Trunk 2/Route 214 Corridor Traffic Study

Final Report

131021.00 ● Final Report ● March 2014

Prepared for:

NOVA SCOTIA
Transportation and Infrastructure Renewal

MUNICIPALITY OF EAST HANTS

Prepared by:

CBCL LIMITED
Consulting Engineers

Final Report	M. MacDonald	03/31/2014	A. Muir
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March 31, 2014

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Dear Mr. Croft:

RE: Trunk 2/Route 214 Corridor Traffic Study - Final Report

Thank you for giving us the opportunity to undertake this important Corridor Traffic Study on your behalf. Through our involvement in this project, we have had the privilege of working with yourself, your team and the Steering Committee. We are pleased to enclose ten bound copies plus one unbound and a PDF version of the Final report, for your information.

The objectives of the project were set out in the terms of reference, contained in the Request for Proposals document. The Final report includes an analysis of existing traffic conditions including traffic counts, computer modelling, an estimate of future traffic volumes based on anticipated and proposed developments within the area, identification of network deficiencies and mitigation measures, development of functional designs and preliminary cost estimates, a review of the potential Milford Inland Container Terminal, and a recommendation on the best interchange option to relieve anticipated traffic congestion in the future.

We hope that this report provides you with all that you need, however, please do not hesitate to contact us should you require any further information.

We look forward to discussing the report with you at your convenience.

Yours truly,

CBCL Limited

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Encl: 10 bound Copies + 1 unbound copy of the Final Report + 1 Digital Copy

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EXECUTIVE SUMMARY

Introduction (Chapter 1)

Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR), Highway Engineering Services, and the Municipality of East Hants appointed CBCL Limited to undertake the Trunk 2/Route 214 Corridor Traffic Study on their behalf. The project was initiated due to an anticipated high level of growth in the East Hants area. Proposed residential construction in the area may cause considerable congestion at Exit 8, hence the need for this study to assess the need for a new Highway 102 connection. This report explores and assesses a number of options for the possible construction of a new interchange in the Lantz area.

The existing road network in the study area is made up of three main routes, namely Highway 102, Trunk 2 and Route 214. The objectives for this study include assessing future traffic flow patterns on Trunk 2 and Route 214 based on projected developments within the study area and for three interchange options; identifying roadway deficiencies for each study horizon; to service a possible inland container terminal near Milford; and to recommend an interchange option. Operational conditions were to be analysed for two horizon years, 2023 and 2033.

Background Information (Chapter 2)

A review of all available background information was undertaken at the start of the project. The information came from a number of sources, including Provincial and Municipal resources, the 2011 National Household Survey census data, previous planning studies and historical data collection from NSTIR for the period between 2007 and 2012. A number of assumptions were made based on this research including background traffic growth projections and future distribution patterns relevant in the analysis of the interchange options.

Proposed Interchange Options (Chapter 3)

The primary purpose of this report is to evaluate three interchange options that are being put forward by NSTIR and East Hants, and to identify the one that will provide the greatest road network benefits. The options are as follows:

- Option 1 – No new interchange;
- Option 2 – South Lantz Interchange; and
- Option 3 – North Lantz Interchange.

Traffic Data Collection (Chapter 4)

An essential part of this project was to become familiar with the study area, the local road network including existing intersections, and the conditions for road traffic on a typical day. During June 2013, site visits were undertaken and a current record of the key intersections and features within the study area was prepared. In addition to the site visits, a program of traffic counts at seven intersections within the study area was undertaken on typical weekdays in June during the AM and PM peak traffic periods, with some midday periods counted at specific unsignalized locations. CBCL Limited used Miovision Scout Video Collection Unit camera technology to record real-time video of the turning movements and any incidents occurring during the survey periods.

Traffic Forecasting, Trip Generation and Distribution (Chapter 5)

One of the primary tasks of this project was to forecast and develop reasonable estimates of what future peak hour traffic volumes could be at the study intersections associated with each of the three interchange options. The existing 2013 base traffic volumes were established through the traffic counts undertaken in June 2013 and further analysis was carried out to establish future volume sets.

It was necessary to determine a reasonable background growth rate to be used at all study intersections. The estimated trips from several major planned and proposed developments were included in this study; traffic from known minor developments was assumed to be accounted for as background traffic. Once trip generation for the major developments had been estimated, the new traffic was distributed among the existing study intersections, and future intersections as applicable.

There are many significant employers within the study area representing approximately 900 jobs, many of which would be filled by East Hants residents. However, we assumed that the majority of new study area residents over the next 10 to 20 years would be employed in the Halifax/Dartmouth area rather than locally, particularly due to factors such as the Irving Shipbuilding contract, which is expected to create much direct and indirect employment. Assumptions were developed to distribute these trips for 'Place of Work' for existing and future residents within the study area. The most likely routes that commuters would use were established based on the assumption that almost all trips to/from the Halifax/Dartmouth area are via Highway 102 South. Anticipated traffic diversions were established based on the analysis of the three interchange options.

After estimating background traffic, development traffic, and changes to traffic volumes as the result of diversions, the various volumes for each turning movement within the study area were summed to obtain projected future traffic volumes for all study area intersections.

Model Development (Chapter 6)

Following the development of estimated turning movement traffic volumes for the existing traffic conditions plus six future scenarios, traffic modelling was undertaken using Synchro 8 software to perform a Level of Service (LOS) analysis of each intersection during the weekday AM and PM peak hours. In addition to LOS, the Volume-to-Capacity (V/C) ratio and queue length data were analyzed to measure intersection performance. All Synchro analyses reports are provided in Appendix B and tables in Chapter 6 show the results of the AM and PM peak hour operations analysis for the modelled options. Following the tables, each intersection is discussed individually with respect to existing and anticipated issues.

Operational Appraisal (Chapter 7)

Traffic Signal Warrant Analyses were carried out for several existing and future unsignalized intersections within the various option/horizon scenarios. However, before traffic signals would be installed at any of these locations, they would first be investigated as roundabouts. The analyses and functional roundabout design for these scenarios was carried out using the latest version of the ARCADY software, and it shows that any of these intersections would operate well as roundabouts.

An analysis of level of service and weaving operation was also undertaken for the section of Highway 102 between Exit 8 and the proposed location of the South Lantz Interchange. NSTIR has indicated that implementation of a South Lantz interchange would necessitate construction of auxiliary lanes to connect the ramps, including widening of the twin Highway 102 bridges over the Nine Mile River. The weaving analyses were carried out to represent the worst case Option 2 scenario, i.e. traffic volumes for horizon year 2033. The weaving analyses indicate that connecting the ramps would accommodate anticipated future traffic volumes safely and efficiently.

Left and Right Turn Lane Warrants were also carried out to assess the need for storage lanes at study intersections for the various interchange options.

Functional Designs and Preliminary Cost Estimates (Chapter 8)

The functional designs for this study have been developed using the locations of the indicative corridors provided by NSTIR. The land for the South Lantz Interchange has already been purchased by NSTIR, while that for the North Lantz location is currently owned by Armco Capital. Both interchange options would connect with Trunk 2 with a connector road. Additional land would also need to be purchased to the west of Highway 102 for either option.

Class 'D' estimated construction costs for the Lantz interchange options (with and without contingencies and excluding land costs) are summarised in the table below.

Summary of Probable Construction Costs

Option	Estimated Construction Cost without Contingencies	Estimated Construction Cost with Contingencies
South Lantz Interchange	$14.2m	$19.9m
North Lantz Interchange	$11.4m	$16.0m

Based on the above cost estimates, it would be reasonable to select the North Lantz Interchange Option as being the preferred option as it is the least expensive.

Preferred Interchange Option (Chapter 9)

Based on the above analysis, we have selected **Option 3 (North Lantz Interchange)** and recommend that NSTIR proceed with a new connector road and interchange at the North Lantz location. The following points illustrate why this was selected as the preferred option:

- Option 3 is expected to result in only moderately higher traffic volumes along Trunk 2 (south of Shaw Brick), Route 214 and at Exit 8 compared to Option 2;

- Considerably lower Trunk 2 peak hour volumes can be expected north of Shaw Brick with Option 3 vs. Option 2;
- Option 3 would not require any Highway 102 or bridge widening ;
- Armco have indicated they are willing and eager to modify their subdivision layout to accommodate a connector road through their property, provide the required ROW, and they may be willing to cost-share construction of the connector and interchange with NSTIR;
- Option 3 connector road can simply be added as a new Trunk 2 intersection with two-way stop control; and
- At an estimated cost of $16.0m, Option 3 is expected to be significantly less expensive than Option 2.

Option 3 Intersection Mitigation Measures (Chapter 10)

We carried out further Synchro analyses to identify what intersection upgrades would be required to maintain acceptable operations under the projected Option 3 volumes for 2023 and 2033. This task revealed that most of the study intersections would need capacity improvements before the projected traffic demands are reached. **Table 10.2** summarizes the anticipated intersection performance with the future Option 3 volumes and with the recommended mitigation measures implemented.

Table 10.2: Summary of Anticipated Option 3 Mitigation Measures

Intersection / Approach		2023		2033	
		AM	PM	AM	PM
Route 214 & Park Road/ Superstore	EB	B	C	C	C
	WB	A	B	A	B
	NB	B	B	B	B
	SB	B	C	C	D
Route 214 & Hwy 102 SB Ramps	EB	A	B	A	B
	WB	C	B	C	C
	SB	D	C	B	C
Route 214 & Hwy 102 NB Ramps	EB	A	C	A	C
	WB	B	D	C	D
	NB	B	C	B	D
Route 214 & Elmsdale Mall	EB	E	B	A	B
	WB	B	B	B	B
	SB	B	C	E	C
Route 214 & Trunk 2	EB	B	C	B	D
	WB	D	C	C	D
	NB	D	D	C	D
	SB	D	C	B	B
Trunk 2 & Shaw Brick	WB	B	A	A	A
	NB	A	A	A	A
	SB	A	A	A	A
Trunk 2 & Route 277	WB	B	C	B	B
	NB	A	A	A	A
	SB	A	A	A	A

Note: Route 214 is assumed to be East-West and Trunk 2 North-South

Note that roundabouts could also be considered for adding future capacity for several of these intersections, and were previously investigated in Chapter 7. Figures 7.1, 7.2, and 7.3 illustrate concept roundabouts at the intersections of Route 214 and Highway 102 SB Ramps, Highway 102 NB Ramps/Elmsdale Mall, and Trunk 2, respectively. In each of these cases, the roundabout alternative is considered superior and is therefore recommended over the improvements suggested in Section 10.1

Proposed Inland Container Terminal (Chapter 11)

The Port of Halifax has short-listed nearby Milford as a possible site for a new inland port and intermodal terminal. In this study, we considered three access options for it, summarized as follows:

Option 1 - Dedicated Highway 102 Milford interchange with a connector road to connect with Trunk 2.
Option 2 - Milford interchange as per Option 1 in conjunction with the South Lantz Interchange.

- Option 3 (A & B) – North Lantz Interchange with a direct roadway connection bypassing Trunk 2.

Option 3B, with an exclusive terminal roadway east of the CN tracks and connecting with the North Lantz Interchange, is the recommended strategy.

Recommendations

Based on the findings of the study, it is recommended that a new interchange on Highway 102 be constructed at the **North Lantz Interchange** location. This option provides the most benefits to the road users and the local communities and will also accommodate any additional traffic associated with the numerous proposed developments in the area.

Finally, it is worth noting that travel demand changes over time, and that we are currently on the verge of a period of significant change in modes of transport, personal mobility challenges and opportunity, including demands for more active transportation opportunities and public transit. The assumptions contained in this report therefore should to be reviewed from time to time as land development progresses and the impacts are analysed on the existing road infrastructure. Adjustments in the timing of upgrades and other improvements may need to be revisited as a result of this analysis.

CHAPTER 1 INTRODUCTION

1.1 Project Background

Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR), Highway Engineering Services, and the Municipality of East Hants appointed CBCL Limited to undertake the Trunk 2/Route 214 Corridor Traffic Study on their behalf. A Steering Committee was set up to guide the progress of the study consisting of members of the joint client teams.

The project was initiated due to an anticipated high level of growth in the East Hants area and within the Trunk 2 corridor adjacent to Elmsdale and Lantz in particular. The anticipated level of growth is expected following a significant increase in residential development and house-buyers looking for cheaper land and houses, still within commuting distance of Halifax, the Halifax Stanfield International Airport and the surrounding areas. There has also been an increase in commercial and industrial development in the area, particularly around Highway 102 Exit 8 in Elmsdale, which is also contributing to levels of traffic on existing roads which are reducing the available capacity and encouraging the demand for new infrastructure along the Trunk 2 corridor. The projected growth is a continuation of the level of growth that has already been seen in the area in recent years. According to the latest national household census data, this level of growth is greater than the overall level of growth seen throughout the entire Province of Nova Scotia.

The south-easterly areas of the Municipality of East Hants are around 35 km north of downtown Halifax, and are well served by Highway 102. These attributes have made it an attractive residential area for people who work in or near Halifax Regional Municipality (HRM), and it has seen up to 100 new housing starts annually in recent years. However, there are still large tracts of land, particularly within the communities of Lantz and Elmsdale, which are suitable for additional residential expansion, and developers now have plans to construct hundreds of new dwellings on this land. In this area, the Highway 102 interchange spacing is around 5 km apart so residents of Lantz and Elmsdale naturally gravitate towards Exit 8 in Elmsdale, which is nearing capacity as it is surrounded by extensive commercial development and the Elmsdale Business Park. The proposed residential construction may cause considerable congestion at Exit 8, hence the need for this study to assess the need for a new Highway 102 connection. This report explores and assesses a number of options for the possible construction of a new interchange in the Lantz area.

1.1.1 Study Area

The general location and study area, as defined by NSTIR, are shown in **Figures 1.1 and 1.2.** The study area extends from the Route 214 corridor between Park Road in the west, Route 214 between Highway 102 and Trunk 2 in Elmsdale to the south, northwards along Highway 102 between Exits 8 and 9 and northwards along Trunk 2 to South Milford. The characteristics of each roadway are quite different, including the level and type of controlled access, posted speed limits and volumes of traffic.

1.1.2 Existing Conditions

The existing road network in the study area is made up of three main routes, namely Highway 102, Trunk 2 and Route 214. There are other minor local roads which connect with these main roads, however, the majority of the local traffic uses the three main routes. A photographic record of existing conditions within the study area is included in **Figures 1.3a to 1.3e**.

Highway 102

This highway generally runs in a north-south direction between Halifax and Truro and has two lanes plus a shoulder on each side of the highway. Highway 102 provides direct access to the Halifax Stanfield International Airport and is a commuter route for people travelling to and from Halifax and Dartmouth or from the smaller towns and villages within the highway corridor. The posted speed limit for the majority of the route is 110kph. There are a number of key interchanges with the highway within or adjacent to the study area, in particular at Enfield (Exit 7), Elmsdale (Exit 8), and Milford (Exit 9). Exit 8 is of most importance to this study as it currently accommodates most of the traffic from Elmsdale and Lantz that wishes to join the highway. The on and off ramps at Exit 8 connect with Route 214 and provide an important point of access for people wishing to travel south to the airport and also into Halifax/Dartmouth, or north towards Truro and beyond.

