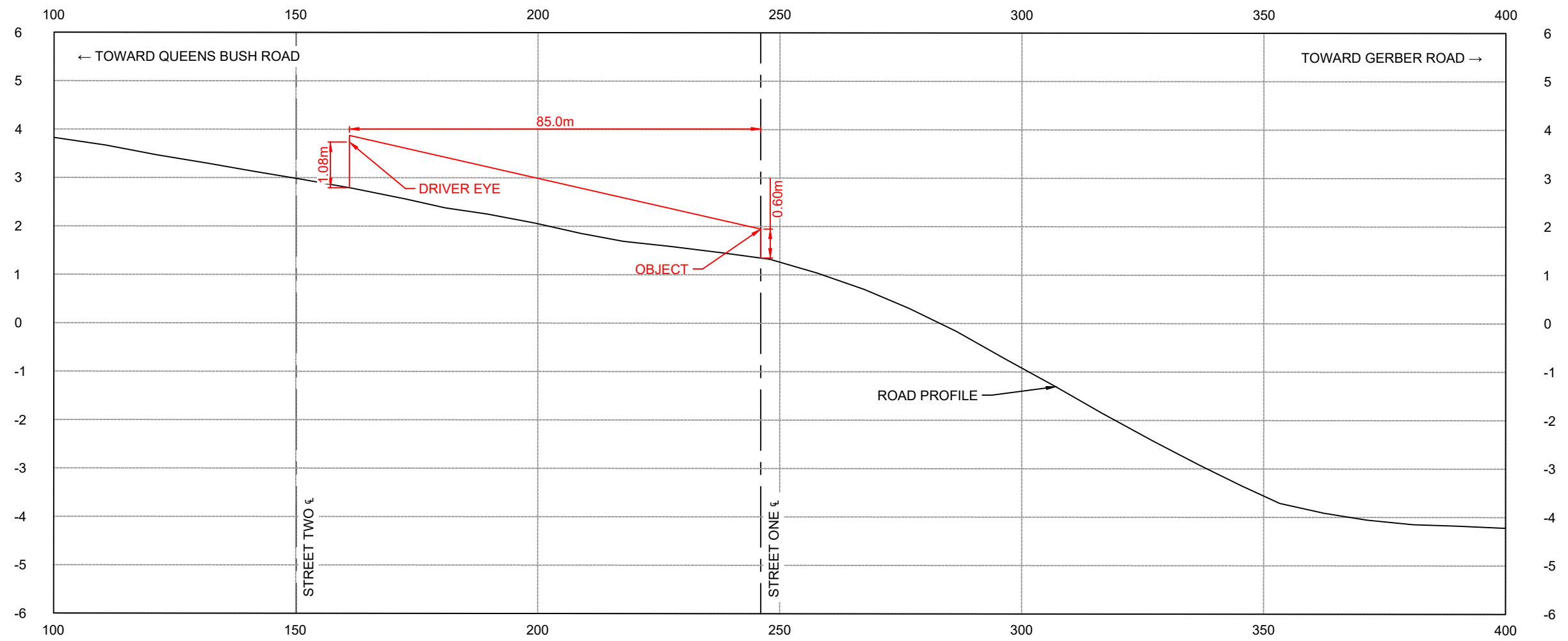
SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 05
DESIGN: DC	DRAWN: DC	CHECK: AS	

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MINIMUM STOPPING SIGHT DISTANCE
SOUTHBOUND - STREET ONE
(VEHICLE APPROACHING DRIVEWAY)



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

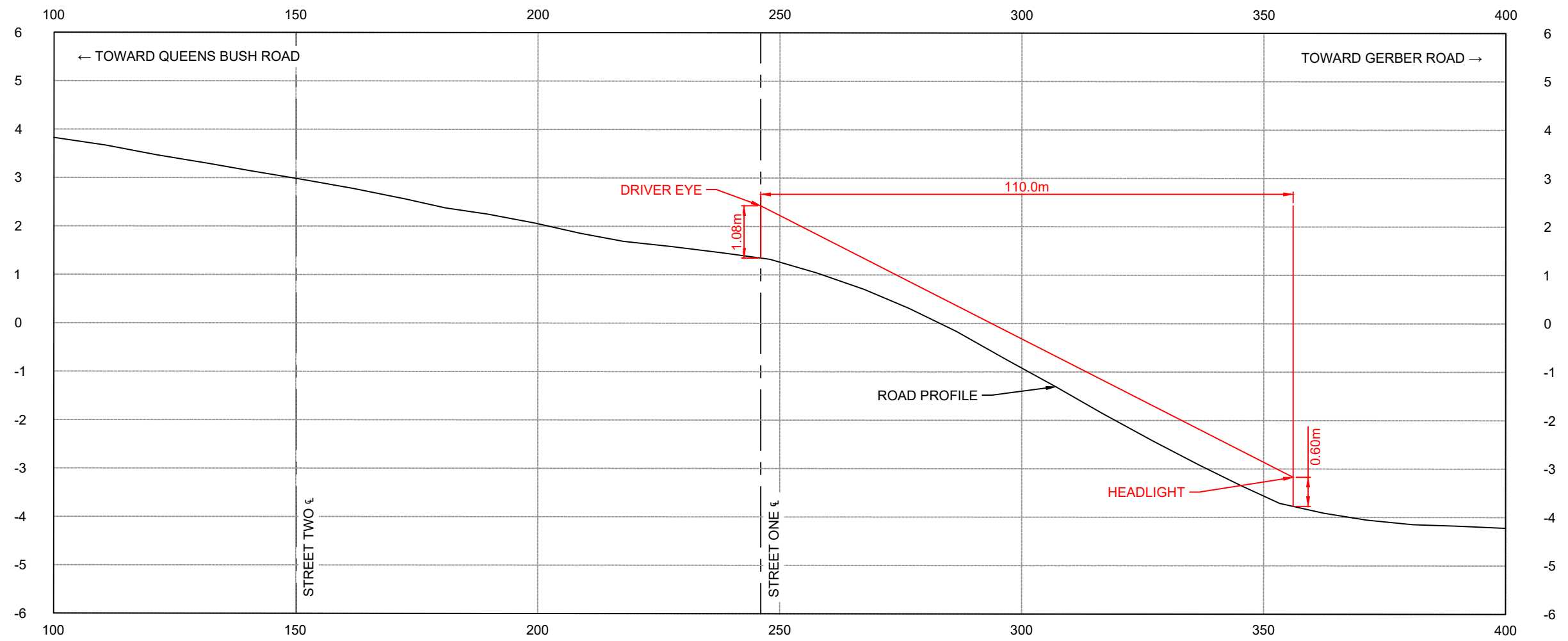
NO.	DATE	INITIAL	REVISION DETAIL

SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 06
DESIGN: DC	DRAWN: DC	CHECK: AS	

