GRIFFIN transportation group inc.
traffic engineering | transportation planning

Proposed East Milford Mixed Use Development

Nova Scotia Department of Public Works

Traffic Impact Study

Final Report

Prepared by:

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Prepared for:

FH DEVELOPMENT GROUP
BUILDING A LEGACY OF QUALITY

June 2023

June 5, 2023

Att: Mr. Ahsan Khan
Senior Project Manager
FH Development Group
153 Sackville Drive
Lower Sackville, NS B4C 2R3

RE: Traffic Impact Study for a proposed residential development in East Milford

The GRIFFIN transportation group inc. is pleased to present the results of the enclosed traffic impact study carried out in support of the planning approval process for a proposed Mixed Use neighbourhood in East Milford, Municipality of East Hants (MEH). The proposed development is being planned to contain up to 1,551 residential units and up to 47,000 ft^2 of supporting commercial space. The entire development will be situated on the PID #45089802 lands, which measure about 275 acres in size.

A comprehensive traffic operational assessment has been carried out to understand the future impacts of a full build-out scenario of the proposed development. Our analysis also considered additional traffic associated with a number of other adjacent future neighbourhoods in the Lantz area. The results flowing from our analysis suggest that the traffic generated by the proposed development can be accommodated on the study area road network with the enclosed study recommendations in place.

The opening of the new Lantz interchange and Lantz Connector Road has introduced planning approval opportunities for several large-scale residential neighbourhoods in the Lantz area. The magnitude of these developments has exceeded previous long-term municipal servicing and transportation estimates for this area. Although the full build-out of this area is expected to occur over a long period of time (i.e. beyond 30-40 years), it is recommended that the NSDPW begin the planning process to preserve right-of-way for another Highway 102 interchange to serve the transportation needs for this growing area.

It has been a pleasure working with the project team in completing this study. Feel free to contact the undersigned anytime to further discuss the details of this project.

Sincerely,

James J. Copeland, P.Eng., RSP1
Managing Principal – Traffic & Road Safety Engineer
GRIFFIN transportation group inc.

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1. INTRODUCTION

1.1 Background

The GRIFFIN transportation group inc. (GRIFFIN) has been retained by *FH Development Group Ltd. (FH Development)* to carry out a traffic impact study assessment for a proposed Mixed Use neighbourhood near the community boundary between Lantz and East Milford, Municipality of East Hants (MEH). The proposed development will occur on undeveloped lands contained within in PID #45089802 and are generally located between the Highway 102 and Trunk Highway 2 corridors, as shown in *Figure 1*.

FH Development, the proponent, has plans to develop the subject lands into a Mixed Use neighbourhood that will be comprised of up to 1,551 residential units, and about 47,000 ft^2 of supporting commercial floor space. The density of the proposed development is expected to be approximately 5.6 units/acre. There are plans to construct the development in phases; however, our analysis has only evaluated the impacts of a full build scenario.

1.2 Context

It is understood that the proponent has been working with the Municipality of East Hants (MEH) to meet the necessary planning approval requirements associated with the development of these lands. One of the key requirements is to obtain approval for all new street and access connections that can accommodate vehicle movements in/out of the new development. Since the surrounding public roadways are under the jurisdiction of the Nova Scotia Department of Public Works (NSDPW), it was therefore, necessary to engage with them separately as the approving road agency for this particular study.

To initiate this process, GRIFFIN attended a scope development meeting with representatives of NSDPW on Wednesday November 9th, 2022. The discussions followed NSDPW guidelines to identify the general assumptions, intersections to be evaluated, and other relevant details to consider in the traffic assessment process. These steps are detailed in NSDPW's *Policy Number P01018* which includes the *Traffic Impact Analysis Pre-Study Meeting Checklist*. A detailed discussion of each item in the checklist was documented in GRIFFIN's March 6th, 2023 traffic impact study scoping document. The final scoping document was submitted to NSDPW for review and approval.

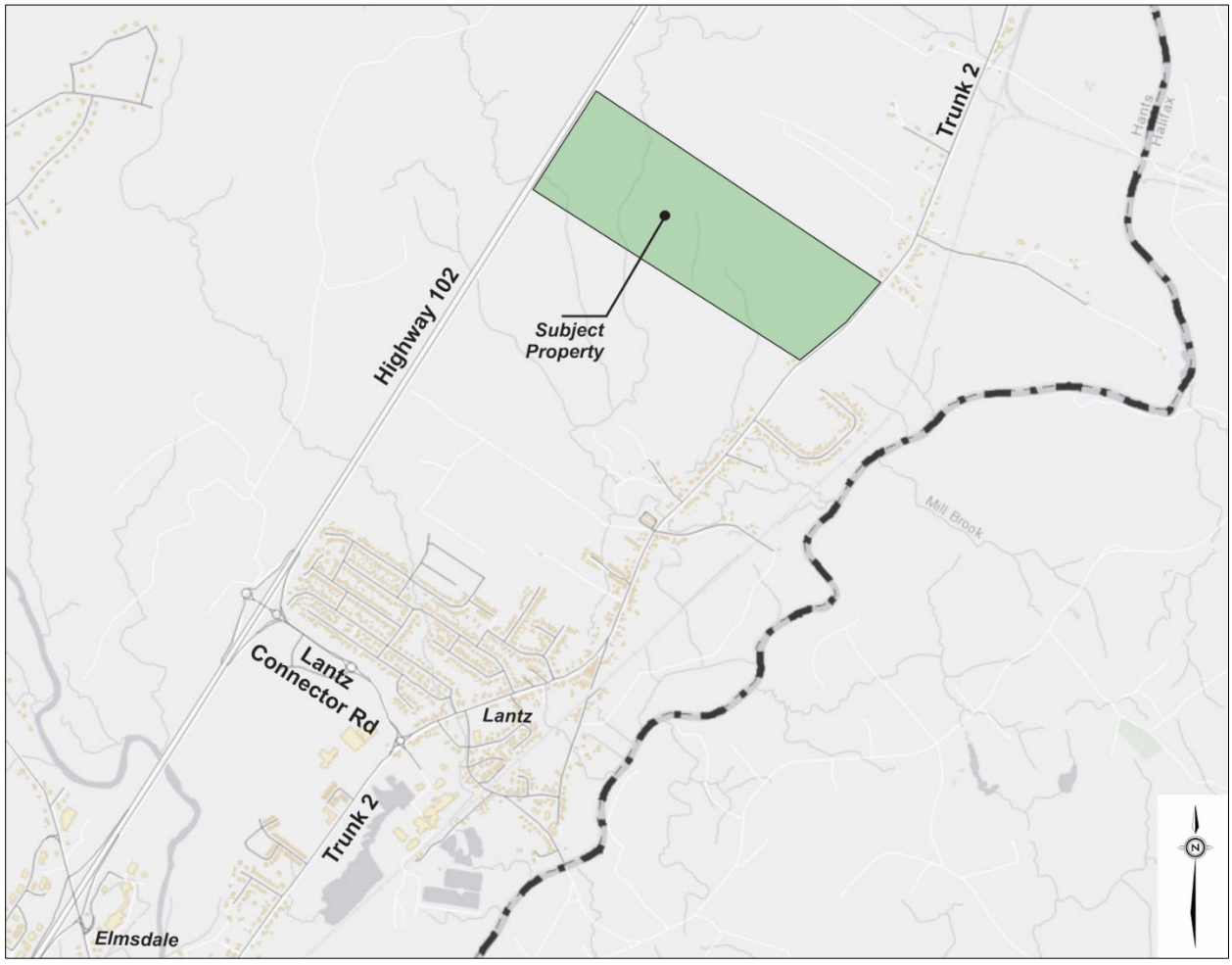
The terms of reference for this impact study were developed based on the following:

- A scope development meeting held on Wednesday November 9th, 2023 and attended by representatives of NSDPW, GRIFFIN (sub-consultant), and the proponent.
- The NSDPW-approved TIS Scoping Document prepared by GRIFFIN, dated March 6th, 2023.
- The latest version of NSDPW's traffic impact study guidelines document.
- A site plan concept sketch provided by the proponent.

- Multiple site reviews and traffic volume counts carried out by GRIFFIN during November 2022.
- Historical traffic data gathered by NSDPW in the vicinity of the proposed development.

The approach and technical findings of this traffic impact study are discussed in the following sections of this report.

Figure 1: Key Map and Site Location



Source: MEH GIS Map

2. EXISTING CONDITIONS

This chapter describes the roadway network, traffic volumes, operating conditions, and other notable characteristics under the baseline conditions.

2.1 The Study Area Road Network

The proposed development is generally located west of Trunk 2, north of Robert Scott Drive, and east of Highway 102. The Trunk 2 corridor will be the focus of this study as it will provide the only vehicle access for future residents and patrons. This is an important north-south route that links the communities of Lantz and Elmsdale – to the south – with the communities of Milford and Shubenacadie – to the north.

Regional travel is facilitated via the Highway 102 corridor. Access to this north-south controlled-access highway is provided via the recently opened Lantz Connector Road – located about 3 km to the south of the proposed development.

Based on the layout and configuration of the existing road network, and through our discussions with NSDPW, it was agreed the traffic impact assessment would focus on the Trunk 2 and Lantz Connector Road corridors.

2.2 Existing Traffic Data and Peak Traffic Volumes

Following industry best practices, specific hours that experience the highest traffic volumes on the roadway are applied to the analysis steps in the traffic impact study process to identify the capacity needs required to accommodate peak vehicle demands. Ideally the peak hours for this analysis would occur during the peak travel times along the Trunk 2 and Lantz Connector Road corridors combined with the peak travel time for the proposed Mixed Use development. Historical traffic volume trends from the study area suggest there is a notable peak in weekday commuter flows (i.e. the morning and afternoon travel peaks). This, combined with an expected increase in residential travel associated with the proposed development suggests that the weekday morning and afternoon travel peaks are appropriate for use in this analysis.

To facilitate an assessment of the existing and future traffic operations there was a need to first develop a set of baseline traffic volumes. Although the NSDPW has some recorded historical traffic volume data, GRIFFIN gathered supplementary traffic volume data to provide a more current understanding of the travel demand and travel patterns in the study area. Current peak period traffic volume data collection locations are summarized in *Table 1*.

Table 1: Current Traffic Data Collection By Location

Location of Data Collection	AM Peak Period Counts[A]	PM Peak Period Counts[A]	24-Hour Counts Mid-block Counts
Lantz Connector / Hwy 102 SB Ramps	Nov 17, 2022	Nov 22, 2022	-
Lantz Connector / Hwy 102 NB Ramps	Nov 17, 2022	Nov 22, 2022	-
Lantz Connector / Trunk 2	Nov 15, 2022	Nov 15, 2022	-
Trunk 2 / Robert Scott Drive	Nov 14, 2022	Nov 14, 2022	-

A – Intersection counts included separate recordings for cars/light trucks, single-unit trucks/busses, large truck/trailer combinations, bicycles, and pedestrians.

Our review of the current 2022 travel demand recorded by GRIFFIN suggested these volumes were reasonable and representative of typical late fall vehicle travel. However, the Baseline year selected for this study was 2023. Therefore, GRIFFIN elected to apply the following traffic volume adjustment factors to establish the baseline vehicle demand:

- General growth rate to increase volumes from 2022 to 2023 at a rate of 0.5% per year. This rate is consistent with the background growth rate discussed later in the report, and
- A seasonal adjustment factor using NSDPW's published 2018 factors for Trunk 2 – an "A" class roadway. The timing of our data collection was consistent with NSDPW's weeks #47 and #48 and so volumes were increased by a factor of 1.04.

The final set of 2023 Baseline weekday AM and PM peak hour volumes applied to our analysis is contained in *Figure 2*.

2.3 Baseline 2023 Intersection Assessment

An intersection capacity analysis process was carried out using the Baseline 2023 traffic volumes (*Figure 2*) as well as the existing lane configurations and traffic control at the following intersections:

1. Lantz Connector Rd / Hwy 102 Southbound Ramps
2. Lantz Connector Rd / Hwy 102 Northbound Ramps
3. Lantz Connector Rd / Shaw Drive
4. Lantz Connector Rd / Trunk 2
5. Trunk 2 / Wickwire South Street (*future street connection*)
6. Trunk 2 / Robert Scott Drive

The analysis process used Trafficware's *Synchro 11* software tool following the Transportation Research Board's Highway Capacity Manual (HCM) methodology for unsignalized intersections, as well as The Transportation Research Laboratory's (TRL) *Arcady 10* software tool for modern roundabouts. The results for the five existing intersections have been summarized in *Table 2*. An expanded summary of results are provided in *Appendix IV*. Following NSDPW TIS guidelines, the measures of effectiveness used to describe the operational performance of the intersections included the Level of service (LOS), average vehicle delay, volume-to-capacity ratio (v/c ratio) and 95th percentile queue length (metres) for each movement at each of the study area intersections.

Figure 2: Baseline 2023 Peak Hour Volumes

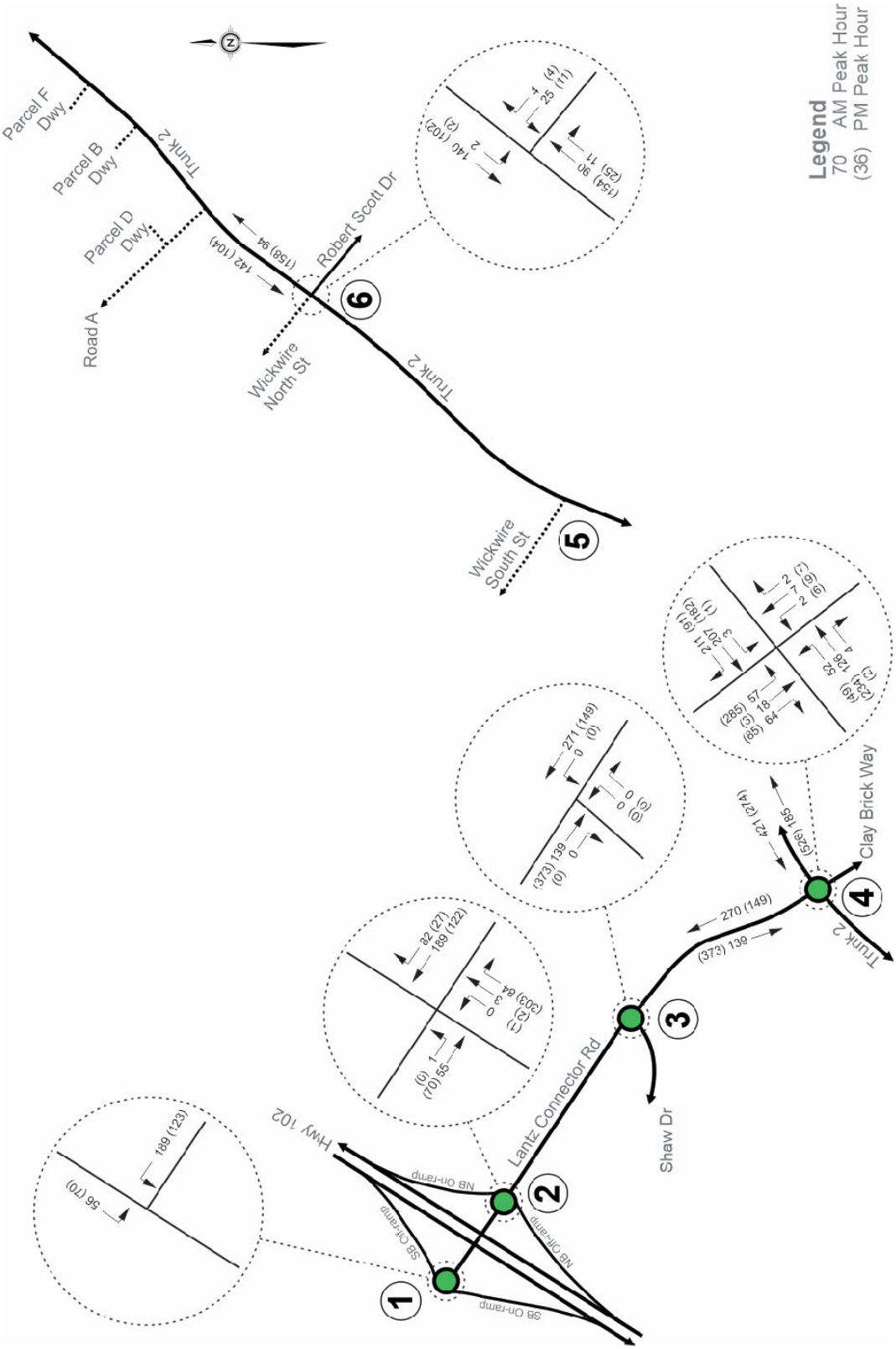


Table 2: Baseline Intersection Operational Analysis Results

#1: Lantz Connector / Hwy 102 SB Ramps						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: n/a	-	-	EB Entry: n/a	-	-
roundabout	WB Entry: **A** (3.6s)	0.17	<10m	WB Entry: **A** (3.4s)	0.11	<10m
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: **A** (3.5s)	0.06	<10m	SB Entry: **A** (3.4s)	0.07	<10m

#2: Lantz Connector / Hwy 102 NB Ramps						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: **A** (3.1s)	0.05	<10m	EB Entry: **A** (3.2s)	0.06	<10m
roundabout	WB Entry: **A** (3.6s)	0.17	<10m	WB Entry: **A** (3.4s)	0.11	<10m
existing lanes	NB Entry: **A** (3.1s)	0.01	<10m	NB Entry: **A** (3.1s)	0.01	<10m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-

#3: Lantz Connector / Shaw Drive						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: n/a	-	-	EB Entry: n/a	-	-
Roundabout	WB Entry: n/a	-	-	WB Entry: n/a	-	-
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: n/a	-	-	SB Entry: n/a	-	-

#4: Lantz Connector / Trunk 2						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: **A** (2.0s)	0.08	<10m	EB Entry: **A** (2.3s)	0.21	10m
roundabout	WB Entry: **A** (3.4s)	0.01	<10m	WB Entry: **A** (4.3s)	0.03	<10m
existing lanes	NB Entry: **A** (1.9s)	0.10	<10m	NB Entry: **A** (2.3s)	0.16	<10m
	SB Entry: **A** (2.7s)	0.26	10m	SB Entry: **A** (2.4s)	0.17	<10m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

Table 2 – continued

#6: Trunk 2 / Robert Scott Dr						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023	NB Th-Rt: n/a[B]	-	-	NB Th-Rt: n/a[B]	-	-
Stop-control	SB Left: **A** (7.4s)	0.01	0m	SB Left: **A** (7.6s)	0.01	0m
existing lanes	WB Lt-Rt: **B** (10.0s)	0.04	<10m	WB Lt-Rt: **B** (10.1s)	0.02	<10m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).
B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

The analysis results contained in *Table 2* suggest the existing study area intersections operate during peak periods with average delays of 10 seconds per vehicle or less, and volume to capacity ratios of 0.26 or less. The vehicle queue lengths at all study area intersections are considered to be negligible.

Generally, the calculated results appeared to be consistent with the operating conditions, driver delays, and queue lengths observed during the field review. The operational results indicate there is a considerable amount of residual capacity for all movements at the study area intersections.

3. FUTURE COMMUNITY GROWTH

This chapter summarizes previous community growth forecasts for the Lantz area of MEH.

3.1 Past Travel Demand Studies

In 2017, GRIFFIN was engaged by the NS Department of Public Works to complete the *Elmsdale/Lantz Area Travel Demand Study*. The main objective of this work was to review the expected population and employment growth in the MEH's Regional Service Boundary (RSB) area, and use this information to establish the future roadway capacity needed to accommodate the expected growth in travel demand[1]. At the time, the MEH had completed a Water Servicing study (2013) and estimated that up to 3,023 new residential units could occur within the RSB. However, the Water Servicing study was based on full build-out, long-term projections (i.e. an unlimited growth scenario). The 2017 travel demand study took a slightly different approach to the growth forecasting process. Industry best practices for transportation studies were followed and it was determined that a likely growth scenario was about 2,000 new residential units would be built in the RSB by the 2041 planning horizon – an average of about 80 units/year.

Building on our earlier work, GRIFFIN gathered and reviewed new information that was available to us for this current study, which helped to establish an updated and more recent picture regarding the full development potential within the MEH's RSB area. A summary of this information is provided in *Table 3*.

Table 3: Future Potential Growth in MEH's Regional Service Boundary Area

Study Name	Full Growth Potential New Residential Units
MEH Water Servicing Study (2013)	**3,023 units**
New Study Area Developments (since 2017)**:**	
Lantz North (Wickwire Station) TIS (2019)	2,115 units
Lantz South TIS (2020)	1,241 units
Enland / Elegant Acreage TIS (2021)	500 units
FH Development Milford TIS (2022)	1,551 units
TOTAL	**5,407 units**

Since the earlier studies in 2013 and 2017 were completed, several large residential neighbourhoods are now being planned in the Lantz-East Milford area and the latest combined total development of all new residential units has increased to about 5,400 units. This latest information assumes nearly 2,400 more residential units than previously contemplated by the MEH. However, it should be noted that the full development of all 5,400 units will occur over a very long time, far beyond the typical 20-25 year planning horizon used in transportation planning

[1] It should be noted that the proposed East Milford Mixed Use development will form the north limit of the MEH's Regional Service Boundary (RSB) area.

studies. Thus, for the purposes of this traffic impact study a shorter planning horizon will be used, along with a corresponding reduced number of residential units likely to occur in that timeframe.

3.2 Community Growth on a Yearly Basis

3.2.1 – Recent Growth Patterns

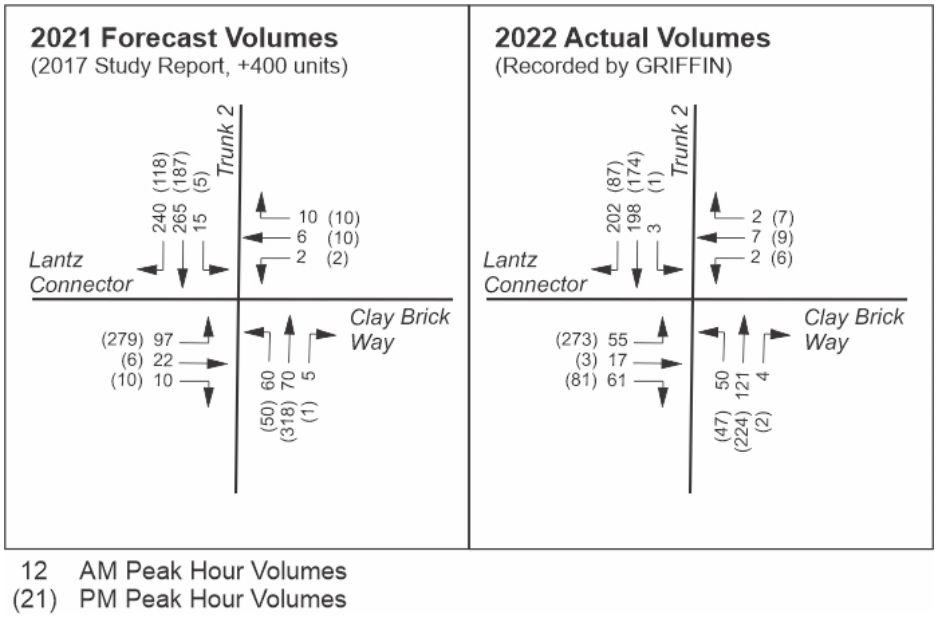
GRIFFIN's 2017 travel demand study established a 25-year average growth estimate that was used to create traffic forecasts for the 2041 planning horizon (2016 to 2041). Looking at several source documents, GRIFFIN determined that a reasonable above-average residential growth within the MEH's Regional Service Boundary would result in a long-term average of about 80 new units per year. Therefore, the expected growth in this area of the MEH was assumed to be 400 new residential units by the 2021 planning horizon, and 2,000 new units by the 2041 planning horizon. Again, this rate of growth formed the basis of the traffic forecasts in the 2017 study.

To help understand what has actually changed since 2017, GRIFFIN carried out a comparative review of peak hour volumes at the Trunk 2 / Lantz Connector intersection. Since travel demand growth correlates well with population and employment growth, GRIFFIN measured the current peak hour travel demand and compared the following information:

- *2021 Horizon (Predicted)*: Forecast 2021 volumes from GRIFFIN's 2017 study report (assuming 400 new units were built between 2017 and 2021), and
- *2022 Horizon (Actual)*: Observed volumes recorded by GRIFFIN in November 2022

These two scenarios were selected as they both had a common road network that included the new Lantz interchange and Lantz Connector Road. The comparison of both sets of peak hour volumes at the Trunk 2 / Lantz Connector Road intersection has been provided in *Figure 3*.

Figure 3: Comparison of Previously Forecast 2021 and Observed 2022 Peak Hour Volumes



The comparison between the observed 2022 volumes (actual) versus GRIFFIN's forecast 2021 volumes (as predicted in our 2017 study report) shows that the current 2022 traffic demand is lower than was previously forecast. For example, current two-way volumes on Trunk 2 north of the new Lantz Connector Road are about 150 vph below the previously forecast 2021 volumes[2]. This could be due in part to several factors, but it appears to suggest that actual residential growth did not reach the estimated 80 new units / year, between 2017 and 2022. This is plausible given the restrictions and material shortages that plagued the building industry throughout the COVID-19 pandemic.

3.2.2 – New Future Growth Assumptions

Recent government initiatives have committed to increasing the housing inventory in the province. This combined with the interest in private developments in the Lantz area, leads us to reconsider our previous residential growth assumptions. It is expected there will be more housing units completed in the RSB within a 20-year horizon, and thus, the average yearly rate of development will also increase. A summary of the original and current development rates between the 2017 and 2043 planning horizons are summarized in *Table 4*.

Table 4: Future 20-Year Residential Growth Forecasts

Horizon Years	Original 2017 Study		Current Estimate	
	Units/Year	Total Units[A]	Units/Year	Total Units[A]
2017-2021 (5-year)	80	400	50	300
20-year (2041)	80	2,000	-	-
New 20-year (2043)	-	-	110	2,600
AVERAGE	**80 units/yr**		**96 units/yr**	

A - cumulative total residential units.

In summary, GRIFFIN now expects a total of about 2,609 units will be built within the RSB, and in the Lantz area, between 2017 and 2043. This is an increase of about 600 units, over and above what was contemplated in the 2017 Study. On average, this equates to an increase of about 96 units/year for the Lantz area out to a 2043 horizon year.

GRIFFIN has applied this information to this current TIS process and has assumed that 2,609 new units would be built in the study area between 2023 and 2043. Further discussions of our background traffic assumptions applied to this study are provided in Section 5.

[2] The 2021 forecast volumes included traffic associated with 400 new residential units built between 2017 and 2021.

4. THE PROPOSED DEVELOPMENT

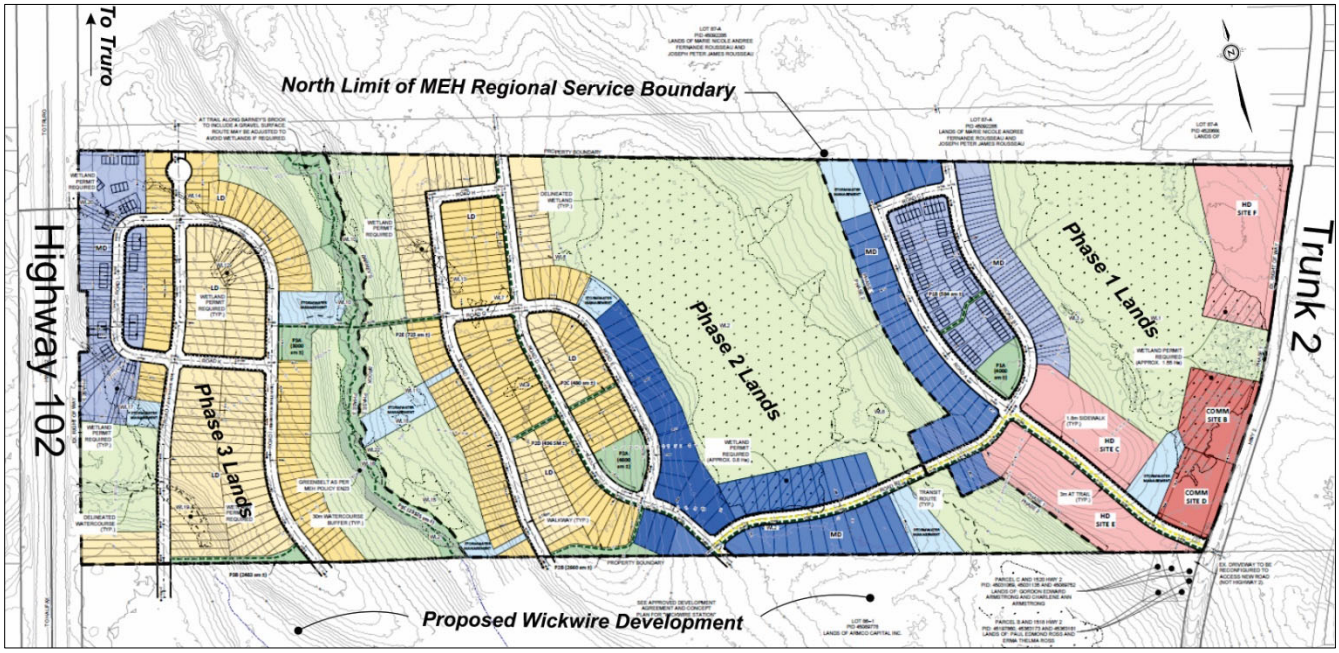
This chapter describes the proposed changes to the property, and the type/magnitude of the proposed development lands.

4.1 A Mixed Use Neighbourhood

4.1.1 – Project Overview

The proposed site layout is contained in *Figure 4,* and includes the proposed internal roadway network needed to accommodate the full build-out of the development.

Figure 4: Conceptual Site Plan and Internal Street Layout



Source: DesignPoint

Table 5: Proposed Development Mix by Land Use Type

Land Use Category	Residential Unit Type	Development Size
Residential	Detached Homes (R-1)	371 units
	Semi-detached Homes (R-2)	166 units
	Townhomes (R-3)	252 units
	Apartments / Multi-units (R-4)	762 units
	Residential Sub-Total	**1,551 units**
Commercial	Parcel B - General office space	21,000 ft^2
	Parcel B – Medical/Dental space	21,000 ft^2
	Parcel D – Quick serve restaurant	3,000 ft^2
	Parcel D – Coffee shop with drive thru	2,000 ft^2
	Parcel D – Gas/Convenience/Car wash	6 fuel positions
	Parcel F – Ground floor commercial	n/a[A]
	Commercial Sub-Total	**47,000 ft^2**

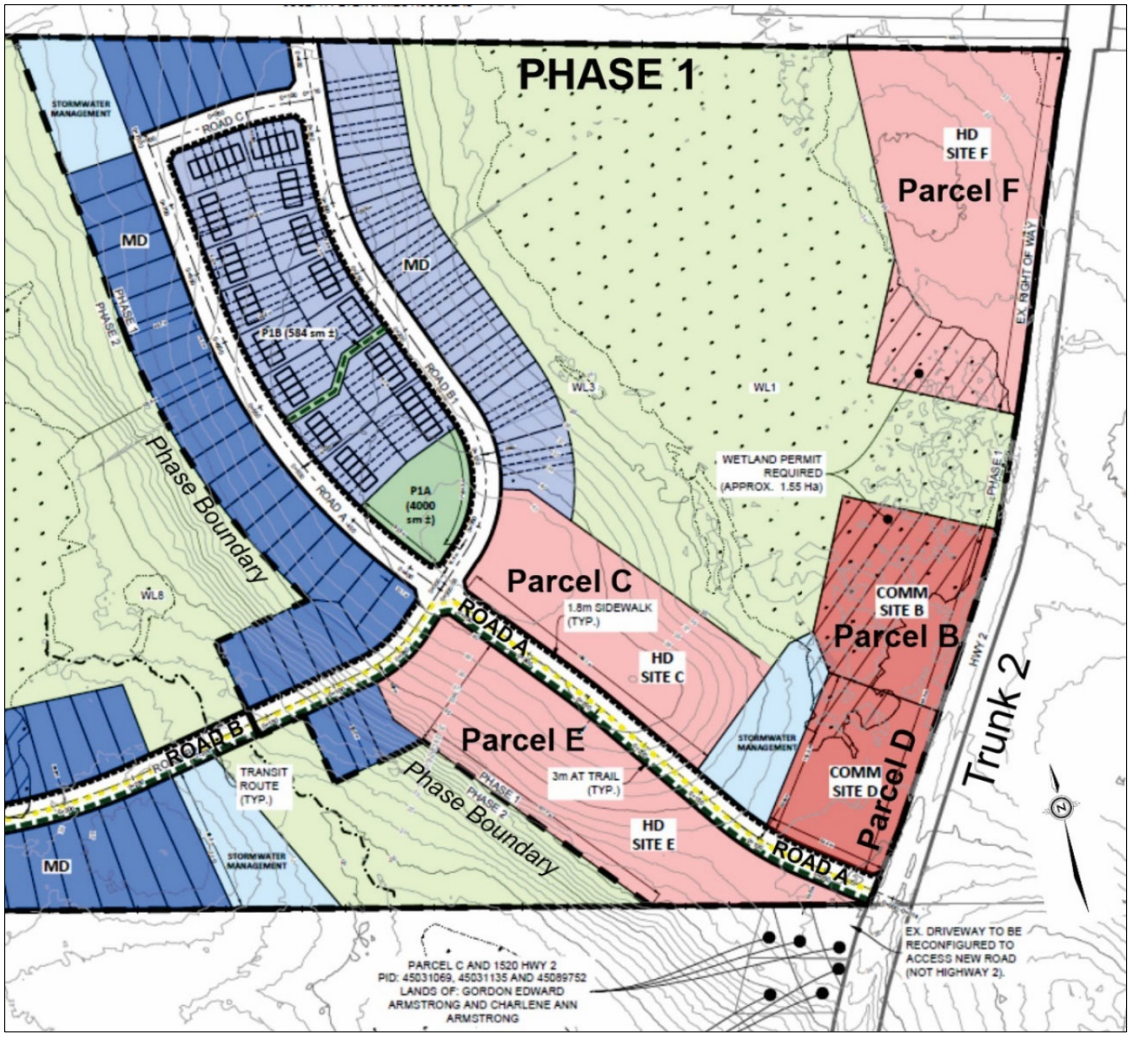
A –trip rates for ground floor commercial space in a residential apartment building are captured in residential trip rate.

The land use categories and magnitude of development for the full build out development scenario is summarized in *Table 5*.

4.1.2 – Phase 1 Development Details

A more detailed illustration of the Phase 1 development concept is provided in *Figure 5*. As shown, there are a number of large land parcels that will include multi-unit residential buildings (Parcels C, E, and F), commercial buildings (Parcel B), and highway commercial businesses (Parcel D). Parcel F will contain a small amount of ground floor commercial space within a multi-unit building.