Trunk 2

This key route generally runs parallel to Highway 102 in a north-south direction. Trunk 2 was the main road between Halifax and Truro before Highway 102 was constructed. The posted speed limit on this route varies between 50kph and 80kph depending on whether the area is built-up or rural. The road is one lane in each direction with a paved shoulder on both sides, generally with double yellow lines in the centre of the road to prohibit overtaking. Access to Trunk 2 is controlled using 'Stop' signs, although there are numerous private driveways that access directly on to the road. The route passes through the communities of Enfield, Elmsdale and Lantz and provides access to residential sub-divisions, local schools and recreational facilities such as the East Hants Sportsplex. There is a sidewalk on the west side of Trunk 2 that links these communities, however this is discontinued to the north of Lantz opposite the Robert Scott Drive access.

Route 214

Route 214 connects with Trunk 2 and passes over Highway 102 in an east/west direction. Highway 102 Exit 8 on and off ramps connect with Route 214 adjacent to the location of the Superstore and Sobeys stores and associated commercial development just off the highway. Route 214 has one lane in each direction with continuous gravel and asphalt strips, and a sidewalk on the west side of the road until around 100m south of the McDonald's and A&W fast food restaurants, close to Exit 8. The posted speed limit on this section of Route 214 is 50kph as the area is built-up and includes residential and

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Figure 1.1
General Location Plan

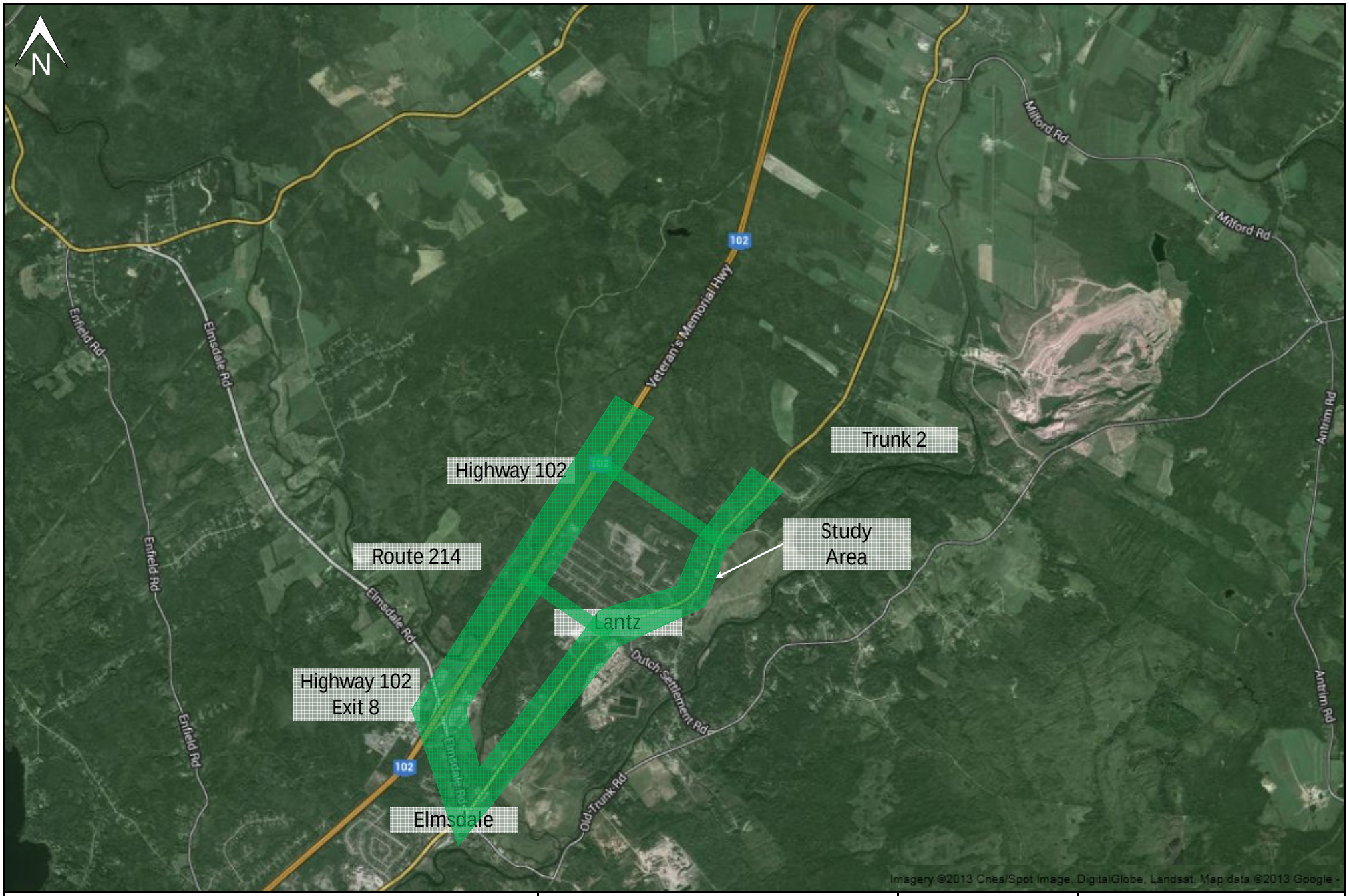

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Figure 1.2
Definition of Study Area

Highway 102, Exit 8 N/b off-ramp

Park Road/Superstore intersection

Highway 102, Northbound off-ramp

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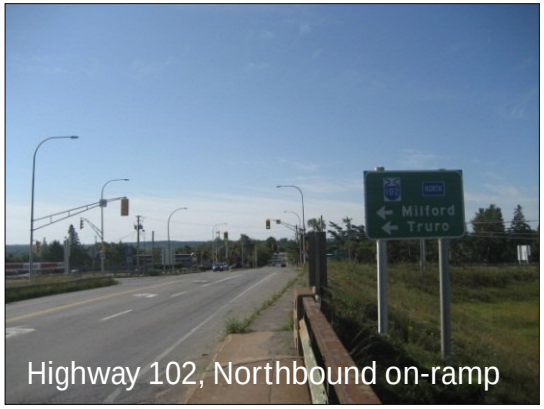
Figure 1.3a
Photographic Record of Existing Conditions



Highway 102, Northbound on-ramp


Highway 102, Southbound off-ramp

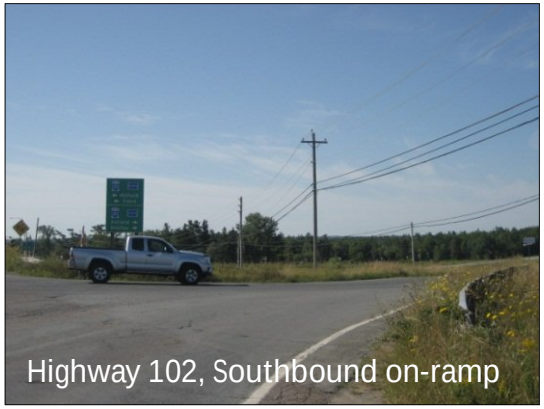

Highway 102, Southbound on-ramp

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Figure 1.3b
Photographic Record of Existing Conditions


Tim Horton's driveway/Mason Lane


Mason Lane/Route 214 intersection

Rail crossing/Trunk 2/Route 214

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Figure 1.3c
Photographic Record of Existing Conditions

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Figure 1.3d
Photographic Record of Existing Conditions

Single lane bridge, Route 277

Trunk 2

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Figure 1.3e
Photographic Record of Existing Conditions

commercial development. Route 214 connects with Trunk 2 at a signalized intersection around 1 km south of Exit 8. This intersection is adjacent to a railroad crossing which is controlled by flashing lights and a barrier system. Currently, it does not appear that the operation of the railroad crossing barrier affects the operation of the signalized intersection, despite their proximity.

1.1.3 Project Objectives

Four primary objectives were set out for this important study, as outlined below:

1. To assess future traffic flow patterns on Trunk 2 and Route 214 based on projected developments within the study area and for three interchange options, namely:
   a. No Lantz Interchange.
   b. South Lantz Interchange location.
   c. North Lantz Interchange location.
2. Identify roadway deficiencies for each study horizon based on estimated traffic flow patterns for each of the three interchange options. This objective is to include recommendations for mitigation measures and associated costs.
3. To service a possible inland container terminal near Milford, including an investigation of:
   a. A second interchange and connector road between Elmsdale (Milford Option 1) and Milford (Milford Option 2).
   b. A direct connection from the North Lantz Interchange location (Milford Option 3).
4. Recommend an interchange option taking into consideration analysis of traffic flow, roadway deficiencies, mitigation costs, construction costs, and potential benefits to future development including an inland container terminal near Milford.

These objectives clearly set out NSTIR's and East Hants requirements in determining the optimum solution for traffic and future infrastructure to accommodate the anticipated levels of growth through residential, commercial and industrial developments within the study corridor.

We have prepared this draft final report to address the issues, data collection, analysis and computer modelling, development of functional designs and mitigation measures, and preliminary cost estimates that have been undertaken, and to make recommendations to the Steering Committee on the optimum solution.

1.2 Report Structure

This report has been prepared to describe the work undertaken to satisfy the objectives of the project.

Chapter 2 presents a high level review of the background information received for the project. The review includes historical data collection and information regarding proposed developments and land use within the study area to provide an overall picture of current and future conditions within the corridor.

Chapter 3 describes the various proposed interchange options and the specific characteristics of each option when undertaking the required analysis.

Chapter 4 describes the traffic data collection exercise in detail and sets out the results of the traffic counts to establish baseline conditions for the study area.

Chapter 5 explains the background work undertaken to develop the traffic forecasting, trip generation and trip distribution. This work was based on the available information and assumptions developed which were discussed and agreed by the Steering Committee, to estimate future traffic patterns and growth within the study area.

Chapter 6 sets out the work undertaken to develop the various computer models and output results that assisted in assessing the various interchange options and horizon years.

Chapter 7 outlines the operational appraisal resulting from the computer modelling and analysis undertaken, including separate traffic signal warrant analyses, roundabout analyses, weaving analyses and turning lane warrant analyses.

Chapter 8 describes the development of the functional designs for the proposed interchange and connector road options and their associated preliminary cost estimates.

Chapter 9 identifies the preferred option and the information supporting the selection.

Chapter 10 describes the recommended mitigation measures based on the selection of the preferred interchange option, and a corresponding estimate of construction costs.

Chapter 11 presents a high level review of the proposed Inland Container Terminal near Milford based on the available information and the assumptions made.

Finally, Chapter 12 presents the conclusions and recommendations of the study, based on the work undertaken.

CHAPTER 2 REVIEW OF BACKGROUND INFORMATION

2.1 Provincial and Municipal Context

This study serves the objectives of two major stakeholders, namely the Nova Scotia Department of Transportation and Infrastructure Renewal who are responsible for all Nova Scotia highway projects; and the Municipality of East Hants who will be locally impacted by the location and design decisions of the proposed interchange. Previous planning and transportation studies in the area have also been in the interest of both NSTIR and the Municipality of East Hants whether on an individual or overlapping basis. Therefore, we are grateful to both stakeholder parties who played an integral role in providing the background reference material for this study in the form of previous transportation study reports, mapping, and other land use planning documentation.

According to the 2011 National Household Survey census data, the population of the Municipality of East Hants has increased by 3.5% from 2006, rising from 22,411 to 23,195 residents. This is a fairly significant change in the local population. For comparison, the national average growth rate for 2011 was 5.9%. East Hants is divided into 13 districts including Elmsdale and Lantz as separate districts. It should be noted that the study area is situated on the east side of East Hants, and its area is small relative to the whole Municipality, though it is home to roughly 1/3 of the population of East Hants.

2.2 Previous Planning Studies

The Trunk 2/Route 214 Corridor Traffic Study involved forecasting future traffic volumes and travel patterns to assess the proposed future interchange locations and other recommended improvements to the local roadway network which would enable accommodation of future traffic demands. Over the next several years, additional demands will be placed on the existing transportation system with the completion of several planned developments in the study area.

To assist in estimating future traffic volumes, both NSTIR and the Municipality of East Hants provided CBCL Limited with copies of all available traffic studies for recent and ongoing developments in the study area. Specifically, the following traffic impact study reports were provided:

- Royal Bank Elmsdale Branch, Delphi MRC, April 2003;
- The Heights at Shubenacadie Traffic Impact Study, Atlantic Roads and Traffic Management, September 2006;

- Traffic Impact Study for an A&W Restaurant and Drive Thru in Elmsdale, ADI Limited, November 2008;
- Willowcrest Estates Traffic Impact Study, GAALCO Engineering, March 2012;
- Traffic Impact Study – Proposed Residential Development Trunk 2, Genivar, July 2012; and
- Lands of Melmik Holdings Traffic Impact Study, JRL Consulting, December 2012.

The above reports were reviewed for key information including the type and magnitude of the development, planned development rates (i.e. lots per year), expected completion year, peak hour trip generation at full build-out and projected distribution of new trips. Projected trips were added to the background volumes at the study area intersections based on the assumptions presented in the traffic studies (i.e. expected completion and distribution). The projected new trips outlined in some of the study reports, for example the A&W Restaurant, as well as the Royal Bank Branch on Route 214, are assumed to be included in our data collection volumes on the local road network as they have been in operation for a number of years.

In addition to the traffic impact studies of planned and proposed developments within the study area, other planning studies and documents were provided and reviewed for relevant information. Specifically the following studies and documents were provided by the Municipality of East Hants and NSTIR:

- Route 214 Corridor Study, Streetwise Traffic Engineering, April 1998;
- Enfield Traffic Study, Atlantic Roads and Traffic Management, December 2000;
- Highway 102-Route 214 Interchange Area Transportation Study, O'Halloran Campbell Consultants Limited, January 2003;
- Halifax Inland Terminal and Trucking Options Study, MariNova Consulting Ltd, January 2006;
- East Hants Village Core Plans, Ekistics, January 2011;
- East Hants Corridor Feasibility Study, Genivar, February 2012;
- East Hants Socio-Economic Study, Municipality of East Hants, November 2012;
- Highway 102 South Lantz Interchange (PDF and CAD Files);
- Elmsdale Trunk 2/Route 214 Signal Timing/Phasing;
- Clayton Developments Conceptual Phasing Plan;
- East Hants Current and Conceptual Development Plans (June 2013); and
- NSTIR 5-Year Plan 2013-14.

These various studies and documents were reviewed for relevant information relating to existing infrastructure, population growth and changing travel demand, historical traffic projections on study area roadways, and potential changes to the roadway network. This information formed the basis for study assumptions including background traffic growth projections and future distribution patterns which are relevant in the analysis of the interchange options.

2.3 Historical Data Collection

NSTIR was contacted to obtain the historical traffic volume data for study area roadways. **Table 2.1** overleaf describes the data that were obtained and examined. Traffic count data prior to 2007 were eliminated in order to examine more recent traffic growth patterns within the study area. Most of the

data represent counts taken during the fall periods. Data involving summer and winter counts were used with caution.