INTERSECTION SIGHT DISTANCE
RIGHT-TURN FROM STOP - STREET ONE
(DRIVER LOOKING LEFT TO TURN RIGHT) - DIM CONDITIONS



NO.	DATE	INITIAL	REVISION DETAIL

SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152

DATE: APR 2026

SCALE: 1:1000
SCALE: VERTICAL: 10:1

DRAWING NO.:

DESIGN: DC

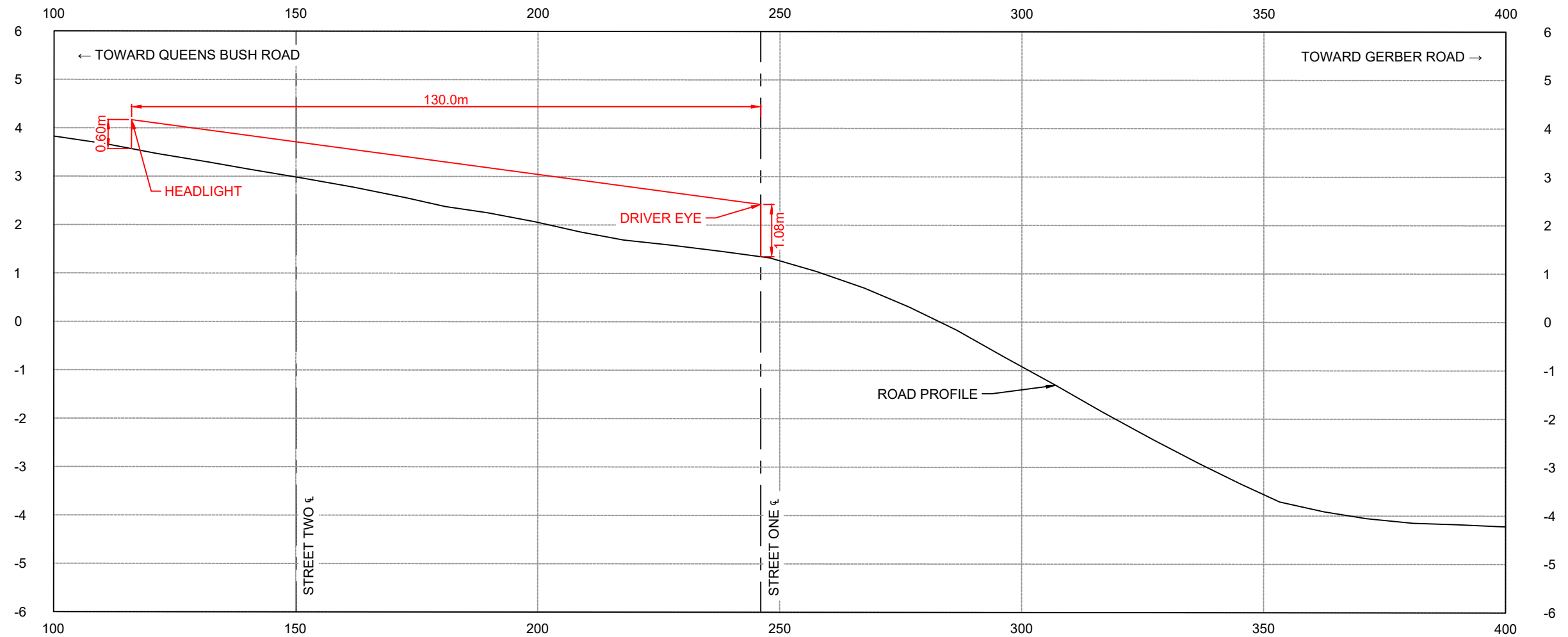
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07

THIS DRAWING HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

INTERSECTION SIGHT DISTANCE
LEFT-TURN FROM STOP - STREET ONE
(DRIVER LOOKING RIGHT TO TURN LEFT) - DIM CONDITIONS



ROAD PROFILE DATA COLLECTED BY:
PARADIGM TRANSPORTATION SOLUTIONS LIMITED
USING MOASURE DATA, 2026-04-09

NO.	DATE	INITIAL	REVISION DETAIL

SIGHT DISTANCE ASSESSMENT
1949 GERBER ROAD
TOWNSHIP OF WELLESLEY



PROJECT NO.: 260152	DATE: APR 2026	SCALE: 1:1000 SCALE: VERTICAL: 10:1	DRAWING NO.: 08
DESIGN: DC	DRAWN: DC	CHECK: AS	

Appendix E

Internal Capture Calculations



NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	1949 Gerber Road	Organization:	PTSL (260152)		
Project Location:	Wellesley	Performed By:			
Scenario Description:		Date:			
Analysis Year:		Checked By:			
Analysis Period:	AM Street Peak Hour	Date:			

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821	62,172		97	65	32
Restaurant				0		
Cinema/Entertainment				0		
Residential	210		185	130	35	95
Hotel				0		
All Other Land Uses ²				0		
Total				227	100	127

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00			1.00		
Restaurant						
Cinema/Entertainment						
Residential	1.00			1.00		
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	227	100	127
Internal Capture Percentage	2%	2%	2%
External Vehicle-Trips ³	223	98	125
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	2%	3%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	1%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Informational Report</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
³ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
⁴ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
<i>Estimation Tool Developed by the Texas Transportation Institute</i>

Project Name:	1949 Gerber Road
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	65	65	1.00	32	32
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	35	35	1.00	95	95
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	9		4	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	19	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		21	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	5		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	11	0	0		0
Hotel	0	3	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	64	65	64	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	34	35	34	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	31	32	31	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	94	95	94	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	1949 Gerber Road			Organization:	PTSL (260152)
Project Location:	Wellesley			Performed By:	
Scenario Description:				Date:	
Analysis Year:				Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821	62,172		355	192	163
Restaurant				0		
Cinema/Entertainment				0		
Residential	210		185	169	105	64
Hotel				0		
All Other Land Uses ²				0		
Total				524	297	227

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00			1.00		
Restaurant						
Cinema/Entertainment						
Residential	1.00			1.00		
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					0	
Restaurant						
Cinema/Entertainment						
Residential		0				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	42	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	19	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	524	297	227
Internal Capture Percentage	23%	21%	27%
External Vehicle-Trips ³	402	236	166
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	40%	30%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Informational Report</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
³ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P
⁴ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
<i>Estimation Tool Developed by the Texas Transportation Institute</i>

Project Name:	1949 Gerber Road
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	192	192	1.00	163	163
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	105	105	1.00	64	64
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		47	7	42	8
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	27	13	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		15	0	0	4	0
Retail	0		0	0	48	0
Restaurant	0	96		0	17	0
Cinema/Entertainment	0	8	0		4	0
Residential	0	19	0	0		0
Hotel	0	4	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	19	173	192	173	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	42	63	105	63	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	42	121	163	121	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	19	45	64	45	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix F