Figure 5: Proposed Phase 1 Concept Plan



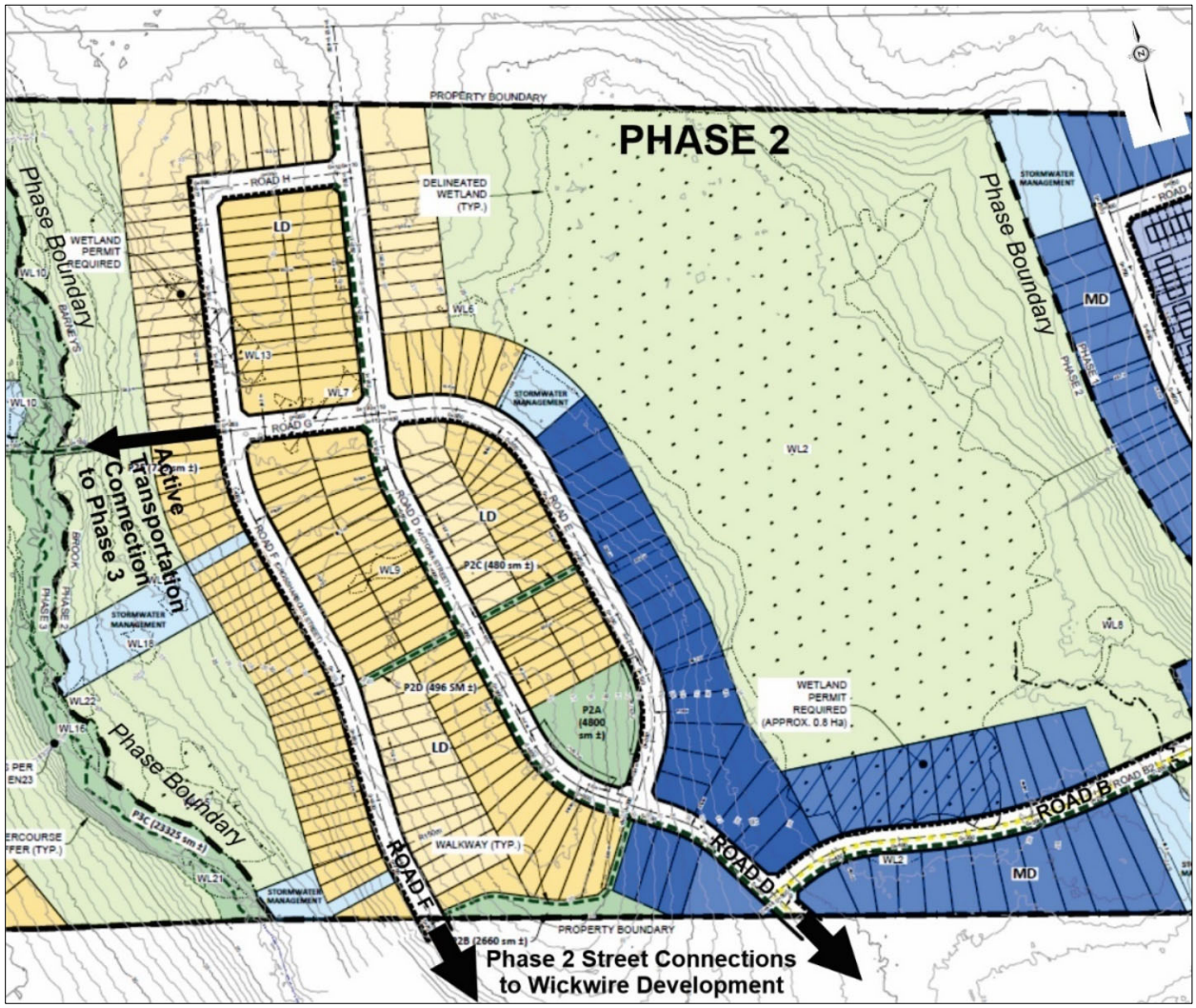
The primary vehicle access will be provided via the intersection formed between Trunk 2 and the new Road A. There are also three large land parcels with frontage along Trunk 2 and we have made the following access assumptions in our analysis steps:

- *Parcel F*: One new driveway connection to Trunk 2.
- *Parcel B*: One new driveway connection to Trunk 2.
- *Parcel D:* One new driveway connection to Road A only.

4.1.3 – Phase 2 Development Details

The proposed Phase 2 development details are contained in *Figure 6*. As shown, vehicle access will be provided via Road B (to Trunk 2) as well as two new collector street connections to the future Wickwire residential development to the south.

Figure 6: Proposed Phase 2 Concept Plan

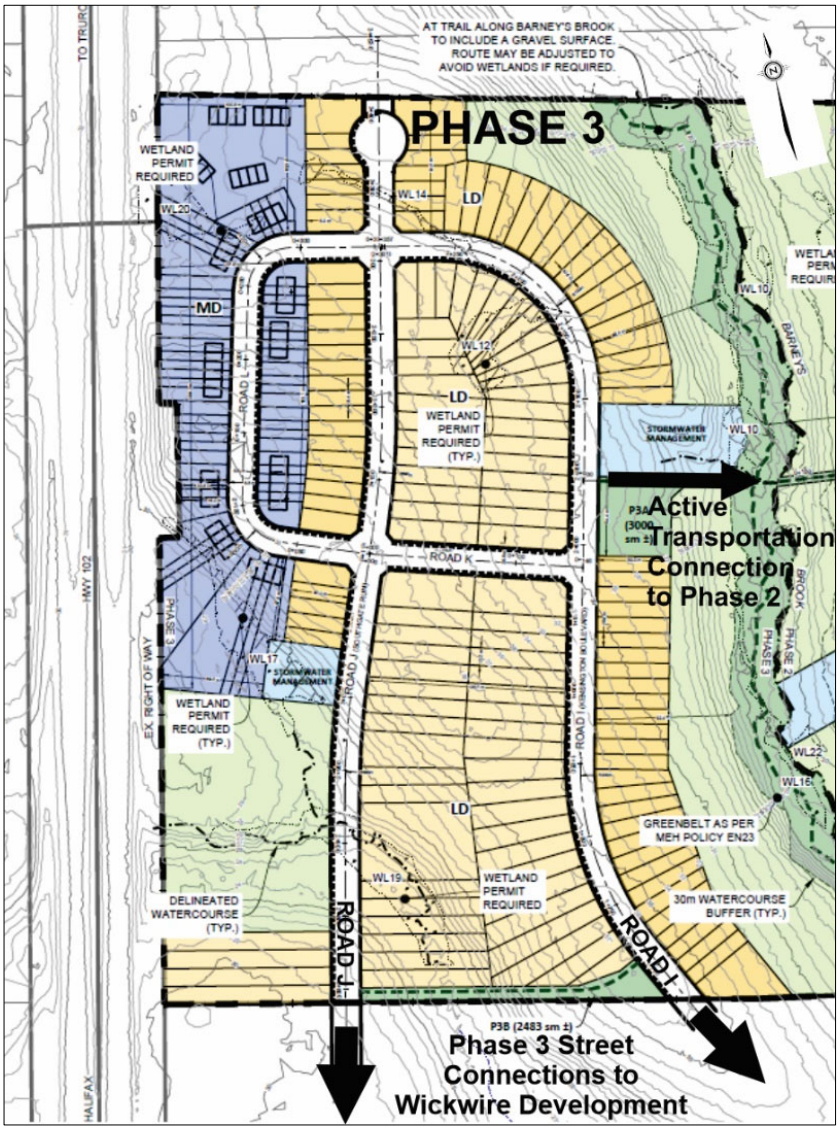


Drivers moving to/from Phase 2 have multiple options to get to Trunk 2. To the east, drivers can use the new Road B-Road A route through Phase 1, or they can travel to the south through the future Wickwire residential development. It should also be noted no west road connection is proposed to connect with Phase 3. However, the proponent has plans to provide an Active Transportation connection across Barney's Brook to offer some mobility between these Phases.

4.1.4 – Phase 3 Development Details

The proposed Phase 3 development details are contained in *Figure 7*. As shown, vehicle access will only be provided via Roads I and J to the future Wickwire residential development to the south. No road connections are proposed to connect with Phase 2.

Figure 7: Proposed Phase 3 Concept Plan



Drivers moving to/from Phase 3 have limited options to get to Trunk 2. There is no east road connection to Phases 1 and 2 so drivers will need to travel to the south through the future Wickwire residential development. The proponent has plans to provide an Active Transportation connection across Barney's Brook to connect with Phase 2.

4.2 Vehicle Trip Generation Summary – Full Build-out

4.2.1 Overview

Currently, the subject lands are undeveloped and are generally covered with vegetation. Based on our discussions with *FH Development*, the 1,551-unit residential and 47,000 ft^2 of neighbourhood commercial space, is likely to be constructed in phases and will contain a mix of unit types. However, our assessment has only focused on the ultimate future full build-out of the entire development. A summary of our vehicle trip generation calculations for a full build-out scenario are provided below, including separate discussions for the residential and commercial land use types.

4.2.2 Residential Land Use Vehicle Trip Generation

The expected site-generated vehicle trips associated with the proposed 1,551-unit residential development are summarized in *Table 6*. Based on GRIFFIN's past experience with large-scale residential and Mixed Use developments it appeared appropriate to apply the Institute of Transportation Engineer's (ITE) latest vehicle trip generation rates to this development. As such, the ITE's *Trip Generation Manual, 11th Edition* document was applied.

The total forecast vehicle trips associated with the residential land uses during the peak hours of a typical weekday are expected to be:

- *AM Peak Hour:* **752** two-way trips, including 181 inbound and 571 outbound from the site.
- *PM Peak Hour:* **864** two-way trips, including 535 inbound and 329 outbound from the site.

To utilize conservative trip generation estimates in this study, it was assumed there would be no reduction in the residential site-generated vehicle trips associated with pass-by trips. Therefore, all calculated site generated trips were assumed to be new vehicles added to the study area road network.

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Table 6: Residential Peak Hour Site-Generated Vehicle Trips – Full Build-out (vph)

	Size	Vehicle Trip Rate	Inbound (vph)	Outbound (vph)	Total Trips (vph)
AM Peak Hour					
Detached Housing: Single-Family Detached Housing (ITE Code 210)	371 units	0.66 / unit[A]	62 (25%)	184 (75%)	246
Semi-detached Housing: Single-Family Attached Housing (ITE Code 215)	166 units	0.49 / unit[A]	20 (25%)	61 (75%)	81
Townhomes: Multifamily Housing (Low-Rise) (ITE Code 220)	252 units	0.40 / unit[A]	24 (24%)	77 (76%)	101
Apartments: Multifamily Housing (Mid-Rise) (ITE Code 221)	762 units	0.43 / unit[A]	75 (23%)	249 (77%)	324
AM Peak Vehicle Trips			**181**	**571**	**752**
PM Peak Hour					
Detached Housing: Single-Family Detached Housing (ITE Code 210)	371 units	0.92 / unit[A]	215 (63%)	126 (37%)	341
Semi-detached Housing: Single-Family Attached Housing (ITE Code 215)	166 units	0.58 / unit[A]	57 (59%)	39 (41%)	96
Townhomes: Multifamily Housing (Low-Rise) (ITE Code 220)	252 units	0.51 / unit[A]	81 (63%)	48 (37%)	129
Apartments: Multifamily Housing (Mid-Rise) (ITE Code 221)	762 units	0.39 / unit[A]	182 (61%)	116 (39%)	298
PM Peak Vehicle Trips			**535**	**329**	**864**

A – Rates calculated using ITE's regression formula.

4.2.3 Commercial Land Use Vehicle Trip Generation

The expected site-generated vehicle trips associated with the 47,000 ft^2 of neighbourhood commercial space being planned within the new development is summarized in *Table 7*. Similar to our trip generation approach presented in the previous Section, GRIFFIN determined that it was appropriate to use the Institute of Transportation Engineer's (ITE) latest vehicle trip generation rates contained in the *Trip Generation Manual, 11th Edition* document. The one exception was the use of NSDPW's empirical trip rates applied to the proposed coffee shop business.

Table 7: Commercial Peak Hour Site-Generated Vehicle Trips – Full Build-out (vph)

	Size	Vehicle Trip Rate	Inbound (vph)	Outbound (vph)	Total Trips (vph)
AM Peak Hour					
Office Space: General Office (ITE Code 710)	21,000 ft^2	2.10 / 1k ft^2	39 (88%)	5 (12%)	44
Health Centre: Medical/Dental Office (ITE Code 720)	21,000 ft^2	2.81 / 1k ft^2	47 (79%)	12 (21%)	59
Quick Serve Restaurant: Fast Food with Drive Thru (ITE Code 933)	3,000 ft^2	43.33 / 1k ft^2	75 (58%)	55 (42%)	130
Coffee Shop: Coffee Shop with Drive Thru (NSDPW Trip Rates)[A]	2,000 ft^2	123.2 / 1k ft^2	126 (51%)	121 (49%)	247
Gas Station: Gas / Convenience (ITE Code 945)	6 fuel positions	16.0 / fuel position	48 (50%)	48 (50%)	96
Car Wash: Automated Car Wash (ITE Code 948)	1 tunnel	0.0 / tunnel	0 (50%)	0 (50%)	0
		AM Peak Vehicle Trips	**335**	**241**	**576**
PM Peak Hour					
Office Space: General Office (ITE Code 710)	21,000 ft^2	2.14 / 1k ft^2	8 (17%)	37 (83%)	45
Health Centre: Medical/Dental Office (ITE Code 720)	21,000 ft^2	3.90 / 1k ft^2	25 (30%)	57 (70%)	82
Quick Serve Restaurant: Fast Food with Drive Thru (ITE Code 933)	3,000 ft^2	31.33 / 1k ft^2	47 (50%)	47 (50%)	94
Coffee Shop: Coffee Shop with Drive Thru (NSDPW Trip Rates)[A]	2,000 ft^2	84.8 / 1k ft^2	88 (52%)	82 (48%)	170
Gas Station: Gas / Convenience (ITE Code 945)	6 fuel positions	18.5 / fuel position	56 (50%)	55 (50%)	111
Car Wash: Automated Car Wash (ITE Code 948)	1 tunnel	14.0 / tunnel	7 (50%)	7 (50%)	14
		PM Peak Vehicle Trips	**231**	**285**	**516**

A – Vehicle trip rates provided by NSDPW for an operating Tim Hortons in Nova Scotia.

The total forecast site-generated trips associated with the commercial land uses during the peak hours of a typical weekday are expected to be:

- *AM Peak Hour:* **576** two-way trips, including 335 inbound and 241 outbound from the site.
- *PM Peak Hour:* **516** two-way trips, including 231 inbound and 285 outbound from the site.

The total vehicle trips contained in *Table 7* were further divided into the three main trip types that included pass-by trips, shared trips between businesses co-located within the property, and new trips. GRIFFIN's assumed percent splits among these various trip types were based on ITE guidelines and industry best practices.

Since the majority of commercial floor space is concentrated in the Parcel B and Parcel D properties, we reviewed each parcel separately. This process allowed us to identify site-specific hared trip estimates occurring between businesses co-located within the Parcel. The assumptions applied to Parcel B are contained in *Table 8,* while the assumptions applied to Parcel D are contained in *Table 9.*

Table 8: Parcel B Commercial Land Uses – Pass-by and Shared Vehicle Trip Percentages (vph)

Parcel B Land Use Type	Vehicle Trip Type	AM Peak Trips (two-way)	PM Peak Trips (two-way)
Office Space: General Office (ITE Code 710)	**Total Trips[A]**	**44**	**45**
	Pass-by Trips[B]	0 (0%)	0 (0%)
	On-site Shared Trips[C]	0 (0%)	0 (0%)
	New Trips	44	45
Health Centre: Medical/Dental Office (ITE Code 720)	**Total Trips[A]**	**59**	**82**
	Pass-by Trips[B]	0 (0%)	0 (0%)
	On-site Shared Trips[C]	6 (10%)	8 (10%)
	New Trips	53	74

A – Total trips for Parcel B taken from Table 7.

B – Pass-by trips attracted from adjacent road. Percentages based on ITE trip generation empirical surveys.

C – On-site shared trips are defined as one vehicle trip that patronizes multiple businesses on-site during that one trip. Percentages based on ITE empirical data for Mixed Use developments.

It should be noted that the "new trips" were applied to trip distribution step, discussed in Section 4.3.

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Table 9: Parcel D Commercial Land Uses – Pass-by and Shared Vehicle Trip Percentages (vph)

Parcel B Land Use Type	Vehicle Trip Type	AM Peak Trips (two-way)	PM Peak Trips (two-way)
Quick Serve Restaurant: Fast Food with Drive Thru (ITE Code 933)	**Total Trips[A]**	**130**	**94**
	Pass-by Trips[B]	40 (30%)	48 (50%)
	On-site Shared Trips[C]	14 (10%)	10 (10%)
	New Trips	76	36
Coffee Shop: Coffee Shop with Drive Thru (NSDPW Trip Rates)	**Total Trips[A]**	**246**	**170**
	Pass-by Trips[B]	198 (80%)	86 (50%)
	On-site Shared Trips[C]	0 (0%)	0 (0%)
	New Trips	48	84
Gas Station: Gas / Convenience (ITE Code 945)	**Total Trips[A]**	**96**	**111**
	Pass-by Trips[B]	48 (50%)	56 (50%)
	On-site Shared Trips[C]	10 (10%)	12 (10%)
	New Trips	38	43
Car Wash: Automated Car Wash (ITE Code 948)	**Total Trips[A]**	**0**	**14**
	Pass-by Trips[B]	0 (30%)	4 (30%)
	On-site Shared Trips[C]	0 (50%)	8 (50%)
	New Trips	0	2

A – Total trips for Parcel B taken from Table 7.

B – Pass-by trips attracted from adjacent road. Percentages based on ITE trip generation empirical surveys.

C – On-site shared trips are defined as one vehicle trip that patronizes multiple businesses on-site during that one trip. Percentages based on ITE empirical data for Mixed Use developments.

4.3 Distribution of Site-Generated Trips

The distribution of new site-generated traffic requires the practitioner to correlate the origins/destinations of these trips to a point outside of the study area. Typically, the origins and destinations are located where the major roads cross the study area cordon line. In the case of this particular project, the road connections to the outer cordon line include Trunk 2 (north and south), and Highway 102 (north and south).

There were three key factors taken into consideration when developing the expected distribution patterns for each land use type. These included the following:

- The proximity of the community services located to the south in Lantz and Elmsdale;
- Access to the Highway 102 regional travel corridor via the new Lantz Connector Road; and
- A review of the current traffic flow directional splits at the Trunk 2 / Robert Scott Drive intersection.

Information and data associated with all three of these factors were reviewed and the selected distribution percentages applied to the study analyses are summarized in *Table 10.* As shown, GRIFFIN applied different vehicle trip distribution percentages for the residential and commercial land use types. Drivers moving to/from each of these land use types generally have different trip purposes and travel route choices.

Table 10: Site-Generated Trip Distribution by Land Use Type

Direction	Via	Residential Land Uses	Parcel B Commercial Office / Health Centre	Parcel D Commercial / Retail
North	Trunk 2	15%	15%	25%
	Highway 102	5%	5%	0%
East	Route 277	2%	5%	0%
South	Trunk 2	18%	30%	0%
	Highway 102	60%	15%	0%
West	n/a	-	-	-
Internal[A]	Internal Streets	0%	30%	75%
	Total	**100%**	**100%**	**100%**

A – Internal trips are assumed to be generated from within the new residential areas. For Parcels B & D, trips are assigned between residential areas, along Trunk 2, to the Parcel driveways.

It should be noted that a portion of the site-generated trips are assumed to only occur internally within the development. This assumption is based on the expectation that some residents will travel between their residence to patronize one of the new commercial businesses, for example. Although we refer to these trips as "internal", they were still explicitly considered and added to the Trunk 2 volumes as well as the driveway volumes for Parcels B and D. This is discussed in more detail in the following Section.

4.4 Street Connections and Vehicle Trip Assignment

4.4.1 Overview of Assignment Process

The assignment of vehicle trips associated with a new development is the process of distributing the site-generated trips across multiple routes between each set of origin and destination pairs. For example, if a retail business had multiple driveways then drivers have a choice to move in/out of both driveways as they travel to/from the north, the south, and so forth.

For this particular study, the vehicle trip assignment process utilized multiple connection options to access the Trunk 2 corridor. The expected demand assigned to each Trunk 2 access point was based on the proximity and relative convenience to each Phase and sub-area within the proposed development. Further, there are multiple internal street connections for Phases 1 and 2; however, Phase 3 has no internal connectivity and must utilize the Wickwire Development internal street system to gain access to Trunk 2.

4.4.2 Assignment of Residential Trips

The trip assignment process for the residential land uses required additional assessment and rationalization. The residential-based trips were assigned to the three new street connections (i.e. Road A, Wickwire North, and Wickwire South) based on the proximity and relative convenience for the new residents. Our assumed assignment of residential trips to each new Trunk 2 intersection is contained in *Table 11*.

Table 11: Vehicle Trip Assignment Percentages

	New Road A	Wickwire North Street	Wickwire South Street	Total Percent
Percent Assigned Trips	58%	32%	10%	**100%**

The results of the assignment process for the new site-generated residential trips are shown graphically in *Figure 8*.

4.4.3 Assignment of Commercial Trips

Since there are no internal roadway connections between the new residential areas and Parcels B, D, and F, GRIFFIN explicitly assigned all commercial trips generated by these Parcels to/from the Trunk 2 corridor using the distribution percentages contained in *Table 10*.

The "internal" trips were explicitly added to the Parcel driveways, Trunk 2 corridor, and the intersections offering access to the proposed development (eg. Road A). These trips were also included in our intersection evaluations discussed later in this report. The majority of these "internal" commercial trips were assigned in/out of Road A which corresponds with the Phase 1 and Phase 2 residential areas. Since the Phase 3 residential area has no opportunity to connect internally to Road A, we assigned these trips via the Wickwire street connections to Trunk 2.

The assignment of all commercial trips are shown graphically in *Figure 9*.

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Figure 8: Site-Generated Peak Hour Volumes - Residential Land Uses

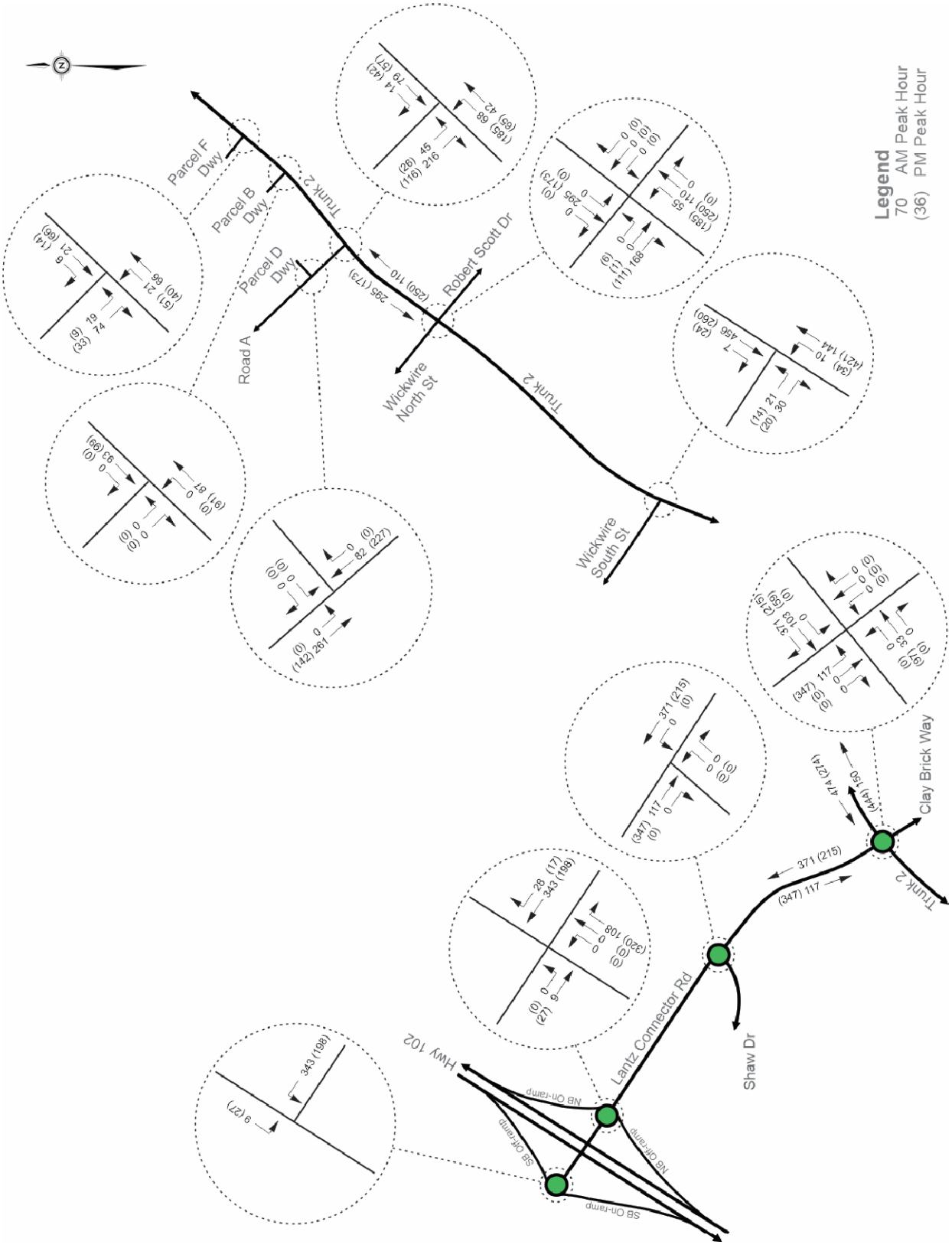
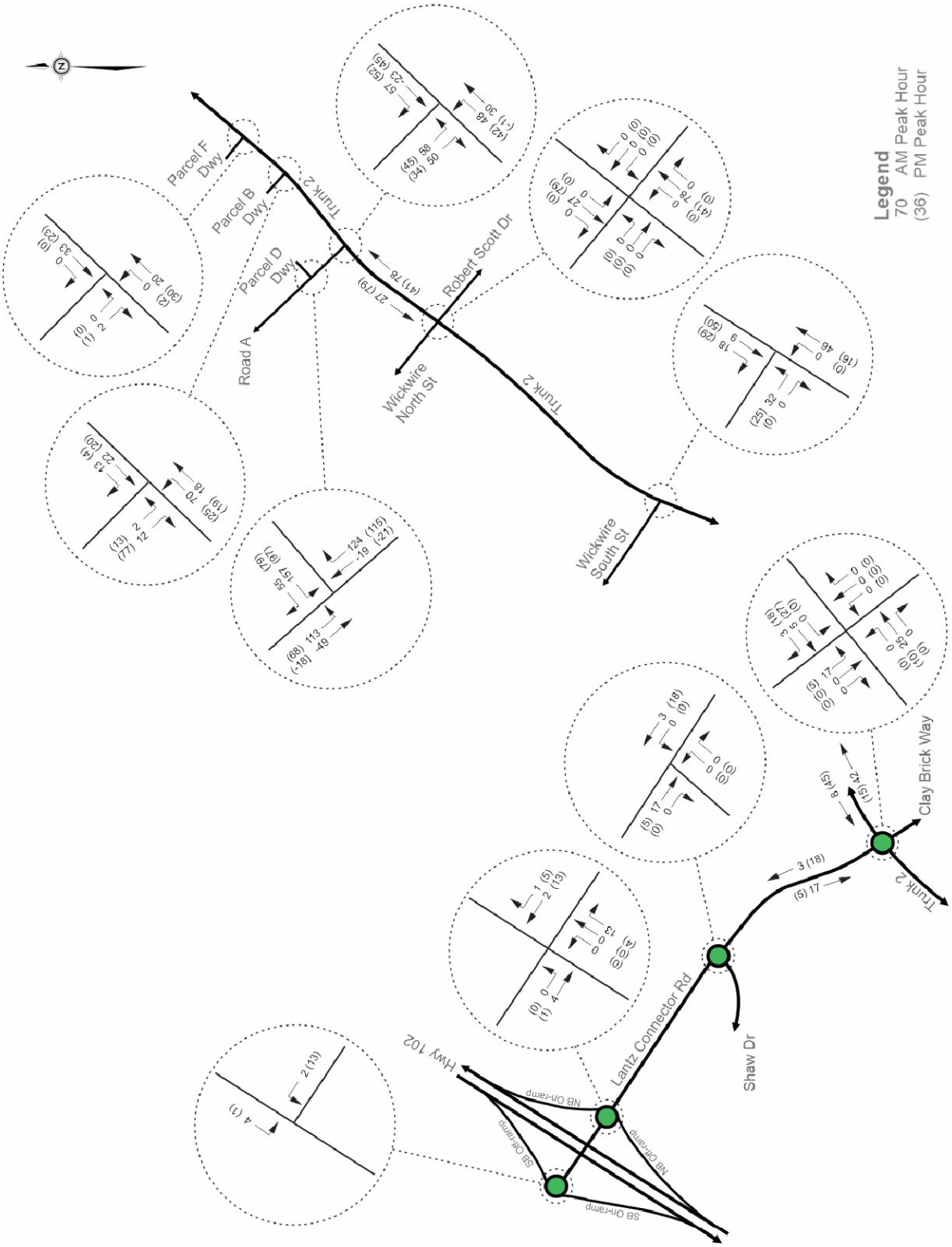


Figure 9: Site-Generated Peak Hour Volumes – Commercial Land Uses



5. DEVELOPING FUTURE TRAFFIC VOLUMES

This chapter summarizes the process and assumptions used to develop the future year traffic volumes expected by the 2043 planning horizon.

5.1 Overview

The future planning horizon chosen for a traffic impact study represents a milestone in the development process. Following NSDPW guidelines, the future planning horizon year used in the analysis for this type of development will occur 5 years beyond the expected full build-out/occupancy of the site.

Through discussions with *FH Development*, it was determined that the full build-out of the subject lands will be dependent on market demands as individual lots are purchased. In recent years, the rate of population growth in this area of the Province has been moderate. Thus, it appeared reasonable to take a longer-term outlook for the 1,551-unit development to fully develop. GRIFFIN has assumed the full build-out timeframe for this Mixed Use neighbourhood would be about 12-15 years, plus an addition 5 year timeframe required by NSDPW. Using these expected timelines GRIFFIN has provided a summary of the planning horizon assumptions in *Table 12*.

Table 12: Development Completion Dates and Study Horizon Years

Planning Horizons	Development / Traffic Scenario	Roadway Network
2023 Planning Horizon	2023 Existing Conditions	Existing roadway network (with Lantz Interchange)
2043 Planning Horizon	2043 Future Background Conditions: • Lantz South (30% complete, 373 units) • Lantz North (30% complete, 635 units) • Enland/Elegant Acreage (10% complete, 50 units) • These development rates equate to 1,058 new residential units.	Existing roadway network (with Lantz Interchange)
	2043 Future Total – Development Scenario 1: • The above-noted Background development assumptions (1,058 units), plus • Full build-out of the proposed *FH Development's* Milford development (1,551 units)	Existing roadway network (with Lantz Interchange)
	2043 – Sensitivity Assessment of Trunk 2 Corridor: • Full build-out of the *FH Development's* East Milford development (1,551 units), plus • Full build-out of Armco's Wickwire development (2,115 units) • This scenario includes a total of 3,666 units.	Analysis focused only on three new intersections along Trunk 2

Following traffic impact study best practices, the analysis process carried out for the future planning horizon includes two sets of assessments. The first is referred to as the future background traffic scenario which excludes the proposed site-generated traffic (*i.e.,* future status quo). The second is referred to as the future total traffic scenario which adds the proposed site-generated traffic to the street network. It is through this process that the practitioner can identify the impacts explicitly associated with the new site-generate traffic added to the roadway network by comparing the two sets of results, presented in Section 6. Specific to this study, the NSDPW has requested that an additional future development scenario be evaluated – which we refer to as a sensitivity assessment – and the results of this additional evaluation is presented later in Section 8.

The assembly of both sets of future 2043 peak hour traffic volumes is discussed in the following Sections.

5.2 Future Background Traffic Volumes

5.2.1 Component #1 – General Traffic Growth

Developing future "background" traffic volumes typically consists of general traffic growth, any future planned developments, and any planned road network changes in the vicinity of the study area. To establish a reasonable general background traffic growth rate for this area, GRIFFIN reviewed historical NSDPW traffic volumed data along Trunk 2 as well as the assumptions made in the 2017 Elmsdale-Lantz Travel Demand Modelling Study. Average Annual Daily Traffic (AADT) volumes recorded by NSDPW between 2009 and 2017 showed a 0.42% per year increase over this period. Therefore, a slightly higher-than-average compounding growth rate of **0.5% per year** was applied to the 2023 Baseline volumes. This rate is consistent with assumptions made in previous traffic studies for this area. The explicit impacts associated with the larger developments are discussed below.

5.2.2 Component #2 – Road Network Changes

When the roadway network is changed or modified at some point between the Baseline year and the future planning horizon, there is a potential for traffic flow patterns to change. For this study; however, the road network is not expected to change and was assumed to remain the same out to the 2043 planning horizon.

5.2.3 Component #3 – Adjacent Developments

Since 2019, several major residential developments have initiated planning approval processes with the MEH. These developments were discussed earlier in this report, and we provide a summary of their development magnitude in *Table 13*.

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Table 13: Summary of Background Developments

Development Name	TIS Year	100% Build-out		2043 Build-out (estimate)	
		Residential (units)	Commercial (ft^2)	Residential (units)	Commercial (ft^2)
1 – Lantz North / Wickwire Station	2019	2,115	50,000	635 (30%)	15,000 (30%)
2 – Lantz South	2020	1,241	220,100	373 (30%)	66,030 (30%)
3 – Enland / Elegant Acreage	2021	500	-	50 (10%)	-
TOTALS		**3,856 units**	**270,100 ft^2**	**1,058 units**	**66,045 ft^2**

Therefore, the development of background traffic for the 2043 planning horizon used in this current study was comprised of the following:

- Traffic growth from 2023 to 2043 using a 0.50% compounding rate (a 1.105 factor), and
- 30% of the Lantz North / Wickwire Development site-generated traffic, and
- 30% of the Lantz South Development site-generated traffic, and
- 10% of the Enland / Elegant Acreage Development site-generated traffic.

For each background development, GRIFFIN referenced the site-generated vehicle trips from their respective TIS study reports. However, GRIFFIN adjusted the trip distribution and assignment patterns slightly to reflect actual traffic flow patterns observed during November 2022 – with the new Lantz Connector Road and new interchange open and operational. This approach provided a more accurate representation of future traffic flow conditions.

The resulting future Background 2043 peak hour volumes are contained in *Figure 10*.

5.3 Future Total Traffic Volumes – Development Scenario 1

Under the future Total 2043 traffic scenario, the proposed development is expected to be fully constructed and occupied. The traffic volumes for this scenario were developed using the following assumptions:

- Future background 2043 volumes (*Figure 10*), plus
- Site-generated traffic volumes (*Figures 8 and 9*).

The future Total 2043 traffic volumes used in the analysis are shown in *Figure 11*.