From our analysis of the available data, traffic growth patterns in the study area appear to be varied. While the Highway 102 corridor segments examined show an average annual growth rate of 0.3% to 1.9%, the other study area roadways appear to experience higher growth rates in the order of 2.2% to 8.5% annually. This higher growth rate could be attributed to higher development activity within the study area in recent years.

Table 2.1: Historical Traffic Data (Source: NSTIR)

Highway Section	Location	Date	AADT	Average Rate of Growth
Highway 102 Section 090 (Exit 7 to Exit 8)	4.9 km north of Exit 7 northbound	Sep-07	12100	0.4%
		Oct-08	12200	
		Oct-09	12300	
		Oct-11	12740	
		Dec-12	12330	
	4.9 km south of Exit 8 southbound	Sep-07	12500	0.3%
		Oct-08	10200	
		Oct-09	12700	
		Oct-11	13060	
		Dec-12	12700	
Highway 102 Section 100 (Exit 8 to Exit 9)	6.8 km north of Exit 8 northbound	Sep-07	10500	1.9%
		Oct-08	10300	
		Nov-09	12100	
		Oct-11	11200	
		Dec-12	11500	
	6.8 km south of Exit 9 southbound	Sep-07	10500	1.5%
		Oct-08	10500	
		Nov-09	11400	
		Oct-11	11260	
		Dec-12	11300	
Highway 2 Section 060 Hwy 102 to Rte 214	Halifax/Hants County Line	Aug-07	7490	2.2%*
		Nov-09	7680	
		Jan-11	8160	
Highway 2 Section 070 Rte 214 to Rte 277	1.5 km south of Lantz	Aug-07	5420	4.7%*
		Nov-09	7200	
		Sep-11	6430	

Highway Section	Location	Date	AADT	Average Rate of Growth
Highway 2 Section 080 Rte 277 to Trunk 14	3 km south of Milford	Aug-07	1910	8.5%*
		Nov-09	2380	
		Oct-11	2560	
Highway 214 Section 010 TK 2 to Hwy 102 Interchange	Just east of Hwy 102 interchange	Aug-07	12700	3.7%*
		Sep-08	13250	
		Nov-09	12040	
		Oct-11	14600	
* Average Growth Rate used with caution due to seasonal differences within the data				

2.4 Assumptions Based on Background Research

Based on a review of the various background research literature, the following assumptions with respect to traffic within the study area have been made:

- Continued growth in residential, commercial, and industrial development will strain the capacity of the Route 214 intersections, creating periods of excessive congestion;
- Substantial upgrades to Route 214 would be required to accommodate anticipated future additional traffic demand;
- A 1.5% annual growth rate applied to current traffic count data is appropriate for estimating the future 2023 and 2033 background traffic;
- The 1.5% background annual growth rate will incorporate additional traffic volumes from currently unplanned residential, commercial and industrial development; and
- In addition to the 1.5% background annual growth rate, future projected volumes from various planned larger developments will contribute to traffic growth exceeding available capacity and will follow the distribution patterns assigned in the various traffic impact studies.

CHAPTER 3 PROPOSED INTERCHANGE OPTIONS

3.1 Overview

As mentioned, the primary purpose of this report is to evaluate three interchange options that are being put forward by NSTIR and the Municipality of East Hants, and to identify the one that will provide the greatest road network benefits. The options are as follows:

- Option 1 – No new interchange. Existing road and highway infrastructure would remain generally unchanged, except for capacity enhancements as needed for existing roadways and intersections, and at the Exit 8 interchange. New traffic generated from planned residential developments would mix with existing traffic and use existing facilities;
- Option 2 – South Lantz Interchange. This option would involve construction of an interchange on Highway 102 approximately 1.9 km north of Exit 8. It would require a Trunk 2 connector road about 1.0 km long that would form a four-way intersection with Shaw Brick's existing driveway; and
- Option 3 – North Lantz Interchange. This option would involve construction of an interchange on Highway 102 approximately 3.2 km north of Exit 8. It would require a connector road about 1.5 km long which would form a three-way intersection on Trunk 2 roughly 1,350m north of Route 277. Further study would be required to determine the optimal location for this intersection.

The indicative locations and general layouts of the South and North Lantz Interchanges are shown in **Figure 3.1**.

3.2 South Lantz Interchange

A new controlled-access connector road, approximately 1.1 km long, would join the interchange with Trunk 2. It would be immediately south of, and generally parallel with, Towerview Court, an existing residential street. It is proposed that the connector road would form a four-way intersection with Shaw Brick's existing driveway. The Province already owns the right-of-way (ROW) for this option, except the land needed for the southbound ramps to the west of Highway 102.

The connector road for this option would likely only have two additional access points: a link to Towerview Court, and a connection to the planned Clayton Developments proposals to the south. It is not clear whether these two roads would align with each other or be offset.

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Figure 3.1
Currently Proposed Interchange Locations

One concern with this option is the presence of twin Highway 102 bridges over the Nine Mile River about 900m north of Exit 8, and roughly 1,000m south of the proposed South Lantz interchange location. Currently both bridges carry two lanes of traffic, and the tapers for the northerly Exit 8 ramps are at least 250m away. Following the results of the weaving analysis described later in this report, the potential requirement to add auxiliary lanes between the two interchanges due to their close proximity to the Exit 8 ramps has been analysed. This option could require widening of both bridges which would be a very expensive undertaking that the Province would prefer to avoid. An earlier study suggested the use of a partial clover layout to maximize interchange spacing and the available weaving distance required.

3.3 North Lantz Interchange

Again, the expectation is that the connector road with the interchange would have limited access such that residential and commercial driveways would probably not be permitted. However, it must be noted that this road would bisect a large tract of land currently owned by Armco Capital Inc. They are planning an extensive mixed-use residential community development on both sides of where the connector road would be constructed. If this option were to proceed, the required land would first have to be acquired by the Province.

Based on discussions with Armco Capital, they have indicated that they would be willing to provide land to the east of Highway 102 to accommodate the North Lantz Interchange ramps. Armco Capital will also re-visit their proposals for the land to investigate if they could reallocate the land in a more efficient layout, especially if a connector road would be constructed through their land. They have also indicated that they are willing to negotiate provisions for cost sharing of the North Lantz Interchange.

CHAPTER 4 TRAFFIC DATA COLLECTION

4.1 Familiarity with Existing Conditions

An essential part of this project was to become familiar with the study area, the local road network including existing intersections, and the conditions for road traffic on a typical day. During the summer period, site visits were undertaken and one day in particular provided the best weather conditions for walking about on site. The photographs in Figures 1.3a to 1.3e provide a current record of the key intersections and features within the study area.

4.2 Turning Movement Traffic Counts

Another key element of the study was to undertake a program of traffic counts within the study area on typical weekdays during the AM and PM peak traffic periods, with some midday periods counted at specific unsignalized locations. The counts were undertaken to assist in establishing current traffic volumes, turning movements and vehicle proportions at key locations during typical weekdays. Through the collection and analysis of this information, the prevailing traffic demand and operating conditions in the study area were established. The traffic counts involved turning movement counts at seven key intersections discussed and agreed with the project Steering Committee. The counts were undertaken during June 2013 when traffic conditions were expected to be typical of average demand. It was important to undertake the traffic counts while the local schools were still in session.

To provide the client team with the best level of service for the data collection, CBCL Limited used Miovision Scout Video Collection Unit camera technology to record real-time video of the turning movements and any incidents occurring during the survey periods. This method of data collection is widely used in other countries and regions of North America, however, is a relatively new concept in Atlantic Canada. The photographs below show the on-site installation and setup of the Miovision camera equipment during the June 2013 traffic counts.


Live Recording
Stop
Records until June 21, 2013 at 09:15
Pgm for
21/6/13
600
1100
1600
miovision
technologies

4.3 Survey Locations

Traffic counts were undertaken at seven key intersections within the study area between Monday June 17 and Monday June 24, 2013. The Miovision Scout video camera equipment was installed at the identified intersections using available street furniture such as lighting columns and utility poles for support and security. The cameras come in modular parts that fit together easily and the head of the pole with the video camera attached can be extended to up to 25 feet in height. Most of the locations for the project traffic counts only required one camera pointed towards the intersection at a suitable angle to cover all approaches, however, three of the locations required two cameras to cover all turning movements. The counts assisted in defining current traffic volumes and turning movements and were undertaken at the following locations:

- Intersection 1 - Route 214/Park Road (signalized);
- Intersection 2 - Route 214/Highway 102 Southbound Ramps (unsignalized);
- Intersection 3 - Route 214/Highway 102 Northbound Ramps (signalized);
- Intersection 4 - Route 214/Mason Lane (Sobeys Plaza – signalized);
- Intersection 5 - Route 214/Trunk 2 (signalized);
- Intersection 6 - Trunk 2/Shaw Brick Driveway (unsignalized); and
- Intersection 7 - Trunk 2/Route 277 Dutch Settlement Road (unsignalized).

The count data for each location were collected in 15-minute intervals between 07:00 and 09:00 hours, and between 16:00 and 18:00 hours during the weekday survey to provide a 4-hour record of turning movements. The unsignalized intersections were also counted during the midday peak, between 11:00 and 13:00 hours.

The following three vehicle classifications were adopted for the traffic counts to provide information on vehicle proportions in the study area:

- Passenger vehicles;
- Medium trucks; and
- Heavy trucks and buses.

The locations of the traffic turning counts are shown in **Figure 4.1**.

The counts took place without any interruption, with one exception where the Scout video camera equipment was tampered with during the PM peak count. When reviewing the video footage for that particular day it was discovered that the camera pole had been rotated to point away from the intersection. The evening peak period was re-counted on the next available weekday without further disruption.

One known incident occurred during the counts at the Route 214/Trunk 2 signalized intersection involving a medium truck attempting to 'beat' the railway crossing gates and having to stop when the downward gate got caught on the top of the truck. The vehicle was stopped very close to the railway line and the fast moving train as it passed through the crossing. Fortunately, no collision occurred and no-one was injured, however, potentially it could have been a much more serious incident. As far as can be seen from the video footage, all the crossing lights were flashing and operational and the gate was closing to stop vehicles from entering the area adjacent to the railway. Under due diligence, we reported the incident to the Trucking Companies in the area and to NSTIR.

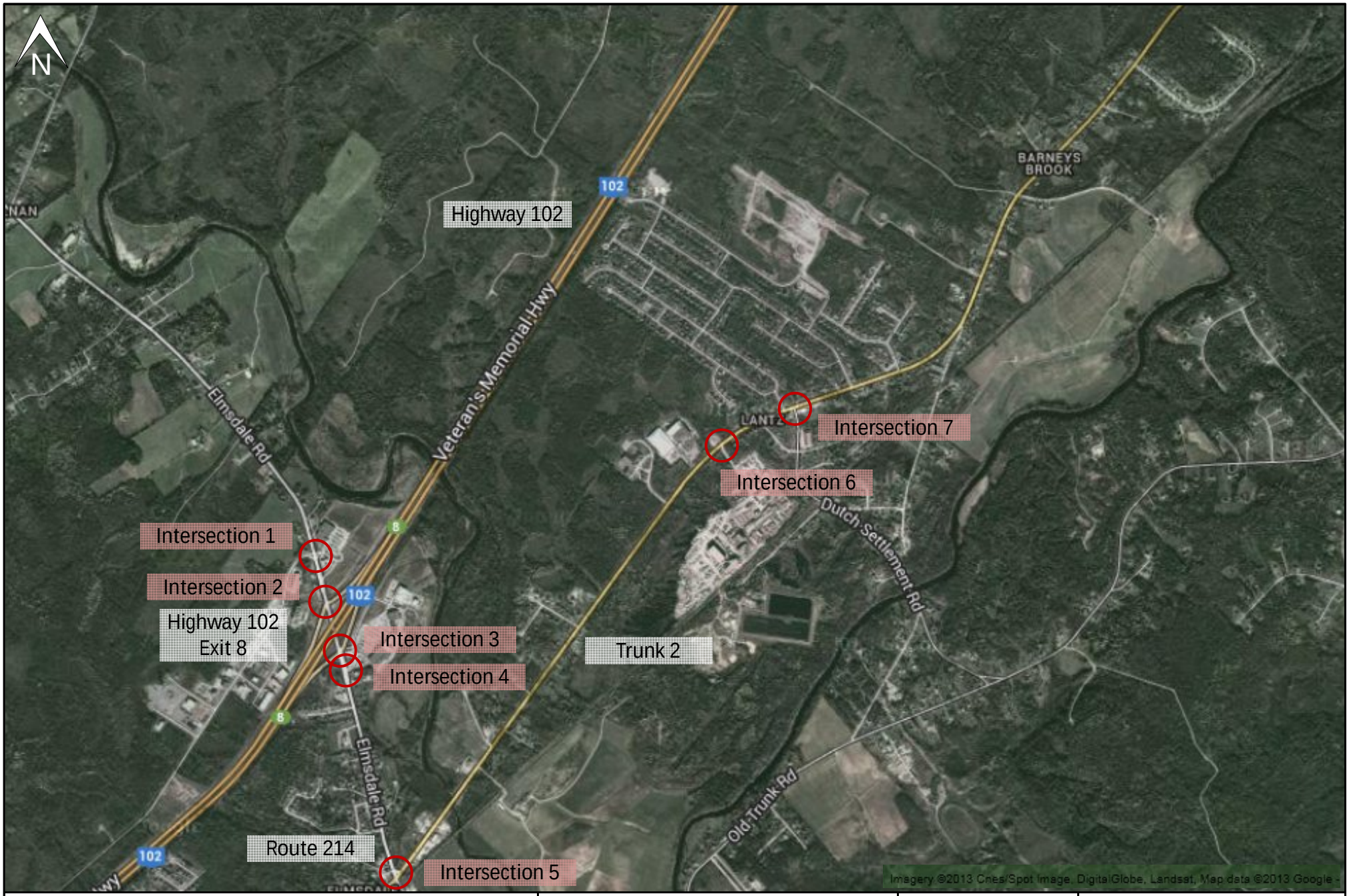

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Figure 4.1
Traffic Count Locations
June 2013

4.4 Survey Results

The observed weekday peak hour traffic volumes for all vehicles derived from the traffic turning counts at all locations are summarised in **Figures 4.2a to 4.2d**. The AM and PM peak hours were identified through analysing the two hour data sets and were typically between 07:30 and 08:30 hours and 16:30 and 17:30 hours respectively. Some variations in the peak hour period were observed, most likely due to local trips stopping and starting their journeys within a short time period within the study area. A summary of the peak hour count data is also shown in **Tables 4.1 and 4.2**.