Background Traffic Operations Reports



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	65	69	76	34	30	45	76	61	47	113	3
Future Volume (vph)	0	65	69	76	34	30	45	76	61	47	113	3
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.930			0.971			0.933			0.996	
Flt Protected					0.974		0.950			0.950		
Satd. Flow (prot)	0	1412	0	0	1426	0	1619	1312	0	1588	1550	0
Flt Permitted					0.974		0.950			0.950		
Satd. Flow (perm)	0	1412	0	0	1426	0	1619	1312	0	1588	1550	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	3%	0%	0%	3%	12%	21%	5%	5%	0%
Adj. Flow (vph)	0	65	69	76	34	30	45	76	61	47	113	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	0	140	0	45	137	0	47	116	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.7% ICU Level of Service A

Analysis Period (min) 15

Intersection

Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	65	69	76	34	30	45	76	61	47	113	3
Future Vol, veh/h	0	65	69	76	34	30	45	76	61	47	113	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	2	0	3	0	0	3	12	21	5	5	0
Mvmt Flow	0	65	69	76	34	30	45	76	61	47	113	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	8.8	9.3	9.3	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	54%	100%	0%
Vol Thru, %	0%	55%	49%	24%	0%	97%
Vol Right, %	0%	45%	51%	21%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	137	134	140	47	116
LT Vol	45	0	0	76	47	0
Through Vol	0	76	65	34	0	113
RT Vol	0	61	69	30	0	3
Lane Flow Rate	45	137	134	140	47	116
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.074	0.199	0.175	0.194	0.078	0.175
Departure Headway (Hd)	5.898	5.234	4.691	4.979	5.948	5.425
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	604	681	760	717	599	657
Service Time	3.67	3.005	2.754	3.041	3.721	3.198
HCM Lane V/C Ratio	0.075	0.201	0.176	0.195	0.078	0.177
HCM Control Delay, s/veh	9.1	9.3	8.8	9.3	9.2	9.4
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.7	0.6	0.7	0.3	0.6

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	32	173	54	39	131	36
Future Volume (vph)	32	173	54	39	131	36
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.943		0.971	
Flt Protected		0.992			0.962	
Satd. Flow (prot)	0	1530	1477	0	1595	0
Flt Permitted		0.992			0.962	
Satd. Flow (perm)	0	1530	1477	0	1595	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	21%	3%	0%	10%	2%	3%
Adj. Flow (vph)	32	173	54	39	131	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	205	93	0	167	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	173	54	39	131	36
Future Vol, veh/h	32	173	54	39	131	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	21	3	0	10	2	3
Mvmt Flow	32	173	54	39	131	36

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	93	0	0 311 74
Stage 1	-	-	- 74 -
Stage 2	-	-	- 237 -
Critical Hdwy	4.31	-	- 6.42 6.23
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.389	-	- 3.518 3.327
Pot Cap-1 Maneuver	1390	-	- 682 986
Stage 1	-	-	- 949 -
Stage 2	-	-	- 802 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1390	-	- 665 986
Mov Cap-2 Maneuver	-	-	- 665 -
Stage 1	-	-	- 925 -
Stage 2	-	-	- 802 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	1.19	0	11.57
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	281	-	-	-	715
HCM Lane V/C Ratio	0.023	-	-	-	0.234
HCM Ctrl Dly (s/v)	7.7	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

								
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (vph)	21	33	5	67	133	8		
Future Volume (vph)	21	33	5	67	133	8		
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor								
Frt	0.917					0.992		
Flt Protected	0.981					0.997		
Satd. Flow (prot)	1570	0	0	1527	1574	0		
Flt Permitted	0.981					0.997		
Satd. Flow (perm)	1570	0	0	1527	1574	0		
Link Speed (k/h)	50					50		
Link Distance (m)	149.0					93.5		
Travel Time (s)	10.7					6.7		
Confl. Peds. (#/hr)			8					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Heavy Vehicles (%)	0%	0%	0%	7%	3%	0%		
Adj. Flow (vph)	21	33	5	67	133	8		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	54	0	0	72	141	0		
Sign Control	Stop			Free	Free			
Intersection Summary								
Area Type:	Other							
Control Type:	Unsignalized							
Intersection Capacity Utilization	19.9%			ICU Level of Service A				
Analysis Period (min)	15							

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	33	5	67	133	8
Future Vol, veh/h	21	33	5	67	133	8
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	21	33	5	67	133	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	222	145	149
Stage 1	145	-	-
Stage 2	77	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	771	908	1445
Stage 1	887	-	-
Stage 2	951	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	763	901	1435
Mov Cap-2 Maneuver	763	-	-
Stage 1	878	-	-
Stage 2	951	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.57	0.52	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	125	-	842	-	-
HCM Lane V/C Ratio	0.003	-	0.064	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	29	5	83	113	3
Future Volume (vph)	23	29	5	83	113	3
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925				0.997	
Flt Protected	0.978			0.997		
Satd. Flow (prot)	1579	0	0	1540	1553	0
Flt Permitted	0.978			0.997		
Satd. Flow (perm)	1579	0	0	1540	1553	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	154.3			93.5	330.7	
Travel Time (s)	11.1			6.7	23.8	
Confl. Peds. (#/hr)			10			10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	6%	4%	33%
Adj. Flow (vph)	23	29	5	83	113	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	88	116	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	29	5	83	113	3
Future Vol, veh/h	23	29	5	83	113	3
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	6	4	33
Mvmt Flow	23	29	5	83	113	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	218	125	126
Stage 1	125	-	-
Stage 2	93	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	775	932	1473
Stage 1	906	-	-
Stage 2	936	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	766	924	1460
Mov Cap-2 Maneuver	766	-	-
Stage 1	895	-	-
Stage 2	936	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.53	0.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	102	-	847	-	-
HCM Lane V/C Ratio	0.003	-	0.061	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	39	37	69	77	31
Future Volume (vph)	36	39	37	69	77	31
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.930				0.961	
Flt Protected	0.977			0.983		
Satd. Flow (prot)	1482	0	0	1542	1506	0
Flt Permitted	0.977			0.983		
Satd. Flow (perm)	1482	0	0	1542	1506	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)	2		8			8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	6%	3%	3%	7%
Adj. Flow (vph)	36	39	37	69	77	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	106	108	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	39	37	69	77	31
Future Vol, veh/h	36	39	37	69	77	31
Conflicting Peds, #/hr	2	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	7	6	3	3	7
Mvmt Flow	36	39	37	69	77	31