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Figure 10: Future Background 2043 Peak Hour Volumes

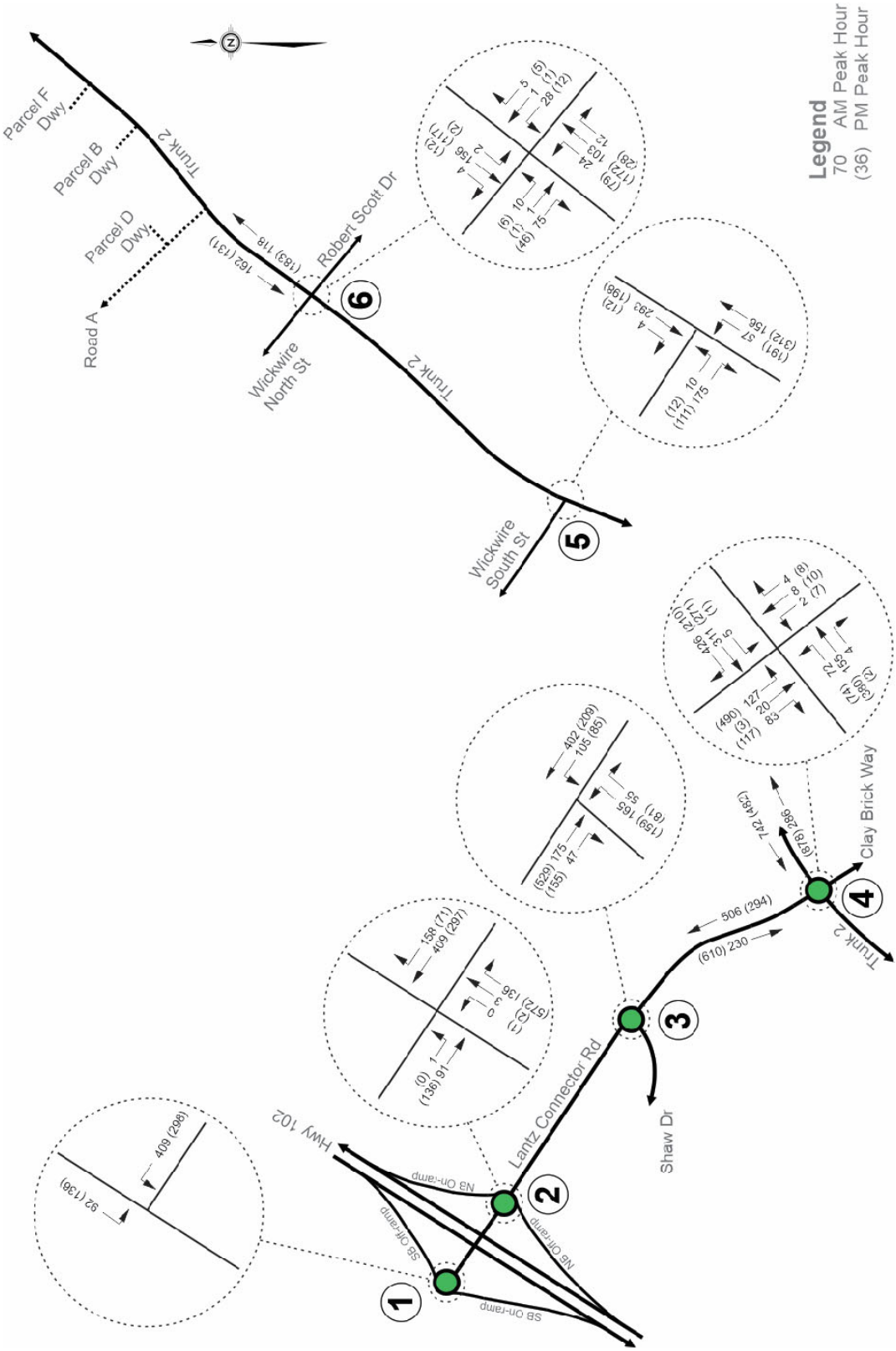
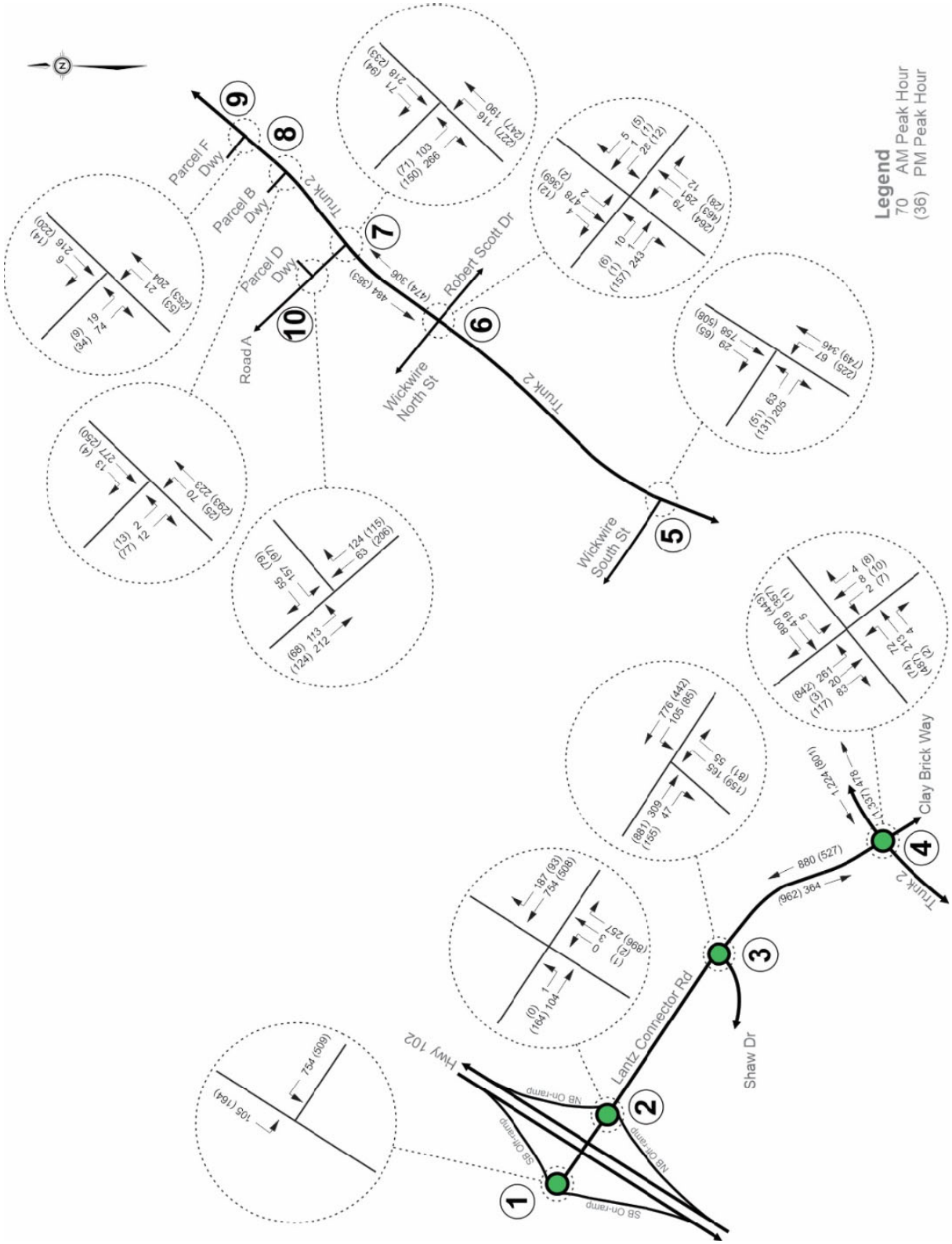


Figure 11: Future Total 2043 Peak Hour Volumes – Development Scenario 1



6. FUTURE 2043 TRAFFIC OPERATIONAL ANALYSIS

This chapter summarizes the results of the future year traffic operations analysis, including the auxiliary turn lane warrants, and intersection capacity review at the 2043 Horizon.

6.1 Analysis Step #1 – Traffic Signal Warrant Review

The initial step in the analysis process identified the need for signalized traffic control by using the Transportation Association of Canada's (TAC) signal warrant procedure. This methodology is widely used by road agencies across Canada and is a recognized procedure by the NSDPW. The TAC calculation process uses a set of average intersection volumes measured over the six highest hours of a typical day. The results of this calculation process include a number of priority points to indicate whether a traffic signal is warranted. When the minor street traffic volume exceeds 75 vehicles/hour and the number of priority points exceeds 100, the traffic signal warrant is met.

GRIFFIN used the observed November 2022 hourly traffic volume profile recorded at the Trunk 2 / Lantz Connector Road intersection to establish the temporal profile and identify the six highest hours. These data were considered to be representative of current study area traffic flow patterns and were applied to the TAC warrant calculations. The results are contained in *Table 14*. Detailed signal warrant assessments are contained in *Appendix II*.

Table 14: Summary of Traffic Signal Warrant Results

Intersection No. & Location	Development Scenarios		
	Baseline 2023	Background 2043	Total 2043
#5: Trunk 2 / Wickwire South St	n/a[A]	38 points	**138 points**
#6: Trunk 2 / Robert Scott-Wickwire North St	3 points	13 points[B]	76 points[B]
#7: Trunk 2 / New Road A	n/a[A]	n/a[A]	76 points
#8: Trunk 2 / Parcel B Commercial Access	n/a[A]	n/a[A]	19 points
#9: Trunk 2 / Parcel F Residential Access	n/a[A]	n/a[A]	18 points
#10: Road A / Parcel D Commercial Access	n/a[A]	n/a[A]	37 points

A – Intersection does not exist under this development scenario.

B – Assumes the existing three-leg intersection is converted to a four-leg intersection to accommodate the new west access connection serving the Wickwire Development.

The results contained in *Table 14* suggest only one future intersection will require a traffic control upgrade from stop-control to either signalization or a roundabout – the Wickwire South intersection. The overall findings include:

- *Trunk 2 / Wickwire South Street*: This three-leg intersection is expected to require either traffic signals or a roundabout to accommodate the assumed development rates by the 2043 planning horizon.
- *Trunk 2 / Robert Scott-Wickwire South Street*: This intersection can operate with stop-control under our assumed Total 2043 peak hour traffic demand. However, with more growth to occur within the future Wickwire development there will likely be a need for traffic signals at some point in the future.
- *Trunk 2 / New Road A*: This future intersection can accommodate the majority of the proposed Phase 1 and a portion of the Phase 2 traffic. Under a full buildout scenario (i.e. 1,551 units) this intersection is expected to function adequately with stop-control.

Our results also indicate that all new intersections and accesses associated with the proposed Mixed Use development can operate with unsignalized traffic control under the assumed Total 2043 peak hour traffic demand. These signal warrant results were carried forward to the intersection performance analysis presented in Section 6.3.

6.2 Analysis Step #2 - Auxiliary Turn Lane Review

The next step in the analysis process included a review of the auxiliary turn lane needs at the unsignalized, stop-controlled intersections included in this study. Since the Lantz Connector Road corridor is comprised of four modern roundabouts, the focus of our review shifted to the Trunk 2 corridor.

The left turn lane warrant review followed Ministry of Transportation of Ontario (MTO) procedures. The right turn lane warrant review followed the Ohio Department of Transportation (ODOT) methodology. A summary of the auxiliary turn lane assessment results are provided in *Table 15*. Detailed auxiliary turn lane warrant assessments are contained in *Appendix III*.

Under the assumed future Total 2043 peak hour conditions we can expect the need for left turn lanes in the following locations:

- On Trunk 2 at the Robert Scott Drive-Wickwire North Street unsignalized intersection, and
- On Trunk 2 at the new Road A unsignalized intersection, and
- On Road A at the new Parcel D highway commercial access – assuming only one access.

The auxiliary turn lane warrant assessment results indicate that auxiliary right turn lanes are not required at any unsignalized intersection in the study area. These results have been carried forward to the intersection performance assessment discussed in the next Section.

Table 15: Summary of Auxiliary Turn Lane Assessments

Intersection No. & Location	Turn Lane	Development Scenarios		
		Baseline 2023	Background 2043	Total 2043
#5: Trunk 2 / Wickwire South St	Left Turn Lane	*n/a*[A]	**Warrant met**	*signalized*[B]
	Right Turn Lane	*n/a*[A]	Warrant not met	*signalized*[B]
#6: Trunk 2 / Robert Scott-Wickwire North St	Left Turn Lane	Warrant not met	Warrant not met	**Warrant met**
	Right Turn Lane	Warrant not met	Warrant not met	Warrant not met
#7: Trunk 2 / New Road A	Left Turn Lane	*n/a*[A]	*n/a*[A]	**Warrant met**
	Right Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met
#8: Trunk 2 / Parcel B Commercial Access	Left Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met
	Right Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met
#9: Trunk 2 / Parcel F Residential Access	Left Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met
	Right Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met
#10: Road A / Parcel D Commercial Access	Left Turn Lane	*n/a*[A]	*n/a*[A]	**Warrant met**
	Right Turn Lane	*n/a*[A]	*n/a*[A]	Warrant not met

A – This intersection does not exist under this development scenario.

B – Results provided only for scenarios with stop-control. Future Total scenario requires signalization, thus no results.

6.3 Analysis Step #3 - Future 2043 Intersection Performance Analysis

A capacity and operational performance analysis effort was carried for each study area intersection using the future 2043 forecast traffic volumes. The analysis process used the industry-accepted Trafficware *Synchro 11* software tool for signalized/unsignalized intersections, which is based on the methodologies contained in the Transportation Research Board's (TRB) *Highway Capacity Manual*. The evaluation of modern roundabouts was completed using the latest version of the Transportation Research Laboratory's Arcady software tool.

A summary of results for the critical intersection movements are contained in *Table 16* and the detailed capacity reports are contained in *Appendix IV*. Following NSDPW's TIS guidelines, the measures of effectiveness used to describe the operational performance included the level of service, average vehicle delay, volume-to-capacity ratio (v/c ratio) and 95th percentile queue length (metres) for all approaches to the intersection.

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Table 16: Future 2043 Intersection Operational Analysis Results

#1: Lantz Connector / Hwy 102 SB Ramps						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: n/a	-	-	EB Entry: n/a	-	-
Roundabout -	WB Entry: **A** (3.6s)	0.17	<10m	WB Entry: **A** (3.4s)	0.11	<10m
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: **A** (3.5s)	0.06	<10m	SB Entry: **A** (3.4s)	0.07	<10m
Background 2043	EB Entry: n/a	-	-	EB Entry: n/a	-	-
Roundabout -	WB Entry: **A** (4.7s)	0.37	15m	WB Entry: **A** (4.1s)	0.27	<10m
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: **A** (4.5s)	0.11	<10m	SB Entry: **A** (4.2s)	0.15	<10m
Total 2043	EB Entry: n/a	-	-	EB Entry: n/a	-	-
Roundabout -	WB Entry: **A** (9.2s)	0.68	30m	WB Entry: **A** (5.5s)	0.46	10m
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: **A** (7.3s)	0.19	10m	SB Entry: **A** (5.6s)	0.22	10m

#2: Lantz Connector / Hwy 102 NB Ramps						
	AM Peak Hour			PM Peak Hour		
	Approach: LOS (Delay)	V/C	Queue[A]	Approach: LOS (Delay)	V/C	Queue[A]
Existing 2023	EB Entry: **A** (3.1s)	0.05	<10m	EB Entry: **A** (3.2s)	0.06	<10m
Roundabout -	WB Entry: **A** (3.6s)	0.17	<10m	WB Entry: **A** (3.4s)	0.11	<10m
existing lanes	NB Entry: **A** (3.1s)	0.01	<10m	NB Entry: **A** (3.1s)	0.01	<10m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-
Background 2043	EB Entry: **A** (3.3s)	0.08	<10m	EB Entry: **A** (3.4s)	0.12	<10m
Roundabout -	WB Entry: **A** (4.7s)	0.37	15m	WB Entry: **A** (4.1s)	0.27	10m
existing lanes	NB Entry: **A** (3.2s)	0.01	<10m	NB Entry: **A** (3.2s)	0.01	<10m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-
Total 2043	EB Entry: **A** (3.3s)	0.09	<10m	EB Entry: **A** (3.5s)	0.15	<10m
Roundabout -	WB Entry: **A** (9.3s)	0.68	30m	WB Entry: **A** (5.5s)	0.46	10m
existing lanes	NB Entry: **A** (3.2s)	0.01	<10m	NB Entry: **A** (3.3s)	0.01	<10m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

Table 16 - continued

#3: Lantz Connector / Shaw Drive						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023	EB Entry: n/a	-	-	EB Entry: n/a	-	-
Roundabout -	WB Entry: n/a	-	-	WB Entry: n/a	-	-
existing lanes	NB Entry: n/a	-	-	NB Entry: n/a	-	-
	SB Entry: n/a	-	-	SB Entry: n/a	-	-
Background 2043	EB Entry: **A** (2.0s)	0.12	<10m	EB Entry: **A** (2.8s)	0.37	15m
Roundabout -	WB Entry: **A** (2.9s)	0.31	15m	WB Entry: **A** (2.3s)	0.17	<10m
existing lanes	NB Entry: **A** (4.3s)	0.22	10m	NB Entry: **A** (6.8s)	0.33	15m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-
Total 2043	EB Entry: **A** (2.2s)	0.19	<10m	EB Entry: **A** (4.0s)	0.56	15m
Roundabout -	WB Entry: **A** (5.7s)	0.60	15m	WB Entry: **A** (3.0s)	0.32	15m
existing lanes	NB Entry: **A** (5.0s)	0.25	10m	NB Entry: **B** (12.7s)	0.48	15m
	SB Entry: n/a	-	-	SB Entry: n/a	-	-

#4: Lantz Connector / Trunk 2						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023	EB Entry: **A** (2.0s)	0.08	<10m	EB Entry: **A** (2.3s)	0.21	10m
Roundabout -	WB Entry: **A** (3.4s)	0.01	<10m	WB Entry: **A** (4.3s)	0.03	<10m
existing lanes	NB Entry: **A** (1.9s)	0.10	<10m	NB Entry: **A** (2.3s)	0.16	<10m
	SB Entry: **A** (2.7s)	0.26	10m	SB Entry: **A** (2.4s)	0.17	<10m
Background 2043	EB Entry: **A** (2.2s)	0.13	<10m	EB Entry: **A** (2.9s)	0.35	15m
Roundabout -	WB Entry: **A** (3.7s)	0.02	<10m	WB Entry: **A** (5.8s)	0.04	<10m
existing lanes	NB Entry: **A** (2.1s)	0.13	<10m	NB Entry: **A** (2.9s)	0.29	10m
	SB Entry: **A** (3.7s)	0.45	15m	SB Entry: **A** (2.9s)	0.30	15m
Total 2043	EB Entry: **A** (2.6s)	0.22	10m	EB Entry: **A** (4.5s)	0.57	15m
Roundabout -	WB Entry: **A** (4.1s)	0.02	<10m	WB Entry: **B** (10.2s)	0.07	<10m
existing lanes	NB Entry: **A** (2.3s)	0.17	<10m	NB Entry: **A** (4.2s)	0.42	15m
	SB Entry: **A** (7.9s)	0.75	55m	SB Entry: **A** (4.0s)	0.49	15m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

Table 16 - continued

#5: Trunk 2 / Wickwire South St						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023[C] *No intersection*	n/a	-	-	n/a	-	-
Background 2043 *Stop-control*	SB Th-Rt: n/a[B] NB Left: **A** (8.1s) EB Left: **B** (13.9s) EB Right: **B** (12.1s)	- 0.05 0.03 0.27	- <10m <10m 10m	SB Th-Rt: n/a[B] NB Left: **A** (8.3s) EB Left: **C** (19.5s) EB Right: **B** (10.4s)	- 0.16 0.05 0.15	- <10m <10m <10m
Total 2043 *Signalized*	SB Entry: **C** (28.2s) NB Entry: **A** (6.1s) EB Entry: **B** (15.1s)	0.88 0.31 0.54	190m 40m 20m	SB Entry: **C** (21.9s) NB Entry: **B** (10.1s) EB Entry: **B** (13.7s)	0.75 0.63 0.35	100m 115m 20m

#6: Trunk 2 / Robert Scott Dr-Wickwire North St						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023 *Stop-control - existing lanes*	NB Th-Rt: n/a[B] SB Left: **A** (7.4s) WB Entry: **B** (10.0s) EB Entry: n/a	- 0.01 0.04 -	- 0m <10m -	NB Th-Rt: n/a[B] SB Left: **A** (7.6s) WB Entry: **B** (10.1s) EB Entry: n/a	- 0.01 0.02 -	- 0m <10m -
Background 2043 *Stop-control - new west leg*	NB Left: **A** (7.7s) SB Left: **A** (7.5s) WB Entry: **B** (12.4s) EB Entry: **B** (10.1s)	0.02 0.01 0.07 0.12	<10m 0m <10m 10m	NB Left: **A** (7.7s) SB Left: **A** (7.7s) WB Entry: **B** (13.1s) EB Entry: **B** (10.0s)	0.06 0.01 0.04 0.07	<10m 0m <10m <10m
Total 2043 *Stop-control - new west leg*	NB Left: **A** (8.9s) SB Left: **A** (8.0s) WB Entry: **F** (67.2s) EB Entry: **C** (20.9s)	0.08 0.01 0.40 0.55	<10m 0m 15m 25m	NB Left: **A** (9.3s) SB Left: **A** (8.6s) WB Entry: **F** (81.1s) EB Entry: **C** (17.9s)	0.26 0.01 0.30 0.37	10m 0m 10m 15m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

C – Intersection does not exist under this scenario.

Table 16 - continued

#7: Trunk 2 / New Road A						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023[C]	n/a	-	-	n/a	-	-
Background 2043[C]	n/a	-	-	n/a	-	-
Total 2043	SB Th-Rt: n/a[B]	-	-	SB Th-Rt: n/a[B]	-	-
Stop-control	NB Left: **A** (8.3s)	0.10	<10m	NB Left: **A** (8.9s)	0.21	10m
	EB Left: **C** (21.0s)	0.33	10m	EB Left: **E** (36.9s)	0.41	15m
	EB Right: **B** (13.0s)	0.39	15m	EB Right: **B** (11.6s)	0.23	10m

#8: Trunk 2 / Parcel B Commercial Access						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023[C]	n/a	-	-	n/a	-	-
Background 2043[C]	n/a	-	-	n/a	-	-
Total 2043	SB Th-Rt: n/a[B]	-	-	SB Th-Rt: n/a[B]	-	-
Stop-control	NB Left: **A** (8.2s)	0.06	<10m	NB Left: **A** (7.9s)	0.02	<10m
	EB Lt-Rt: **B** (10.9s)	0.02	<10m	EB Lt-Rt: **B** (11.4s)	0.15	<10m

#9: Trunk 2 / Parcel F Residential Access						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023[C]	n/a	-	-	n/a	-	-
Background 2043[C]	n/a	-	-	n/a	-	-
Total 2043	SB Th-Rt: n/a[B]	-	-	SB Th-Rt: n/a[B]	-	-
Stop-control	NB Left: **A** (7.8s)	0.02	<10m	NB Left: **A** (7.9s)	0.05	<10m
	EB Lt-Rt: **B** (11.0s)	0.15	<10m	EB Lt-Rt: **B** (11.0s)	0.07	<10m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

C – Intersection does not exist under this scenario.

Table 16 - continued

#10: Road A / Parcel D Commercial Access						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Existing 2023[C] *No intersection*	n/a	-	-	n/a	-	-
Background 2043[C] *No intersection*	n/a	-	-	n/a	-	-
Total 2043 *Stop-control*	WB Th-Rt: n/a[B] EB Left: **A** (8.0s) SB Lt-Rt: **C** (20.0s)	- 0.09 0.49	- <10m 20m	WB Th-Rt: n/a[B] EB Left: **A** (8.2s) SB Lt-Rt: **C** (15.5s)	- 0.06 0.36	- <10m 15m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

C – Intersection does not exist under this scenario.

The results contained in *Table 16* suggest that all future traffic movements at the study area intersections are forecast to operate with good levels of service, delay times, volume-to-capacity ratios along with little to no queue build-up during the peak travel times. However, in order to achieve acceptable intersection performance measures there will be a need for new roadway infrastructure upgrades, including:

1. *Trunk 2 / Wickwire South Street*: Under our assumed 2043 Total traffic scenario, this intersection will require traffic signals and a northbound left turn lane.
2. *Trunk 2 / Wickwire North Street*: Under our assumed 2043 Total traffic scenario, this four-leg intersection can function adequately with stop-control, and auxiliary left turn lanes in both the north and southbound direction.
3. *Trunk 2 / New Road A*: This new three-leg intersection can function with stop-control under a full-build-out scenario. The warrant for a new northbound left turn auxiliary lane is met at this location.

The future lane configuration and traffic control upgrades are illustrated in *Figure 12*.

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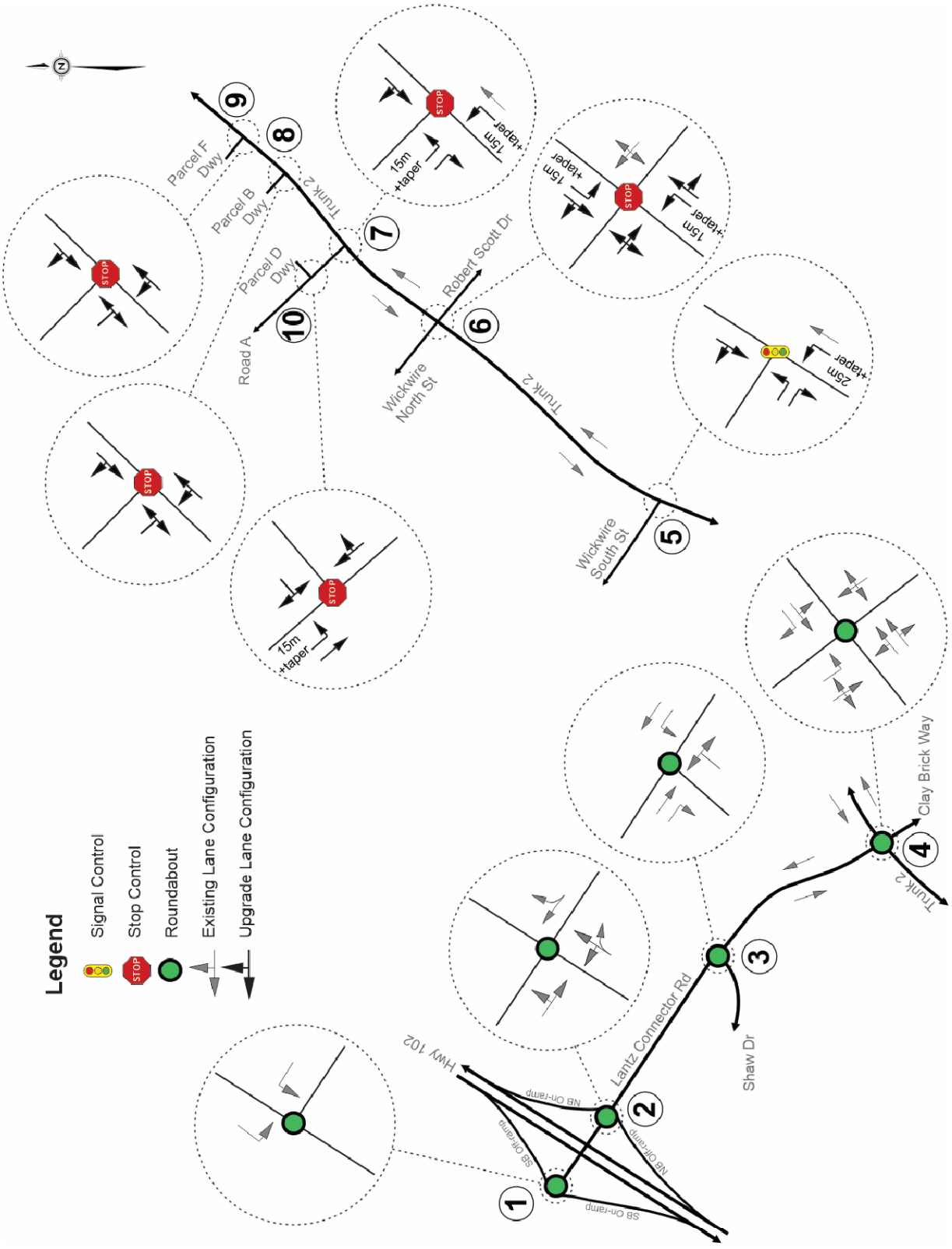
Figure 12: Recommended Future Lane Configuration – 2043 Horizon



7. INTERNAL STREET NETWORK

This chapter provides a summary of the proposed new street system and an assessment of the new connections to Trunk 2.

7.1 New Connections to Trunk 2

7.1.1 Overview

GRIFFIN completed a driver visibility review at the three new connections proposed as part of the *FH Development* neighbourhood. These connections include the Road A intersection, the Parcel B access, and the Parcel F access.

At this early stage of the planning approval process, NSDPW requires proponents to apply their Sight Distance Policy Procedure (PR5000) to determine if a proposed new access is provided in a suitable location. The procedure is applicable to drivers traveling on the major road approaching the new intersection/access and ensures there is sufficient distance for them to identify a hazard and bring their vehicle to a stop. The minimum criterion for approaching vehicles is referred to as S*topping Sight Distance* (SSD). The NSDPW Procedure generally follows guidelines contained in the Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roads*[3] document using a driver eye height of 1.05m, an object height of 0.60m, as well as the observed 85th percentile operating speeds.

GRIFFIN gathered vehicle operating speed data north of the Robert Scott Drive intersection, near the proposed connection for Road A. These data were gathered in November 2022. This location is situated in the vicinity of a speed limit transition zone from 60 km/h to 80 km/h.

The calculated 85th percentile vehicle operating speeds were determined to be 82 km/h. However, as this area continues to grow and become less rural and more suburban, it is expected that the MEH and NSDPW will extend the 60 km/h speed zone further north along Trunk 2 – beyond the proposed development. We have assumed operating speeds in the vicinity of the proposed Road A intersection would be much less in the future and have used 60 km/h for the visibility review discussed in the following Section.

7.1.2 Stopping Sight Distance Review

A summary of the field measured sight distances relative to the minimum requirements for a 60 km/h operating speed is provided in *Table 17*.

[3] Geometric Design Guide for Canadian Roads. Transportation Association of Canada. 2017 Edition.

Table 17: Summary of Stopping Sight Distance Measurements (60 km/h)

Measurement Location	Travel Direction	Available SSD	TAC Required SSD		Does Available Exceed Required?
			Base[A]	Slope Adjusted	
1. Proposed New Road A (at field access)	Northbound	93 m	85 m (60 km/h)	80 m (+3%)[B]	**Yes**
	Southbound	250 m		85 m (0%)[B]	**Yes**
2. Proposed New Parcel B Access (270m south of P/L)	Northbound	150m	85 m (60 km/h)	85 m (0%)[B]	**Yes**
	Southbound	105 m		85 m (0%)[B]	**Yes**
3. Proposed New Parcel F Access (50m south of P/L)	Northbound	115m	85 m (60 km/h)	87 m (-3%)[B]	**Yes**
	Southbound	160m		87 m (-3%)[B]	**Yes**

A – 2017 TAC Chapter 2, Table 2.5.2

B – An estimate of the actual slope along Trunk 2 on the approaches to the new access.

GRIFFIN concluded from the driver visibility review findings that the three proposed new connections to Trunk 2 can be placed in locations that offer sufficient stopping sight distance for a future 60 km/h operating speed.

7.2 Accommodating Public Transit Service in the Future

It is understood that the MEH has plans to implement public transit service at some point in the future. This type of transportation service is essential for a growing community, once population and employment levels reach feasible levels. There is; however, a notable investment of time and resources for a Municipality to plan and implement such a service – activities that could include route planning, service thresholds, investments in a bus fleet, adequate maintenance and storage facilities, hiring personnel, and so forth. Given these conditions, it is expected that the introduction of transit service is likely to occur in the medium to long-term timeframe.

Planning for a public transit service; however, can begin now to ensure the future service can be implemented more efficiently. It would be prudent for the Municipality to make provisions for public transit bus service during the planning and design stages – particularly along collector streets – with in the new development areas in Lantz. This includes the *FH Development* proposed Mixed Use neighbourhood.

As the Municipality continues through the planning approval process, they should work with *FH Developments* to identify future potential bus route corridor(s) within the proposed development. These specific streets may require design adjustments to accommodate the larger transit vehicles. In addition, a successful transit system requires good connectivity with other travel modes – such as active transportation.

We should note that despite the future plans to implement public transit, GRIFFIN has not modified the vehicle trip generation rates applied to this study to account for any mode shift from

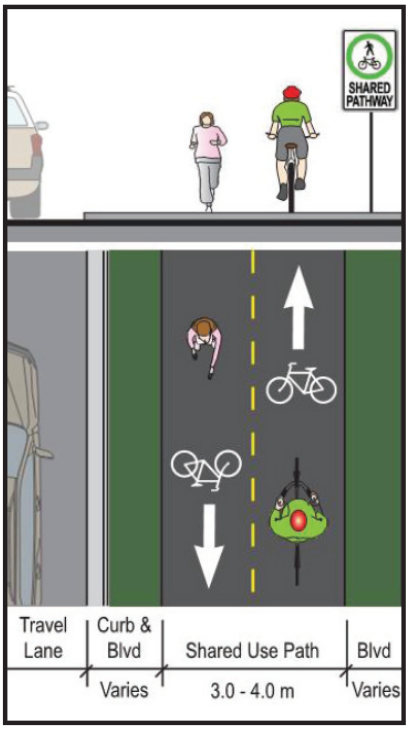
commuter vehicle travel to public transit travel. This provides a more conservative and worst-case set of results – particularly if transit service is not introduced until a long-term time frame.

7.3 Active Transportation Facilities

Planning and designing communities following Smart Growth guidelines and principles will help a Municipality reduce dependency on auto travel, and in turn, will encourage greater use of other modes such as public transit, walking, and cycling. A successful Smart Growth strategy relies on the ability of the plan to offer residents with multiple choices for their mode of travel when making trips. We discussed the potential for a future public transit service in this area of MEH in the previous Section, but there is more that can be implemented to help achieve these goals.

The MEH should give consideration to providing active transportation facilities throughout the growing area of Lantz. New neighbourhoods that are being planned should attempt to incorporate active transportation trails and multi-use pathways that offer convenient connectivity between neighbourhoods. Asphalt multi-use paths (MUP) could be implemented in the street boulevard area, in place of typical concrete sidewalks. An example of a MUP is contained in *Figure 13*.

Figure 13: Example of a Multi-Use Path Along a Street



Source: OTM Book 18: Cycling Facilities

These types of active transportation facilities offer a safe and comfortable area to travel – regardless of age or ability. They also offer good connectivity between the active modes and public transit and should be considered along all new collector streets, as well as connecting schools, recreational centres and so forth.

8. TRUNK 2 CORRIDOR SENSITIVITY ANALYSIS

This chapter summarizes the analysis results of our long-term full build-out sensitivity analysis. The assessment only focuses on the capacity needs of the new intersections along Trunk 2.

8.1 Overview

Throughout the Province, the demand for residential housing units has increased in the last few years – beyond what was previously contemplated. Specific to our study area, there is now expected to be a notable increase in population and employment in the Lantz area over the next 20-40 years. Therefore, the NSDPW has concerns with the long-term functionality of the Trunk 2 corridor in Lantz. As such, the NSDPW has requested that an additional sensitivity assessment be completed to better understand the future Trunk 2 corridor capacity needs.

Establishing the vehicle demand for the sensitivity assessment was less focused on a specific planning horizon – which is the typical approach for transportation planning assessments – and more focused on a specific full build-out scenario. As identified through discussions with NSDPW, the assumed full build-out scenario assumed that both the Wickwire Development and FH Development's East Milford Development were completed. We have focused specifically on these two developments in the Lantz north area as they are anticipated to contribute to the majority of vehicle demand on Trunk 2, in the vicinity of the NSDPW's area of concern. The assumed development rates for the key development areas are summarized in *Table 18*.