Table 4.1: Summary of 2-way All Vehicle AM Peak (07:30 – 08:30 hours) Turning Count Volumes

Location	Traffic (N) of intersection	Traffic (E) of intersection	Traffic (S) of intersection	Traffic (W) of intersection
Rte 214/Park Rd	455	168	704	249
Rte 214/Hwy 102 SB Ramps	744	148	914	456
Rte 214/Hwy 102 NB Ramps	918	177	1,097	222
Rte 214/Mason Ln (Sobeys)	1,080	759	1,113	-
Route 214/Trunk 2	901	485	331	695
Trk 2/Shaw Brick Driveway	-	493	47	498
Trk 2/Rte 277 Dutch Sett Rd	-	358	96	386

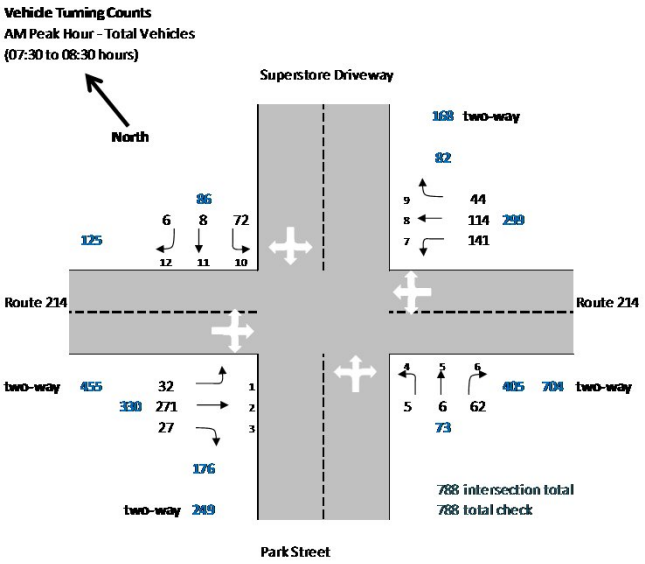
Table 4.2: Summary of 2-way All Vehicle PM Peak (16:30 – 17:30 hours) Turning Count Volumes

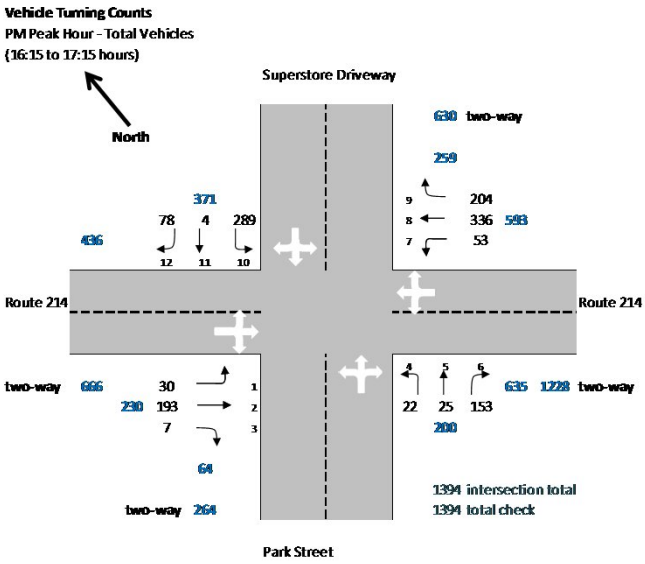
Location	Traffic (N) of intersection	Traffic (E) of intersection	Traffic (S) of intersection	Traffic (W) of intersection
Rte 214/Park Rd	666	630	1,228	264
Rte 214/Hwy 102 SB Ramps	1,441	189	1,439	303
Rte 214/Hwy 102 NB Ramps	1,417	295	1,565	621
Rte 214/Mason Ln (Sobeys)	1,373	973	1,376	-
Route 214/Trunk 2	1,236	674	522	1,032
Trk 2/Shaw Brick Driveway	-	629	17	634
Trk 2/Rte 277 Dutch Sett Rd	-	495	162	527

From the traffic turning counts the following overall vehicle classification percentages were derived: Passenger vehicles (between 91% and 98%), Medium trucks (between 1% and 5%) and Heavy trucks and Buses (between 0% and 5%).

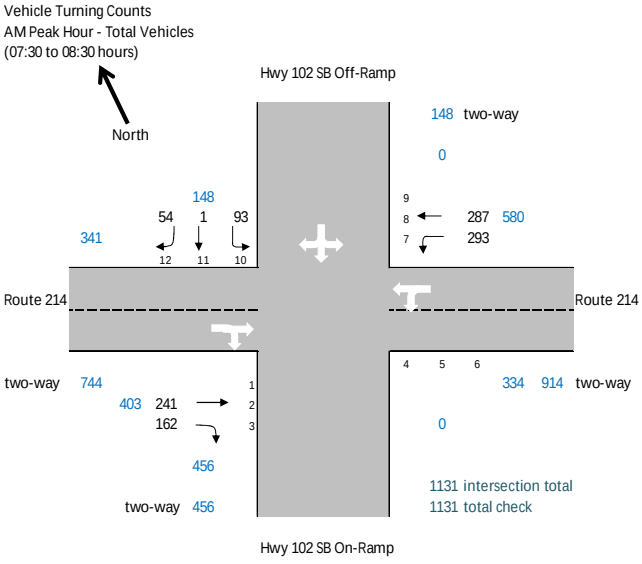
Details of the total turning movement traffic count volumes for each intersection are provided in **Appendix A**.

Intersection 1 - Route 214 at Park St/Superstore Driveway





Intersection 2 - Route 214 at Highway 102 SB Ramps



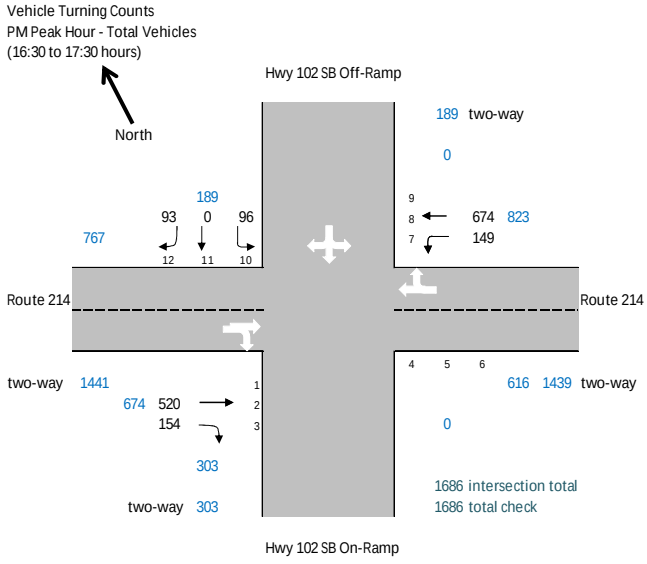


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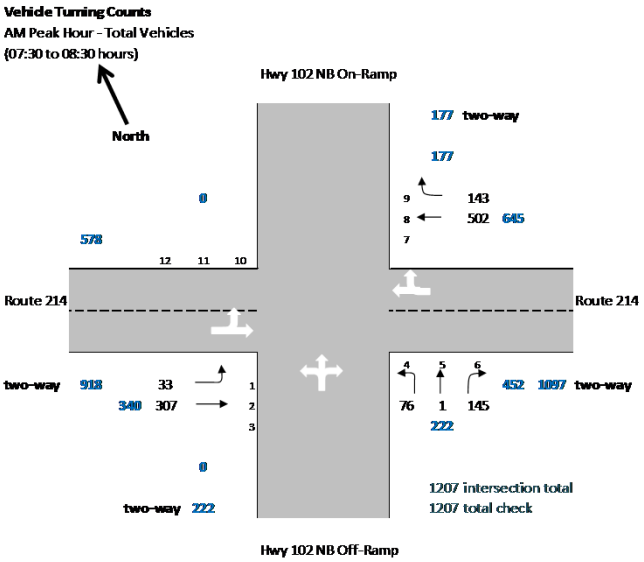
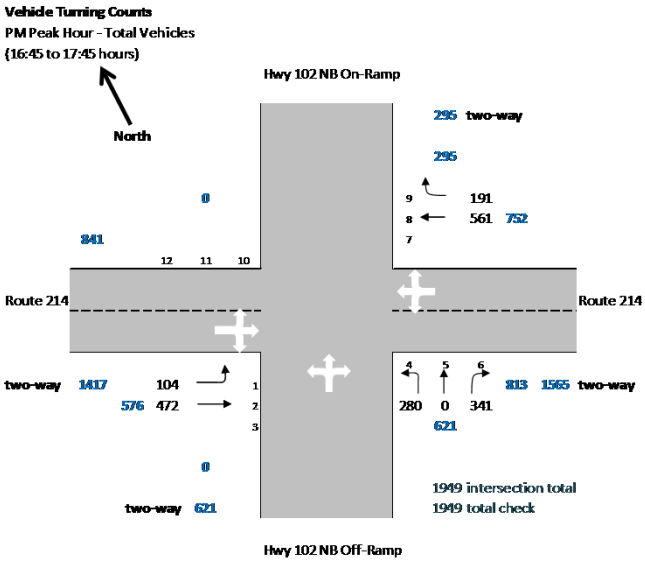
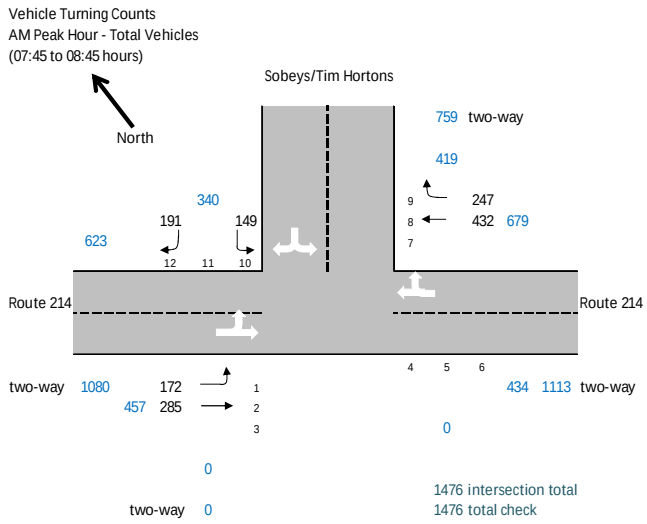
Figure 4.2a
Existing Turning Movements
Peak Hours – Total Vehicles
June 2013

Intersection 3 - Route 214 at Highway 102 NB Ramps





Intersection 4 - Route 214 at Sobeys/Tim Hortons Entrance



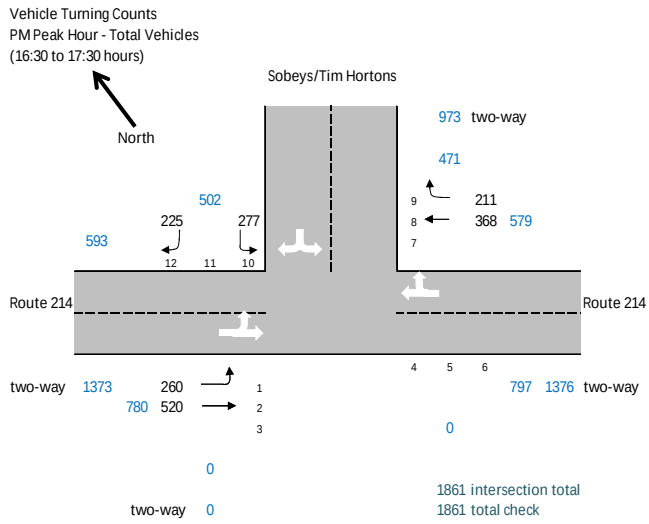


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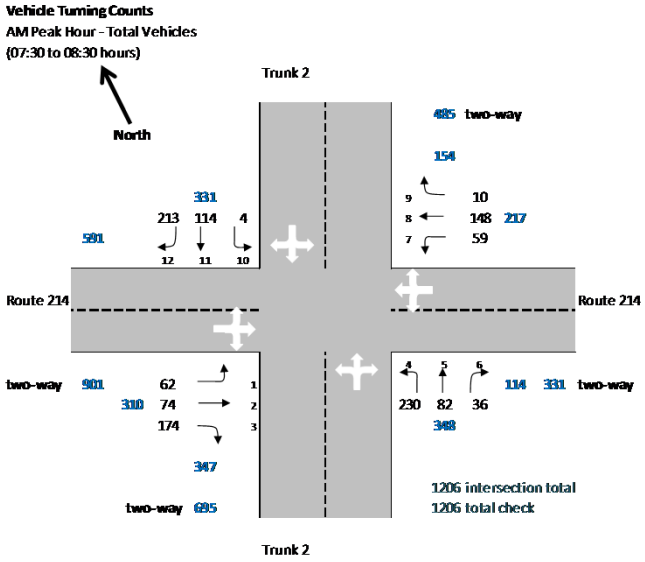
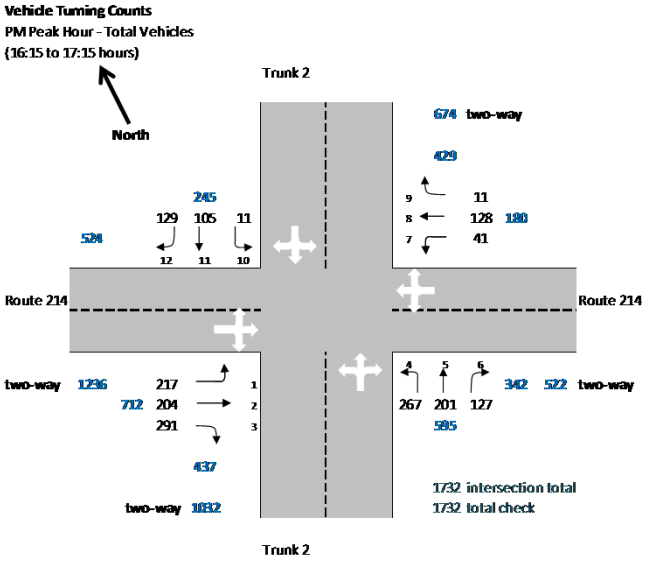
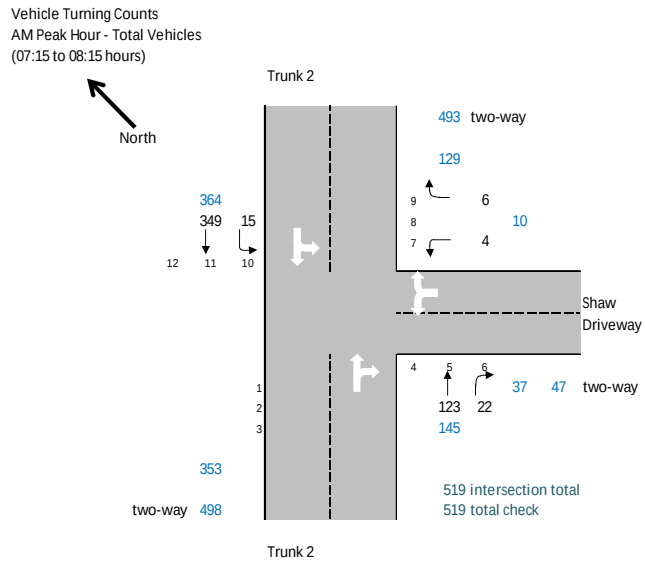
Figure 4.2b
Existing Turning Movements
Peak Hours – Total Vehicles
June 2013