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	246	101	116
Stage 1	101	-	-
Stage 2	145	-	-
Critical Hdwy	6.47	6.27	4.16
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.363	2.254
Pot Cap-1 Maneuver	732	941	1448
Stage 1	911	-	-
Stage 2	870	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	706	935	1438
Mov Cap-2 Maneuver	706	-	-
Stage 1	881	-	-
Stage 2	869	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.9	2.64	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	628	-	809	-	-
HCM Lane V/C Ratio	0.026	-	0.093	-	-
HCM Ctrl Dly (s/v)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lanes, Volumes, Timings
1: Nafziger Road & Gerber Road

1949 Gerber Road, Wellesley TIS
Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	38	74	67	74	60	75	109	90	52	79	9
Future Volume (vph)	7	38	74	67	74	60	75	109	90	52	79	9
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.916			0.960			0.932			0.985	
Flt Protected		0.997			0.984		0.950			0.950		
Satd. Flow (prot)	0	1383	0	0	1410	0	1635	1471	0	1668	1475	0
Flt Permitted		0.997			0.984		0.950			0.950		
Satd. Flow (perm)	0	1383	0	0	1410	0	1635	1471	0	1668	1475	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	3%	3%	2%	2%	2%	5%	0%	10%	0%
Adj. Flow (vph)	7	38	74	67	74	60	75	109	90	52	79	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	201	0	75	199	0	52	88	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.8% ICU Level of Service A

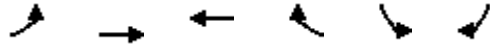
Analysis Period (min) 15

Intersection

Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	38	74	67	74	60	75	109	90	52	79	9
Future Vol, veh/h	7	38	74	67	74	60	75	109	90	52	79	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	2	3	3	2	2	2	5	0	10	0
Mvmt Flow	7	38	74	67	74	60	75	109	90	52	79	9
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay, s/veh	8.9			10.1			9.9			9.5		
HCM LOS	A			B			A			A		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	6%	33%	100%	0%
Vol Thru, %	0%	55%	32%	37%	0%	90%
Vol Right, %	0%	45%	62%	30%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	199	119	201	52	88
LT Vol	75	0	7	67	52	0
Through Vol	0	109	38	74	0	79
RT Vol	0	90	74	60	0	9
Lane Flow Rate	75	199	119	201	52	88
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.125	0.285	0.16	0.281	0.09	0.142
Departure Headway (Hd)	5.989	5.164	4.855	5.028	6.202	5.796
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	593	689	728	708	581	622
Service Time	3.784	2.958	2.952	3.112	3.902	3.496
HCM Lane V/C Ratio	0.126	0.289	0.163	0.284	0.09	0.141
HCM Control Delay, s/veh	9.7	10	8.9	10.1	9.5	9.5
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0.4	1.2	0.6	1.2	0.3	0.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	37	84	163	136	65	33
Future Volume (vph)	37	84	163	136	65	33
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.939		0.955	
Flt Protected		0.985			0.968	
Satd. Flow (prot)	0	1596	1499	0	1551	0
Flt Permitted		0.985			0.968	
Satd. Flow (perm)	0	1596	1499	0	1551	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	4%	4%
Adj. Flow (vph)	37	84	163	136	65	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	121	299	0	98	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 43.0% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	84	163	136	65	33
Future Vol, veh/h	37	84	163	136	65	33
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	4	0	4	4
Mvmt Flow	37	84	163	136	65	33

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	300	0	0 390 232
Stage 1	-	-	- 232 -
Stage 2	-	-	- 158 -
Critical Hdwy	4.1	-	- 6.44 6.24
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	2.2	-	- 3.536 3.336
Pot Cap-1 Maneuver	1273	-	- 610 802
Stage 1	-	-	- 802 -
Stage 2	-	-	- 866 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1272	-	- 591 802
Mov Cap-2 Maneuver	-	-	- 591 -
Stage 1	-	-	- 777 -
Stage 2	-	-	- 866 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	2.42	0	11.54
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	550	-	-	-	648
HCM Lane V/C Ratio	0.029	-	-	-	0.151
HCM Ctrl Dly (s/v)	7.9	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	14	25	147	85	11
Future Volume (vph)	6	14	25	147	85	11
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.985	
Flt Protected	0.985			0.993		
Satd. Flow (prot)	1468	0	0	1593	1593	0
Flt Permitted	0.985			0.993		
Satd. Flow (perm)	1468	0	0	1593	1593	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	149.0			196.7	93.5	
Travel Time (s)	10.7			14.2	6.7	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	0%	0%	2%	1%	0%
Adj. Flow (vph)	6	14	25	147	85	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	172	96	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	14	25	147	85	11
Future Vol, veh/h	6	14	25	147	85	11
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	0	0	2	1	0
Mvmt Flow	6	14	25	147	85	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	292	95	100
Stage 1	95	-	-
Stage 2	197	-	-
Critical Hdwy	6.6	6.2	4.1
Critical Hdwy Stg 1	5.6	-	-
Critical Hdwy Stg 2	5.6	-	-
Follow-up Hdwy	3.68	3.3	2.2
Pot Cap-1 Maneuver	663	968	1505
Stage 1	886	-	-
Stage 2	795	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	649	965	1500
Mov Cap-2 Maneuver	649	-	-
Stage 1	867	-	-
Stage 2	795	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.38	1.08	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	262	-	842	-	-
HCM Lane V/C Ratio	0.017	-	0.024	-	-
HCM Ctrl Dly (s/v)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	6	31	122	91	16
Future Volume (vph)	9	6	31	122	91	16
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946				0.980	
Flt Protected	0.971			0.990		
Satd. Flow (prot)	1603	0	0	1578	1569	0
Flt Permitted	0.971			0.990		
Satd. Flow (perm)	1603	0	0	1578	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	154.3			93.5	330.7	
Travel Time (s)	11.1			6.7	23.8	
Confl. Peds. (#/hr)			10			10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	3%	1%	7%
Adj. Flow (vph)	9	6	31	122	91	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	153	107	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	6	31	122	91	16
Future Vol, veh/h	9	6	31	122	91	16
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	3	1	7
Mvmt Flow	9	6	31	122	91	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	293	109	117
Stage 1	109	-	-
Stage 2	184	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	702	950	1484
Stage 1	921	-	-
Stage 2	852	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	680	942	1471
Mov Cap-2 Maneuver	680	-	-
Stage 1	892	-	-
Stage 2	852	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.8	1.52	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	365	-	765	-	-
HCM Lane V/C Ratio	0.021	-	0.02	-	-
HCM Ctrl Dly (s/v)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	28	39	92	79	47
Future Volume (vph)	32	28	39	92	79	47
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.937				0.950	
Flt Protected	0.974			0.985		
Satd. Flow (prot)	1593	0	0	1560	1521	0
Flt Permitted	0.974			0.985		
Satd. Flow (perm)	1593	0	0	1560	1521	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	3%	3%	0%
Adj. Flow (vph)	32	28	39	92	79	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	131	126	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	28	39	92	79	47
Future Vol, veh/h	32	28	39	92	79	47
Conflicting Peds, #/hr	0	0	18	0	0	18
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	3	3	0
Mvmt Flow	32	28	39	92	79	47