Table 18: Assumed Future Full Build-Out Rates – Sensitivity Analysis (3,666 units)

Development Name	Residential (units)	Commercial (ft^2)
Lantz North / Wickwire Station	2,115	50,000 ft^2
FH Development East Milford	1,551	47,000 ft^2
TOTALS	**3,666 units**	**97,000 ft^2**

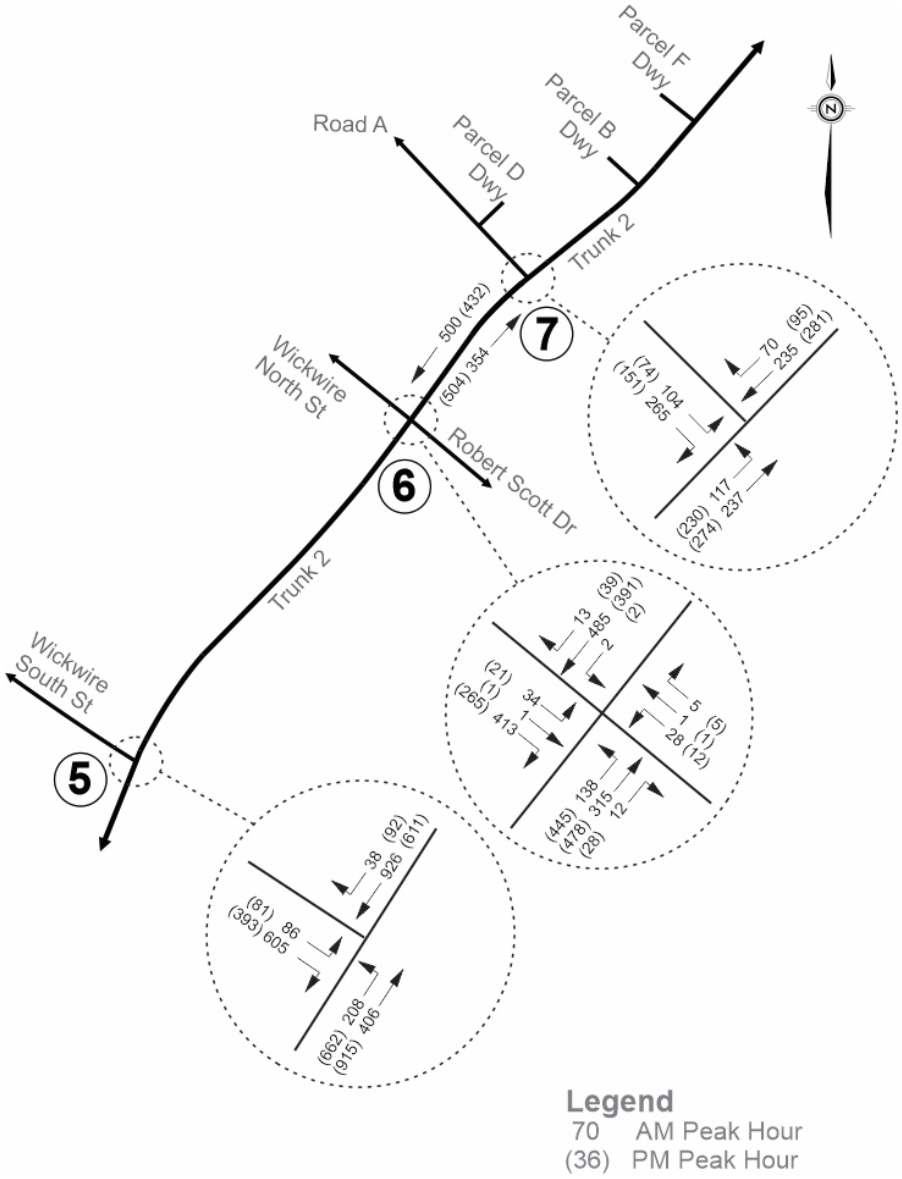
The analysis component to our sensitivity assessment was focused only on the new intersections along the Trunk 2 corridor in the vicinity of the Lantz North / Wickwire development. As such, we have only evaluated the Wickwire South Street, Wickwire North Street-Robert Scott Drive, and the new *FH Development* Road A intersections.

8.2 Peak Hour Traffic Volumes

The future full build-out peak hour traffic volumes utilized the same source documents as applied to our analysis of the 2043 Total development scenario, presented earlier in Section 6. The Wickwire Development site-generated traffic was referenced from the WSP 2019 TIS report (Figures 2A and B). The East Milford site-generated traffic volumes were referenced from Section

4 of this report. GRIFFIN then assembled the sensitivity analysis peak hour volumes and these are contained in *Figure 14*.

Figure 14: Future Trunk 2 Corridor Peak Hour Vehicle Demand – Sensitivity Analysis Scenario



8.3 Analysis Results

8.3.1 Signal Warrant Results

Following the same analysis methodology as presented earlier in Section 6.1, GRIFFIN calculated the need for traffic control upgrades at each of the three intersections – assuming the future peak hour vehicle demand contained in *Figure 14*. The traffic signal warrant results are presented in *Table 19*, along with detailed calculations provided in *Appendix II*.

Table 19: Summary of Traffic Signal Warrant Results – Sensitivity Analysis (3,666 units)

Intersection No. & Location	Sensitivity Analysis Results	
	Baseline 2023	Future Full Build-Out
#5: Trunk 2 / Wickwire South St	n/a[A]	**415 points**
#6: Trunk 2 / Robert Scott-Wickwire North St	3 points	**140 points[B]**
#7: Trunk 2 / New Road A	n/a[A]	81 points

A – Intersection does not exist under this development scenario.

B – Assumes the existing three-leg intersection is converted to a four-leg intersection to accommodate the new west access connection.

Upgrades to either traffic signals or roundabouts are expected to be needed at both the Wickwire South Street intersection (415 points) and the Wickwire North Street intersection (140 points) under a future full build-out scenario. Since the majority of traffic flow is expected to move to/from the south along Trunk 2, the vehicle demand north of the future Wickwire Development are similar to the 2043 peak hour volumes contained in *Figure 11*. Therefore, the Trunk 2 / New Road A intersection is expected to operate with acceptable performance measures as a stop-control intersection (81 points).

8.3.2 Auxiliary Turn Lane Warrant Results

The auxiliary turn lane warrant results for the Road A unsignalized intersection are presented in *Table 20*, along with detailed calculations provided in *Appendix III*.

Table 20: Summary of Auxiliary Turn Lane Assessments– Sensitivity Analysis (3,666 units)

Intersection No. & Location	Turn Lane	Sensitivity Analysis Results	
		Baseline 2023	Future Full Build-Out
#5: Trunk 2 / Wickwire South St	Left Turn Lane	*n/a[A]*	*signalized[B]*
	Right Turn Lane	*n/a[A]*	*signalized[B]*
#6: Trunk 2 / Robert Scott-Wickwire North St	Left Turn Lane	Warrant not met	*signalized[B]*
	Right Turn Lane	Warrant not met	*signalized[B]*
#7: Trunk 2 / New Road A	Left Turn Lane	*n/a[A]*	**Warrant met**
	Right Turn Lane	*n/a[A]*	Warrant not met

A – This intersection does not exist under this development scenario.

B – Results provided only for scenarios with stop-control. Future Total scenario requires signalization, thus no results.

As identified in the previous section, only the new Road A intersection will be able to operate with stop-control. The warrant is met for a northbound auxiliary left turn lane at this location. The warrant is not met for the southbound right turn lane.

8.3.3 Intersection Performance Results

A summary of the operational performance at the three key intersections is summarized in *Table 21*.

Table 21: Intersection Operational Analysis Results – Sensitivity Analysis (3,666 units)

#5: Trunk 2 / Wickwire South St						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Full Build-out Sensitivity Analysis *Signalized* *Trunk 2: 4-lanes*	SB Entry: **D** (42.4s) NB Entry: **C** (24.4s) EB Entry: **D** (38.8s)	0.92 0.81 0.95	120m 70m 130m	SB Entry: **D** (50.0s) NB Entry: **C** (27.5s) EB Entry: **B** (15.7s)	0.93 0.96 0.73	105m 210m 25m

#6: Trunk 2 / Robert Scott Dr-Wickwire North St						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Full Build-out Sensitivity Analysis *Signalized* *Trunk 2: 2-lanes*	SB Entry: **B** (19.3s) NB Entry: **A** (6.9s) EB Entry: **B** (17.0s) WB Entry: **C** (25.8s)	0.60 0.32 0.78 0.16	105m 40m 35m 15m	SB Entry: **B** (16.1s) NB Entry: **B** (14.2s) EB Entry: **B** (12.4s) WB Entry: **C** (25.4s)	0.51 0.84 0.63 0.09	80m 80m 20m 10m

#7: Trunk 2 / New Road A						
	AM Peak Hour			**PM Peak Hour**		
	Approach: LOS (Delay)	**V/C**	**Queue[A]**	**Approach: LOS (Delay)**	**V/C**	**Queue[A]**
Full Build-out Sensitivity Analysis *Stop-control* *Trunk 2: 2-lanes*	SB Th-Rt: n/a[B] NB Left: **A** (8.4s) EB Left: **C** (23.7s) EB Right: **B** (13.2s)	- 0.11 0.37 0.40	- <10m 15m 15m	SB Th-Rt: n/a[B] NB Left: **A** (9.1s) EB Left: **E** (46.9s) EB Right: **B** (12.2s)	- 0.22 0.49 0.25	- 10m 20m 10m

A – Queue represents the calculated vehicle queue length in metres occurring 95% of the time (95th percentile).

B – HCM methodology assumes no delay for this first order intersection movement. No results calculated.

C – Intersection does not exist under this scenario.

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8.4 Discussion of Long-Term Corridor Capacity Needs

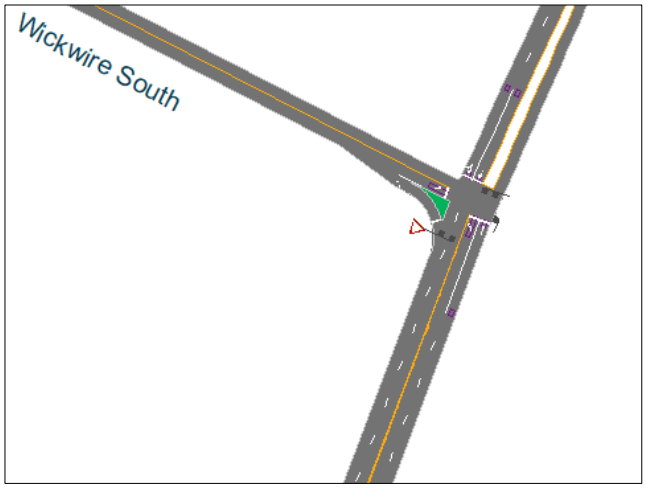
Based on the findings of our long-term full build-out sensitivity analysis, we can expect the need for traffic signals at both Wickwire North and South intersections. In terms of roadway cross-section, there is a need to widen Trunk 2 south of the future Wickwire South Street intersection to four lanes (i.e. two travel lanes in each direction). North of this location, Trunk 2 can adequately function with the capacity offered by a two-lane cross-section (i.e. one travel lane in each direction). The expected lane configuration needs are generally shown in *Figure 15*.

It should be noted that this a long-term view of the corridor capacity needs – a timeframe that is likely to extend beyond the 2043 planning horizon selected for this study. However, these findings are important as they suggest that there will be a need for a significant investment to widen the Trunk 2 corridor in order to accommodate the expected long-term population and employment growth in Lantz. In conclusion, there appears to be multiple future transportation planning options for this area of the MEH:

- Widen Trunk 2 to four lanes to move vehicle demand between the new neighbourhoods in Lantz north and the new Lantz interchange,
- Begin planning for a new Highway 102 interchange in the east Milford / Milford area to help dissipate the concentration of vehicle demand to/from the south and avoid the need to widen Trunk 2, or
- Implement new land use policies, introduce public transit with an attractive level of service, and offer multiple travel mode options for future residents. These initiatives will help reduce some of the demand for auto travel, and are likely only able to defer the need for capacity upgrades.

Upon rationalizing these three candidate long-term solutions, GRIFIN recommends that the NSDPW begin the planning process for a new Highway 102 interchange. This work will help identify an appropriate location as well as assist in preserving the necessary right-of-way once the need for this facility is reached.

Figure 15: Trunk 2 Long-Term Corridor Lane Configuration



9. CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the salient findings of the analysis and identifies any necessary changes to the transportation infrastructure.

9.1 Conclusions

The following conclusions were gleaned from this traffic impact assessment:

- *The Proposed Development*: The proponent has plans to develop the vacant PID #45089802 property into a Mixed Use neighbourhood that will be comprised of up to 1,551 new residential units and about 47,000 ft^2 of supporting commercial space. Vehicle access to this development will be provided by several new connections to Trunk 2. It is understood that the MEH has future plans to offer public transit service and this development is being planned to accommodate this service once it is ready to be implemented. This will offer future residents of this neighbourhood, as well as other adjacent neighbourhoods, with travel mode options which may help reduce auto demand in the area.
- *New Vehicle Traffic*: The expected new vehicle traffic generated by the proposed Mixed Use development was calculated using ITE's latest trip rates contained in the *Trip Generation Manual, 11th Edition*. The additional vehicle trips added to the road network include:
    - *AM Peak Hour*: 1,328 vph (516 inbound, 812 outbound)
    - *PM Peak Hour*: 1,380 vph (766 inbound, 614 outbound)
- *Lantz Connector Road Corridor:* The existing lane configuration and the existing capacity at each roundabout along this corridor is expected to sufficiently accommodate the forecast peak hour demand assumed to occur by the 2043 planning horizon. No future upgrades are expected at any of the existing roundabouts by 2043.
- *New Connections along the Trunk 2 Corridor – 2043 Planning Horizon:*
    - GRIFFIN has assumed three new connections to Trunk 2 would be needed to accommodate the proposed Mixed Use development. They included one new intersection connection (Road A), as well as two new driveway connections (Parcel B and Parcel F). Our driver visibility review concluded there are suitable locations to make these connections assuming the future regulatory speed limit and operating speeds along Trunk 2 are reduced to 60 km/h – a reduced speed environment is expected to occur as this area changes from rural to suburban.
    - The three new Trunk 2 connections associated with the proposed development are expected to operate with acceptable performance measures with stop-control.
    - The Wickwire South Street and North Street intersections are expected to also serve as connection options for the proposed development. Our examination of

these two future connections has identified the need for signalization at the Wickwire South Street intersection. The Wickwire North Street-Robert Scott Drive intersection is expected to function well with stop-control under the assumed 2043 Total peak hour traffic demand used in this study.

- *Trunk 2 Corridor Beyond 2043*: At the request of NSDPW, GRIFFIN completed a long-term full build-out sensitivity assessment in the vicinity of the new intersections along Trunk 2. It was determined that Trunk 2 is expected to require widening to a four-lane cross-section south of the Wickwire South Street intersection – in the absence of any other network capacity upgrades.

Overall, our traffic analysis results suggest the study area intersections can adequately accommodate the future Total 2043 peak hour volumes – assuming the transportation system upgrades noted above have been implemented. In addition, it can be concluded that the new site-generated vehicle trips associated with the proposed development result in volume increases along the Lantz Connector Road; however, this corridor will continue to offer sufficient capacity through the 2043 planning horizon.

9.2 Recommendations

The following recommendations were developed based on the findings flowing from this study:

1. *Geometric Design Process*: That the geometric design process for the new internal street system and its intersections with the existing public roads follow the most recent NSDPW and TAC geometric design guidelines. In addition, minimum required driver sight distances, corner sight triangles and corner clearances should be confirmed and maintained throughout the design and construction phases of the project. Prior to the start of any roadway or intersection design process, the proponent and their geometric design team will need to identify and confirm an appropriate design vehicle (eg. a snow removal truck or garbage truck).
2. *Signs and Pavement Markings*: That all new signage and pavement markings associated with any new intersections or roads be installed in accordance with the latest version of the Transportation Association of Canada's (TAC) *Manual of Uniform Traffic Control Devices of Canada* (MUTCDC).
3. *New Internal Street System*: That the geometric design team follow industry best practices when selecting an alignment for the new internal public streets and that the location of minor streets and commercial driveways along the new internal street system are placed in suitable locations. All municipal by-law requirements should be met including provisions for appropriate corner clearances to ensure new driveways serving the individual lots within the development are a sufficient distance away from intersections. The geometric design team should verify these requirements with the appropriate approving agency. Consideration of implementing active transportation facilities and design features such as curb extensions at intersections, accessibility features (eg. tactile warning pads at crosswalks), wider multi-use paths in place of a traditional sidewalks, and so forth will provide improved travel mode options for the future residents.

4. Implement the following Trunk 2 intersection/driveway upgrades as shown in *Figure 12*:
    - *Trunk 2 / Wickwire South Street*: Signalization and a northbound left turn auxiliary lane likely needed prior to the 2043 planning horizon.
    - *Trunk 2 / Robert Scott-Wickwire North Street*: Stop-control and north-south left turn auxiliary lanes, sufficient out to the 2043 planning horizon.
    - *Trunk 2 / New Road A*: Stop-control and a northbound left turn auxiliary lane are sufficient out to the 2043 planning horizon. This new intersection should be located as close to the south property line as possible to maximize the driver visibility to/from the south along Trunk 2. The adjacent civic #1520 driveway will need to be closed and relocated to connect to Road A to eliminate turning conflicts at the new intersection.
    - *New Driveways along Trunk 2*: GRIFFIN recommends the following:
        - *Parcel F Driveway*: One stop-controlled driveway with no auxiliary turn lanes. Providing only one vehicle access will be sufficient to accommodate the traffic generated by the assumed residential units contained within this parcel.
        - *Parcel B Driveway*: One stop-controlled driveway with no auxiliary turn lanes. Providing only one vehicle access will be sufficient to accommodate the traffic generated by the assumed commercial space contained within this parcel.
        - *Parcel D Driveway*: One stop-controlled driveway connecting to Road A, with as much corner clearance distance from Trunk 2 as possible. One driveway connection will be sufficient to serve the proposed highway commercial businesses assumed to be contained within this parcel.
5. *Lower Trunk 2 Speed Limit*: Shift the existing speed transition zone from Robert Scott Drive, northward, to beyond the Regional Service boundary (RSB). This will lower the regulatory speed limit along Trunk 2 to 60 km/h through the study area. This is expected to be more consistent with the future suburban nature of this area.
6. *Begin Long-Term Infrastructure Planning*: As noted earlier in this report the Trunk 2 corridor is expected to adequately function with one through travel lane in each direction throughout the study area, out to the 2043 planning horizon. Beyond this timeframe; however, the full build-out of the known developments in this area will require widening of Trunk 2 to a four-lane cross-section south of the Wickwire South Street intersection. An alternative solution to extensive and intrusive widening is to provide a new Highway 102 interchange to better serve this growing area. It is recommended that NSDPW begin a long-term planning process to identify a suitable location for a new interchange facility.

APPENDIX I

Observed Traffic Volumes

Turning Movement Count Report

Report Generated Using Turning Movement Count for Android by PortableStudies.com

Study Information

Study Summary

Count Name
LantzConn 102NBRamps AMPeak
Location
LantzConn 102NBRamps AM Nov 17 22, Not Available
Performed By
Unknown
Date
Thursday, November 17, 2022

Notes

U = U Turn L = Left Turn T = Thru R = Right Turn
P1 = Pedestrian Direction 1 P2 = Pedestrian Direction 2
Veh = Total Vehicles for Approach

Peak Hour Volume	
375	
% Vehs	**% HV's**
93.3%	6.7%
% Bank 3	**% Bank 4**
0.0%	0.0%
Pedestrians Volume	
0	

Peak Hour Data

Time Period	Lantz Connector EB							Lantz Connector WB							Hwy 102 NB Off Ramp							Hwy 102 NB On Ramp							Total Vehicles	Total Pedestrians
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh		
7:20 AM	0	0	15	0	0	0	15	0	0	58	12	0	0	70	0	0	0	14	0	0	14	0	0	0	0	0	0	0	99	0
7:35 AM	0	1	19	0	0	0	20	0	0	45	20	0	0	65	0	0	1	24	0	0	25	0	0	0	0	0	0	0	110	0
7:50 AM	0	0	11	0	0	0	11	0	0	39	18	0	0	57	0	0	1	13	0	0	14	0	0	0	0	0	0	0	82	0
8:05 AM	0	0	8	0	0	0	8	0	0	39	11	0	0	50	0	0	1	25	0	0	26	0	0	0	0	0	0	0	84	0

Vehicle Movement Summary

Movement / Details	Lantz Connector EB							Lantz Connector WB							Hwy 102 NB Off Ramp							Hwy 102 NB On Ramp							Entire Intersection	
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	Vehicles	Pedestrians
Movement Volume	0	1	53	0	0	0	54	0	0	181	61	0	0	242	0	0	3	76	0	0	79	0	0	0	0	0	0	0	375	0
PHF	-	0.25	0.70	-	-	-	0.68	-	-	0.78	0.76	-	-	0.86	-	-	0.75	0.76	-	-	0.76	-	-	-	-	-	-	-	0.85	-
% Vehs	0.0%	100.0%	83.0%	0.0%				0.0%	0.0%	97.8%	85.2%				0.0%	0.0%	100.0%	96.1%				0.0%	0.0%	0.0%	0.0%					
% HV's	0.0%	0.0%	17.0%	0.0%				0.0%	0.0%	2.2%	14.8%				0.0%	0.0%	0.0%	3.9%				0.0%	0.0%	0.0%	0.0%					
% Bank 3	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%					
% Bank 4	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%					

Need a custom report?

Contact:
support@portablestudies.com

Turning Movement Count Report

Report Generated Using Turning Movement Count for Android by PortableStudies.com

Study Information

Study Summary

Count Name
LantzConn NB102Ramps PMPeak
Location
LantzConn NB102Ramps PM Nov 21 22, Not Available
Performed By
Unknown
Date
Tuesday, November 22, 2022

Notes

U = U Turn L = Left Turn T = Thru R = Right Turn
P1 = Pedestrian Direction 1 P2 = Pedestrian Direction 2
Veh = Total Vehicles for Approach

Peak Hour Volume	
481	
% Vehs	**% HV's**
94.4%	5.6%
% Bank 3	**% Bank 4**
0.0%	0.0%
Pedestrians Volume	
0	

Peak Hour Data

Time Period	Lantz Connector EB							Lantz Connector WB							Hwy 102 Off-Ramp							Hwy 102 On-Ramp							Total Vehicles	Total Pedestrians
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh		
4:10 PM	0	0	17	0	0	0	17	0	0	34	6	0	0	40	0	0	1	51	0	0	52	0	0	0	0	0	0	0	109	0
4:25 PM	0	0	22	0	0	0	22	0	0	28	5	0	0	33	0	0	0	60	0	0	60	0	0	0	0	0	0	0	115	0
4:40 PM	0	0	13	0	0	0	13	0	0	29	7	0	0	36	0	0	1	67	0	0	68	0	0	0	0	0	0	0	117	0
4:55 PM	0	0	15	0	0	0	15	0	0	26	7	0	0	33	0	1	0	91	0	0	92	0	0	0	0	0	0	0	140	0

Vehicle Movement Summary

Movement / Details	Lantz Connector EB							Lantz Connector WB							Hwy 102 Off-Ramp							Hwy 102 On-Ramp							Entire Intersection	
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	Vehicles	Pedestrians
Movement Volume	0	0	67	0	0	0	67	0	0	117	25	0	0	142	0	1	2	269	0	0	272	0	0	0	0	0	0	0	481	0
PHF	-	-	0.76	-	-	-	0.76	-	-	0.86	0.89	-	-	0.89	-	0.25	0.50	0.74	-	-	0.74	-	-	-	-	-	-	-	0.86	-
% Vehs	0.0%	0.0%	77.6%	0.0%				0.0%	0.0%	95.7%	92.0%				0.0%	0.0%	100.0%	98.5%				0.0%	0.0%	0.0%	0.0%					
% HV's	0.0%	0.0%	22.4%	0.0%				0.0%	0.0%	4.3%	8.0%				0.0%	100.0%	0.0%	1.5%				0.0%	0.0%	0.0%	0.0%					
% Bank 3	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%					
% Bank 4	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%					

Turning Movement Count Report

Report Generated Using Turning Movement Count for Android by PortableStudies.com

Study Information

Study Summary

Count Name
Tk2 LantzConn AM Peak
Location
Trunk2 LantzConn AM Tues Nov 15 22, Not Available
Performed By
Unknown
Date
Tuesday, November 15, 2022

Notes

U = U Turn L = Left Turn T = Thru R = Right Turn
P1 = Pedestrian Direction 1 P2 = Pedestrian Direction 2
Veh = Total Vehicles for Approach

Peak Hour Volume	
722	
% Vehs	**% HV's**
91.4%	8.6%
% Bank 3	**% Bank 4**
0.0%	0.0%
Pedestrians Volume	
0	

Peak Hour Data

Time Period	Lantz Connector EB							Shaw Dr WB							Tk 2 NB							Tk 2 SB							Total Vehicles	Total Pedestrians
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh		
7:10 AM	0	16	2	9	0	0	27	0	1	1	0	0	0	2	0	6	19	1	0	0	26	0	1	39	59	0	0	99	154	0
7:25 AM	0	13	3	23	0	0	39	0	1	3	0	0	0	4	0	9	14	2	0	0	25	0	0	56	57	0	0	113	181	0
7:40 AM	0	15	5	18	0	0	38	0	0	1	1	0	0	2	0	27	43	1	0	0	71	0	2	68	41	0	0	111	222	0
7:55 AM	0	11	7	11	0	0	29	0	0	2	1	0	0	3	0	8	45	0	0	0	53	0	0	35	45	0	0	80	165	0

Vehicle Movement Summary

Movement / Details	Lantz Connector EB							Shaw Dr WB							Tk 2 NB							Tk 2 SB							Entire Intersection	
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	Vehicles	Pedestrians
Movement Volume	0	55	17	61	0	0	133	0	2	7	2	0	0	11	0	50	121	4	0	0	175	0	3	198	202	0	0	403	722	0
PHF	-	0.86	0.61	0.66	-	-	0.85	-	0.50	0.58	0.50	-	-	0.69	-	0.46	0.67	0.50	-	-	0.62	-	0.38	0.73	0.86	-	-	0.89	0.81	-
% Vehs	0.0%	90.9%	88.2%	85.2%				0.0%	0.0%	0.0%	100.0%				0.0%	90.0%	88.4%	100.0%				0.0%	100.0%	92.4%	98.5%					
% HV's	0.0%	9.1%	11.8%	14.8%				0.0%	100.0%	100.0%	0.0%				0.0%	10.0%	11.6%	0.0%				0.0%	0.0%	7.6%	1.5%				**Need a custom report?**	
% Bank 3	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%				**Contact: support@portablestudies.com**	
% Bank 4	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%					

Turning Movement Count Report

Report Generated Using Turning Movement Count for Android by PortableStudies.com

Study Information

Study Summary

Count Name
Tk2 LantzConn PM Peak
Location
Trunk2 LantzConn PM Tues Nov 15 22, Not Available
Performed By
Unknown
Date
Tuesday, November 15, 2022

Notes

U = U Turn L = Left Turn T = Thru R = Right Turn
P1 = Pedestrian Direction 1 P2 = Pedestrian Direction 2
Veh = Total Vehicles for Approach

Peak Hour Volume	
914	
% Vehs	**% HV's**
94.5%	5.5%
% Bank 3	**% Bank 4**
0.0%	0.0%
Pedestrians Volume	
0	

Peak Hour Data

Time Period	Lantz Connector EB							Shaw Dr WB							Tk 2 NB							Tk 2 SB							Total Vehicles	Total Pedestrians
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh		
4:05 PM	0	60	0	16	0	0	76	0	1	5	4	0	0	10	0	3	50	0	0	0	53	0	0	62	20	0	0	82	221	0
4:20 PM	0	60	2	25	0	0	87	0	2	4	1	0	0	7	0	8	49	0	0	0	57	0	0	55	17	0	0	72	223	0
4:35 PM	0	70	0	20	0	0	90	0	2	3	0	0	0	5	0	9	55	2	0	0	66	0	1	47	28	0	0	76	237	0
4:50 PM	0	69	1	20	0	0	90	0	0	1	1	0	0	2	0	20	63	0	0	0	83	0	0	35	23	0	0	58	233	0

Vehicle Movement Summary

Movement / Details	Lantz Connector EB							Shaw Dr WB							Tk 2 NB							Tk 2 SB							Entire Intersection	
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	Vehicles	Pedestrians
Movement Volume	0	259	3	81	0	0	343	0	5	13	6	0	0	24	0	40	217	2	0	0	259	0	1	199	88	0	0	288	914	0
PHF	-	0.93	0.38	0.81	-	-	0.95	-	0.63	0.65	0.38	-	-	0.60	-	0.50	0.86	0.25	-	-	0.78	-	0.25	0.80	0.79	-	-	0.88	0.96	-
% Vehs	0.0%	96.5%	100.0%	87.7%				0.0%	80.0%	84.6%	66.7%				0.0%	82.5%	98.2%	50.0%				0.0%	100.0%	95.5%	94.3%					
% HV's	0.0%	3.5%	0.0%	12.3%				0.0%	20.0%	15.4%	33.3%				0.0%	17.5%	1.8%	50.0%				0.0%	0.0%	4.5%	5.7%				**Need a custom report?**	
% Bank 3	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%				**Contact:**	
% Bank 4	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%				**support@portablestudies.com**	

Turning Movement Count Report

Report Generated Using Turning Movement Count for Android by PortableStudies.com

Study Information

Study Summary

Count Name
Tk2 RobertScott Lantz PM Peak
Location
Trunk2 Robert Scott Mon Nov 14 2022, Not Available
Performed By
Unknown
Date
Monday, November 14, 2022

Notes

U = U Turn L = Left Turn T = Thru R = Right Turn
P1 = Pedestrian Direction 1 P2 = Pedestrian Direction 2
Veh = Total Vehicles for Approach

Peak Hour Volume	
286	
% Vehs	**% HV's**
96.9%	3.1%
% Bank 3	**% Bank 4**
0.0%	0.0%
Pedestrians Volume	
0	

Peak Hour Data

Time Period	Robert Scott							Tk 2 NB							Tk 2 SB							Total Vehicles	Total Pedestrians
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh		
4:25 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	35	7	0	0	42	0	1	19	0	0	0	20	64	0
4:40 PM	0	0	0	0	0	0	0	0	5	0	1	0	0	6	0	0	32	8	0	0	40	0	0	26	0	0	0	26	72	0
4:55 PM	0	0	0	0	0	0	0	0	2	0	2	0	0	4	0	0	30	4	0	0	34	0	1	26	0	0	0	27	65	0
5:10 PM	0	0	0	0	0	0	0	0	2	0	1	0	0	3	0	0	50	5	0	0	55	0	0	27	0	0	0	27	85	0

Vehicle Movement Summary

Movement / Details	Robert Scott							Tk 2 NB							Tk 2 SB							Entire Intersection	
	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	U	L	T	R	P1	P2	Veh	Vehicles	Pedestrians
Movement Volume	0	0	0	0	0	0	0	0	11	0	4	0	0	15	0	0	147	24	0	0	171	0	2	98	0	0	0	100	286	0
PHF	-	-	-	-	-	-	-	-	0.55	-	0.50	-	-	0.63	-	-	0.74	0.75	-	-	0.78	-	0.50	0.91	-	-	-	0.93	0.84	-
% Vehs	0.0%	0.0%	0.0%	0.0%				0.0%	100.0%	0.0%	100.0%				0.0%	0.0%	98.0%	95.8%				0.0%	100.0%	94.9%	0.0%					
% HV's	0.0%	0.0%	0.0%	0.0%				0.0%	0.0%	0.0%	0.0%				0.0%	0.0%	2.0%	4.2%				0.0%	0.0%	5.1%	0.0%				**Need a custom report?**	
% Bank 3	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%				**Contact: support@portablestudies.com**	
% Bank 4	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%					

APPENDIX II

TAC Traffic Signal Warrant Results

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Wickwire South Street	Direction (EW or NS)	EW
Quadrant / Int #	5	Comments	2043 Volumes Background Scenario 3-Leg Intersection

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				2,000	1
Trunk 2	SB					1		2,000	1
Wickwire South Street	WB								
Wickwire South Street	EB				1				

Are the Wickwire South Street EB right turns significantly impeded by through movements? (y/n) n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

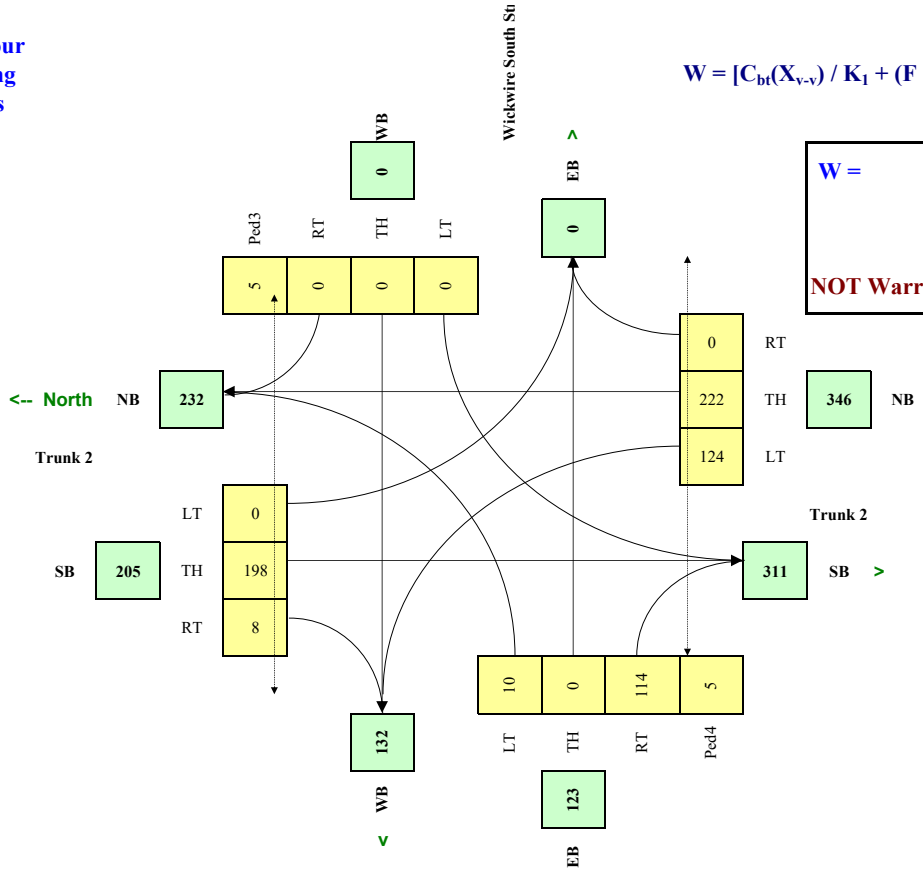
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Wickwire South Street	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1	Ped2	Ped3	Ped4
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	NS	NS	EW	EW
													W Side	E Side	N Side	S Side
7:00 - 8:00	43	118	0	0	221	3	0	0	0	8	0	132	5	5	5	5
8:00 - 9:00	57	156	0	0	293	4	0	0	0	10	0	175	5	5	5	5
12:00 - 13:00	133	218	0	0	138	8	0	0	0	8	0	77	5	5	5	5
13:00 - 14:00	143	234	0	0	149	9	0	0	0	9	0	83	5	5	5	5
16:00 - 17:00	191	312	0	0	198	12	0	0	0	12	0	111	5	5	5	5
17:00 - 18:00	179	293	0	0	186	11	0	0	0	11	0	104	5	5	5	5
Total (6-hour peak)	**746**	**1,331**	**0**	**0**	**1,185**	**47**	**0**	**0**	**0**	**58**	**0**	**682**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**124**	**222**	**0**	**0**	**198**	**8**	**0**	**0**	**0**	**10**	**0**	**114**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	38	32	6
		Veh	*Ped*

NOT Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Wickwire South Street	Direction (EW or NS)	EW
Quadrant / Int #	5	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				2,000	1
Trunk 2	SB					1		2,000	1
Wickwire South Street	WB								
Wickwire South Street	EB				1				

Are the Wickwire South Street EB right turns significantly impeded by through movements? (y/n) n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