Intersection 5 - Route 214 at Trunk 2 (CN Rail)





Intersection 6 - Trunk 2 at Shaw Driveway



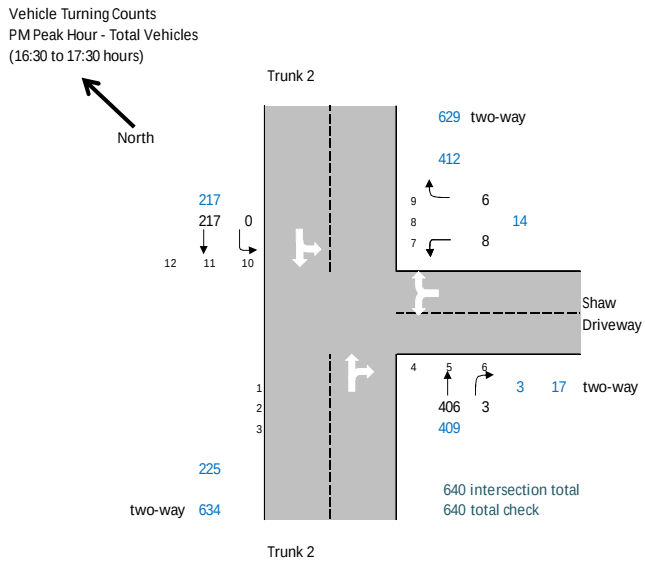


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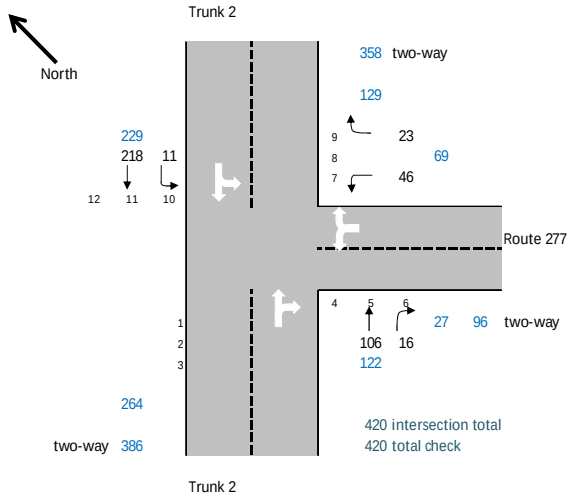
Figure 4.2c
Existing Turning Movements
Peak Hours – Total Vehicles
June 2013

Intersection 7 - Trunk 2 at Dutch Settlement Rd (Route 277)

Vehicle Turning Counts
AM Peak Hour - Total Vehicles
(07:30 to 08:30 hours)



Vehicle Turning Counts
PM Peak Hour - Total Vehicles
(16:30 to 17:30 hours)

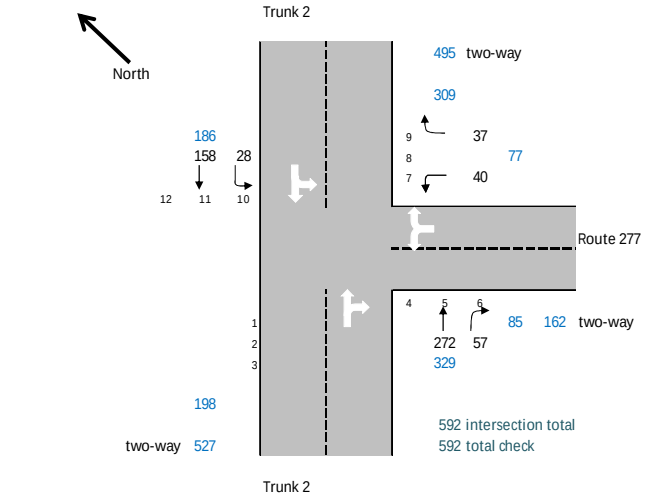


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Figure 4.2d
Existing Turning Movements
Peak Hours – Total Vehicles
June 2013

CHAPTER 5 TRAFFIC FORECASTING, TRIP GENERATION AND DISTRIBUTION

5.1 Overview

One of the primary tasks of this project was to forecast and develop reasonable estimates of what future peak hour traffic volumes could be at the study intersections associated with each of the three interchange options. Future traffic volumes were generally estimated using the following calculation:

Future Volume = 2013 Volume
+ Background Growth
+ Known Development Traffic
+ Anticipated Diversions

The existing 2013 base traffic volumes were established in the previous chapter of this report. This chapter explains the methodologies and assumptions used to estimate the other variables in this equation and establish future volume sets for further analysis.

5.2 Background Traffic Growth Rate

It was first necessary to determine a reasonable background growth rate to be used at all study intersections. To do this, we compiled historical count data for key road links within the study area. NSTIR provided data for the period 2007-2012 and from this we calculated the average annual traffic growth rates for those segments over this five year period. **Table 5.1** summarizes our findings:

Table 5.1: Summary of Local Growth Rates 2007-2012

Roadway	Location	Avg. Annual Growth Rate
Highway 102	4.9 km South of Exit 8	0.35%
Highway 102	5.8 km North of Exit 8	1.70%
Trunk 2	North of Route 214	4.70%
Trunk 2	South of Route 214	2.20%
Route 214	b/w Hwy 102 & Trunk 2	3.70%

For this study, we were provided with information on several planned residential developments that are expected to be built during the study period, i.e. by 2033. These developments are shown in **Figure 5.1** and indicate their locations relative to adjacent developments and to the local road network. These developments call for approximately 2,800 new dwellings and are anticipated to generate the majority of new traffic within the study area, particularly along Trunk 2 and Route 214, such that use of the higher rates in the table would result in over-estimation of future traffic. Therefore, it was decided that a lower growth rate of 1.5% would be appropriate to estimate background traffic, and the estimated traffic from the planned developments would be added on top; together these increases in traffic account for significant annual growth. Use of the 1.5% growth rate results in existing 2013 volumes being increased by 16% to estimate 2023 background traffic, and by 35% for 2033.

As mentioned above, the addition of future trips generated by known planned and proposed developments to the projected background traffic volumes for the horizon years 2023 and 2033 followed the distribution patterns used in the corresponding available traffic impact studies. For developments not currently in the planning phase, and without existing traffic impact studies, the distribution of future trips followed existing distribution patterns as determined by the turning movement counts collected as part of this study.

5.3 Trip Generation for Planned and Proposed Developments

The estimated trips from several major planned and proposed developments were included in this study; traffic from known minor developments was assumed to be accounted for as background traffic. The four major future traffic generators, along with estimated trip generation, are described below.

5.3.1 Clayton Development

Clayton Developments Limited owns a large tract of land between Highway 102 and Trunk 2 approximately 2 km north of the Route 214 intersection. The proposed development includes 850 dwellings; 530 of these are apartments, and the remainder are single family homes and townhouses. There are also large lots proposed for commercial or mixed land uses. No traffic study was available for this proposed development, so CBCL Limited met with members of Clayton staff to better understand what is proposed. Clayton Developments provided a 2006 concept plan and the numbers of residential units and types of lots to be included. Based on our discussions with Clayton Developments, they have not updated their concept plan and they provided conservative build-out rates due to the state of the local economy. This information was used to estimate trip generation and the total traffic at full build-out is provided in **Table 5.2** below.

Table 5.2: Estimated Trip Generation: Clayton Development

Proposed Clayton Residential Development						
Source: CBCL Limited Meeting with Clayton Developments on August 7, 2013						
	Rate	**% In**	**% Out**	In	Out	Total
AM Peak Hour				59	183	**242**
PM Peak Hour				198	120	**318**

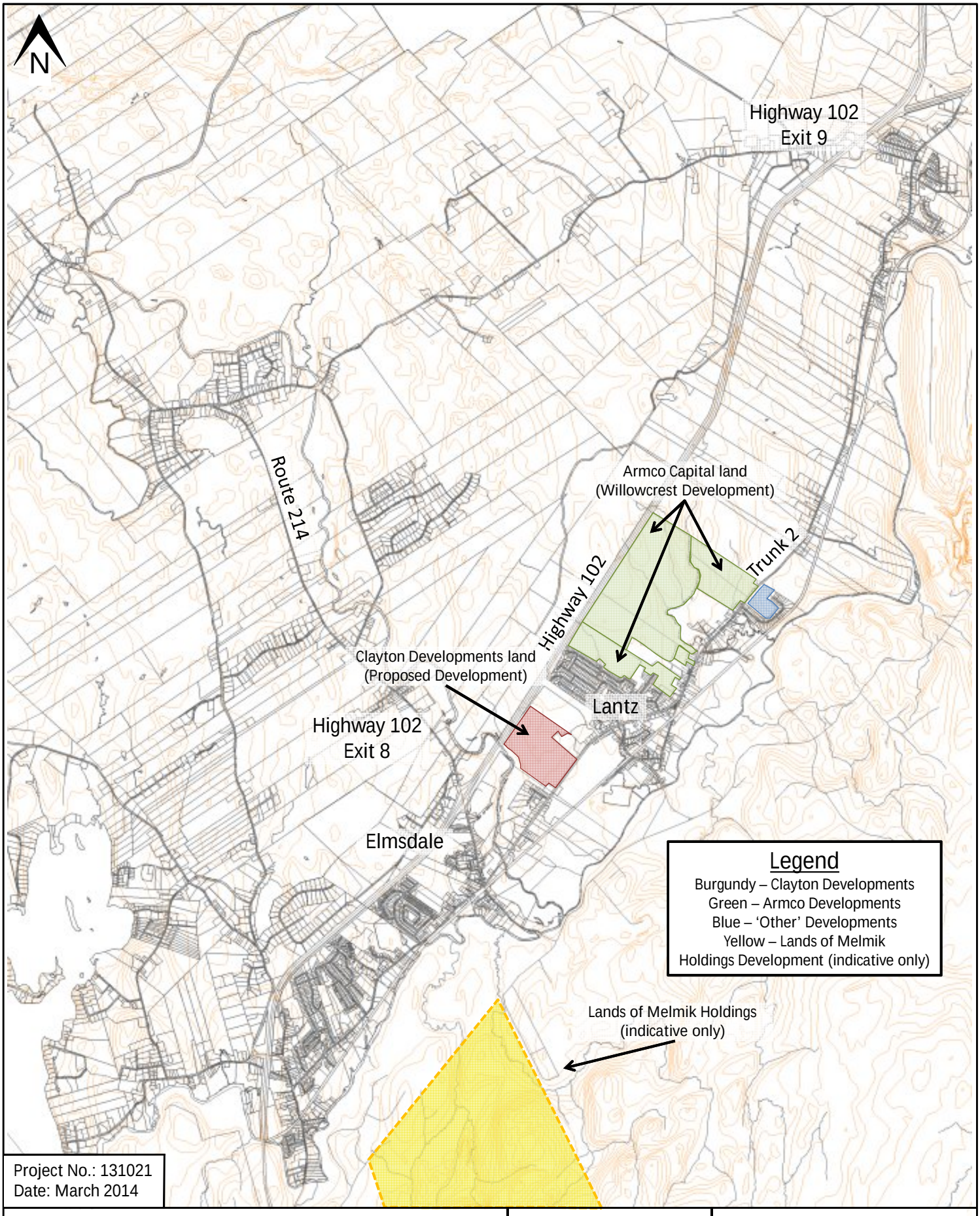

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Figure 5.1
Proposed Residential Developments

For the purposes of this study, it was assumed that 40% of the Clayton proposed development would be completed by the 2023 horizon year, and that the remainder would be completed by 2033.

5.3.2 Armco Development

Armco Capital Inc. has plans to develop a large mixed-use residential community between Highway 102 and Trunk 2 approximately 4 km north of the Route 214 intersection along Trunk 2. The currently proposed concept for the development includes 836 single family homes, 78 townhouses, 308 semi-detached homes, and 144 apartments for a total of 1,366 dwelling units. NSTIR provided us with a 2012 traffic impact study for 'Willowcrest Estates' prepared by GAALCO Traffic Engineering. We used the trip generation assumptions directly from this report and they are summarized in **Table 5.3**. The GAALCO study indicated that 50% of the Armco development is expected to be complete by 2022, and the remainder by 2032. Therefore for this study, we simply assumed 50% for 2023 and 100% for 2033.

Table 5.3: Estimated Trip Generation: Armco Development

Proposed Armco Residential Development						
Source: Willowcrest Estates TIS, GAALCO Traffic Engineering, March 2012						
	Rate	**% In**	**% Out**	In	Out	Total
AM Peak Hour				203	652	**855**
PM Peak Hour				655	385	**1,040**

5.3.3 Other Developments

The Municipality of East Hants provided a copy of the latest (June 2013) version of their 'Current and Conceptual Development Plans'. This drawing shows planned and proposed developments within the villages of Enfield, Elmsdale, and Lantz; the largest developments are those proposed by Clayton and Armco as described above, with several significant but smaller developments south of Route 214. However, there are also plans for many additional residential lots in three or four developments south and east of the Armco land, on the west side of Trunk 2. The existing Robert Scott Drive loop on the east side of Trunk 2 is also anticipated to be expanded. Together, these developments comprise about 615 dwelling units and will generate significant new traffic that would not likely be fully accounted for within the background growth rate. We therefore concluded that this traffic should be added separately to the analysis. Trip generation rates were calculated using the ITE Trip Generation Manual, 8th Edition, and the results are provided below in **Table 5.4**.

Table 5.4: Estimated Trip Generation: Other Developments

Proposed Residential Development East and South of Armco							
ITE Land Use Code 210 (Single Family Detached Housing)							
615	**Dwelling Units**	**Rate**	**% In**	**% Out**	In	Out	Total
AM Peak Hour		0.75	25%	75%	116	346	**462**
PM Peak Hour		1.01	63%	37%	392	230	**622**

For the purposes of this study, it was assumed that 35% of these developments would be completed by the 2023 horizon year, and that the remainder would be completed by 2033.

5.3.4 Lands of Melmik Holdings Development

The fourth major plan is a proposal by Austin Contracting Limited to develop 519 lots for mobile homes on a large tract of land south of the Trunk 2/Route 214 intersection. This site is outside the Municipality of East Hants border, however any generated traffic is expected to pass through East Hants using Route 214/Elmsdale Road to reach Highway 102 (Exit 8) and beyond. The developer intends to market these homes to senior people suggesting that trip generation will be lower than if they were sold to younger people and families. However the traffic impact study, prepared by JRL Consulting in December 2012, conservatively estimated trips using the ITE Land Use Code for Mobile Home Park instead of Detached Senior Adult Housing. The estimated trips from this traffic impact study are shown in **Table 5.5**.

Table 5.5: Estimated Trip Generation: Melmik Holdings Development

Proposed Melmik Residential Development						
Source: Melmik Holdings TIS, JRL Consulting, December 2012						
	Rate	**% In**	**% Out**	In	Out	Total
AM Peak Hour				38	115	**153**
PM Peak Hour				184	117	**301**

5.3.5 Developments South of Route 214

CBCL Limited did not include any of the planned developments south of Route 214 separately as many of them are well south of Route 214 and most of the new commuter traffic from them would likely be attracted to Exit 7 (Enfield) more so than to Exit 8 (Elmsdale). We acknowledge there will be new development traffic attracted northward to the commercial area, but assumed these would be adequately accounted for in the annual background traffic growth.