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	291	121	144
Stage 1	121	-	-
Stage 2	170	-	-
Critical Hdwy	6.4	6.2	4.13
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.227
Pot Cap-1 Maneuver	704	936	1432
Stage 1	910	-	-
Stage 2	865	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	673	922	1410
Mov Cap-2 Maneuver	673	-	-
Stage 1	870	-	-
Stage 2	865	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.07	2.27	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	536	-	770	-	-
HCM Lane V/C Ratio	0.028	-	0.078	-	-
HCM Ctrl Dly (s/v)	7.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Appendix G

Total Traffic Operations Reports



Lanes, Volumes, Timings
1: Nafziger Road & Gerber Road

1949 Gerber Road, Wellesley TIS
Total AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	80	69	101	46	37	45	76	81	52	113	3
Future Volume (vph)	0	80	69	101	46	37	45	76	81	52	113	3
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.937			0.973			0.923			0.996	
Flt Protected					0.973		0.950			0.950		
Satd. Flow (prot)	0	1421	0	0	1428	0	1619	1291	0	1588	1550	0
Flt Permitted					0.973		0.950			0.950		
Satd. Flow (perm)	0	1421	0	0	1428	0	1619	1291	0	1588	1550	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	3%	0%	0%	3%	12%	21%	5%	5%	0%
Adj. Flow (vph)	0	80	69	101	46	37	45	76	81	52	113	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	0	0	184	0	45	157	0	52	116	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.9% ICU Level of Service A

Analysis Period (min) 15

Intersection

Intersection Delay, s/veh 9.7
Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	80	69	101	46	37	45	76	81	52	113	3
Future Vol, veh/h	0	80	69	101	46	37	45	76	81	52	113	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	2	0	3	0	0	3	12	21	5	5	0
Mvmt Flow	0	80	69	101	46	37	45	76	81	52	113	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	9.2	10	9.7	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	55%	100%	0%
Vol Thru, %	0%	48%	54%	25%	0%	97%
Vol Right, %	0%	52%	46%	20%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	157	149	184	52	116
LT Vol	45	0	0	101	52	0
Through Vol	0	76	80	46	0	113
RT Vol	0	81	69	37	0	3
Lane Flow Rate	45	157	149	184	52	116
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.076	0.234	0.201	0.26	0.089	0.181
Departure Headway (Hd)	6.077	5.362	4.868	5.092	6.143	5.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	584	663	729	699	578	631
Service Time	3.872	3.156	2.953	3.171	3.942	3.418
HCM Lane V/C Ratio	0.077	0.237	0.204	0.263	0.09	0.184
HCM Control Delay, s/veh	9.4	9.8	9.2	10	9.6	9.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.9	0.7	1	0.3	0.7

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	173	54	59	181	80
Future Volume (vph)	72	173	54	59	181	80
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.930		0.959	
Flt Protected		0.986			0.966	
Satd. Flow (prot)	0	1486	1442	0	1580	0
Flt Permitted		0.986			0.966	
Satd. Flow (perm)	0	1486	1442	0	1580	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	21%	3%	0%	10%	2%	3%
Adj. Flow (vph)	72	173	54	59	181	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	245	113	0	261	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	173	54	59	181	80
Future Vol, veh/h	72	173	54	59	181	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	21	3	0	10	2	3
Mvmt Flow	72	173	54	59	181	80

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	113	0	0 401 84
Stage 1	-	-	- 84 -
Stage 2	-	-	- 317 -
Critical Hdwy	4.31	-	- 6.42 6.23
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.389	-	- 3.518 3.327
Pot Cap-1 Maneuver	1366	-	- 605 973
Stage 1	-	-	- 940 -
Stage 2	-	-	- 738 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1366	-	- 570 973
Mov Cap-2 Maneuver	-	-	- 570 -
Stage 1	-	-	- 885 -
Stage 2	-	-	- 738 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	2.29	0	14.14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	529	-	-	-	653
HCM Lane V/C Ratio	0.053	-	-	-	0.4
HCM Ctrl Dly (s/v)	7.8	0	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.9

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	33	34	0	11	5	85	42	27	193	8
Future Volume (vph)	21	0	33	34	0	11	5	85	42	27	193	8
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.917			0.967			0.957			0.995	
Flt Protected		0.981			0.964			0.998			0.994	
Satd. Flow (prot)	0	1379	0	0	1401	0	0	1392	0	0	1475	0
Flt Permitted		0.981			0.964			0.998			0.994	
Satd. Flow (perm)	0	1379	0	0	1401	0	0	1392	0	0	1475	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		149.0			71.7			196.7			93.5	
Travel Time (s)		10.7			5.2			14.2			6.7	
Confl. Peds. (#/hr)							8					8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	7%	2%	2%	3%	0%
Adj. Flow (vph)	21	0	33	34	0	11	5	85	42	27	193	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	45	0	0	132	0	0	228	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.4%

ICU Level of Service A

Analysis Period (min) 15

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	21	0	33	34	0	11	5	85	42	27	193	8
Future Vol, veh/h	21	0	33	34	0	11	5	85	42	27	193	8
Conflicting Peds, #/hr	0	0	0	0	0	0	8	0	0	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	2	0	2	2	2	0	7	2	2	3	0
Mvmt Flow	21	0	33	34	0	11	5	85	42	27	193	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	354	396	205	363	379	106	209	0	0	127	0	0
Stage 1	259	259	-	116	116	-	-	-	-	-	-	-
Stage 2	95	137	-	247	263	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	605	541	841	593	553	948	1374	-	-	1459	-	-
Stage 1	750	694	-	889	800	-	-	-	-	-	-	-
Stage 2	917	783	-	757	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	579	524	835	555	536	948	1365	-	-	1459	-	-
Mov Cap-2 Maneuver	579	524	-	555	536	-	-	-	-	-	-	-
Stage 1	730	674	-	885	796	-	-	-	-	-	-	-
Stage 2	902	780	-	712	672	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.47		11.28		0.29		0.89					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	64	-	-	713	618	211	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.076	0.073	0.019	-	-				
HCM Ctrl Dly (s/v)	7.6	0	-	10.5	11.3	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-	-				