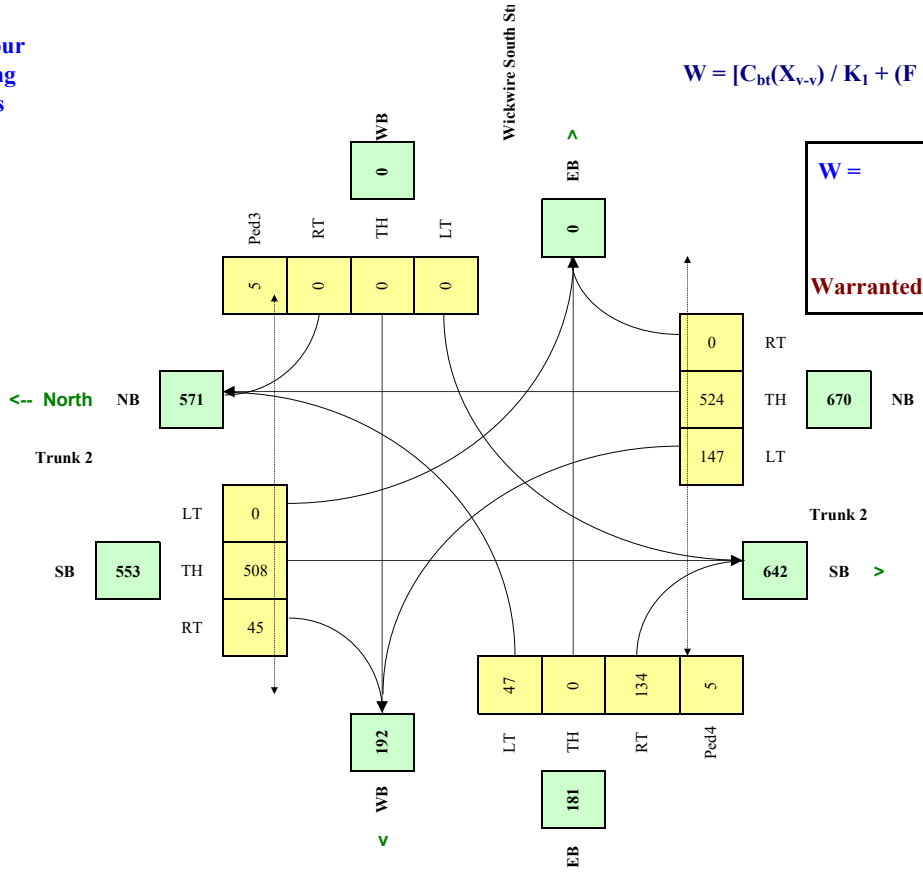
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Wickwire South Street	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	51	261	0	0	572	22	0	0	0	48	0	155	5	5	5	5
8:00 - 9:00	67	346	0	0	758	29	0	0	0	63	0	205	5	5	5	5
12:00 - 13:00	157	522	0	0	354	45	0	0	0	36	0	91	5	5	5	5
13:00 - 14:00	169	562	0	0	381	49	0	0	0	38	0	98	5	5	5	5
16:00 - 17:00	225	749	0	0	508	65	0	0	0	51	0	131	5	5	5	5
17:00 - 18:00	211	702	0	0	476	61	0	0	0	48	0	123	5	5	5	5
Total (6-hour peak)	**880**	**3,142**	**0**	**0**	**3,049**	**271**	**0**	**0**	**0**	**284**	**0**	**803**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**147**	**524**	**0**	**0**	**508**	**45**	**0**	**0**	**0**	**47**	**0**	**134**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\ (X_{v\text{-}p})\ L) / K_2] \times C_i$$



W =	138	124	14
		Veh	*Ped*

Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Wickwire South Street	Direction (EW or NS)	EW
Quadrant / Int #	5	Comments	2043 Volumes Total Scenario Sensitivity Dev. Scenario 2

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				2,000	1
Trunk 2	SB					1	1	980	1
Wickwire South Street	WB								
Wickwire South Street	EB	1					1		
							n		
							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

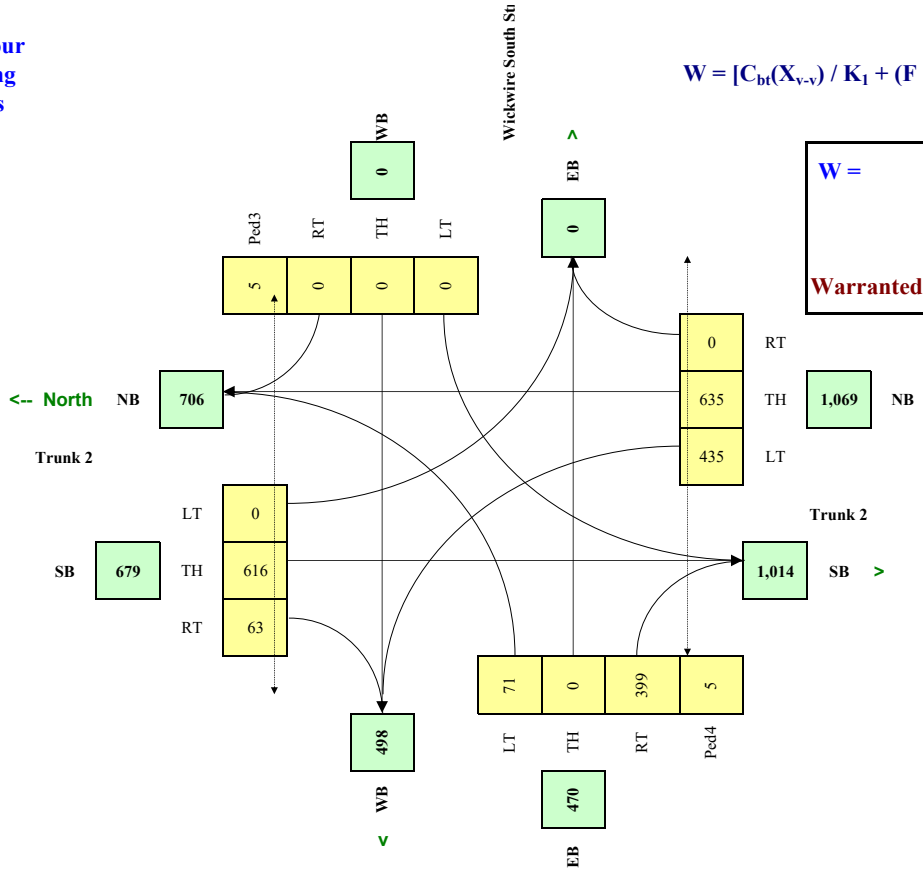
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Wickwire South Street	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	157	306	0	0	699	29	0	0	0	65	0	456	5	5	5	5
8:00 - 9:00	208	406	0	0	926	38	0	0	0	86	0	605	5	5	5	5
12:00 - 13:00	462	638	0	0	426	64	0	0	0	56	0	274	5	5	5	5
13:00 - 14:00	497	686	0	0	458	69	0	0	0	61	0	295	5	5	5	5
16:00 - 17:00	662	915	0	0	611	92	0	0	0	81	0	393	5	5	5	5
17:00 - 18:00	621	858	0	0	573	86	0	0	0	76	0	369	5	5	5	5
Total (6-hour peak)	**2,607**	**3,809**	**0**	**0**	**3,693**	**378**	**0**	**0**	**0**	**425**	**0**	**2,392**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**435**	**635**	**0**	**0**	**616**	**63**	**0**	**0**	**0**	**71**	**0**	**399**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	415	395	20
		Veh	*Ped*

Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Robert Scott Dr	Direction (EW or NS)	EW
Quadrant / Int #	6	Comments	2023 Volumes Baseline Scenario

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB					1		2,000	1
Trunk 2	SB		1					2,000	1
Robert Scott Dr	WB				1				
Robert Scott Dr	EB								
Are the Robert Scott Dr WB right turns significantly impeded by through movements? (y/n)							n		
							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

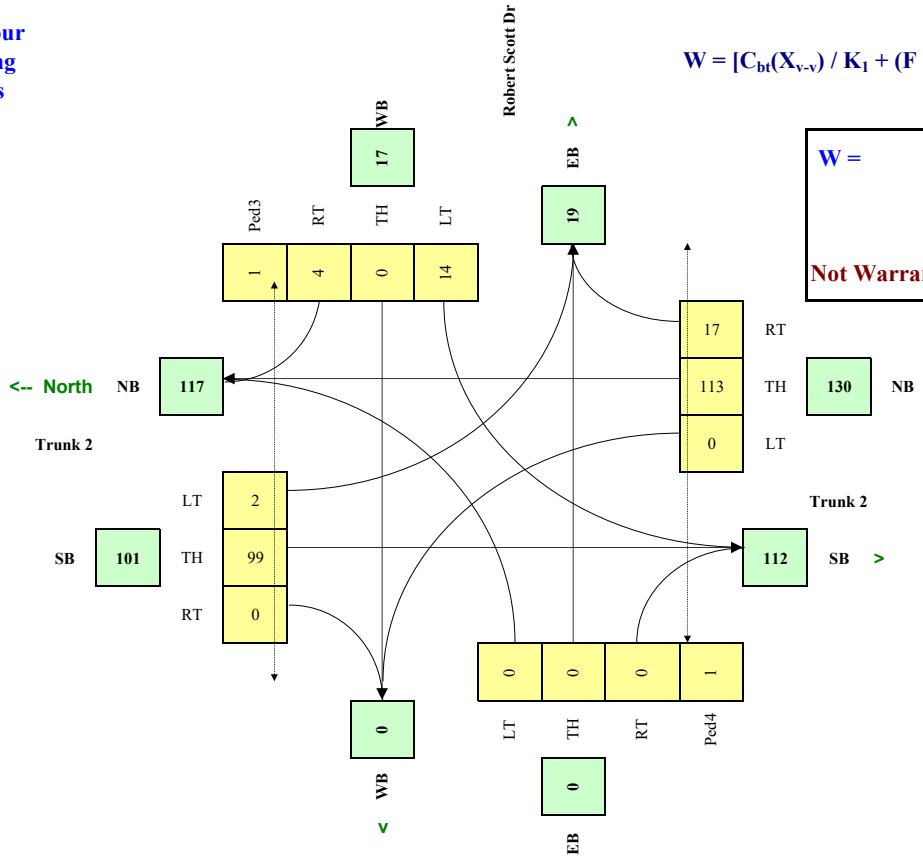
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Robert Scott Dr	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	0	68	8	2	106	0	19	0	3	0	0	0	1	1	1	1
8:00 - 9:00	0	90	11	2	140	0	25	0	4	0	0	0	1	1	1	1
12:00 - 13:00	0	107	17	1	71	0	8	0	3	0	0	0	1	1	1	1
13:00 - 14:00	0	116	19	2	77	0	8	0	3	0	0	0	1	1	1	1
16:00 - 17:00	0	154	25	2	102	0	11	0	4	0	0	0	1	1	1	1
17:00 - 18:00	0	144	23	2	96	0	10	0	4	0	0	0	1	1	1	1
Total (6-hour peak)	**0**	**679**	**103**	**11**	**592**	**0**	**81**	**0**	**21**	**0**	**0**	**0**	**6**	**6**	**6**	**6**
Average (6-hour peak)	**0**	**113**	**17**	**2**	**99**	**0**	**14**	**0**	**4**	**0**	**0**	**0**	**1**	**1**	**1**	**1**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	3	2	1
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Robert Scott Dr	Direction (EW or NS)	EW
Quadrant / Int #	6	Comments	2043 Volumes Background Scenario 4-Leg Intersection

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1				1		2,000	1
Trunk 2	SB	1				1		2,000	1
Robert Scott Dr	WB				1				
Robert Scott Dr	EB				1				
Are the Robert Scott Dr WB right turns significantly impeded by through movements? (y/n)							n		
Are the Robert Scott Dr EB right turns significantly impeded by through movements? (y/n)							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

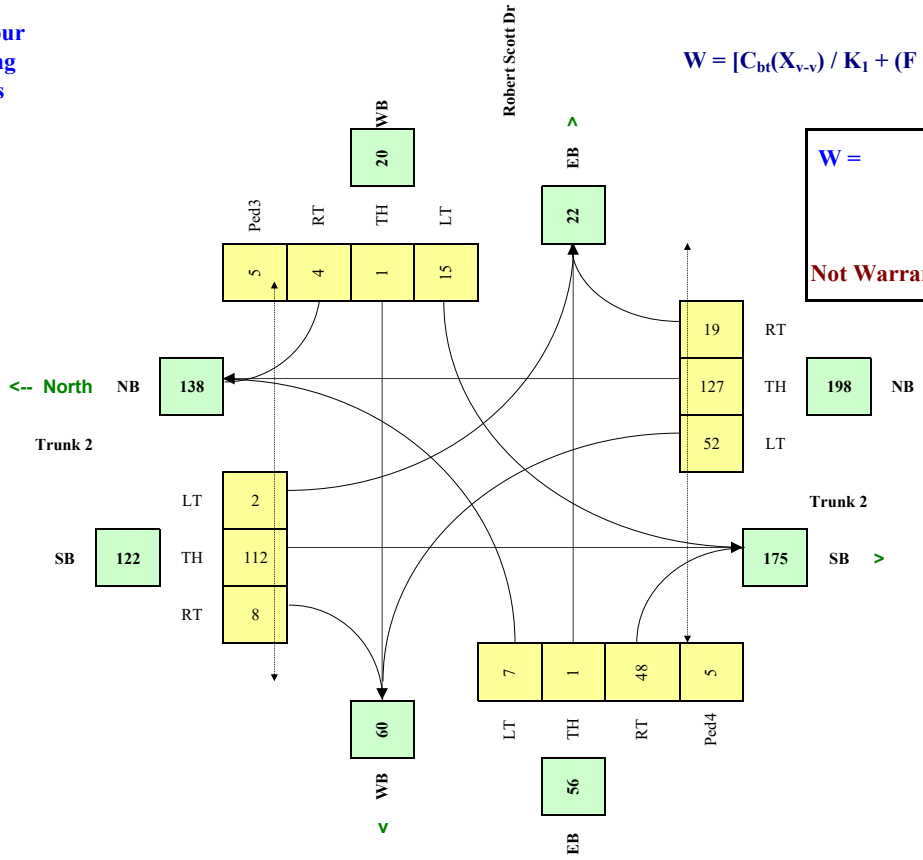
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Robert Scott Dr	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	18	78	9	2	118	3	21	1	3	8	1	57	5	5	5	5
8:00 - 9:00	24	103	12	2	156	4	28	1	4	10	1	75	5	5	5	5
12:00 - 13:00	55	120	20	1	82	8	8	1	3	4	1	32	5	5	5	5
13:00 - 14:00	59	129	21	2	88	9	9	1	4	5	1	35	5	5	5	5
16:00 - 17:00	79	172	28	2	117	12	12	1	5	6	1	46	5	5	5	5
17:00 - 18:00	74	161	26	2	110	11	11	1	5	6	1	43	5	5	5	5
Total (6-hour peak)	**309**	**763**	**116**	**11**	**671**	**47**	**89**	**6**	**24**	**39**	**6**	**288**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**52**	**127**	**19**	**2**	**112**	**8**	**15**	**1**	**4**	**7**	**1**	**48**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	13	9	4
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Robert Scott Dr	Direction (EW or NS)	EW
Quadrant / Int #	6	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1				1		980	1
Trunk 2	SB	1				1		2,000	1
Robert Scott Dr	WB				1				
Robert Scott Dr	EB				1				
Are the Robert Scott Dr WB right turns significantly impeded by through movements? (y/n)							n		
Are the Robert Scott Dr EB right turns significantly impeded by through movements? (y/n)							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

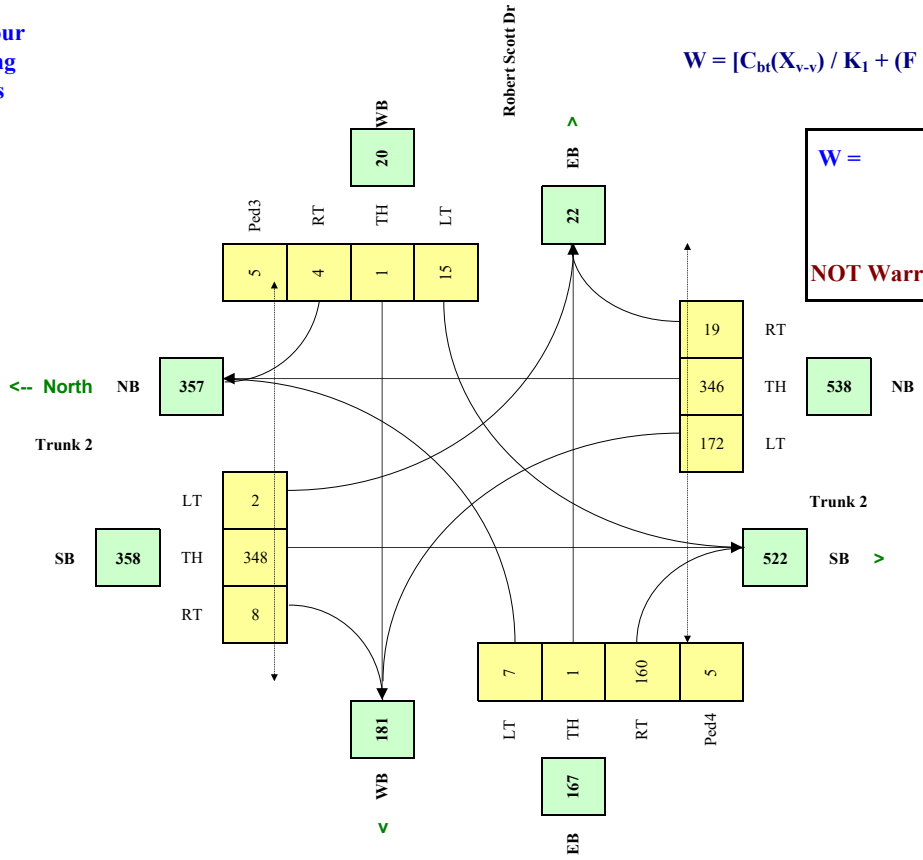
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Robert Scott Dr	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	60	220	9	2	361	3	21	1	4	8	1	183	5	5	5	5
8:00 - 9:00	79	291	12	2	478	4	28	1	5	10	1	243	5	5	5	5
12:00 - 13:00	184	323	20	1	257	8	8	1	3	4	1	109	5	5	5	5
13:00 - 14:00	198	347	21	2	277	9	9	1	4	5	1	118	5	5	5	5
16:00 - 17:00	264	463	28	2	369	12	12	1	5	6	1	157	5	5	5	5
17:00 - 18:00	248	434	26	2	346	11	11	1	5	6	1	147	5	5	5	5
Total (6-hour peak)	**1,033**	**2,078**	**116**	**11**	**2,088**	**47**	**89**	**6**	**26**	**39**	**6**	**957**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**172**	**346**	**19**	**2**	**348**	**8**	**15**	**1**	**4**	**7**	**1**	**160**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	76	66	10
		Veh	*Ped*

NOT Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Robert Scott Dr	Direction (EW or NS)	EW
Quadrant / Int #	6	Comments	2043 Volumes Total Scenario Sensitivity Dev. Scenario 2

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1				1		980	1
Trunk 2	SB	1				1		2,000	1
Robert Scott Dr	WB				1				
Robert Scott Dr	EB				1				

Are the Robert Scott Dr WB right turns significantly impeded by through movements? (y/n) n

Are the Robert Scott Dr EB right turns significantly impeded by through movements? (y/n) n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

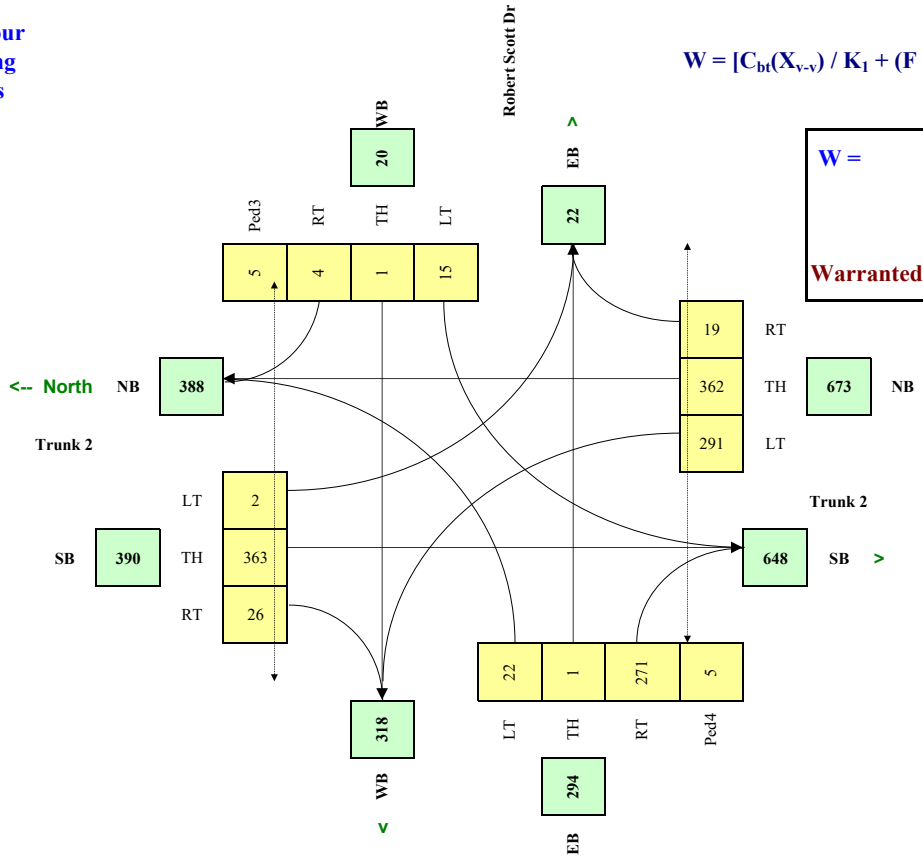
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Robert Scott Dr	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	104	238	9	2	366	10	21	1	4	26	1	312	5	5	5	5
8:00 - 9:00	138	315	12	2	485	13	28	1	5	34	1	413	5	5	5	5
12:00 - 13:00	310	333	20	1	273	27	8	1	3	15	1	185	5	5	5	5
13:00 - 14:00	334	359	21	2	293	29	9	1	4	16	1	199	5	5	5	5
16:00 - 17:00	445	478	28	2	391	39	12	1	5	21	1	265	5	5	5	5
17:00 - 18:00	417	448	26	2	367	37	11	1	5	20	1	249	5	5	5	5
Total (6-hour peak)	**1,748**	**2,171**	**116**	**11**	**2,175**	**155**	**89**	**6**	**26**	**132**	**6**	**1,623**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**291**	**362**	**19**	**2**	**363**	**26**	**15**	**1**	**4**	**22**	**1**	**271**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	140	128	12
		Veh	*Ped*

Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	New Road A	Direction (EW or NS)	EW
Quadrant / Int #	7	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				1,400	1
Trunk 2	SB					1		2,000	1
New Road A	WB								
New Road A	EB				1				

Are the New Road A EB right turns significantly impeded by through movements? (y/n) n

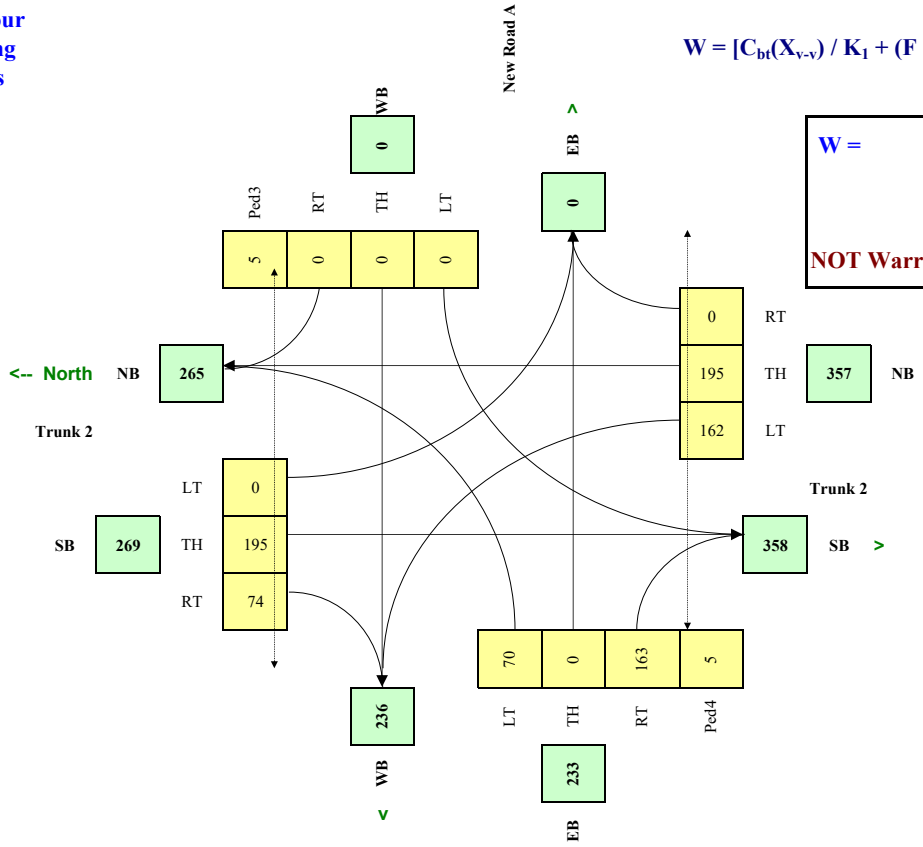
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
New Road A	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1	Ped2	Ped3	Ped4
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	NS	NS	EW	EW
													W Side	E Side	N Side	S Side
7:00 - 8:00	88	143	0	0	164	54	0	0	0	78	0	201	5	5	5	5
8:00 - 9:00	116	190	0	0	218	71	0	0	0	103	0	266	5	5	5	5
12:00 - 13:00	158	172	0	0	162	66	0	0	0	50	0	105	5	5	5	5
13:00 - 14:00	170	185	0	0	175	71	0	0	0	53	0	113	5	5	5	5
16:00 - 17:00	227	247	0	0	233	94	0	0	0	71	0	150	5	5	5	5
17:00 - 18:00	213	232	0	0	219	88	0	0	0	67	0	141	5	5	5	5
Total (6-hour peak)	**972**	**1,169**	**0**	**0**	**1,171**	**444**	**0**	**0**	**0**	**422**	**0**	**976**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**162**	**195**	**0**	**0**	**195**	**74**	**0**	**0**	**0**	**70**	**0**	**163**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	76	69	7
		Veh	*Ped*

NOT Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	New Road A	Direction (EW or NS)	EW
Quadrant / Int #	7	Comments	2043 Volumes Total Scenario Sensitivity Dev. Scenario 2

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				415	1
Trunk 2	SB					1		2,000	1
New Road A	WB								
New Road A	EB				1				
							n		

Are the New Road A EB right turns significantly impeded by through movements? (y/n) n

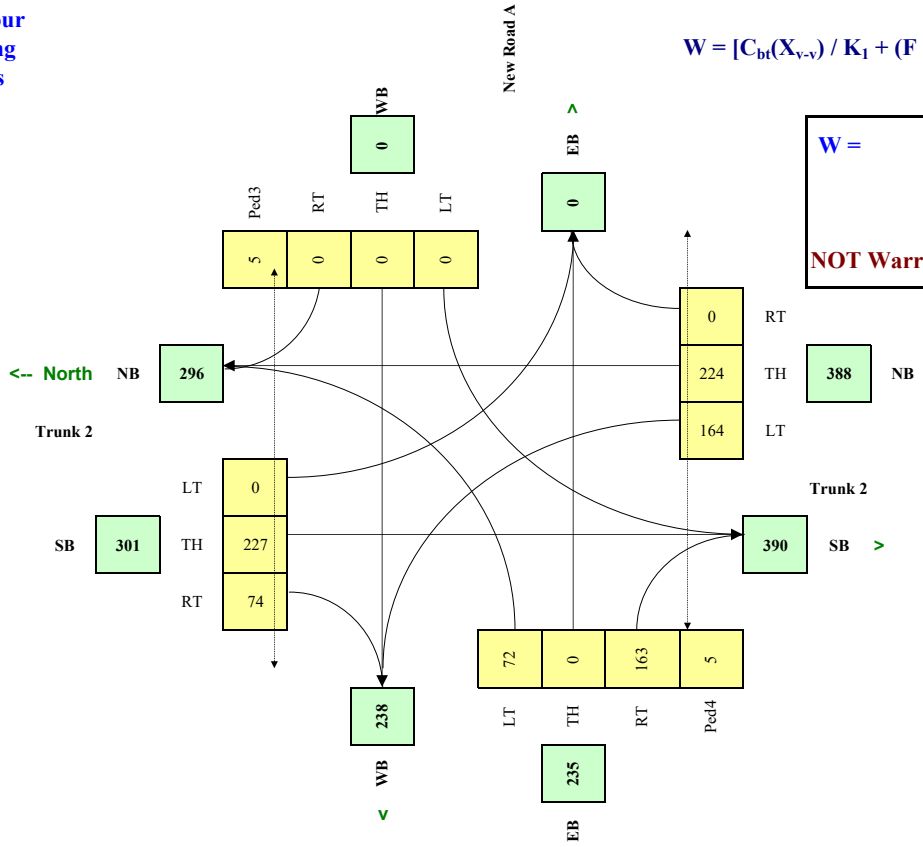
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
New Road A	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	88	179	0	0	177	53	0	0	0	78	0	200	5	5	5	5
8:00 - 9:00	117	237	0	0	235	70	0	0	0	104	0	265	5	5	5	5
12:00 - 13:00	160	191	0	0	196	66	0	0	0	52	0	105	5	5	5	5
13:00 - 14:00	173	206	0	0	211	71	0	0	0	56	0	113	5	5	5	5
16:00 - 17:00	230	274	0	0	281	95	0	0	0	74	0	151	5	5	5	5
17:00 - 18:00	216	257	0	0	264	89	0	0	0	69	0	142	5	5	5	5
Total (6-hour peak)	**984**	**1,344**	**0**	**0**	**1,364**	**444**	**0**	**0**	**0**	**433**	**0**	**976**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**164**	**224**	**0**	**0**	**227**	**74**	**0**	**0**	**0**	**72**	**0**	**163**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	81	74	7
		Veh	*Ped*

NOT Warranted

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Parcel B Comm Dwy	Direction (EW or NS)	EW
Quadrant / Int #	8	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				1,700	1
Trunk 2	SB					1		2,000	1
Parcel B Comm Dwy	WB								
Parcel B Comm Dwy	EB				1				

Are the Parcel B Comm Dwy EB right turns significantly impeded by through movements? (y/n) n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

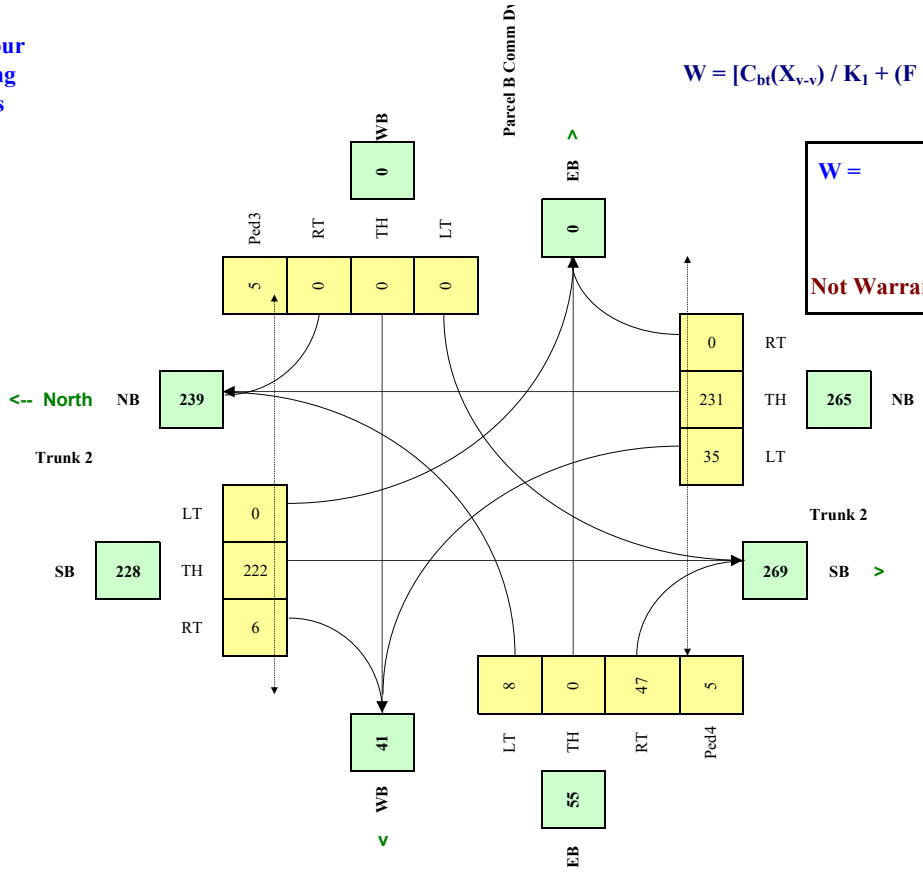
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	5.0%	n	0.0
Parcel B Comm Dwy	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	53	168	0	0	209	10	0	0	0	2	0	9	5	5	5	5
8:00 - 9:00	70	223	0	0	277	13	0	0	0	2	0	12	5	5	5	5
12:00 - 13:00	17	204	0	0	174	3	0	0	0	9	0	54	5	5	5	5
13:00 - 14:00	19	220	0	0	188	3	0	0	0	10	0	58	5	5	5	5
16:00 - 17:00	25	293	0	0	250	4	0	0	0	13	0	77	5	5	5	5
17:00 - 18:00	23	275	0	0	234	4	0	0	0	12	0	72	5	5	5	5
Total (6-hour peak)	**207**	**1,383**	**0**	**0**	**1,332**	**37**	**0**	**0**	**0**	**48**	**0**	**282**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**35**	**231**	**0**	**0**	**222**	**6**	**0**	**0**	**0**	**8**	**0**	**47**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	19	13	6
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	Trunk 2	Direction (EW or NS)	NS
Side Street (name)	Parcel F Res Dwy	Direction (EW or NS)	EW
Quadrant / Int #	9	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Trunk 2	NB	1		1				2,000	1
Trunk 2	SB					1		2,000	1
Parcel F Res Dwy	WB								
Parcel F Res Dwy	EB				1				

Are the Parcel F Res Dwy EB right turns significantly impeded by through movements? (y/n) — n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