5.4 Distribution of Future Trips

Once trip generation for the major developments had been estimated, the new traffic was distributed among the existing study intersections, and future intersections as applicable. Trips for the Melmik Holdings mobile home park development were distributed according to the traffic impact study for that project. Background traffic was simply added to existing 2013 turning movements, so was essentially distributed according to existing patterns.

Trips from the Clayton, Armco, and 'Other' developments were distributed according to a process that resulted from compiling information and formulating a series of assumptions which are explained below.

5.4.1 2011 National Household Survey

As most trips during the weekday AM and PM peak hours are generated by commuters travelling between home and work, employment data from the most recent national household census was reviewed. Of particular interest were 'Place of Work' and 'Mode of Transportation' for the residents of East Hants, the smallest census sub-division available. The following information was obtained from the 2011 National Household Survey (NHS):

- Place of Work
  - 52% of East Hants residents work in Halifax Regional Municipality (HRM);
  - 40% work within East Hants;

  - 3.5% travel to Truro;
  - 4.5% travel elsewhere;
- Mode of Transportation:
  - 95% of East Hants commuters travel by private vehicle (car, truck or van) either as a driver or a passenger; and
  - The remaining 5% indicated using other modes such as transit, walking, or bicycle to get to work.

The 5% using other modes of transportation is not statistically significant for this study; therefore, all new commuter trips were assumed to be made by private vehicle. We noted that Genivar completed a Transit Feasibility Study for the Municipality of East Hants in February 2012, and that a new transit service is now being considered. Such a service would be useful for many East Hants residents commuting to HRM or the Airport. While it would be expected to reduce traffic demands somewhat, the anticipated transit penetration is anticipated to be less than 5%, possibly in the 2-3% range, and would therefore not impact the outcome of this study. In fact, the inherent degree of error in a transportation study due to daily traffic variations and forecasting anomalies would be in a similar range.

For a number of reasons, we assumed that the percentage of study area residents commuting within HRM would be somewhat higher than the 52% for East Hants as a whole.

We have taken account of the fact that the study area is situated on the east side of East Hants, and its area is small relative to the whole Municipality, though it is home to roughly 1/3 of the population. It is also well served by Highway 102 which makes for an easy commute for study area residents who work in major employment areas to the south such as Halifax Stanfield International Airport or within the Halifax area. Residents of other areas of East Hants to the north and west would be less likely to work in the Halifax/Dartmouth area because the roadway infrastructure makes a commute to/from this area less attractive. These residents are more likely to be employed locally within East Hants, possibly in the farming or forestry industries.

There are many significant employers within the study area, including Shaw Brick, Elmsdale Landscaping, Elmsdale Lumber, Goodfellows, Elmsdale Business Park, and the Exit 8 Commercial Area (Superstore, NSLC, Sobeys, Rona, Tim Hortons, Elmsdale Mall, A&W, McDonalds, three gas stations, etc.). Together, these businesses represent approximately 900 jobs, many of which would be filled by East Hants residents. However, we assumed that the majority of new study area residents over the next 10 to 20 years would be employed in the Halifax/Dartmouth area rather than locally, particularly due to factors such as the Irving Shipbuilding contract, which is expected to create much direct and indirect employment.

For these reasons, we assumed that the breakdown for 'Place of Work' for existing and future residents within the study area would be as follows:

- 65% HRM /Airport;
- 30% East Hants; and
- 5% other.

5.4.2 Routing

Once we understood where future commuters would be travelling to, it was important to establish the most likely routes they would use to travel to their destinations. The following assumptions were made:

- Assumed almost all trips to/from the Halifax/Dartmouth area are via Highway 102 South; residents will use the nearest/most convenient interchange to access it, with minimal 'backtracking' behavior, except for 'diverted link' trips to pick up gas, coffee, groceries, etc. at Exit 8 commercial area;
- Assume most trips to/from north are via Highway 102 North, with some via Trunk 2 North;
- Assume very few trips would be generated to/from Route 277 and Route 214 East;
- Assume there would be some trips to/from Route 214 areas northwest of study area; and
- Keeping in mind there is significant employment in the Exit 8 area, including Elmsdale Mall, Superstore, Business Park, and Municipal Building.

Therefore, new trips generated by the Clayton, Armco, and 'Other' developments were distributed among study area roadways as follows:

- Highway 102 South – 60%;
- Highway 102 North – 5%;
- Trunk 2 North - 10%;
- Trunk 2 South – 10%;
- Route 214 Northwest – 5%;
- Elmsdale Mall (Sobeys) – 5%;
- Superstore/NSLC – 3%;
- Park Road (Elmsdale Business Park) – 2%; and
- TOTAL – 100%.

Three other roads, Route 214 Southeast, Route 277, and the Shaw Brick driveway, were assigned as 'negligible' meaning that they are expected to attract very few new trips from these planned and proposed developments. In these cases, nominal traffic volumes of between 2 and 10 vehicles per hour were added manually to acknowledge that they would attract some trips.

Also, many of the businesses in Elmsdale Mall, particularly Sobeys, Tim Hortons, and the Esso gas station, would attract significant pass-by traffic from Trunk 2, i.e. these trips are secondary trips by motorists who would already be travelling on Trunk 2. ITE has published pass-by rates for shopping centre (44%), supermarket (30%), service station (47%), and fast food restaurant (50%). Therefore, a conservative assumed pass-by percentage of 30% was applied to new Trunk 2 trips from the future residential developments.

5.5 Anticipated Traffic Diversions

5.5.1 Option 1 – Existing Street/Highway Network

If no new interchange is constructed, routing of new traffic was distributed according to the following assumptions:

- All traffic to/from Highway 102 south from the proposed Lantz developments will use Exit 8. Exit 9 in Milford is several kilometres to the north, too far to backtrack;

- The majority of Highway 102 north traffic from the Armco and 'Other' developments will use Exit 9 in Milford. Using Exit 8 would require backtracking along Trunk 2 approximately 4 km;
- Traffic from the Clayton development to/from Highway 102 north will be split 50/50 between Exits 8 and 9. Some traffic will drive around 10 km north on Trunk 2 to access Exit 9 in Milford, while others will backtrack south to Route 214 to take advantage of the commercial and retail amenities before accessing Highway 102 via Exit 8;
- Traffic to/from the large future development in Elmsdale (between Pine Hill Drive & Hemlock Drive) will primarily use Exit 8 to access Highway 102. These trips will not be impacted significantly by the construction of a new interchange;
- Future Enfield residents will primarily use Exit 7 to access Highway 102 south, rather than backtracking north along Trunk 2. These trips will not be impacted by the construction of a new interchange; and
- Existing and future HRM residents east of the Shubenacadie River will continue to travel traditional routes to Highway 102 or Trunk 2. The single lane bridge on Route 277 over the Shubenacadie River is probably only used regularly by those living immediately east of it. At roughly 60m long, its narrow width would cause delay to opposing directions of traffic. Those along Old Trunk Road and the section of Route 277 northeast of it likely tend to avoid the bridge, at least during peak times and/or when heading to/from the Exit 8 area or Highway 102 south. There are currently no plans to replace this structure or expand it to two lanes.

5.5.2 New Interchange Options

Having estimated where new future traffic will go and which existing routes it is likely to use if no new interchange is built, the interchange options were analyzed. However, either of the South or North Lantz interchange options would represent a more direct and less congested alternative access to Highway 102 for area residents, particularly those in Lantz, and many of the estimated future trips would divert away from Exit 8. The primary objective of this study is to determine if a new interchange would be beneficial to the Municipality and its residents, and if so, should it be built in South Lantz or North Lantz. To answer these questions, several assumptions were made in order to estimate the amount of traffic a new interchange would attract and where it would divert traffic away from. These assumptions are outlined in the text that follows.

5.5.3 Option 2 - South Lantz Interchange

These assumptions outline the traffic diversions and re-routing expected to occur if a new interchange is built in South Lantz.

- Clayton Development:
  - There would be a direct link from the Clayton development to the interchange connector road, which should encourage all Clayton traffic to/from Highway 102 North to use it, as well as a significant proportion of those to/from Highway 102 South;
  - Some Highway 102 South traffic would use Exit 8 because of the various amenities located there;
- Armco & 'Other' Developments:
  - The South Lantz interchange should attract almost all Armco/Other traffic to/from the Halifax area or other points south; however, all of this traffic would have to use Trunk 2 to access it;
  - Assume that Armco/Other traffic to/from Highway 102 north would use Trunk 2 and Exit 9 rather than backtracking south on Trunk 2;

- Existing Residential:
  - Assume the existing stub from Towerview Court would be extended southward to the interchange connector road, and that this link would attract most of the regional traffic (to Highway 102 north or south) from that existing neighborhood (Towerview/Logan/Oakmont/Poplar/Ryan/etc.);
  - Assume the existing Logan Drive stub adjacent to Highway 102 would remain a dead-end as it would be too close to the new interchange ramp intersection to join the connector road. However, if there was a desire, it may be possible to extend Logan Drive and bring it into the intersection with the northbound ramps if the interchange is constructed with roundabouts;
  - Virtually all Lantz regional traffic to/from Highway 102 south (between Maple Ridge Elementary School & Woodworth Road) would use this interchange, including most traffic associated with Shaw Brick;
  - Some Lantz 'local' traffic to/from the Exit 8 commercial area would also use the connector road and Highway 102, instead of using the Trunk 2/Route 214 intersection; and
  - The above two assumptions regarding Lantz traffic also apply to HRM residents living along the Route 277 corridor and in the Dutch Settlement area, particularly if the narrow bridge is upgraded to a two-lane structure in the future. A South Lantz interchange would probably also attract some residents south of Route 277 on Old Trunk Road, particularly for trips to/from Highway 102 north.

5.5.4 Option 3 - North Lantz Interchange

These assumptions outline the traffic diversions and re-routing expected to occur if a new interchange is built in North Lantz.

- Clayton Development:
  - The north interchange location should attract all regional Clayton traffic to/from Highway 102 north;
  - Clayton traffic to/from Highway 102 south would be expected to use Route 214 and Exit 8 (very few are expected to use the north interchange for this as it would add four to five kilometres to the trip….assumed Route 214 corridor would be upgraded to accommodate the Clayton traffic);
- Armco/'Other' Developments:
  - The connector road for a North Lantz interchange would divide the proposed Armco development, and would have limited direct connections to residential streets north and south of it;
  - These direct connections should attract all regional traffic from the Armco and 'Other' developments, as well as most local trips to/from the Exit 8 commercial area, to use this interchange;
- Existing Residential:
  - This interchange location is not likely to attract many trips to/from Highway 102 south from Trunk 2 area south of Frederic Allen Drive and Mader Street; however, congestion at Exit 8, along Route 214, and/or at the Route 214/Trunk 2 intersection could make backtracking northward to access Highway 102 more appealing;
  - Existing regional and local trips from the large Logan Drive/Poplar Drive neighbourhood would generally continue to use Trunk 2 and Route 214 to access Exit 8 for trips to/from the south; most regional northbound trips from this neighbourhood would divert to the North Lantz interchange; and

- Route 277/Dutch Settlement regional traffic to/from Highway 102 north would be attracted to the North Lantz interchange; similar traffic to/from Highway 102 south from the Route 277 area would mostly continue to use Route 214 and Exit 8 to avoid having to backtrack north on Trunk 2.

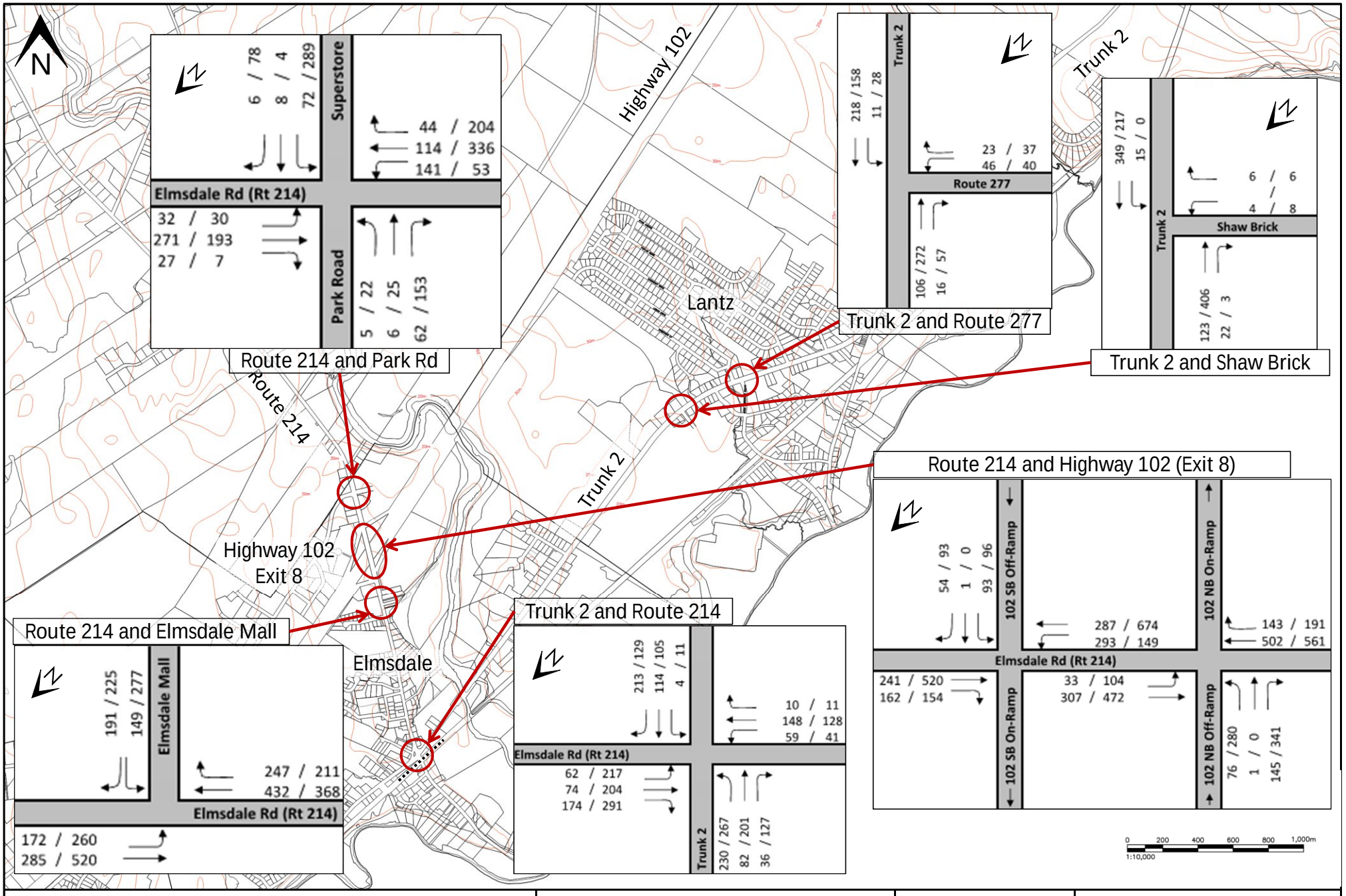
5.5.5 General Considerations

- If a new Lantz interchange is built, regardless of whether in the South or North location, the Exit 8 commercial area will continue to attract any commuters that divert to it. For example, residents that normally use the new interchange (either North or South Lantz) may create pass-by trips at Exit 8; i.e. they would hop on to Highway 102 at their 'normal' interchange and then use Exit 8 to access Tim Hortons for their morning coffee or to pick up a few items at the Superstore on their way home during the evening peak. These types of trips would currently be made via Trunk 2 and Route 214, but using Highway 102 between interchanges would become a faster, more direct route for many local residents; and
- NSTIR noted that the connector road for a new Lantz interchange would have a higher level of access control and a higher design speed than the section of Route 214 that intersects Highway 102 at Exit 8. This would imply that there would only be one or two access points, and probably no private or commercial driveways. This type of road would represent a faster, more convenient Highway 102 access for Lantz residents wishing to bypass the more congested Route 214/Exit 8 area.