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	29	60	0	20	5	94	18	11	140	3
Future Volume (vph)	23	0	29	60	0	20	5	94	18	11	140	3
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925			0.966			0.979			0.997	
Flt Protected		0.978			0.964			0.998			0.996	
Satd. Flow (prot)	0	1387	0	0	1399	0	0	1425	0	0	1458	0
Flt Permitted		0.978			0.964			0.998			0.996	
Satd. Flow (perm)	0	1387	0	0	1399	0	0	1425	0	0	1458	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		154.3			80.5			93.5			330.7	
Travel Time (s)		11.1			5.8			6.7			23.8	
Confl. Peds. (#/hr)							10					10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	6%	2%	2%	4%	33%
Adj. Flow (vph)	23	0	29	60	0	20	5	94	18	11	140	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	80	0	0	117	0	0	154	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.2%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	0	29	60	0	20	5	94	18	11	140	3
Future Vol, veh/h	23	0	29	60	0	20	5	94	18	11	140	3
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	2	0	2	2	2	0	6	2	2	4	33
Mvmt Flow	23	0	29	60	0	20	5	94	18	11	140	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	278	296	152	275	288	103	153	0	0	112	0	0
Stage 1	174	174	-	113	113	-	-	-	-	-	-	-
Stage 2	104	122	-	162	175	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	679	616	900	677	622	952	1440	-	-	1478	-	-
Stage 1	833	755	-	892	802	-	-	-	-	-	-	-
Stage 2	907	795	-	840	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	651	603	892	648	609	952	1428	-	-	1478	-	-
Mov Cap-2 Maneuver	651	603	-	648	609	-	-	-	-	-	-	-
Stage 1	819	743	-	889	799	-	-	-	-	-	-	-
Stage 2	884	792	-	806	742	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.04		10.77		0.32		0.53					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	75	-	-	767	704	128	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.068	0.114	0.007	-	-				
HCM Ctrl Dly (s/v)	7.5	0	-	10	10.8	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0	-	-				

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	68	56	81	86	31
Future Volume (vph)	36	68	56	81	86	31
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.912				0.964	
Flt Protected	0.983			0.980		
Satd. Flow (prot)	1462	0	0	1534	1512	0
Flt Permitted	0.983			0.980		
Satd. Flow (perm)	1462	0	0	1534	1512	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)	2		8			8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	6%	3%	3%	7%
Adj. Flow (vph)	36	68	56	81	86	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	0	0	137	117	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	68	56	81	86	31
Future Vol, veh/h	36	68	56	81	86	31
Conflicting Peds, #/hr	2	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	7	6	3	3	7
Mvmt Flow	36	68	56	81	86	31

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	305	110	125
Stage 1	110	-	-
Stage 2	195	-	-
Critical Hdwy	6.47	6.27	4.16
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.363	2.254
Pot Cap-1 Maneuver	677	931	1437
Stage 1	903	-	-
Stage 2	826	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	644	924	1427
Mov Cap-2 Maneuver	644	-	-
Stage 1	860	-	-
Stage 2	825	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.15	3.12	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	736	-	803	-	-
HCM Lane V/C Ratio	0.039	-	0.129	-	-
HCM Ctrl Dly (s/v)	7.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	57	74	91	92	65	75	109	128	61	79	9
Future Volume (vph)	7	57	74	91	92	65	75	109	128	61	79	9
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5		2.5	2.5		2.5	35.0		2.5	35.0		2.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.928			0.965			0.919			0.985	
Flt Protected		0.997			0.982		0.950			0.950		
Satd. Flow (prot)	0	1403	0	0	1414	0	1635	1447	0	1668	1475	0
Flt Permitted		0.997			0.982		0.950			0.950		
Satd. Flow (perm)	0	1403	0	0	1414	0	1635	1447	0	1668	1475	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		209.7			165.9			140.8			130.1	
Travel Time (s)		15.1			10.0			10.1			9.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	3%	3%	2%	2%	2%	5%	0%	10%	0%
Adj. Flow (vph)	7	57	74	91	92	65	75	109	128	61	79	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	138	0	0	248	0	75	237	0	61	88	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.3% ICU Level of Service B

Analysis Period (min) 15

Intersection

Intersection Delay, s/veh 10.7
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	57	74	91	92	65	75	109	128	61	79	9
Future Vol, veh/h	7	57	74	91	92	65	75	109	128	61	79	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	2	3	3	2	2	2	5	0	10	0
Mvmt Flow	7	57	74	91	92	65	75	109	128	61	79	9
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay, s/veh	9.6			11.4			10.9			10		
HCM LOS	A			B			B			A		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	5%	37%	100%	0%
Vol Thru, %	0%	46%	41%	37%	0%	90%
Vol Right, %	0%	54%	54%	26%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	237	138	248	61	88
LT Vol	75	0	7	91	61	0
Through Vol	0	109	57	92	0	79
RT Vol	0	128	74	65	0	9
Lane Flow Rate	75	237	138	248	61	88
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.132	0.358	0.201	0.367	0.11	0.149
Departure Headway (Hd)	6.333	5.443	5.251	5.33	6.509	6.101
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	567	661	683	675	551	588
Service Time	4.063	3.173	3.288	3.363	4.244	3.836
HCM Lane V/C Ratio	0.132	0.359	0.202	0.367	0.111	0.15
HCM Control Delay, s/veh	10	11.2	9.6	11.4	10.1	9.9
HCM Lane LOS	A	B	A	B	B	A
HCM 95th-tile Q	0.5	1.6	0.7	1.7	0.4	0.5

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	65	135	230	114	108
Future Volume (vph)	122	65	135	230	114	108
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.915		0.934	
Flt Protected		0.968			0.975	
Satd. Flow (prot)	0	1574	1471	0	1528	0
Flt Permitted		0.968			0.975	
Satd. Flow (perm)	0	1574	1471	0	1528	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		241.1	113.8		196.7	
Travel Time (s)		14.5	6.8		14.2	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	4%	4%
Adj. Flow (vph)	122	65	135	230	114	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	187	365	0	222	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.1%			ICU Level of Service B		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	122	65	135	230	114	108
Future Vol, veh/h	122	65	135	230	114	108
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	4	0	4	4
Mvmt Flow	122	65	135	230	114	108

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	366	0	0 560 251
Stage 1	-	-	- - 251 -
Stage 2	-	-	- - 309 -
Critical Hdwy	4.1	-	- - 6.44 6.24
Critical Hdwy Stg 1	-	-	- - 5.44 -
Critical Hdwy Stg 2	-	-	- - 5.44 -
Follow-up Hdwy	2.2	-	- - 3.536 3.336
Pot Cap-1 Maneuver	1204	-	- - 486 783
Stage 1	-	-	- - 786 -
Stage 2	-	-	- - 740 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1203	-	- - 435 782
Mov Cap-2 Maneuver	-	-	- - 435 -
Stage 1	-	-	- - 703 -
Stage 2	-	-	- - 740 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	5.44	0	15.76
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1159	-	-	-	554
HCM Lane V/C Ratio	0.101	-	-	-	0.4
HCM Ctrl Dly (s/v)	8.3	0	-	-	15.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.9