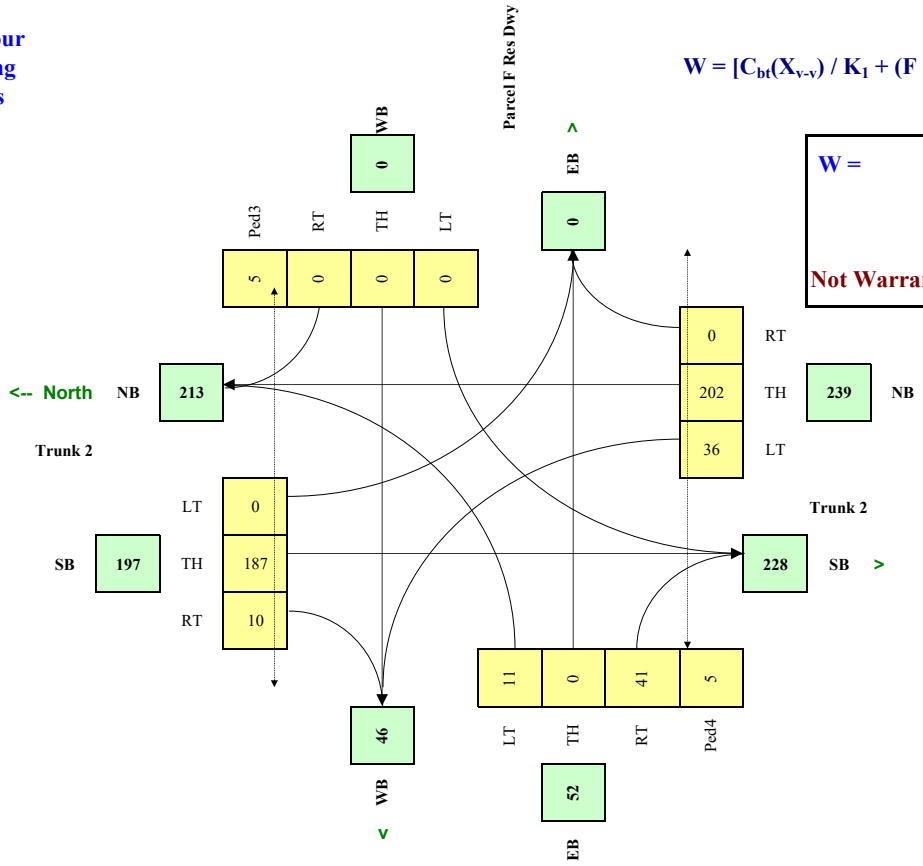
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	80	5.0%	n	0.0
Parcel F Res Dwy	EW		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1	Ped2	Ped3	Ped4
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	NS	NS	EW	EW
													W Side	E Side	N Side	S Side
7:00 - 8:00	16	154	0	0	163	5	0	0	0	14	0	56	5	5	5	5
8:00 - 9:00	21	204	0	0	216	6	0	0	0	19	0	74	5	5	5	5
12:00 - 13:00	37	176	0	0	153	10	0	0	0	6	0	24	5	5	5	5
13:00 - 14:00	40	190	0	0	165	11	0	0	0	7	0	26	5	5	5	5
16:00 - 17:00	53	253	0	0	220	14	0	0	0	9	0	34	5	5	5	5
17:00 - 18:00	50	237	0	0	206	13	0	0	0	8	0	32	5	5	5	5
Total (6-hour peak)	**217**	**1,214**	**0**	**0**	**1,123**	**59**	**0**	**0**	**0**	**63**	**0**	**246**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**36**	**202**	**0**	**0**	**187**	**10**	**0**	**0**	**0**	**11**	**0**	**41**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\ (X_{v\text{-}p})\ L) / K_2] \times C_i$$



W =	18	13	5
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

NSDPW - Traffic Signal Warrant Analysis

Main Street (name)	New Collector St	Direction (EW or NS)	EW
Side Street (name)	Parcel D Comm Dwy	Direction (EW or NS)	NS
Quadrant / Int #	10	Comments	2043 Volumes Total Scenario Dev. Scenario 1

for Warrant Calculation Results, please hit 'Page Down'

CHECK SHEET

Road Authority:	NSDPW
City:	Mun. of East Hants
Analysis Date:	2023 Apr 14, Fri
Count Date:	2022 Nov 14, Mon
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
New Collector St	WB					1		2,000	1
New Collector St	EB	1		1				2,000	1
Parcel D Comm Dwy	NB								
Parcel D Comm Dwy	SB				1				

Are the Parcel D Comm Dwy SB right turns significantly impeded by through movements? (y/n) — n

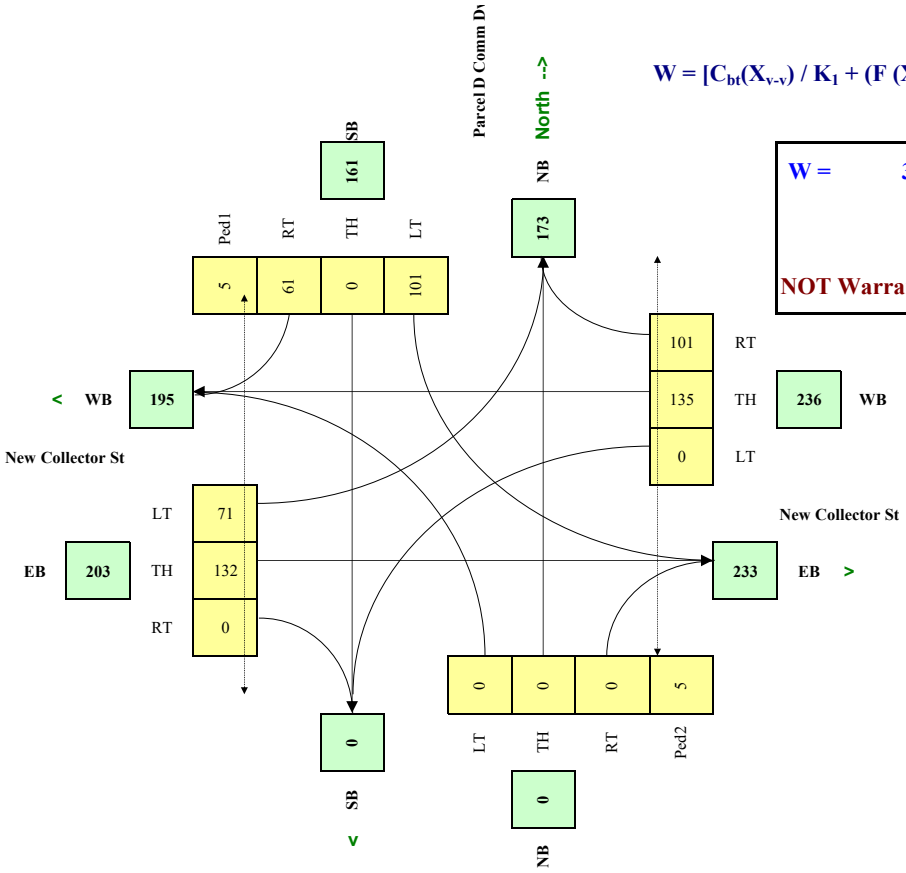
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	20,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
New Collector St	EW	50	5.0%	n	0.0
Parcel D Comm Dwy	NS		5.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	0	0	0	118	0	41	0	48	94	85	160	0	5	5	5	5
8:00 - 9:00	0	0	0	157	0	55	0	63	124	113	212	0	5	5	5	5
12:00 - 13:00	0	0	0	68	0	55	0	144	80	47	86	0	5	5	5	5
13:00 - 14:00	0	0	0	73	0	59	0	155	86	51	93	0	5	5	5	5
16:00 - 17:00	0	0	0	97	0	79	0	206	115	68	124	0	5	5	5	5
17:00 - 18:00	0	0	0	91	0	74	0	193	108	64	116	0	5	5	5	5
Total (6-hour peak)	**0**	**0**	**0**	**604**	**0**	**363**	**0**	**809**	**607**	**428**	**791**	**0**	**30**	**30**	**30**	**30**
Average (6-hour peak)	**0**	**0**	**0**	**101**	**0**	**61**	**0**	**135**	**101**	**71**	**132**	**0**	**5**	**5**	**5**	**5**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	37	32	5
		Veh	*Ped*

NOT Warranted

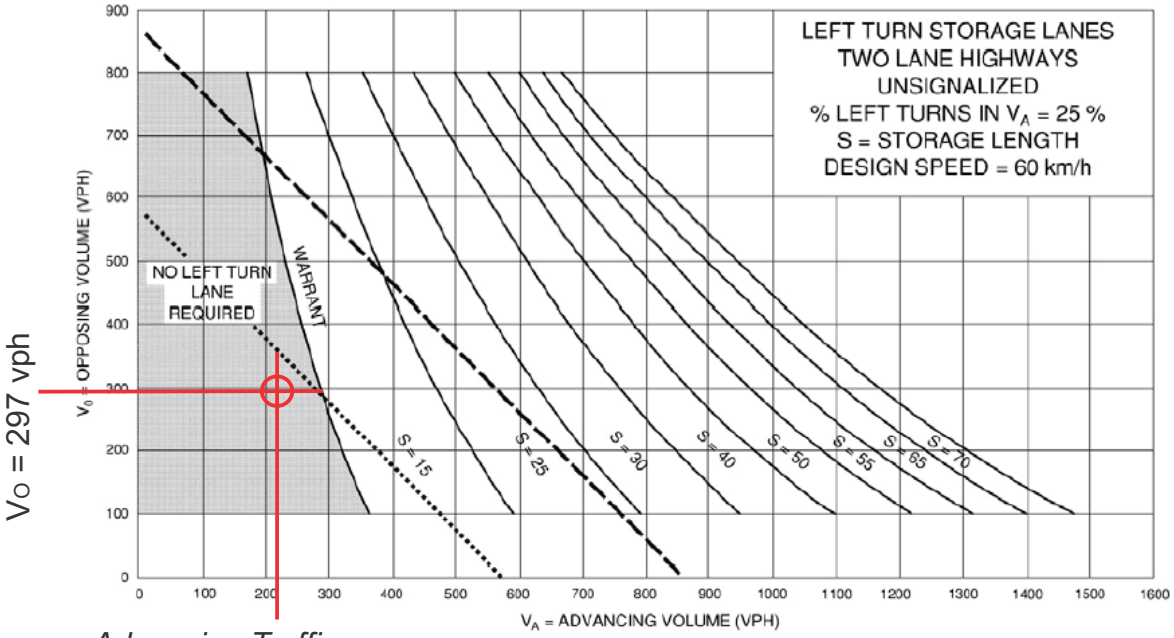
RESET SHEET

APPENDIX III

Auxiliary Lane Warrant Results

Left Turn Lane Warrant Analysis
Background 2043 Traffic Volumes
Trunk 2/WickWire South - Northbound Left Turn

Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-8:

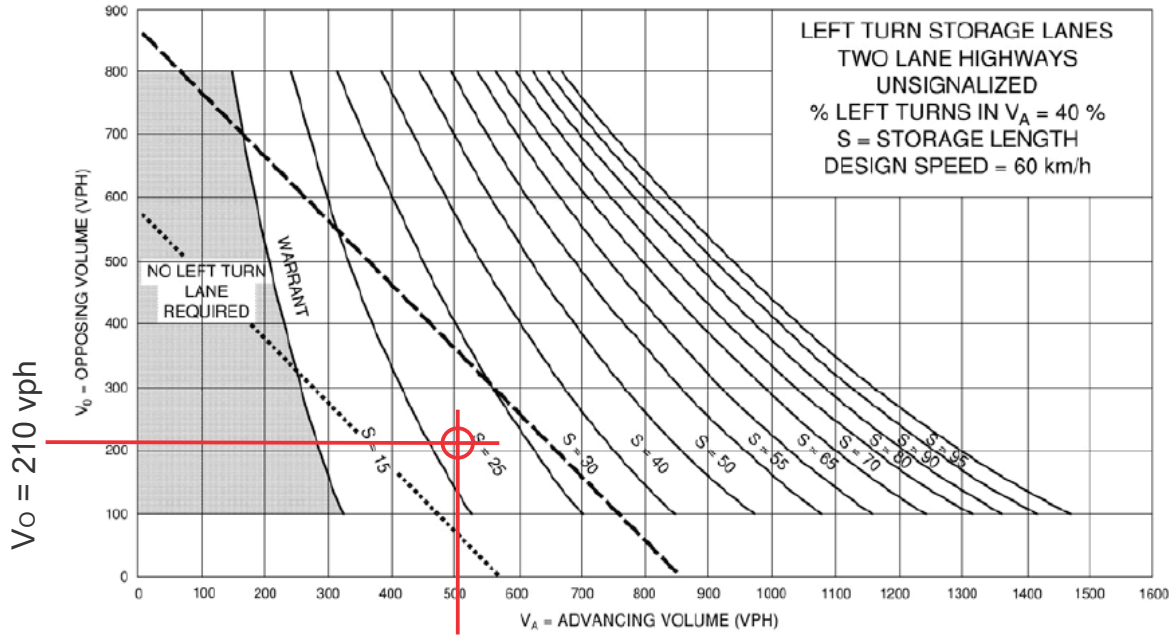


V_O = 297 vph

Advancing Traffic:
V_A = 213 vph
V_L = 57 vph
Left turns = 26.8%

Warrant Not Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-9:



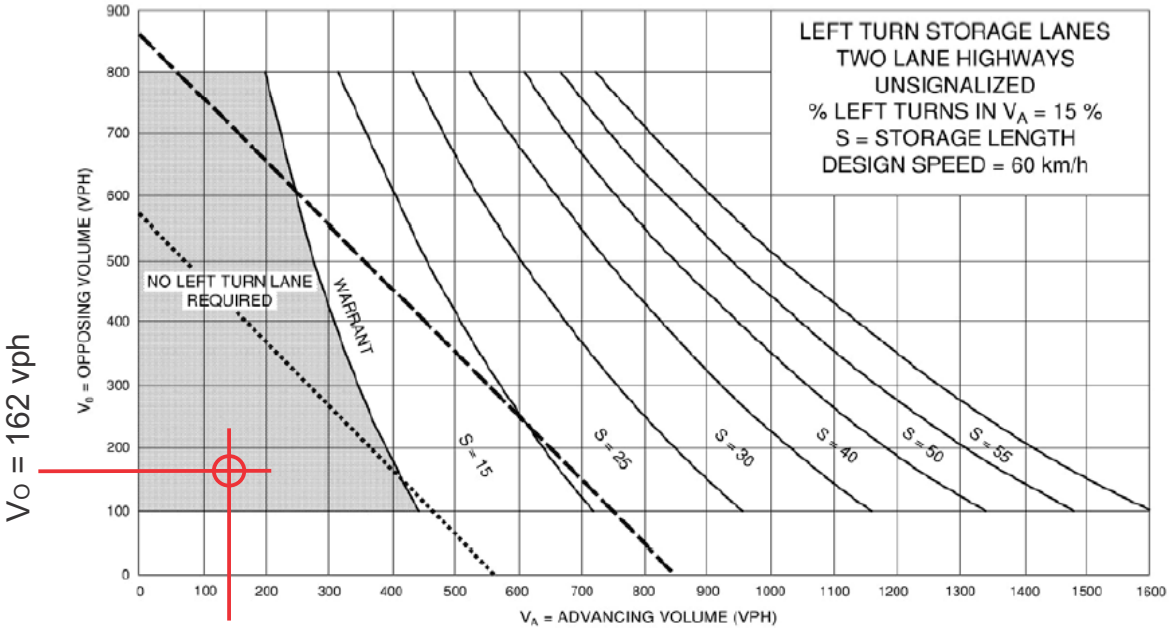
V_O = 210 vph

Advancing Traffic:
V_A = 503 vph
V_L = 191 vph
Left turns = 38.0%

Warrant Met

Left Turn Lane Warrant Analysis
Background 2043 Traffic Volumes
Trunk 2/WickWire North - Northbound Left Turn

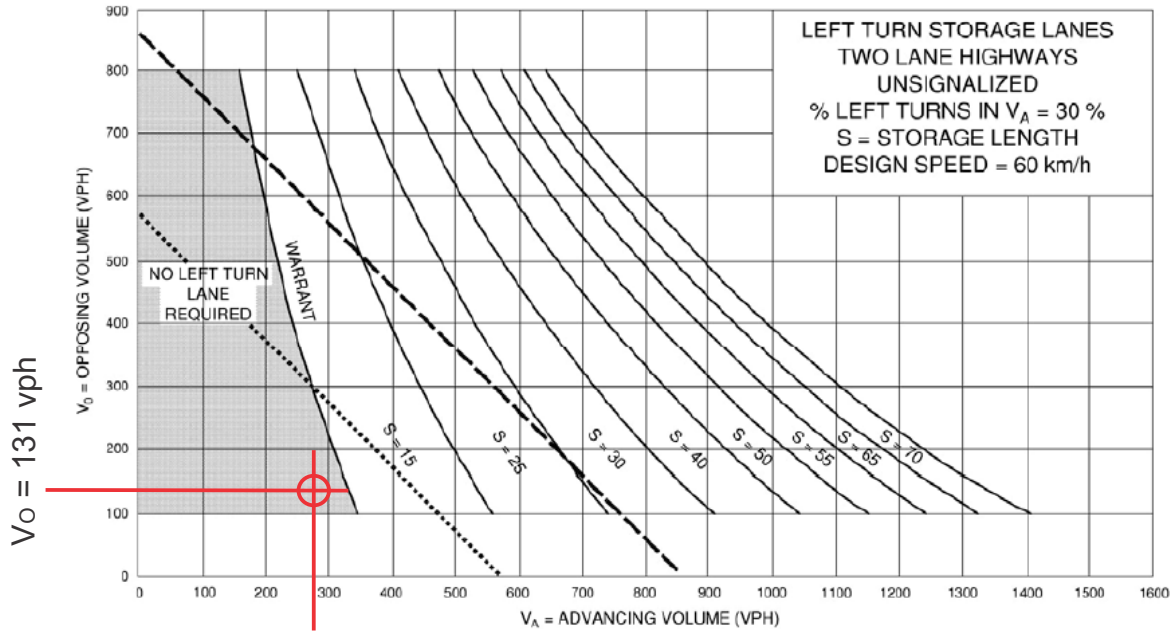
Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-7:



Advancing Traffic:
V_A = 139 vph
V_L = 24 vph
Left turns = 17.3%

Warrant Not Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-8:

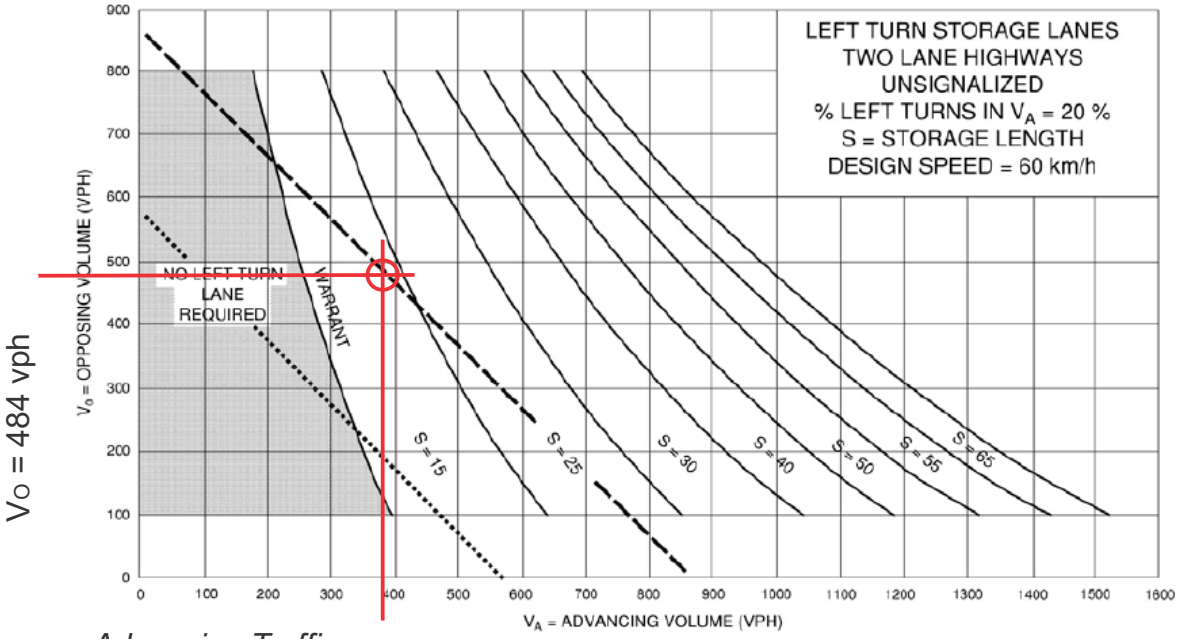


Advancing Traffic:
V_A = 279 vph
V_L = 79 vph
Left turns = 28.3%

Warrant Not Met

Left Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/WickWire North - Northbound Left Turn

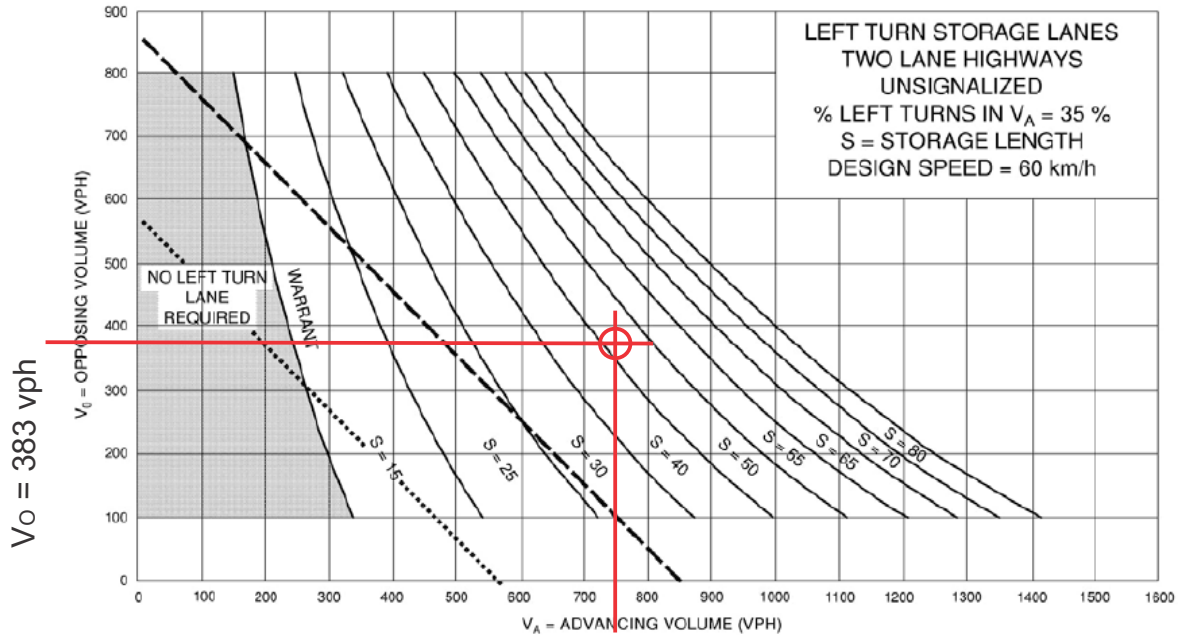
Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-7:



Advancing Traffic:
V_A = 382 vph
V_L = 79 vph
Left turns = 20.7%

Warrant Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-9:

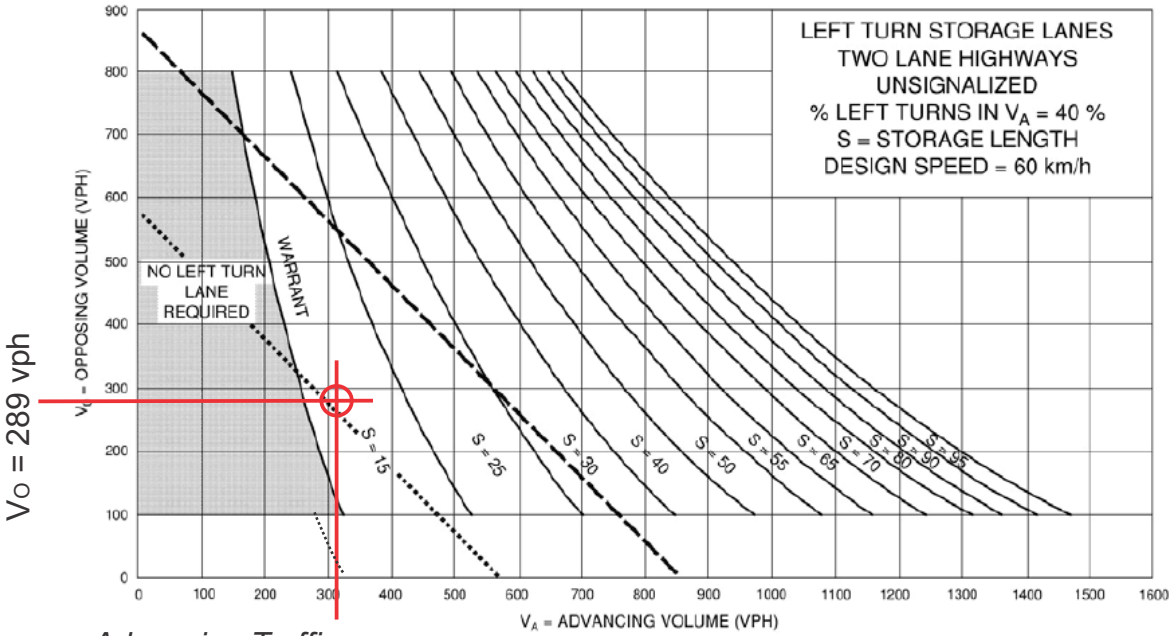


Advancing Traffic:
V_A = 755 vph
V_L = 264 vph
Left turns = 35.0%

Warrant Met

Left Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Road A - Northbound Left Turn

Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-9:

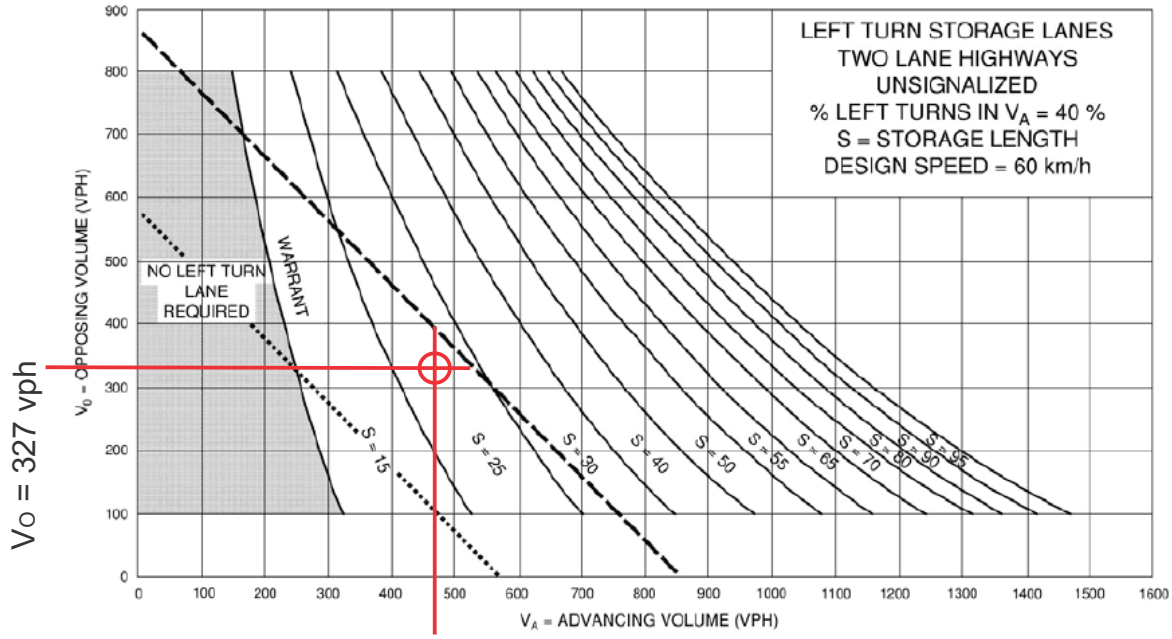


V_O = 289 vph

Advancing Traffic:
V_A = 306 vph
V_L = 116 vph
Left turns = 37.9%

Warrant Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-9:



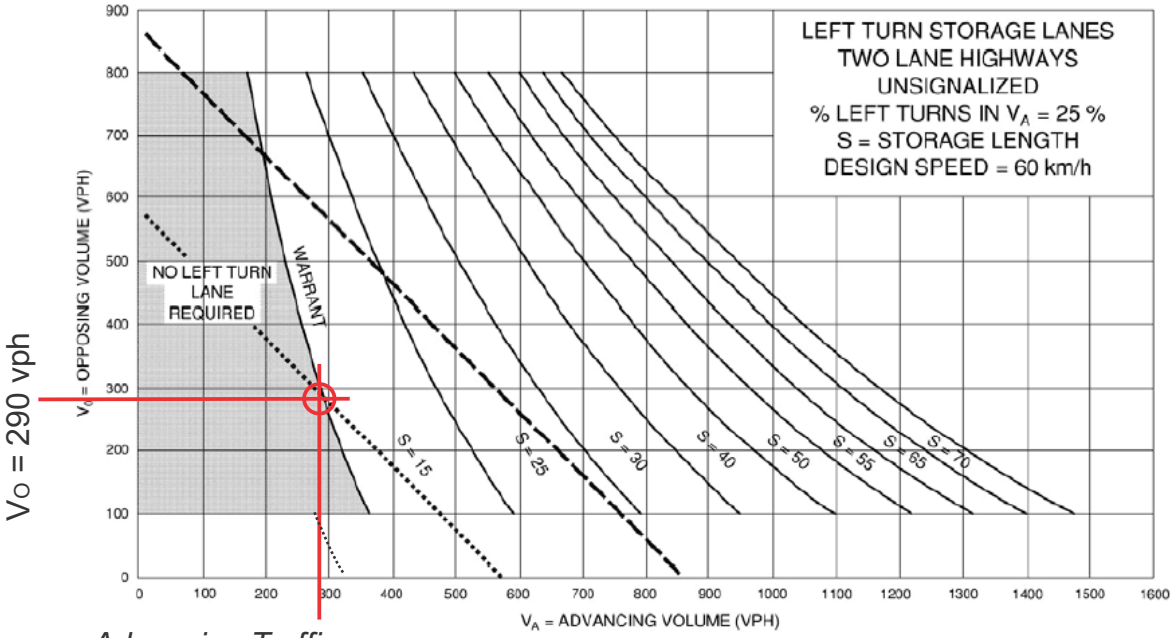
V_O = 327 vph

Advancing Traffic:
V_A = 474 vph
V_L = 227 vph
Left turns = 47.9%

Warrant Met

Left Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Parcel B Access - Northbound Left Turn

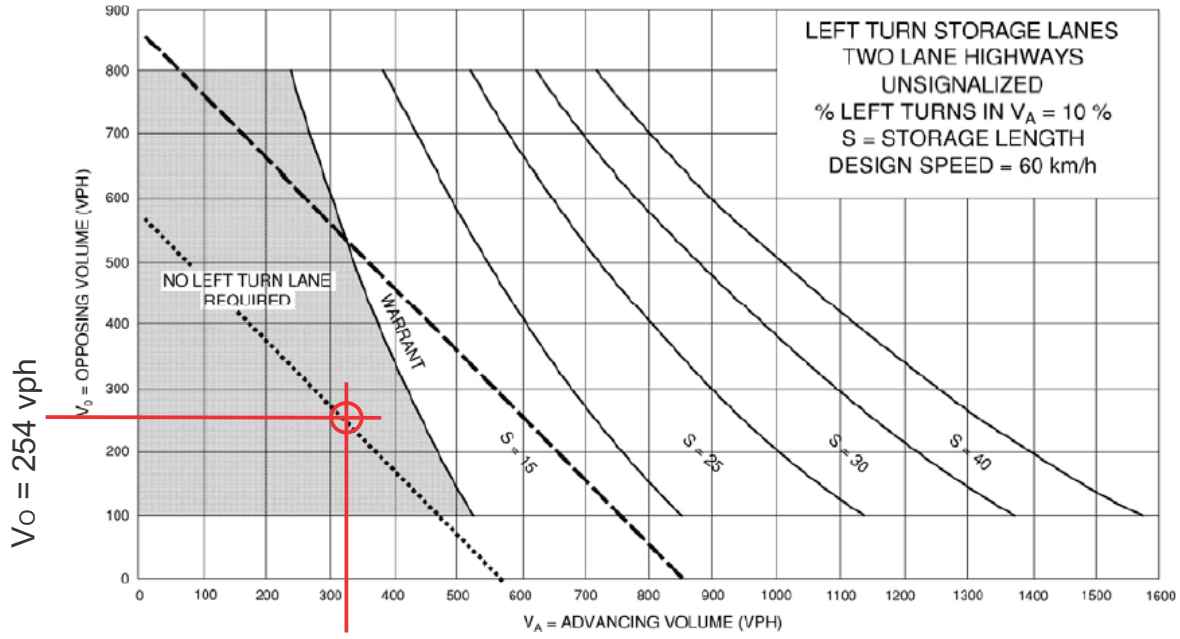
Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-8:



Advancing Traffic:
V_A = 293 vph
V_L = 70 vph
Left turns = 23.9%

Warrant Not Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-6:

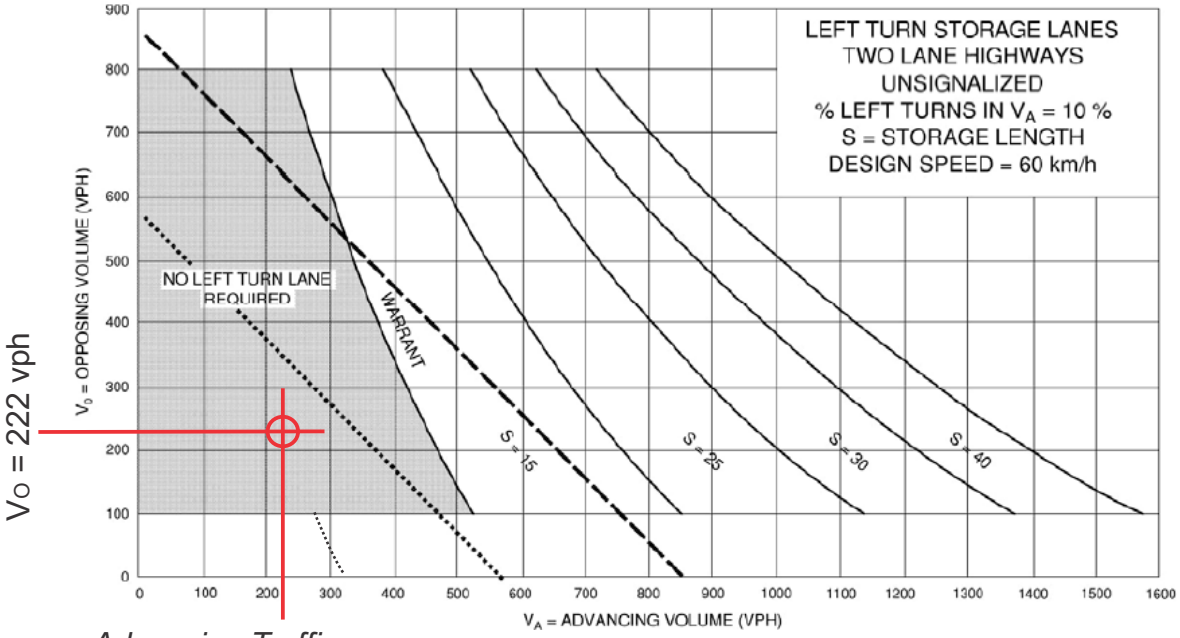


Advancing Traffic:
V_A = 318 vph
V_L = 25 vph
Left turns = 7.9%

Warrant Not Met

Left Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Parcel F Access - Northbound Left Turn