5.6 Projected Future Traffic Volumes

After estimating background traffic, development traffic, and changes to traffic volumes as the result of diversions, the various volumes for each turning movement within the study area were summed to obtain projected future traffic volumes for all study area intersections.

For ease of reference and comparison, the observed 2013 peak hour traffic volumes are shown in **Figure 5.2**. The projected future traffic volumes for each option are provided in **Figures 5.3a to 5.5b**. There are six figures, one for each of these scenarios: 2023 & 2033 Option 1 (No New Interchange), 2023 & 2033 Option 2 (South Lantz Interchange), and 2023 & 2033 Option 3 (North Lantz Interchange).



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AM / PM Volumes

Figure 5.2
Observed Peak Hour Traffic Volumes
June 2013

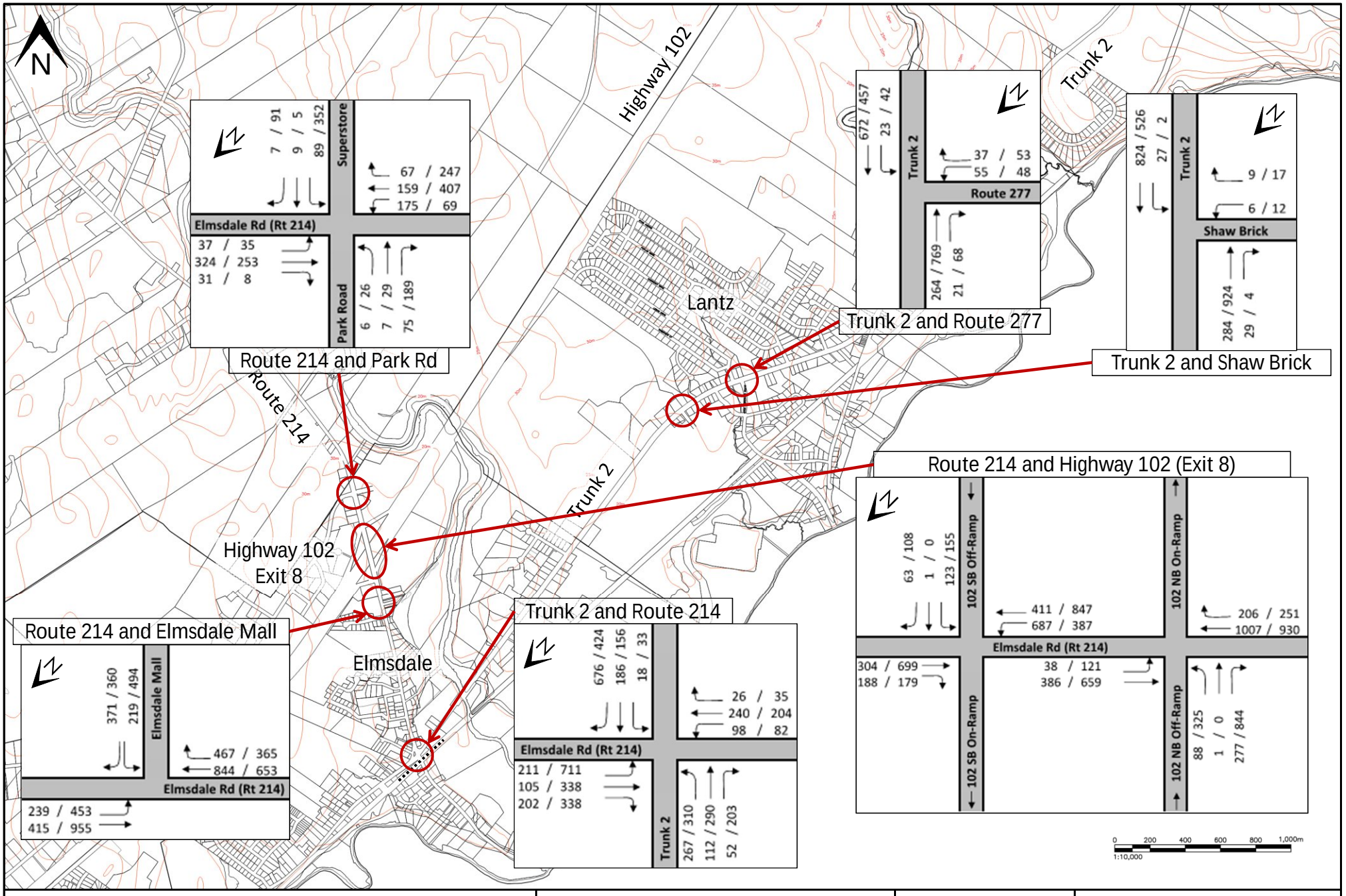

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Figure 5.3a
Projected Peak Hour Traffic Volumes
2023 Option 1
(Existing Road/Highway Network)

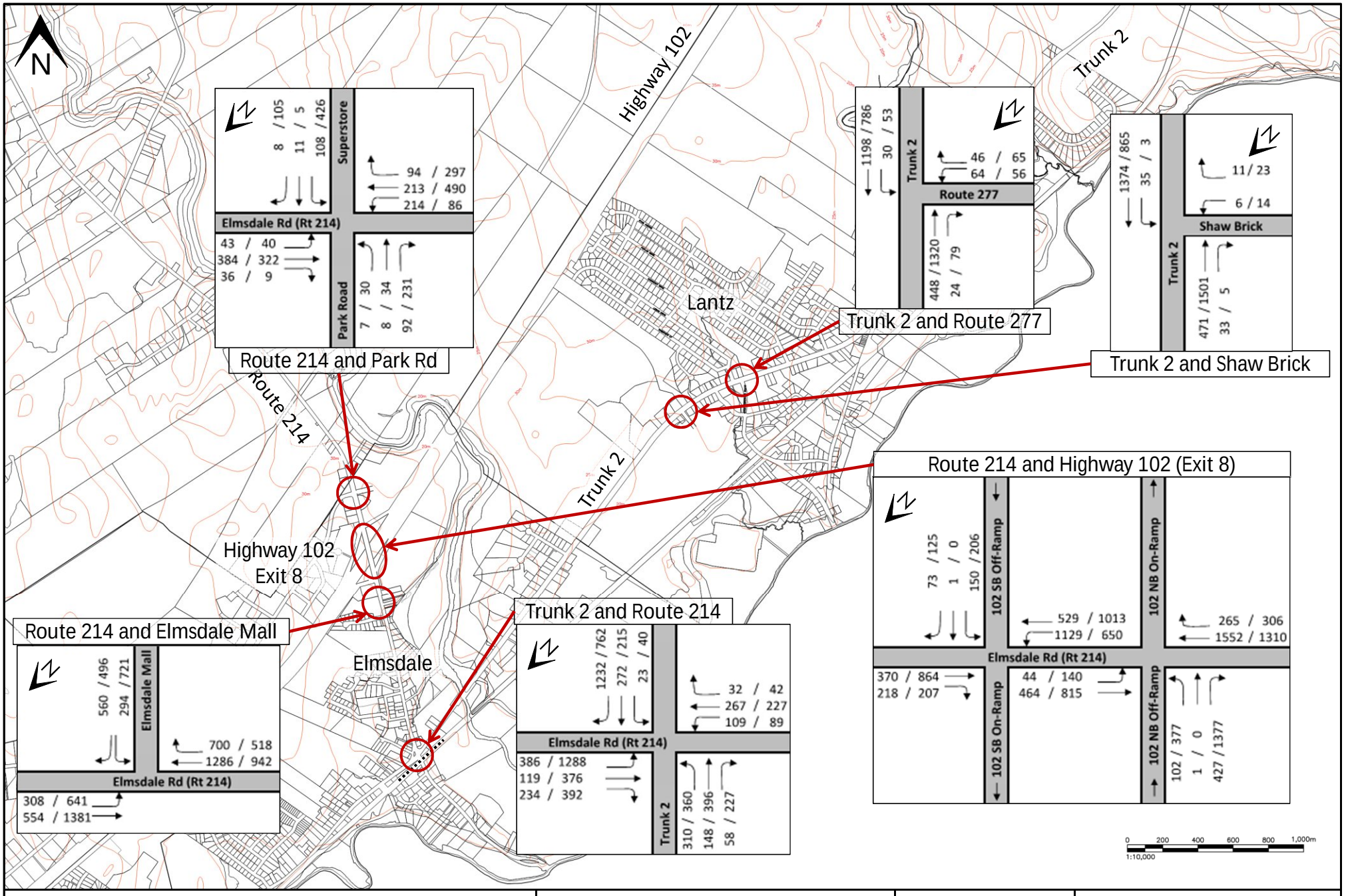

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Figure 5.3b
Projected Peak Hour Traffic Volumes
2033 Option 1
(Existing Road/Highway Network)