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	14	99	0	28	25	184	142	41	110	11
Future Volume (vph)	6	0	14	99	0	28	25	184	142	41	110	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.905			0.970			0.945			0.991	
Flt Protected		0.985			0.962			0.996			0.988	
Satd. Flow (prot)	0	1289	0	0	1402	0	0	1416	0	0	1483	0
Flt Permitted		0.985			0.962			0.996			0.988	
Satd. Flow (perm)	0	1289	0	0	1402	0	0	1416	0	0	1483	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		149.0			71.7			196.7			93.5	
Travel Time (s)		10.7			5.2			14.2			6.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	2%	0%	2%	2%	2%	0%	2%	2%	2%	1%	0%
Adj. Flow (vph)	6	0	14	99	0	28	25	184	142	41	110	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	127	0	0	351	0	0	162	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.9%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	14	99	0	28	25	184	142	41	110	11
Future Vol, veh/h	6	0	14	99	0	28	25	184	142	41	110	11
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	0	0	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	20	2	0	2	2	2	0	2	2	2	1	0
Mvmt Flow	6	0	14	99	0	28	25	184	142	41	110	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	436	578	120	497	512	255	125	0	0	326	0	0
Stage 1	202	202	-	305	305	-	-	-	-	-	-	-
Stage 2	234	376	-	192	207	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.52	6.2	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.3	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.018	3.3	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	501	427	938	483	465	784	1474	-	-	1234	-	-
Stage 1	761	735	-	705	662	-	-	-	-	-	-	-
Stage 2	730	616	-	810	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	455	402	934	449	438	784	1469	-	-	1234	-	-
Mov Cap-2 Maneuver	455	402	-	449	438	-	-	-	-	-	-	-
Stage 1	731	706	-	690	648	-	-	-	-	-	-	-
Stage 2	689	603	-	769	702	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.22		14.74		0.53		2.03					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	118	-	-	710	496	447	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.028	0.256	0.033	-	-				
HCM Ctrl Dly (s/v)	7.5	0	-	10.2	14.7	8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1	0.1	-	-				

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	0	6	25	0	14	31	150	37	16	132	16
Future Volume (vph)	9	0	6	25	0	14	31	150	37	16	132	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.946			0.952			0.977			0.987	
Flt Protected		0.971			0.969			0.993			0.995	
Satd. Flow (prot)	0	1408	0	0	1386	0	0	1452	0	0	1480	0
Flt Permitted		0.971			0.969			0.993			0.995	
Satd. Flow (perm)	0	1408	0	0	1386	0	0	1452	0	0	1480	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		154.3			80.5			93.5			330.7	
Travel Time (s)		11.1			5.8			6.7			23.8	
Confl. Peds. (#/hr)							10					10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	3%	2%	2%	1%	7%
Adj. Flow (vph)	9	0	6	25	0	14	31	150	37	16	132	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	39	0	0	218	0	0	164	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.8%

ICU Level of Service A

Analysis Period (min) 15

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	9	0	6	25	0	14	31	150	37	16	132	16
Future Vol, veh/h	9	0	6	25	0	14	31	150	37	16	132	16
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	2	0	2	2	2	0	3	2	2	1	7
Mvmt Flow	9	0	6	25	0	14	31	150	37	16	132	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	394	431	150	395	421	169	158	0	0	187	0	0
Stage 1	182	182	-	231	231	-	-	-	-	-	-	-
Stage 2	212	249	-	164	190	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	569	517	902	565	524	876	1434	-	-	1387	-	-
Stage 1	824	749	-	772	714	-	-	-	-	-	-	-
Stage 2	795	701	-	838	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	535	494	894	541	501	876	1422	-	-	1387	-	-
Mov Cap-2 Maneuver	535	494	-	541	501	-	-	-	-	-	-	-
Stage 1	807	733	-	753	696	-	-	-	-	-	-	-
Stage 2	763	683	-	822	727	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.78		11.12		1.08		0.74					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	246	-	-	637	627	172	-	-				
HCM Lane V/C Ratio	0.022	-	-	0.024	0.062	0.012	-	-				
HCM Ctrl Dly (s/v)	7.6	0	-	10.8	11.1	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-				

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	66	69	104	98	47
Future Volume (vph)	32	66	69	104	98	47
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.909				0.956	
Flt Protected	0.984			0.980		
Satd. Flow (prot)	1561	0	0	1552	1529	0
Flt Permitted	0.984			0.980		
Satd. Flow (perm)	1561	0	0	1552	1529	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	140.3			330.7	225.6	
Travel Time (s)	10.1			23.8	16.2	
Confl. Peds. (#/hr)			18			18
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	3%	3%	0%
Adj. Flow (vph)	32	66	69	104	98	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	0	173	145	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	66	69	104	98	47
Future Vol, veh/h	32	66	69	104	98	47
Conflicting Peds, #/hr	0	0	18	0	0	18
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	3	3	0
Mvmt Flow	32	66	69	104	98	47

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	382	140	163
Stage 1	140	-	-
Stage 2	242	-	-
Critical Hdwy	6.4	6.2	4.13
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.227
Pot Cap-1 Maneuver	625	914	1410
Stage 1	892	-	-
Stage 2	803	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	583	900	1388
Mov Cap-2 Maneuver	583	-	-
Stage 1	832	-	-
Stage 2	803	-	-