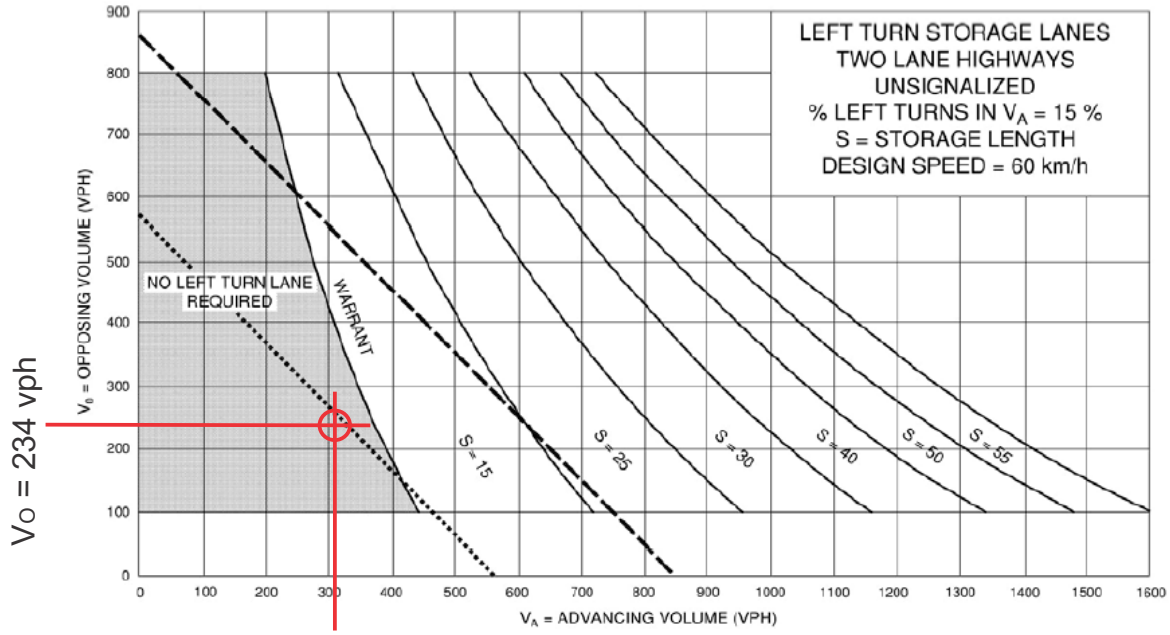
Weekday AM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-6:



Advancing Traffic:
V_A = 225 vph
V_L = 21 vph
Left turns = 9.3%

Warrant Not Met

Weekday PM Peak Hour - MTO 2017 Design Supplement Exhibit 9A-7:

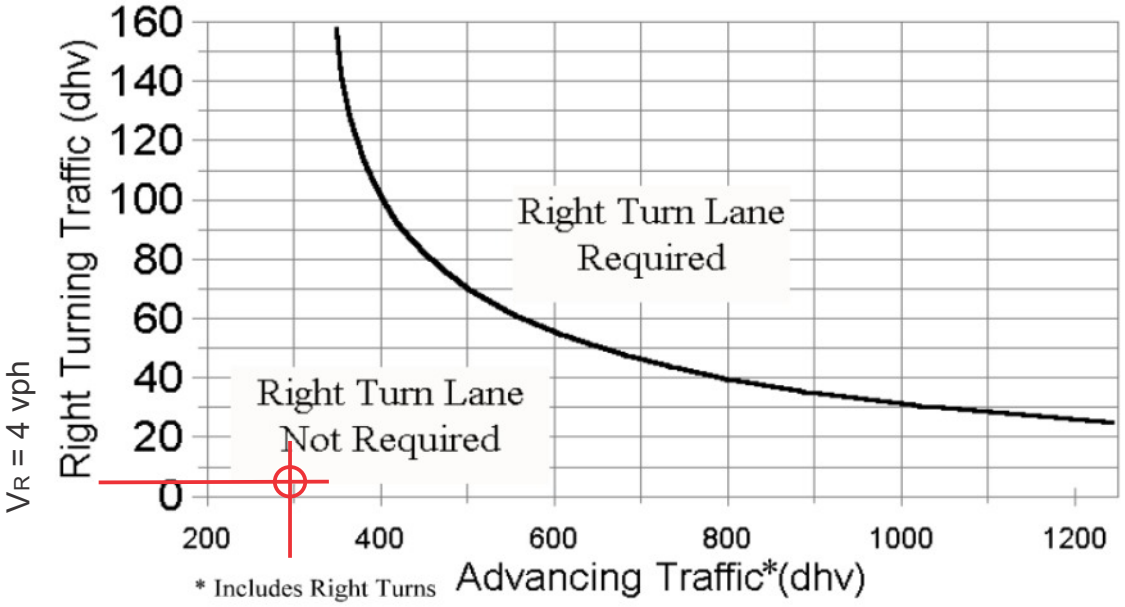


Advancing Traffic:
V_A = 306 vph
V_L = 53 vph
Left turns = 17.3%

Warrant Not Met

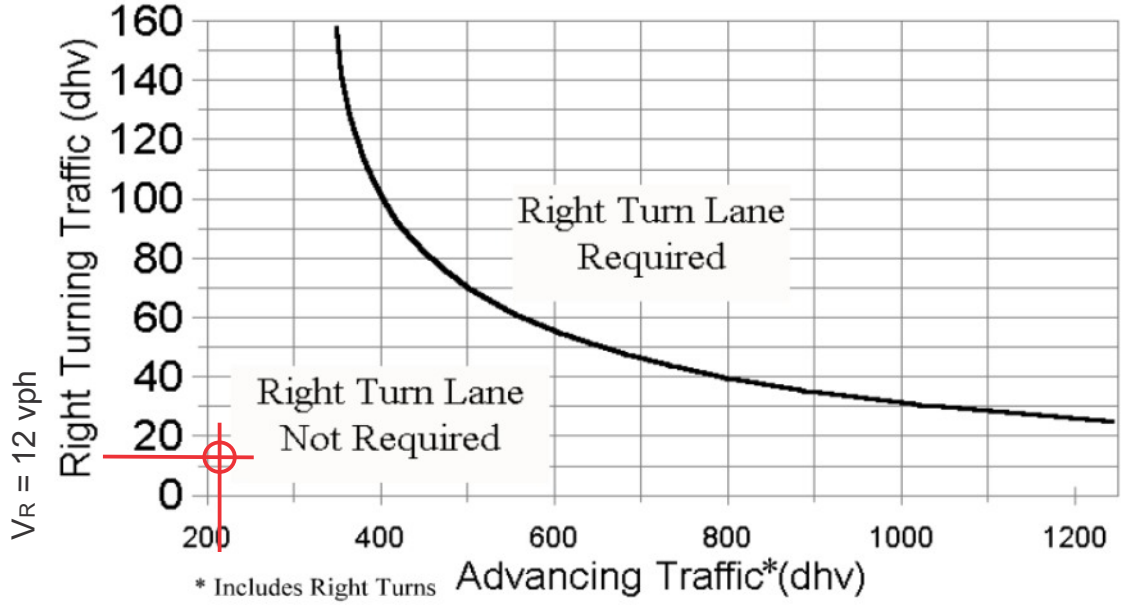
Right Turn Lane Warrant Analysis
Background 2043 Traffic Volumes
Trunk 2/Wickwire South - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 297 vph

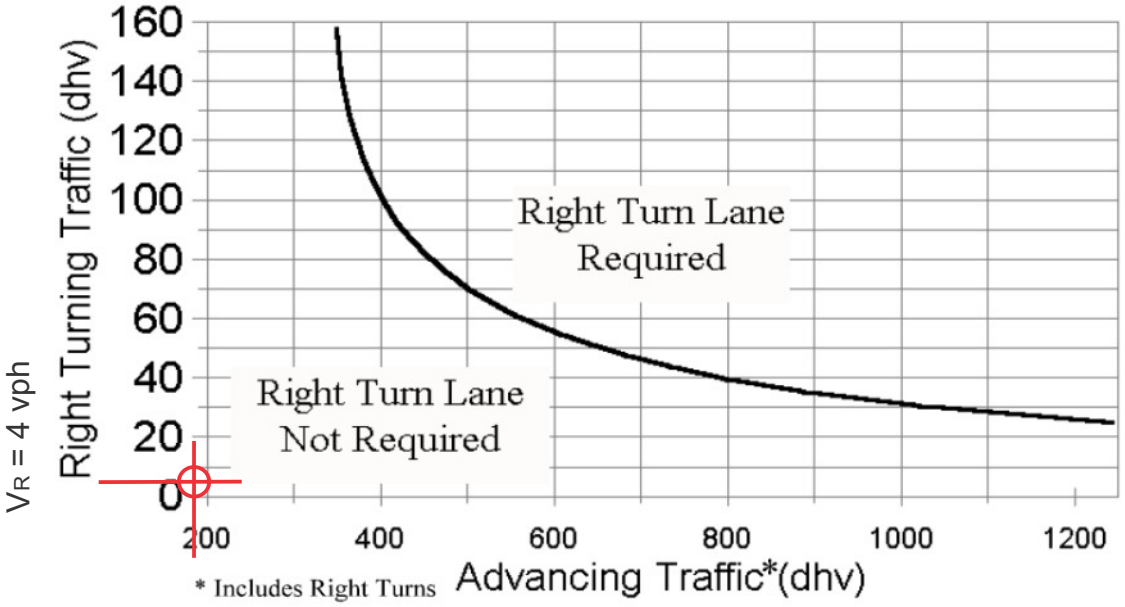
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 210 vph

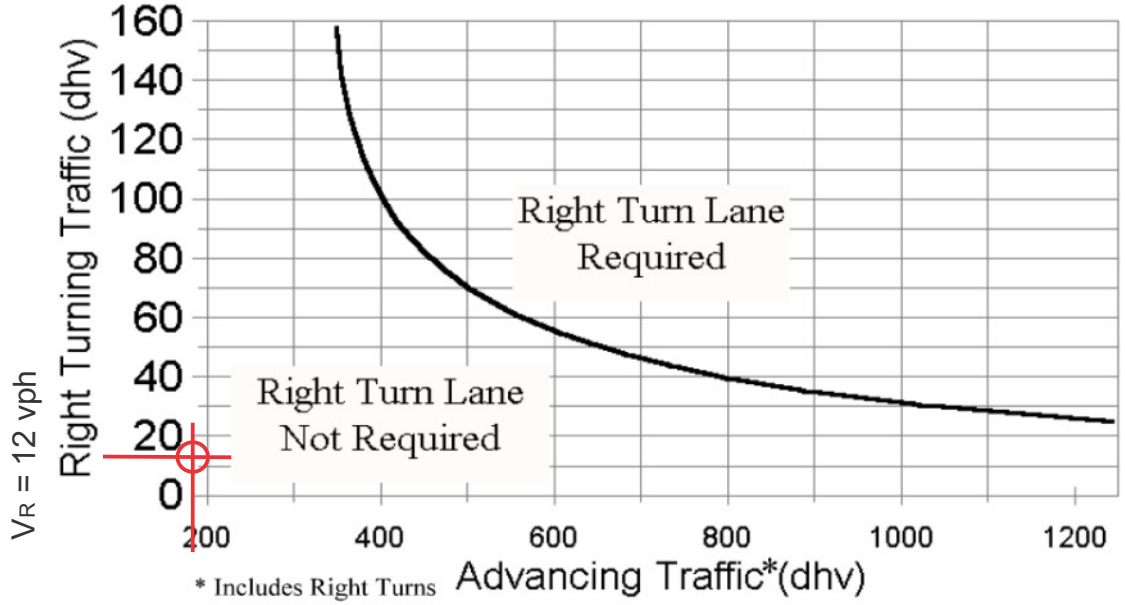
Right Turn Lane Warrant Analysis
Background 2043 Traffic Volumes
Trunk 2/Wickwire North - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 162 vph

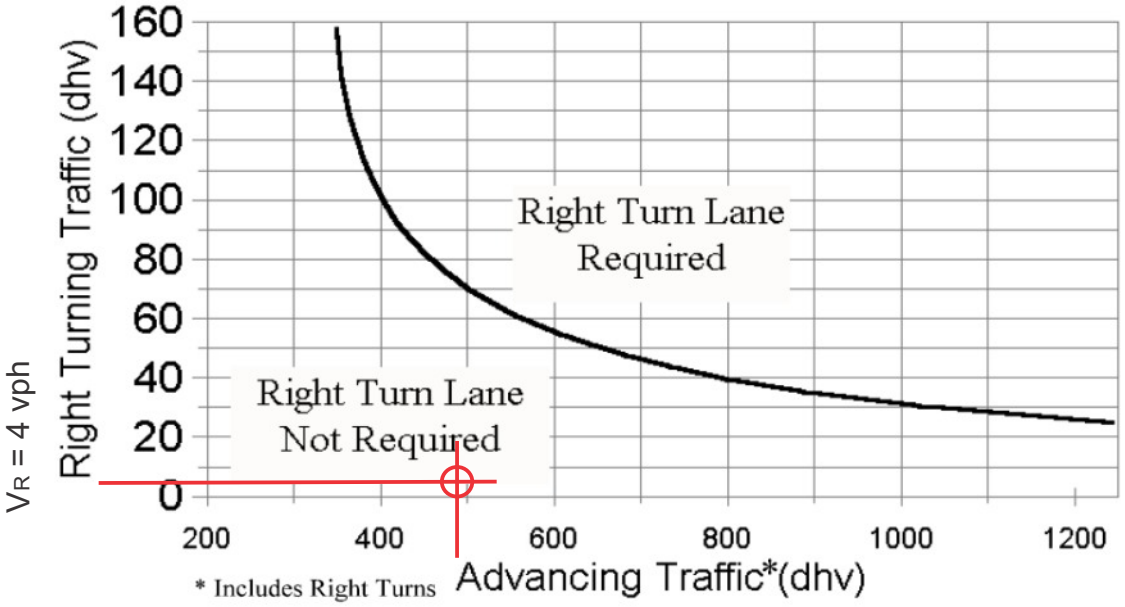
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 131 vph

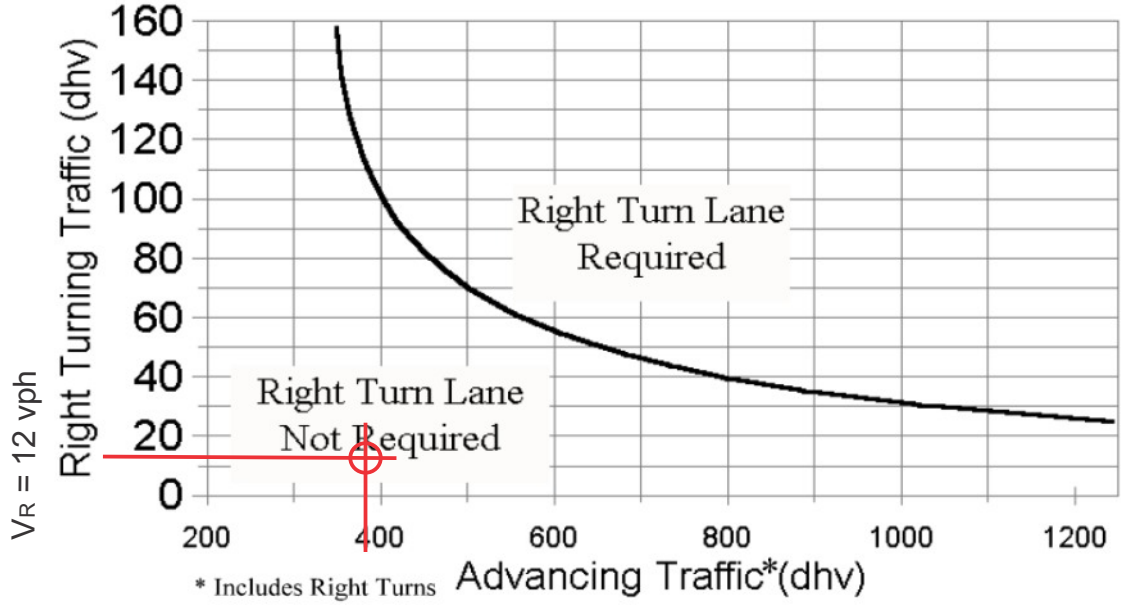
Right Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Wickwire North - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 484 vph

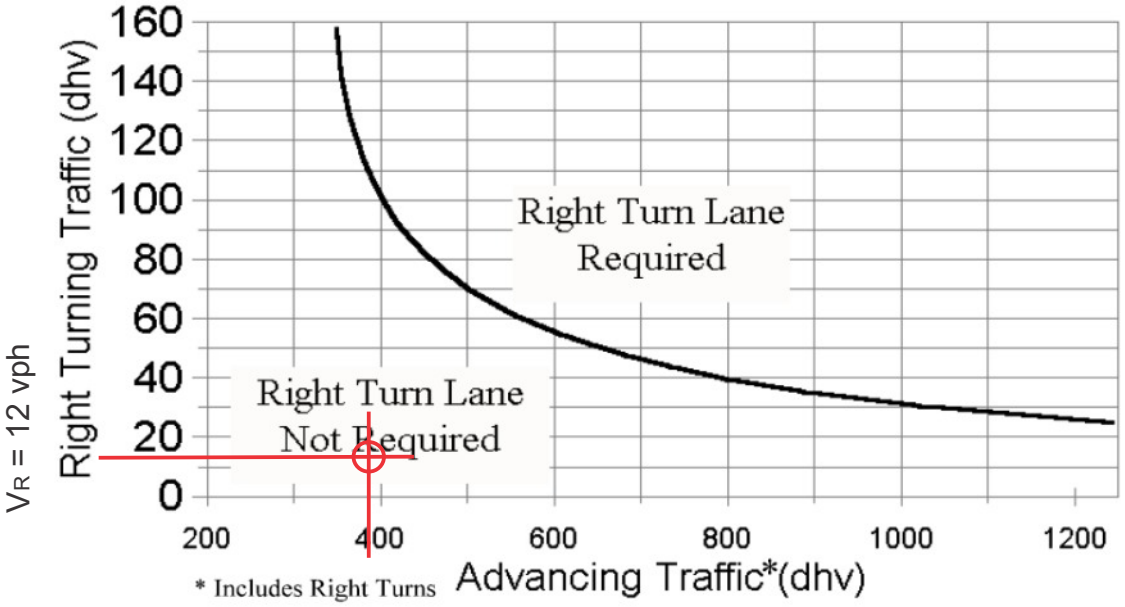
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 383 vph

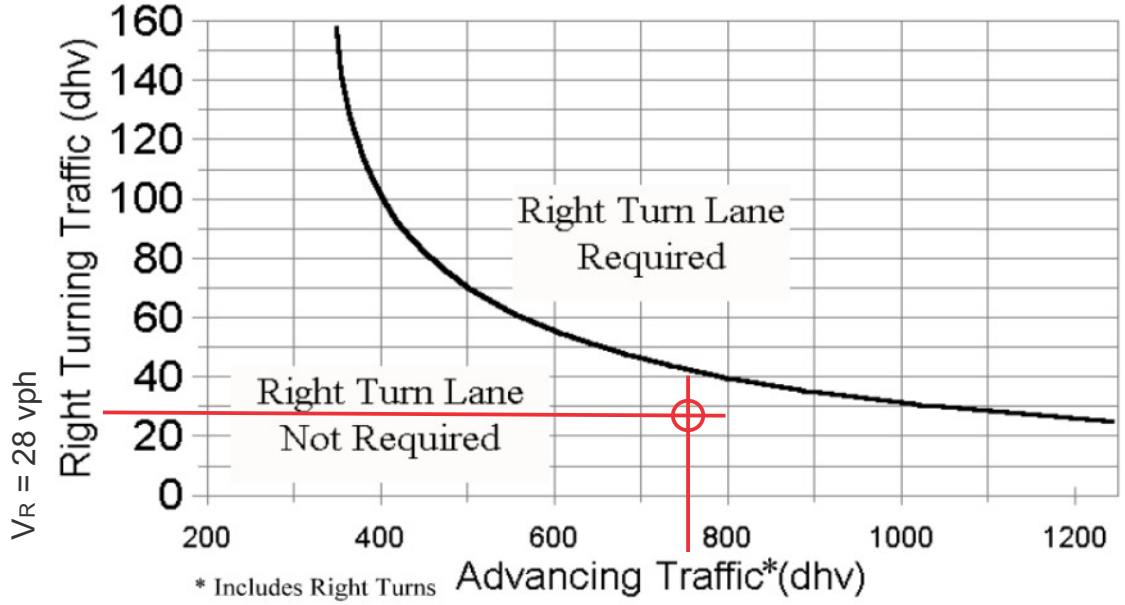
Right Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Wickwire North - Northbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 382 vph

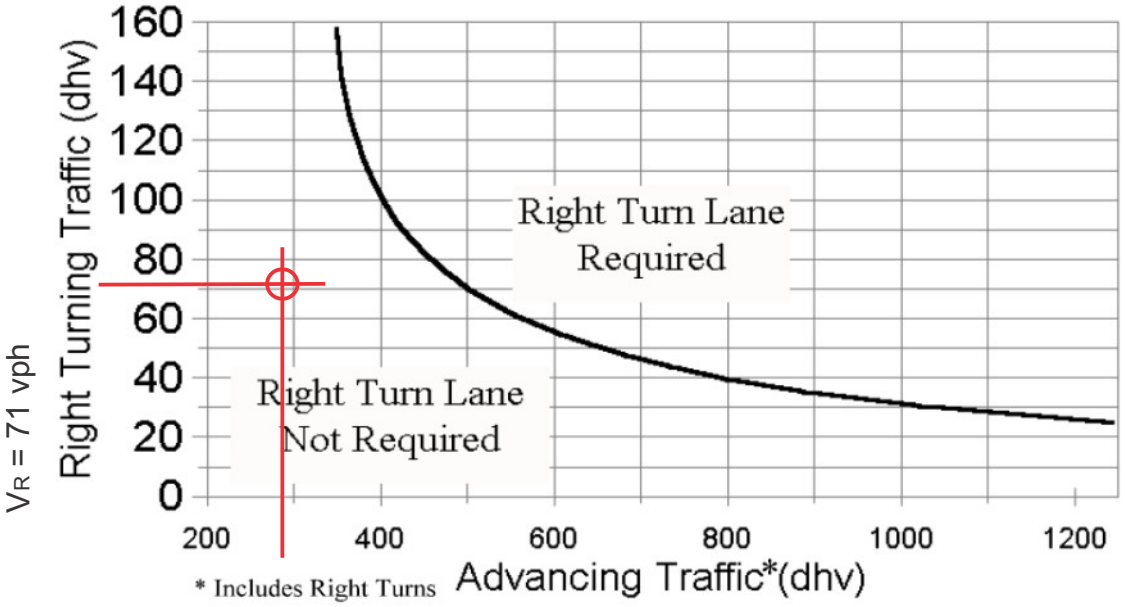
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 755 vph

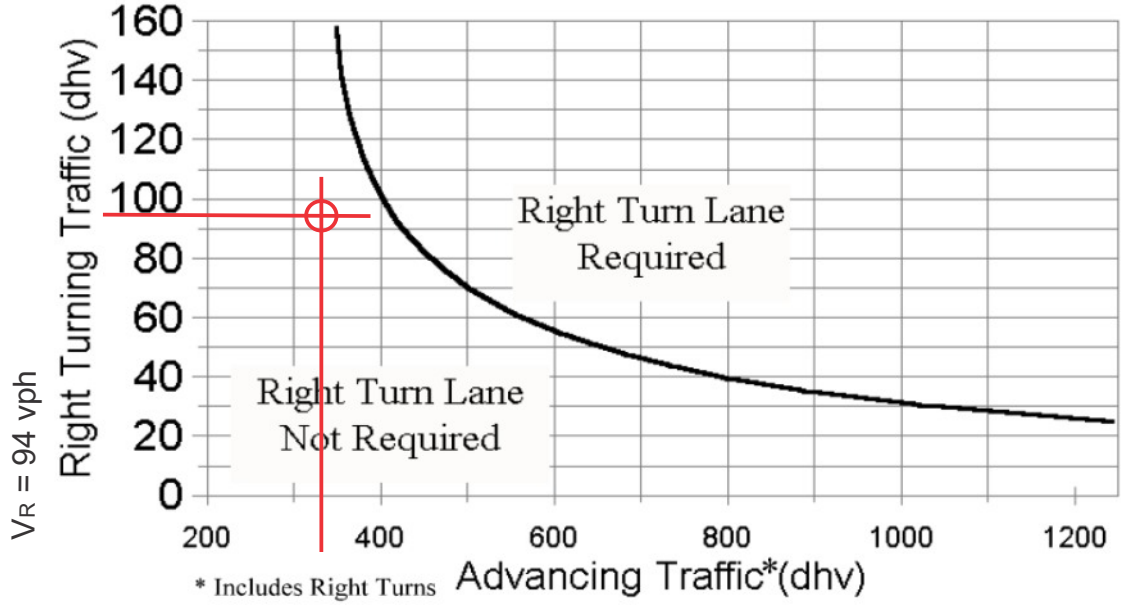
Right Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Road A - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 289 vph

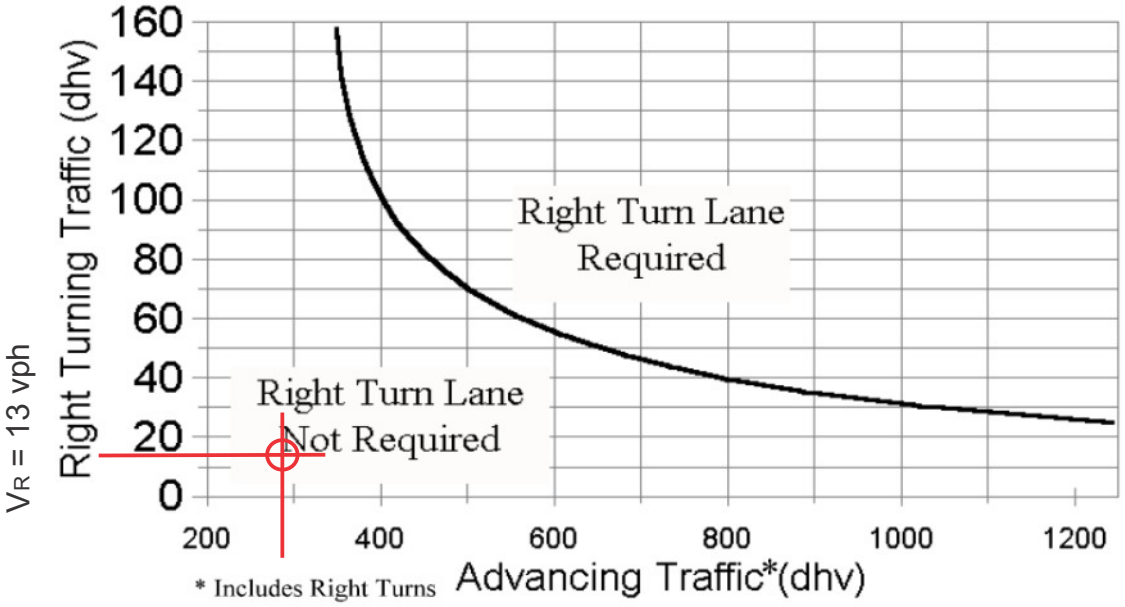
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 327 vph

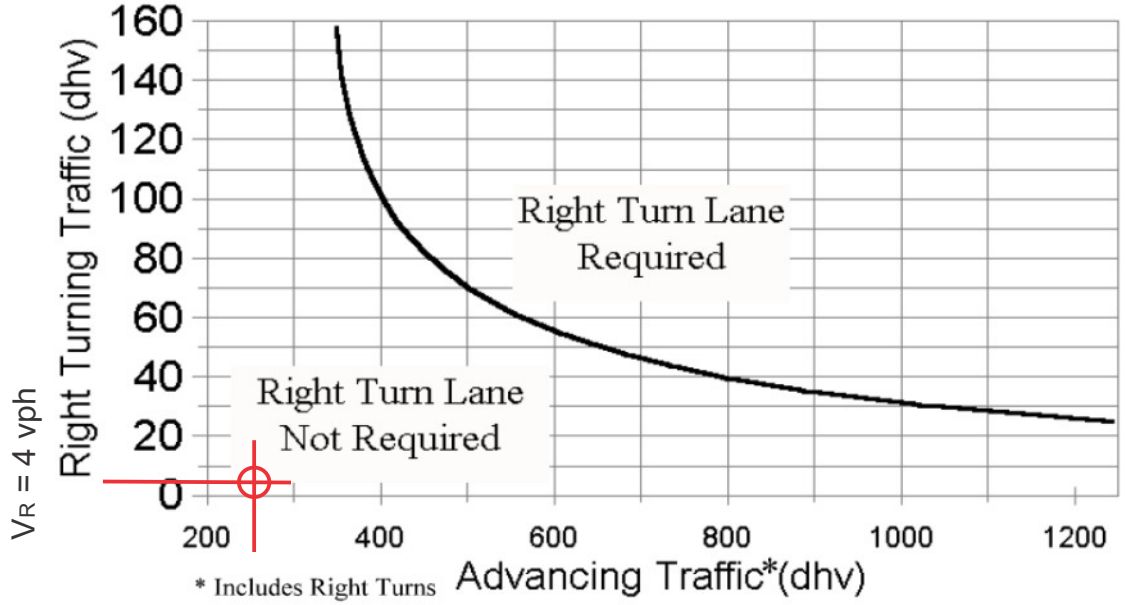
Right Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Parcel B Access - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 290 vph

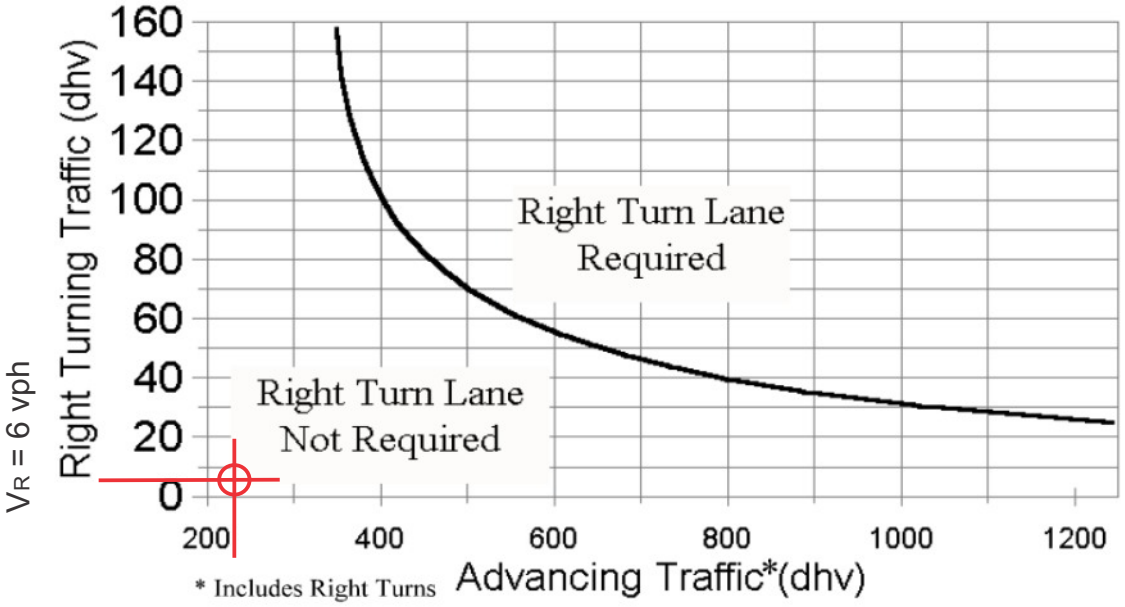
Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 254 vph

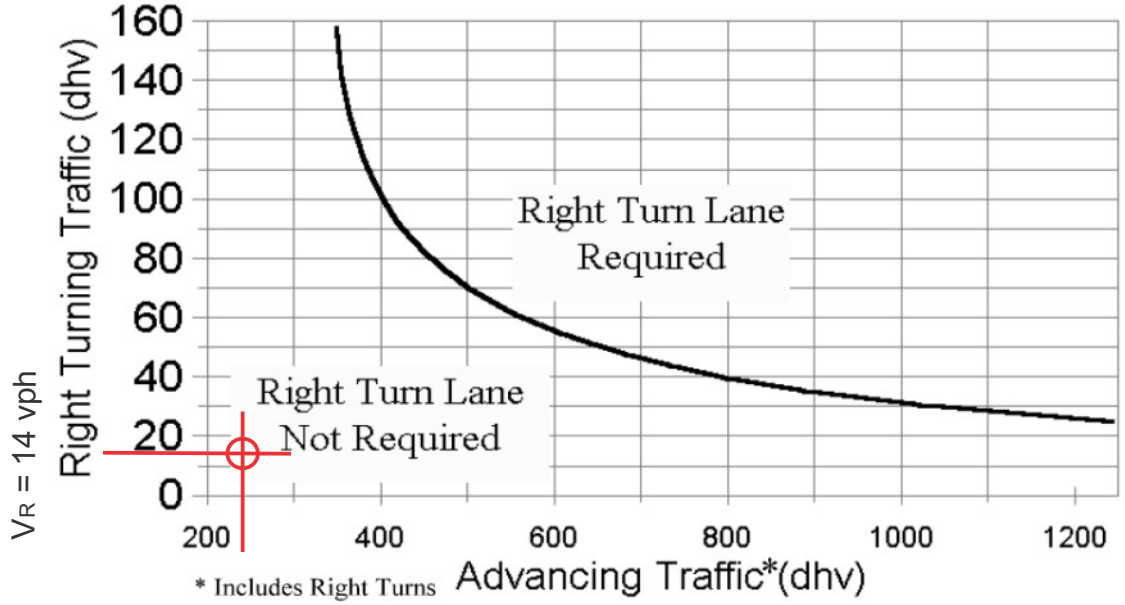
Right Turn Lane Warrant Analysis
Total 2043 Traffic Volumes
Trunk 2/Parcel F Access - Southbound Right Turn

Weekday AM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 222 vph

Weekday PM Peak Hour - 70 km/h or less**:**



Advancing Traffic:
V_A = 234 vph

APPENDIX IV

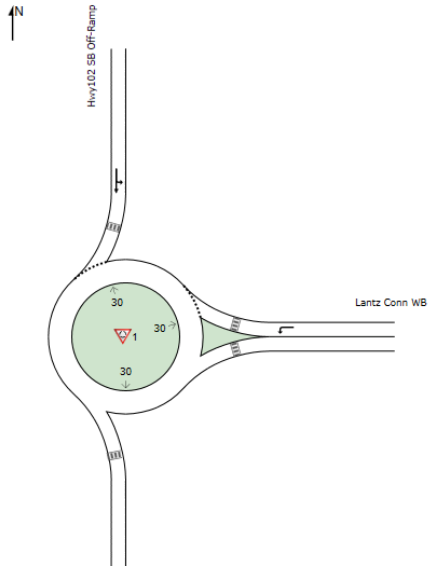
Intersection operational analyses

Lantz Connector Corridor

Roundabout Results

All Planning Horizons

1. Lantz Connector Road / Highway 102 Southbound Ramps



	AM Vols									PM Vols								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
	Existing Geometry - 2023 Baseline																	
Leg WB	D1	0.2	0.5	3.60	0.17	A	3.58	A	425 %	D2	0.1	0.5	3.36	0.11	A	3.38	A	545 %
Leg SB		0.1	0.5	3.53	0.06	A			[Leg SB]		0.1	0.5	3.43	0.07	A			[Leg SB]
	Existing Geometry - 2043 Bkgd																	
Leg WB	D3	0.6	2.0	4.73	0.37	A	4.67	A	160 %	D4	0.4	1.2	4.08	0.27	A	4.13	A	190 %
Leg SB		0.1	0.5	4.45	0.11	A			[Leg WB]		0.2	0.5	4.23	0.15	A			[Leg SB]
	Existing Geometry - 2043 Total																	
Leg WB	**D5**	**2.1**	**4.4**	**9.20**	**0.68**	**A**	**8.96**	**A**	**41 %**	D6	0.8	1.5	5.51	0.46	A	5.52	A	91 %
Leg SB		**0.2**	**0.9**	**7.25**	**0.19**	**A**			**[Leg WB]**		0.3	1.2	5.56	0.22	A			[Leg SB]

Legs

Legs

Leg	Name	Description	No yield line
WB	LantzWB		
SB	OffRampSB		
NB	OnRampNB		

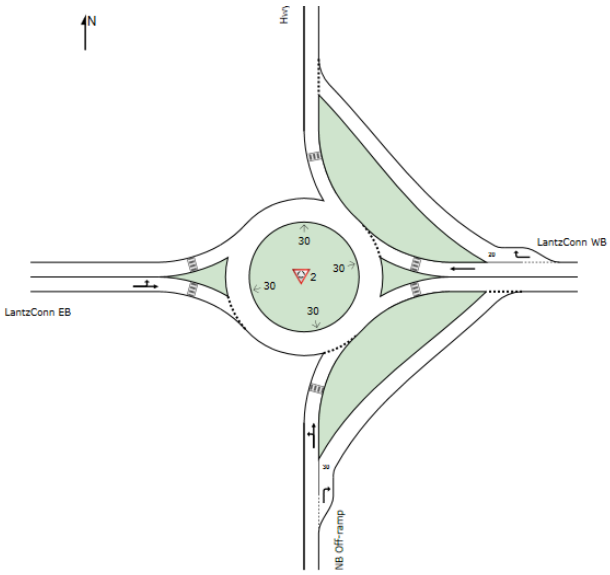
Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
WB	3.50	4.00	30.0	30.0	45.0	20.0		
SB	3.50	4.00	30.0	30.0	45.0	20.0	✓	
NB								✓

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
WB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86
SB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86
NB		1.00	✓	Distance			4.00	2.86

2. Lantz Connector Road / Highway 102 Northbound Ramps



	AM Vols									PM Vols								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Existing Geometry - 2023 Baseline																		
Leg WB	D1	0.2	0.5	3.61	0.17	A	3.43	A	456 % [Leg WB]	D2	0.1	0.5	3.36	0.11	A	3.19	A	760 % [Leg WB]
Leg EB		0.1	0.5	3.14	0.05	A					0.1	0.5	3.19	0.06	A			
Leg NB		0.0	0.5	3.08	0.00	A					0.0	0.5	3.11	0.00	A			
Existing Geometry - 2043 Bkgd																		
Leg WB	D3	0.6	2.0	4.74	0.37	A	4.29	A	158 % [Leg WB]	D4	0.4	1.2	4.09	0.27	A	3.54	A	256 % [Leg WB]
Leg EB		0.1	0.5	3.26	0.08	A					0.1	0.5	3.40	0.12	A			
Leg NB		0.0	0.5	3.15	0.00	A					0.0	0.5	3.23	0.00	A			
Existing Geometry - 2043 Total																		
Leg WB	D5	2.1	4.5	9.26	0.68	A	7.57	A	40 % [Leg WB]	**D6**	**0.8**	**1.5**	**5.51**	**0.46**	**A**	**4.11**	**A**	**108 % [Leg WB]**
Leg EB		0.1	0.5	3.30	0.09	A					**0.2**	**0.5**	**3.50**	**0.15**	**A**			
Leg NB		0.0	0.5	3.17	0.00	A					**0.0**	**0.5**	**3.29**	**0.00**	**A**			

Legs

Legs

Leg	Name	Description	No yield line
WB	LantzWB		
SB	OnRampSB		
EB	LantzEB		
NB	OffRampNB		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
WB	3.50	4.00	30.0	30.0	45.0	20.0		
SB								✓
EB	3.50	4.00	30.0	30.0	45.0	20.0		
NB	3.50	4.00	30.0	30.0	45.0	20.0	✓	

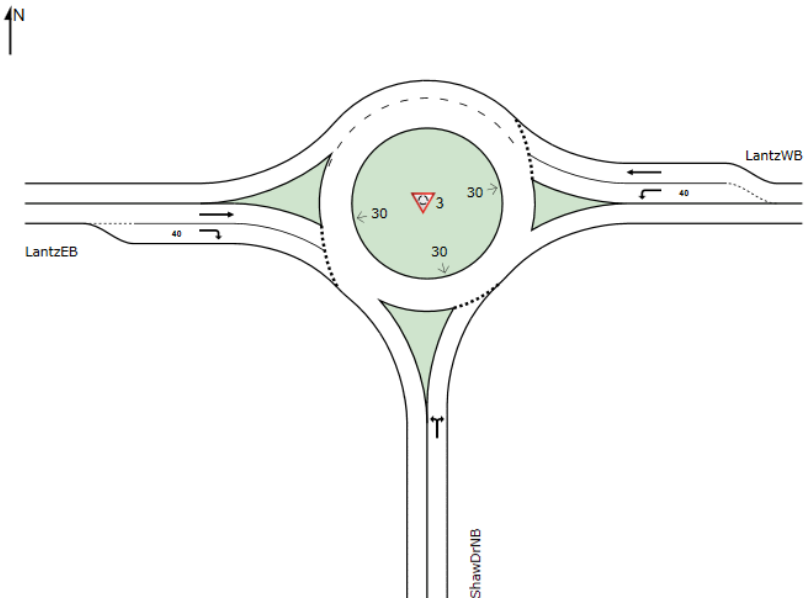
Bypass

Leg	Leg has bypass	Bypass utilisation (%)
WB	✓	100
SB		
EB		
NB	✓	100

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
WB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86
SB		1.00	✓	Distance			4.00	2.86
EB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86
NB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86

3. Lantz Connector Road / Shaw Drive



	AM Vols									PM Vols								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Existing Geometry - 2043 Bkgd																		
Leg WB		**0.4**	**1.8**	**2.93**	**0.31**	**A**			**126 %**		0.2	0.5	2.31	0.17	A			69 %
Leg EB	**D3**	**0.1**	**0.5**	**2.01**	**0.12**	**A**	**3.04**	**A**	**[Leg WB]**	D4	0.6	2.0	2.81	0.37	A	3.48	A	[Leg NB]
Leg NB		**0.3**	**1.3**	**4.35**	**0.22**	**A**					0.5	1.9	6.80	0.33	A			
Existing Geometry - 2043 Total																		
Leg WB		1.5	2.1	5.72	0.60	A			38 %		0.5	1.9	3.01	0.32	A			23 %
Leg EB	D5	0.2	0.5	2.19	0.19	A	4.74	A	[Leg WB]	D6	1.2	1.8	4.00	0.56	A	4.86	A	[Leg NB]
Leg NB		0.3	1.4	4.98	0.25	A					0.9	1.9	12.67	0.48	B			

Legs

Legs

Leg	Name	Description	No yield line
WB	LantzWB		
EB	LantzEB		
NB	ShawNB		

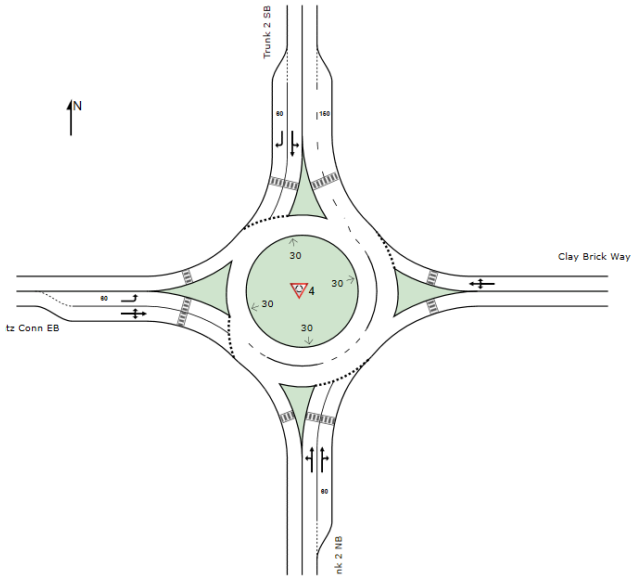
Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
WB	7.00	7.00	0.0	30.0	50.0	20.0		
EB	7.00	7.00	0.0	30.0	50.0	20.0		
NB	3.50	4.00	30.0	30.0	50.0	20.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
WB	1.00	1.00	✓	Distance	7.00	5.00	4.00	2.86
EB	1.00	1.00	✓	Distance	7.00	5.00	4.00	2.86
NB	1.00	1.00	✓	Distance	4.00	2.86	4.00	2.86

4. Lantz Connector Road / Trunk 2



	AM Vols									PM Vols								
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Existing Geometry - 2023 Baseline																		
Leg WB	D1	**0.0**	**0.5**	**3.41**	**0.01**	**A**	**2.39**	**A**	**261 %** [Leg SB]	D2	0.0	0.5	4.25	0.03	A	2.37	A	211 % [Leg WB]
Leg SB		**0.3**	**1.4**	**2.70**	**0.26**	**A**					0.2	0.5	2.41	0.17	A			
Leg EB		**0.1**	**0.5**	**1.99**	**0.08**	**A**					0.3	0.8	2.29	0.21	A			
Leg NB		**0.1**	**0.5**	**1.93**	**0.10**	**A**					0.2	0.5	2.27	0.16	A			
Existing Geometry - 2043 Bkgd																		
Leg WB	D3	0.0	0.5	3.66	0.02	A	3.12	A	109 % [Leg SB]	D4	0.0	0.5	5.77	0.04	A	2.94	A	90 % [Leg WB]
Leg SB		0.8	1.5	3.71	0.45	A					0.4	1.6	2.89	0.30	A			
Leg EB		0.2	0.5	2.22	0.13	A					0.5	2.1	2.90	0.35	A			
Leg NB		0.1	0.5	2.05	0.13	A					0.4	1.4	2.90	0.29	A			
Existing Geometry - 2043 Total																		
Leg WB	D5	0.0	0.5	4.14	0.02	A	6.01	A	30 % [Leg SB]	D6	0.1	0.5	10.15	0.07	B	4.34	A	30 % [Leg WB]
Leg SB		2.9	7.4	7.94	0.75	A					1.0	1.5	4.00	0.49	A			
Leg EB		0.3	1.2	2.58	0.22	A					1.3	1.9	4.54	0.57	A			
Leg NB		0.2	0.5	2.27	0.17	A					0.7	1.5	4.24	0.42	A			

Legs

Legs

Leg	Name	Description	No yield line
WB	ClayWB		
SB	Tk2SB		
EB	LantzEB		
NB	Tk2NB		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
WB	3.50	4.00	30.0	30.0	50.0	20.0		
SB	3.50	7.00	30.0	30.0	50.0	20.0		
EB	7.00	7.00	0.0	30.0	50.0	20.0		
NB	7.00	7.00	0.0	30.0	50.0	20.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
WB	1.00	1.00	✓	Distance	4.00	2.88	4.00	2.88
SB	1.00	1.00	✓	Distance	7.00	5.00	7.00	5.00
EB	1.00	1.00	✓	Distance	7.00	5.00	4.00	2.88
NB	1.00	1.00	✓	Distance	7.00	5.00	4.00	2.88

Trunk 2 Corridor

Existing 2023 Results

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	4	90	11	2	140
Future Vol, veh/h	25	4	90	11	2	140
Conflicting Peds, #/hr	1	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	4	98	12	2	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	262	106	0	0	111	0
Stage 1	105	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	727	948	-	-	1479	-
Stage 1	919	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	725	946	-	-	1477	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	869	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	749	1477	-
HCM Lane V/C Ratio	-	-	0.042	0.001	-
HCM Control Delay (s)	-	-	10	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	4	154	25	2	102
Future Vol, veh/h	11	4	154	25	2	102
Conflicting Peds, #/hr	1	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	167	27	2	111

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	298	183	0	0	195	0
Stage 1	182	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	693	859	-	-	1378	-
Stage 1	849	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	690	857	-	-	1377	-
Mov Cap-2 Maneuver	690	-	-	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	906	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	728	1377	-
HCM Lane V/C Ratio	-	-	0.022	0.002	-
HCM Control Delay (s)	-	-	10.1	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Trunk 2 Corridor

2043 Future Background Scenario Results

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	175	57	156	293	4
Future Vol, veh/h	10	175	57	156	293	4
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	20	40	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	11	190	62	170	318	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	624	330	327	0	-	0
Stage 1	325	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	444	705	1216	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	698	1210	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	2.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1210	-	417	698	-	-
HCM Lane V/C Ratio	0.051	-	0.026	0.273	-	-
HCM Control Delay (s)	8.1	-	13.9	12.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	1.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	111	191	213	198	12
Future Vol, veh/h	12	111	191	213	198	12
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	20	40	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	13	121	208	232	215	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	880	232	233	0	-	0
Stage 1	227	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	314	800	1317	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	262	793	1311	-	-	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	509	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	3.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1311	-	262	793	-	-
HCM Lane V/C Ratio	0.158	-	0.05	0.152	-	-
HCM Control Delay (s)	8.3	-	19.5	10.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.6	-	0.2	0.5	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	10	1	75	28	1	5	24	103	12	2	156	4
Future Vol, veh/h	10	1	75	28	1	5	24	103	12	2	156	4
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	11	1	82	30	1	5	26	112	13	2	170	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	360	363	182	399	359	129	179	0	0	130	0	0
Stage 1	181	181	-	176	176	-	-	-	-	-	-	-
Stage 2	179	182	-	223	183	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	7.15	6.55	6.25	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	3.545	4.045	3.345	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	590	560	853	556	563	913	1379	-	-	1437	-	-
Stage 1	814	744	-	819	748	-	-	-	-	-	-	-
Stage 2	816	743	-	773	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	571	543	845	489	546	905	1373	-	-	1430	-	-
Mov Cap-2 Maneuver	571	543	-	489	546	-	-	-	-	-	-	-
Stage 1	794	740	-	799	730	-	-	-	-	-	-	-
Stage 2	791	725	-	693	739	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	12.4	1.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1373	-	-	795	526	1430	-	-
HCM Lane V/C Ratio	0.019	-	-	0.118	0.07	0.002	-	-
HCM Control Delay (s)	7.7	-	-	10.1	12.4	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.2	0	-	-

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	6	1	46	12	1	5	79	172	28	2	117	12
Future Vol, veh/h	6	1	46	12	1	5	79	172	28	2	117	12
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	7	1	50	13	1	5	86	187	30	2	127	13

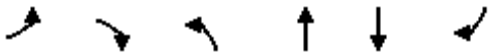
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	525	537	144	547	528	212	145	0	0	222	0	0
Stage 1	143	143	-	379	379	-	-	-	-	-	-	-
Stage 2	382	394	-	168	149	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	7.15	6.55	6.25	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	3.545	4.045	3.345	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	458	446	895	443	451	821	1419	-	-	1329	-	-
Stage 1	853	773	-	637	609	-	-	-	-	-	-	-
Stage 2	634	600	-	827	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	428	414	887	394	419	813	1412	-	-	1323	-	-
Mov Cap-2 Maneuver	428	414	-	394	419	-	-	-	-	-	-	-
Stage 1	798	768	-	596	569	-	-	-	-	-	-	-
Stage 2	588	560	-	774	763	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	13.1	2.2	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	776	462	1323	-	-
HCM Lane V/C Ratio	0.061	-	-	0.074	0.042	0.002	-	-
HCM Control Delay (s)	7.7	-	-	10	13.1	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-

Trunk 2 Corridor

2043 Future Total Scenario Results

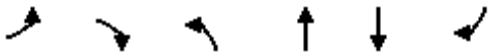


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	205	67	346	758	29
Future Volume (vph)	63	205	67	346	758	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	15.0	30.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	20.0		20.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.96				0.97
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1700	1521	1700	1789	1789	1521
Flt Permitted	0.950		0.121			
Satd. Flow (perm)	1681	1461	217	1789	1789	1468
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		223				17
Link Speed (k/h)	50			60	60	
Link Distance (m)	234.3			363.0	194.0	
Travel Time (s)	16.9			21.8	11.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	223	73	376	824	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	223	73	376	824	32
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	6.0	10.0	10.0	10.0
Minimum Split (s)	26.0	26.0	12.0	26.0	26.0	26.0
Total Split (s)	26.0	26.0	12.0	64.0	52.0	52.0
Total Split (%)	28.9%	28.9%	13.3%	71.1%	57.8%	57.8%
Maximum Green (s)	20.0	20.0	6.0	58.0	46.0	46.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	8.0	8.0		8.0	8.0	8.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0
Pedestrian Calls (#/hr)	5	5		5	5	5
Act Effct Green (s)	11.8	11.8	52.0	52.0	39.8	39.8
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.52	0.52
v/c Ratio	0.26	0.54	0.27	0.31	0.88	0.04

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	32.6	9.8	7.0	5.9	29.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	9.8	7.0	5.9	29.0	6.2
LOS	C	A	A	A	C	A
Approach Delay	15.1			6.1	28.2	
Approach LOS	B			A	C	
Queue Length 50th (m)	8.4	0.0	2.4	14.8	83.2	0.8
Queue Length 95th (m)	18.9	15.9	8.1	37.2	#185.3	5.0
Internal Link Dist (m)	210.3			339.0	170.0	
Turn Bay Length (m)		15.0	30.0			30.0
Base Capacity (vph)	454	553	267	1386	1099	908
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.40	0.27	0.27	0.75	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Tk 2 & Wickwire South



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	51	131	225	749	508	65
Future Volume (vph)	51	131	225	749	508	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	15.0	30.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	20.0		20.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.96				0.97
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1700	1521	1700	1789	1789	1521
Flt Permitted	0.950		0.227			
Satd. Flow (perm)	1681	1461	406	1789	1789	1468
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		142				51
Link Speed (k/h)	50			60	60	
Link Distance (m)	234.3			363.0	194.0	
Travel Time (s)	16.9			21.8	11.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	142	245	814	552	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	142	245	814	552	71
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	6.0	10.0	10.0	10.0
Minimum Split (s)	26.0	26.0	12.0	26.0	26.0	26.0
Total Split (s)	26.0	26.0	16.0	64.0	48.0	48.0
Total Split (%)	28.9%	28.9%	17.8%	71.1%	53.3%	53.3%
Maximum Green (s)	20.0	20.0	10.0	58.0	42.0	42.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	8.0	8.0		8.0	8.0	8.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	12.0
Pedestrian Calls (#/hr)	5	5		5	5	5
Act Effct Green (s)	12.3	12.3	42.8	44.9	25.9	25.9
Actuated g/C Ratio	0.20	0.20	0.68	0.72	0.41	0.41
v/c Ratio	0.16	0.35	0.50	0.63	0.75	0.11

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	27.1	8.5	8.8	10.4	23.9	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	8.5	8.8	10.4	23.9	6.1
LOS	C	A	A	B	C	A
Approach Delay	13.7			10.1	21.9	
Approach LOS	B			B	C	
Queue Length 50th (m)	5.2	0.0	8.9	46.6	49.8	1.3
Queue Length 95th (m)	15.9	12.9	23.7	114.8	97.5	8.0
Internal Link Dist (m)	210.3			339.0	170.0	
Turn Bay Length (m)		15.0	30.0			30.0
Base Capacity (vph)	595	603	504	1585	1247	1039
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.24	0.49	0.51	0.44	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 62.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Tk 2 & Wickwire South

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	243	28	1	5	79	291	12	2	478	4
Future Vol, veh/h	10	1	243	28	1	5	79	291	12	2	478	4
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	11	1	264	30	1	5	86	316	13	2	520	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1034	1037	532	1164	1033	333	529	0	0	334	0	0
Stage 1	531	531	-	500	500	-	-	-	-	-	-	-
Stage 2	503	506	-	664	533	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	7.15	6.55	6.25	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	3.545	4.045	3.345	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	208	228	542	169	230	702	1023	-	-	1209	-	-
Stage 1	526	521	-	547	538	-	-	-	-	-	-	-
Stage 2	545	535	-	445	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	190	206	537	79	208	695	1018	-	-	1203	-	-
Mov Cap-2 Maneuver	190	206	-	79	208	-	-	-	-	-	-	-
Stage 1	479	517	-	498	490	-	-	-	-	-	-	-
Stage 2	492	487	-	224	516	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.9	67.2	1.8	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1018	-	-	498	93	1203	-	-
HCM Lane V/C Ratio	0.084	-	-	0.554	0.397	0.002	-	-
HCM Control Delay (s)	8.9	-	-	20.9	67.2	8	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.3	1.6	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	157	12	1	5	264	463	28	2	369	12
Future Vol, veh/h	6	1	157	12	1	5	264	463	28	2	369	12
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	15	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	7	1	171	13	1	5	287	503	30	2	401	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1517	1529	418	1600	1520	528	419	0	0	538	0	0
Stage 1	417	417	-	1097	1097	-	-	-	-	-	-	-
Stage 2	1100	1112	-	503	423	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	7.15	6.55	6.25	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	3.545	4.045	3.345	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	96	115	629	84	117	544	1124	-	-	1015	-	-
Stage 1	607	586	-	255	285	-	-	-	-	-	-	-
Stage 2	254	281	-	545	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	85	623	48	86	539	1119	-	-	1010	-	-
Mov Cap-2 Maneuver	75	85	-	48	86	-	-	-	-	-	-	-
Stage 1	449	582	-	189	211	-	-	-	-	-	-	-
Stage 2	185	208	-	392	579	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	81.1	3.3	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	477	66	1010	-	-
HCM Lane V/C Ratio	0.256	-	-	0.374	0.296	0.002	-	-
HCM Control Delay (s)	9.3	-	-	17	81.1	8.6	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	1	-	-	1.7	1.1	0	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	103	266	116	190	218	71
Future Vol, veh/h	103	266	116	190	218	71
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	15	15	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	112	289	126	207	237	77

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	745	286	319	0	-	0
Stage 1	281	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	377	746	1224	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	739	1218	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	3.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1218	-	335	739	-	-
HCM Lane V/C Ratio	0.104	-	0.334	0.391	-	-
HCM Control Delay (s)	8.3	-	21	13	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	1.9	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	150	227	247	233	94
Future Vol, veh/h	71	150	227	247	233	94
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	15	15	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	77	163	247	268	253	102

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1076	314	360	0	-	0
Stage 1	309	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	240	719	1182	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	188	712	1176	-	-	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.7	4.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1176	-	188	712	-	-
HCM Lane V/C Ratio	0.21	-	0.41	0.229	-	-
HCM Control Delay (s)	8.9	-	36.9	11.6	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.8	-	1.8	0.9	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	12	70	223	277	13
Future Vol, veh/h	2	12	70	223	277	13
Conflicting Peds, #/hr	5	5	5	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	2	13	76	242	301	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	712	318	320	0	-	0
Stage 1	313	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	395	716	1223	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	709	1217	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1217	-	624	-	-
HCM Lane V/C Ratio	0.063	-	0.024	-	-
HCM Control Delay (s)	8.2	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	77	25	293	250	4
Future Vol, veh/h	13	77	25	293	250	4
Conflicting Peds, #/hr	5	5	5	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	14	84	27	318	272	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	656	284	281	0	-	0
Stage 1	279	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	426	748	1264	-	-	-
Stage 1	761	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	411	741	1258	-	-	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1258	-	664	-	-
HCM Lane V/C Ratio	0.022	-	0.147	-	-
HCM Control Delay (s)	7.9	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	74	21	204	216	6
Future Vol, veh/h	19	74	21	204	216	6
Conflicting Peds, #/hr	5	5	5	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	80	23	222	235	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	517	249	247	0	-	0
Stage 1	244	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	513	782	1302	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	498	775	1296	-	-	-
Mov Cap-2 Maneuver	498	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1296	-	696	-	-
HCM Lane V/C Ratio	0.018	-	0.145	-	-
HCM Control Delay (s)	7.8	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	34	53	253	220	14
Future Vol, veh/h	9	34	53	253	220	14
Conflicting Peds, #/hr	5	5	5	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	10	37	58	275	239	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	648	257	259	0	-	0
Stage 1	252	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	430	774	1288	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	403	767	1282	-	-	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1282	-	645	-	-
HCM Lane V/C Ratio	0.045	-	0.072	-	-
HCM Control Delay (s)	7.9	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	212	63	124	157	55
Future Vol, veh/h	113	212	63	124	157	55
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	15	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	123	230	68	135	171	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	208	0	-	0	622	146
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	481	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1345	-	-	-	446	893
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1339	-	-	-	401	885
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	613	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	20
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1339	-	-	-	467
HCM Lane V/C Ratio	0.092	-	-	-	0.493
HCM Control Delay (s)	8	-	-	-	20
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	2.7

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	68	124	206	115	97	79
Future Vol, veh/h	68	124	206	115	97	79
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	15	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	74	135	224	125	105	86

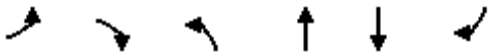
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	580	297
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1188	-	-	-	472	735
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	754	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1182	-	-	-	438	728
Mov Cap-2 Maneuver	-	-	-	-	438	-
Stage 1	-	-	-	-	700	-
Stage 2	-	-	-	-	750	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1182	-	-	-	533
HCM Lane V/C Ratio	0.063	-	-	-	0.359
HCM Control Delay (s)	8.2	-	-	-	15.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.6

Trunk 2 Corridor

Sensitivity Analysis
Long-Term Full Build-Out
Scenario Results

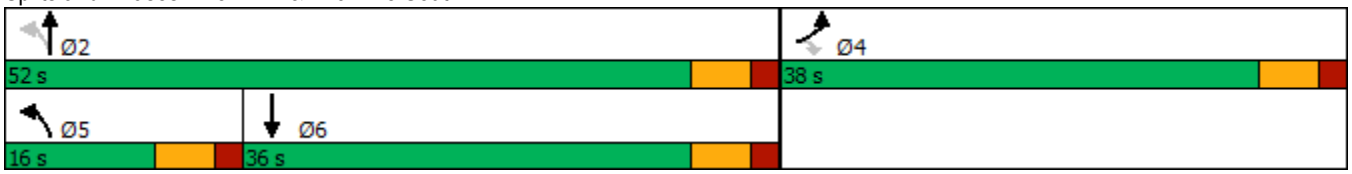


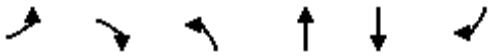
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	605	208	406	926	38
Future Volume (vph)	86	605	208	406	926	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	15.0	0.0			30.0
Storage Lanes	1	1	1			0
Taper Length (m)	20.0		20.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			1.00	
Frt		0.850			0.994	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1700	1521	1700	1789	3375	0
Flt Permitted	0.950		0.114			
Satd. Flow (perm)	1681	1488	204	1789	3375	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		285			5	
Link Speed (k/h)	50			60	60	
Link Distance (m)	234.3			363.0	194.0	
Travel Time (s)	16.9			21.8	11.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	658	226	441	1007	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	658	226	441	1048	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	6.0	10.0	10.0	
Minimum Split (s)	26.0	26.0	12.0	26.0	26.0	
Total Split (s)	38.0	38.0	16.0	52.0	36.0	
Total Split (%)	42.2%	42.2%	17.8%	57.8%	40.0%	
Maximum Green (s)	32.0	32.0	10.0	46.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	Min	Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	5	5		5	5	
Act Effct Green (s)	29.3	29.3	45.2	45.2	29.1	
Actuated g/C Ratio	0.34	0.34	0.52	0.52	0.34	
v/c Ratio	0.16	0.95	0.81	0.47	0.92	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	20.8	41.4	41.1	15.8	42.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.8	41.4	41.1	15.8	42.4	
LOS	C	D	D	B	D	
Approach Delay	38.8			24.4	42.4	
Approach LOS	D			C	D	
Queue Length 50th (m)	10.0	61.7	21.0	43.3	83.5	
Queue Length 95th (m)	19.6	#128.3	#56.2	65.7	#120.4	
Internal Link Dist (m)	210.3			339.0	170.0	
Turn Bay Length (m)		15.0				
Base Capacity (vph)	632	732	280	956	1180	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.90	0.81	0.46	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 36.4		Intersection LOS: D	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Tk 2 & Wickwire South



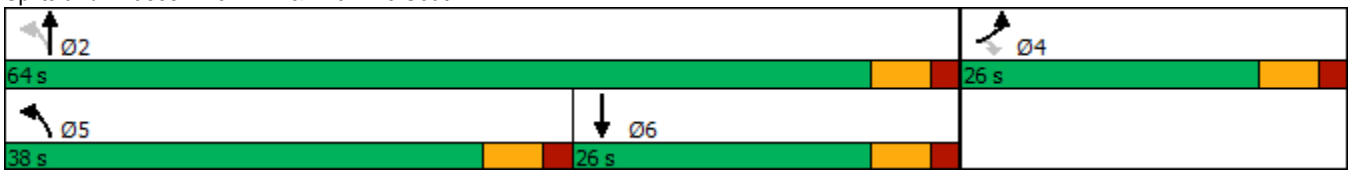


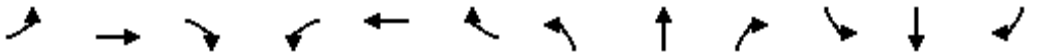
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	81	393	662	915	611	92
Future Volume (vph)	81	393	662	915	611	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	15.0	0.0			30.0
Storage Lanes	1	1	1			0
Taper Length (m)	20.0		20.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99	
Frt		0.850			0.980	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1700	1521	1700	1789	3315	0
Flt Permitted	0.950		0.154			
Satd. Flow (perm)	1681	1485	276	1789	3315	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		427			17	
Link Speed (k/h)	50			60	60	
Link Distance (m)	234.3			363.0	194.0	
Travel Time (s)	16.9			21.8	11.6	
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	427	720	995	664	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	427	720	995	764	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	6.0	10.0	10.0	
Minimum Split (s)	26.0	26.0	12.0	26.0	26.0	
Total Split (s)	26.0	26.0	38.0	64.0	26.0	
Total Split (%)	28.9%	28.9%	42.2%	71.1%	28.9%	
Maximum Green (s)	20.0	20.0	32.0	58.0	20.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	Min	Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	5	5		5	5	
Act Effct Green (s)	12.0	12.0	58.1	58.1	20.0	
Actuated g/C Ratio	0.15	0.15	0.71	0.71	0.24	
v/c Ratio	0.35	0.73	0.96	0.79	0.93	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	35.4	11.7	44.8	14.9	50.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.4	11.7	44.8	14.9	50.0	
LOS	D	B	D	B	D	
Approach Delay	15.7			27.5	50.0	
Approach LOS	B			C	D	
Queue Length 50th (m)	11.6	0.0	78.0	69.9	53.4	
Queue Length 95th (m)	23.1	22.6	#174.1	#205.7	#100.3	
Internal Link Dist (m)	210.3			339.0	170.0	
Turn Bay Length (m)		15.0				
Base Capacity (vph)	414	685	750	1265	821	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.62	0.96	0.79	0.93	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 31.2		Intersection LOS: C	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Tk 2 & Wickwire South



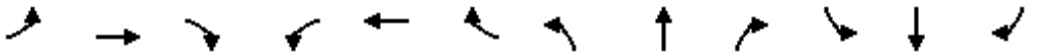


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1	413	28	1	5	138	315	12	2	485	13
Future Volume (vph)	34	1	413	28	1	5	138	315	12	2	485	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		15.0	0.0		0.0	30.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			20.0			20.0		
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		0.99	0.96		0.99			1.00		0.99	1.00	
Frt			0.850		0.981			0.995			0.996	
Flt Protected		0.954			0.960		0.950			0.950		
Satd. Flow (prot)	0	1707	1521	0	1676	0	1700	1778	0	1700	1781	0
Flt Permitted		0.715			0.756		0.292			0.549		
Satd. Flow (perm)	0	1266	1463	0	1308	0	523	1778	0	976	1781	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			390		5			4			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		154.6			127.5			136.8			419.6	
Travel Time (s)		11.1			9.2			8.2			25.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	37	1	449	30	1	5	150	342	13	2	527	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	449	0	36	0	150	355	0	2	541	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0		12.0	26.0		26.0	26.0	
Total Split (s)	30.0	30.0	30.0	30.0	30.0		16.0	60.0		44.0	44.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%		17.8%	66.7%		48.9%	48.9%	
Maximum Green (s)	24.0	24.0	24.0	24.0	24.0		10.0	54.0		38.0	38.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		Max	Max	
Walk Time (s)	8.0	8.0	8.0	8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0			12.0		12.0	12.0	
Pedestrian Calls (#/hr)	5	5	5	5	5			5		5	5	
Act Effct Green (s)		13.7	13.7		13.7		54.2	54.2		40.3	40.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.17	0.17		0.17		0.68	0.68		0.50	0.50	
v/c Ratio		0.18	0.78		0.16		0.32	0.29		0.00	0.60	
Control Delay		29.2	16.0		25.8		7.4	6.8		13.5	19.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		29.2	16.0		25.8		7.4	6.8		13.5	19.3	
LOS		C	B		C		A	A		B	B	
Approach Delay		17.0			25.8			6.9			19.3	
Approach LOS		B			C			A			B	
Queue Length 50th (m)		4.6	7.2		3.7		5.2	14.0		0.1	45.2	
Queue Length 95th (m)		11.6	34.4		10.4		17.0	39.8		1.4	104.1	
Internal Link Dist (m)		130.6			103.5			112.8			395.6	
Turn Bay Length (m)			15.0				30.0			15.0		
Base Capacity (vph)		381	713		397		502	1206		491	898	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.10	0.63		0.09		0.30	0.29		0.00	0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Tk 2 & Wickwire North/Robert Scott



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1	265	12	1	5	445	478	28	2	391	39
Future Volume (vph)	21	1	265	12	1	5	445	478	28	2	391	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		15.0	0.0		0.0	90.0		0.0	15.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			20.0			20.0		
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		0.99	0.96		0.98		1.00	1.00		0.99	1.00	
Frt			0.850		0.964			0.992			0.987	
Flt Protected		0.954			0.967		0.950			0.950		
Satd. Flow (prot)	0	1707	1521	0	1651	0	1700	1772	0	1700	1761	0
Flt Permitted		0.737			0.816		0.352			0.458		
Satd. Flow (perm)	0	1305	1461	0	1383	0	628	1772	0	815	1761	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288		5			6			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		154.6			127.5			136.8			419.6	
Travel Time (s)		11.1			9.2			8.2			25.2	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	1	288	13	1	5	484	520	30	2	425	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	288	0	19	0	484	550	0	2	467	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0		12.0	26.0		26.0	26.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		16.0	64.0		48.0	48.0	
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%		17.8%	71.1%		53.3%	53.3%	
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0		10.0	58.0		42.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)	8.0	8.0	8.0	8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0			12.0		12.0	12.0	
Pedestrian Calls (#/hr)	5	5	5	5	5			5		5	5	
Act Effct Green (s)		11.8	11.8		11.8		58.1	58.1		42.1	42.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.14	0.14		0.14		0.71	0.71		0.51	0.51	
v/c Ratio		0.13	0.63		0.09		0.84	0.44		0.00	0.51	
Control Delay		31.5	10.8		25.4		22.6	6.8		11.5	16.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		31.5	10.8		25.4		22.6	6.8		11.5	16.2	
LOS		C	B		C		C	A		B	B	
Approach Delay		12.4			25.4			14.2			16.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)		3.1	0.0		1.8		21.1	24.4		0.1	38.9	
Queue Length 95th (m)		8.9	18.2		6.9		#79.2	60.0		1.3	77.7	
Internal Link Dist (m)		130.6			103.5			112.8			395.6	
Turn Bay Length (m)			15.0				90.0			15.0		
Base Capacity (vph)		319	574		341		576	1258		418	907	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.08	0.50		0.06		0.84	0.44		0.00	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Tk 2 & Wickwire North/Robert Scott

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	104	265	117	237	235	70
Future Vol, veh/h	104	265	117	237	235	70
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	15	15	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	113	288	127	258	255	76

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	815	303	336	0	-	0
Stage 1	298	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	343	730	1207	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	723	1201	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	589	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	2.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1201	-	304	723	-	-
HCM Lane V/C Ratio	0.106	-	0.372	0.398	-	-
HCM Control Delay (s)	8.4	-	23.7	13.2	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.7	1.9	-	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	74	151	230	274	281	95
Future Vol, veh/h	74	151	230	274	281	95
Conflicting Peds, #/hr	5	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	15	15	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	80	164	250	298	305	103

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1165	367	413	0	-	0
Stage 1	362	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	212	672	1130	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	163	666	1125	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.6	4.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1125	-	163	666	-	-
HCM Lane V/C Ratio	0.222	-	0.493	0.246	-	-
HCM Control Delay (s)	9.1	-	46.9	12.2	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.9	-	2.4	1	-	-