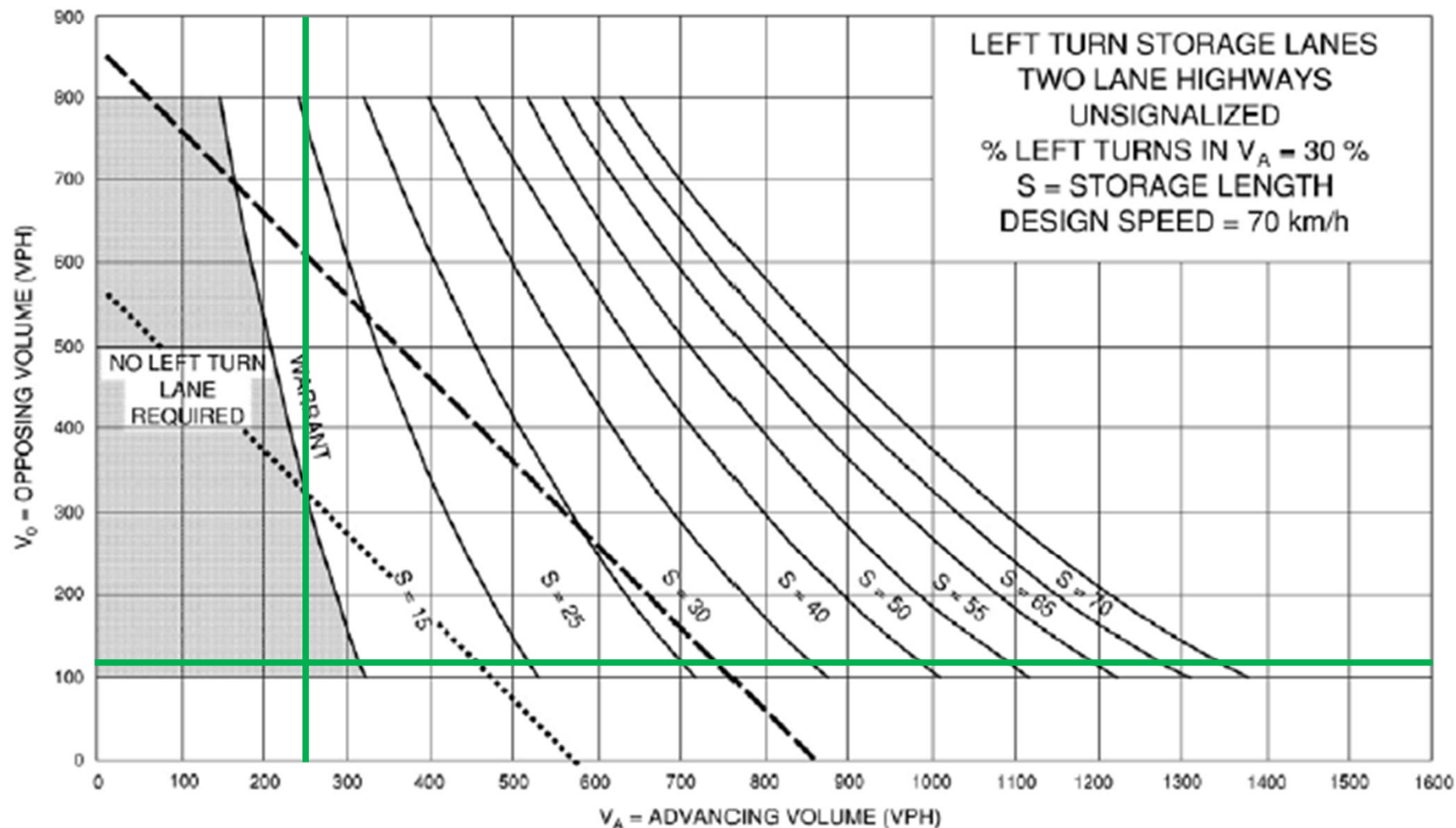
Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.4	3.08	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	718	-	764	-	-
HCM Lane V/C Ratio	0.05	-	0.128	-	-
HCM Ctrl Dly (s/v)	7.7	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Appendix H

Left-Turn Lane Warrants

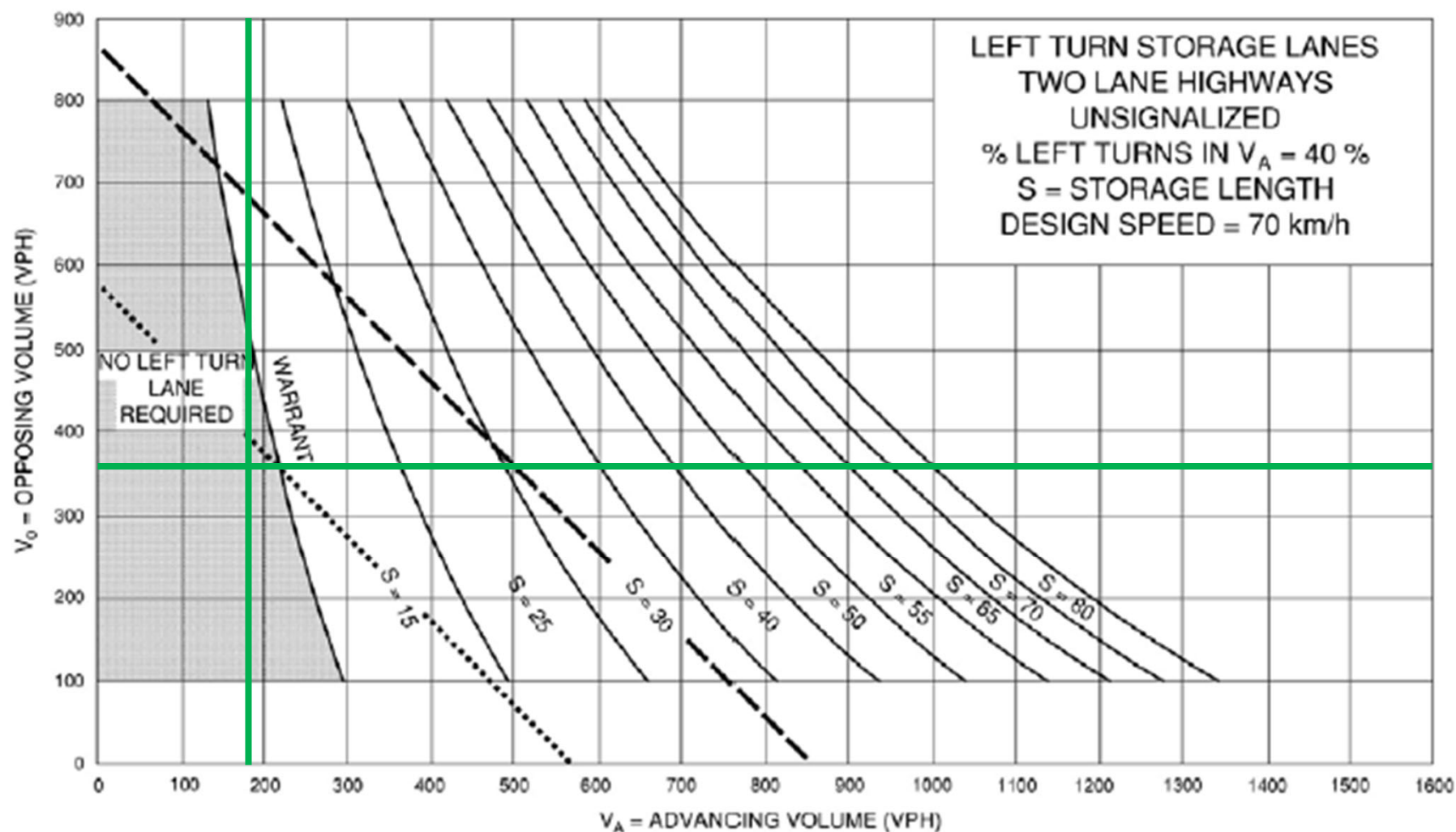




Gerber Road and Greenwood Hill Road Eastbound Left-Turn Lane Warrant

1949 Gerber Road, Wellesley TIS
260152

Total 2033 (AM Peak Hour)



Gerber Road and Greenwood Hill Road Eastbound Left-Turn Lane Warrant

1949 Gerber Road, Wellesley TIS
260152

Total 2033 (PM Peak Hour)