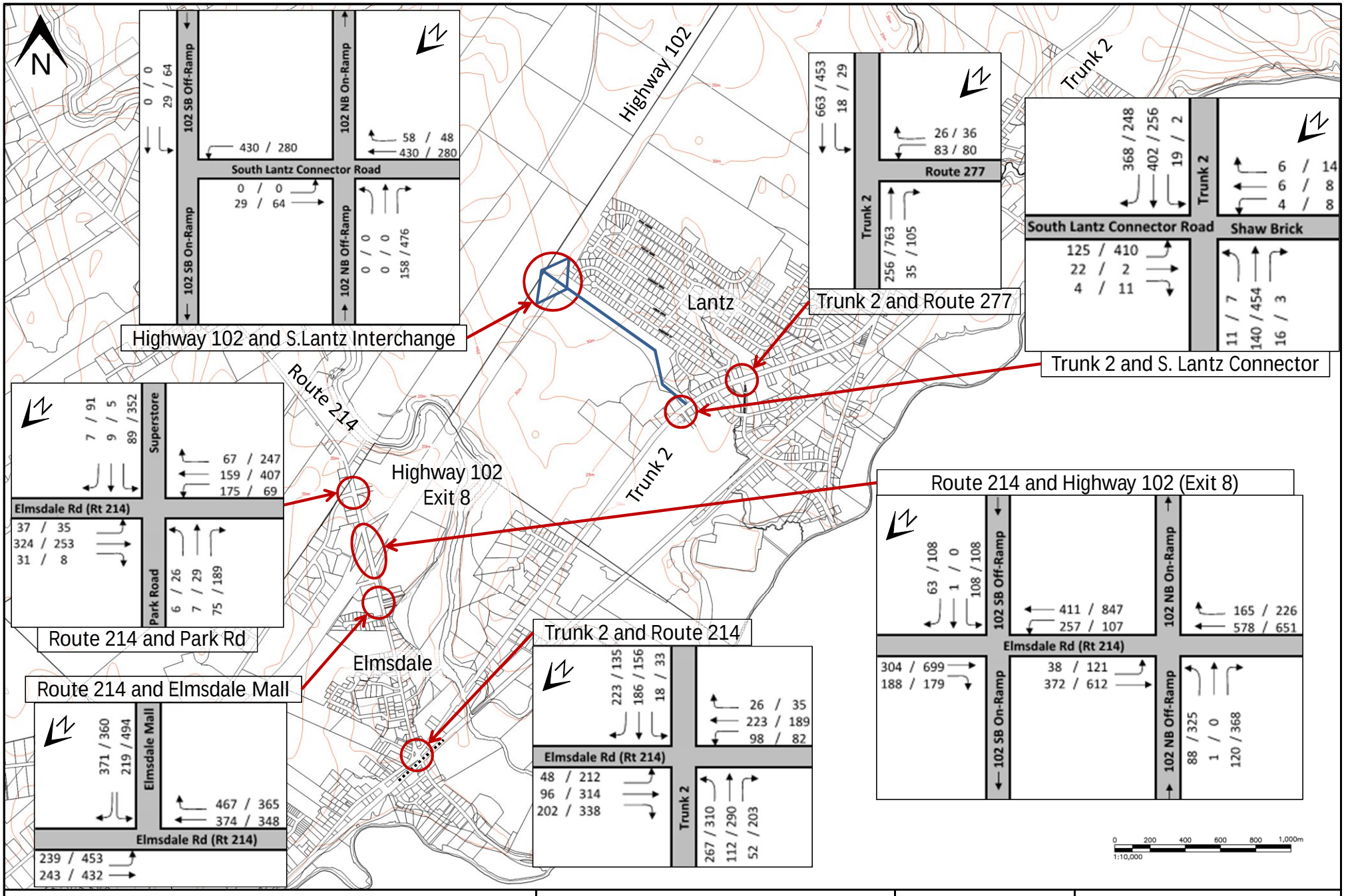

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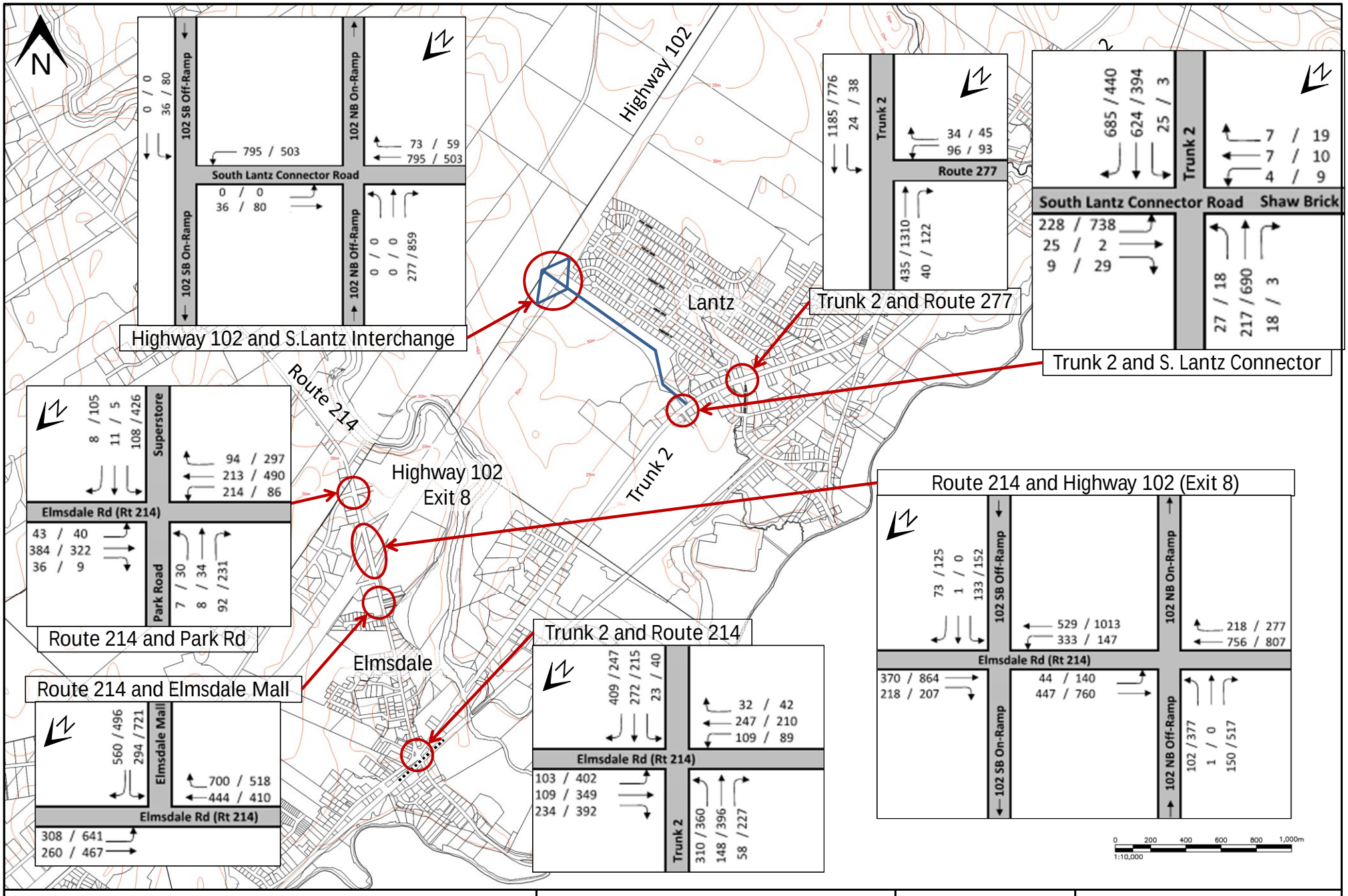
Figure 5.4a
Projected Peak Hour Traffic Volumes
2023 Option 2
(South Lantz Interchange)



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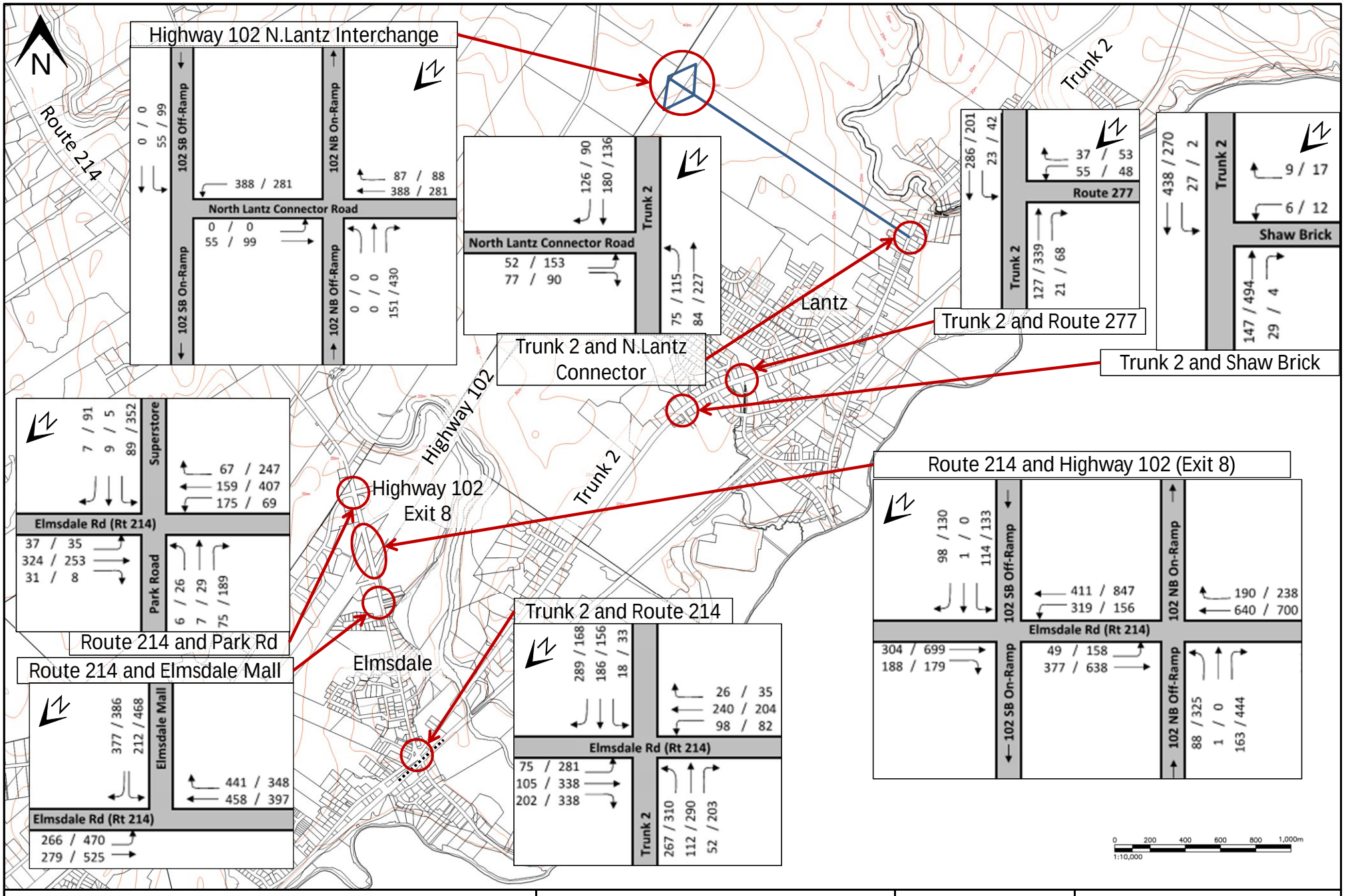
AM / PM Volumes

Figure 5.4b
Projected Peak Hour Traffic Volumes
2033 Option 2
(South Lantz Interchange)



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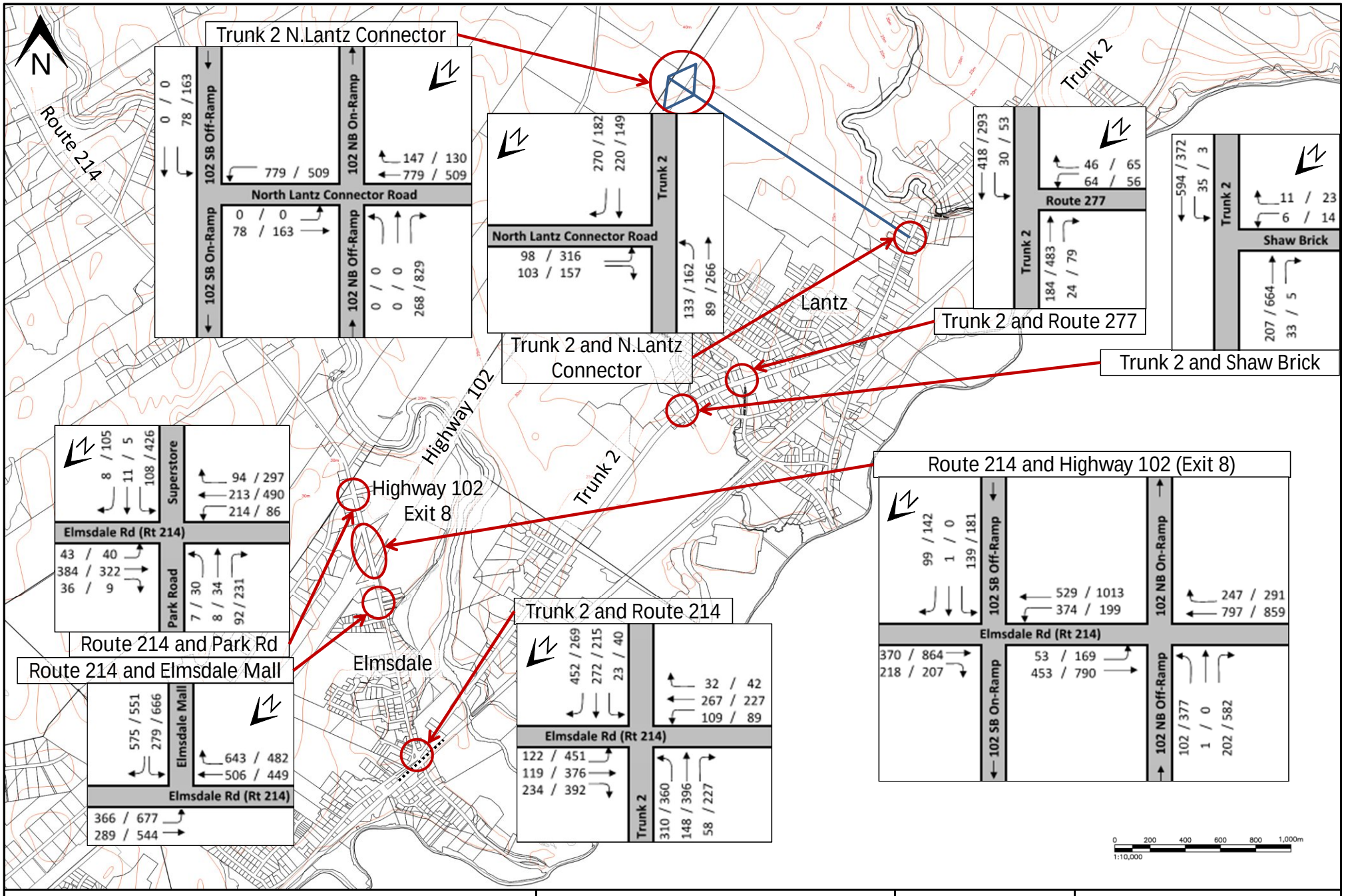
AM / PM Volumes

Figure 5.5a
Projected Peak Hour Traffic Volumes
2023 Option 3
(North Lantz Interchange)



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Corridor Traffic Study

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Date: March 2014
Legend:
AM / PM Volumes

Figure 5.5b
Projected Peak Hour Traffic Volumes
2033 Option 3
(North Lantz Interchange)

CHAPTER 6 MODEL DEVELOPMENT

6.1 Analyses and Performance Indicators

Following the development of estimated turning movement traffic volumes for the existing traffic conditions plus the six future scenarios, traffic modelling was undertaken using Synchro 8 software to perform a Level of Service (LOS) analysis of each intersection during the weekday AM and PM peak hours. Synchro uses the methods outlined in the Highway Capacity Manual, 2010 Edition, published by the Transportation Research Board (TRB).

Level of Service is the key indicator of intersection performance with respect to traffic movements and is defined by the average amount of delay experienced by motorists using each of the various intersection movements. Higher delays result in increased driver discomfort, fuel consumption, and travel time. LOS gives an indication of speed, travel time, traffic interruptions, traffic flow, comfort, and convenience, and is expressed as a scale from 'A' to 'F'. LOS 'A' represents conditions approaching free-flow and LOS 'F' represents a level of delay generally unacceptable to drivers and where traffic volumes usually exceed capacity. A LOS 'D' is generally found to be the minimal accepted level of service during peak periods and was used as such for this study. The criteria associated with each LOS are set out in **Table 6.1**. As shown in the table, the delays listed for signalized intersections are higher than for the same level of service at unsignalized intersections; this is because motorists are typically more tolerant of extended delays at signalized intersections.

Table 6.1: Level of Service (LOS) Criteria for Signalized and Unsignalized Intersections (HCM 2010)

Level of Service (LOS)	Average Delay per Vehicle (sec)	
	Signalized	Unsignalized
A	<10	<10
B	>10 and <20	>10 and <15
C	>20 and <35	>15 and <25
D	>35 and <55	>25 and <35
E	>55 and <80	>35 and <50
F	>80	>50

In addition to LOS, the Volume-to-Capacity (V/C) ratio is a strong indicator of intersection performance. The V/C ratio is the relationship between estimated traffic volumes and the maximum theoretical capacity of an intersection or traffic movement. As the V/C ratio approaches 1.0, the intersection has less ability to accommodate additional traffic. Adjustments to intersection geometry or traffic control can be implemented to increase capacity and therefore reduce the V/C ratio. For the purpose of this study, a V/C ratio of 0.90 or less was considered acceptable.

Queue lengths are also an important consideration when performing intersection analysis. Synchro estimates the 95th percentile queue length for each intersection lane group, and these are also included in the output summary tables.

6.2 Modelling Assumptions

When conducting the Synchro analysis, the following assumptions were made:

- Link speeds were assigned as per the posted speed limits. Speeds on future links were assigned as follows:
  - Connector roads – 70 kph;
  - Interchange ramps – 80 kph;
- Existing traffic control was used for all existing and future scenarios;
- Existing road and intersection geometry was used for all existing and future scenarios except where future turning lanes were found to be warranted;
- Existing signal timing/phasing was used to model existing conditions; optimized timing/phasing was used for future scenarios; and
- New intersection approaches were assumed to have a single shared approach lane, unless one or more turning lanes were found to be warranted.

6.3 Synchro Analyses Results

All Synchro analyses reports are provided in **Appendix B**. **Tables 6.2 through 6.25** on the following pages show the results of the AM and PM peak hour operations analysis for the following options:

1. 2013 Existing.
2. Option 1 (No new interchange) – 2023.
3. Option 1 (No new interchange) – 2033.
4. Option 2 (South Lantz Interchange) – 2023.
5. Option 2 (South Lantz Interchange) – 2033.
6. Option 3 (North Lantz Interchange) – 2023.
7. Option 3 (North Lantz Interchange) – 2033.

Note that the results are grouped by intersection i.e. Table 6.2 includes the Synchro results for the Route 214/Park Road/Superstore intersection for each of the above options. Turning movements with deficient peak hour operational characteristics are highlighted as follows:

- LOS E – **Light Orange;**
- LOS F – **Dark Orange;**
- V/C > 0.90 – **Yellow; and**
- Excessive Queuing (>75m) – **Yellow.**

Following the tables, each intersection is discussed with respect to existing and anticipated issues.

6.3.1 Route 214 & Park Road/Superstore (Signalized Intersection)

Table 6.2 - Route 214 & Park Road/Superstore (Signalized) - AM Peak

	EB - L Park Rd to Rte 214W	EB - TR Park Rd to S/Rte 214E	WB - L SS to Rte 214E	WB - T SS to Park Rd	WB - R SS to Rte 214W	NB - L Rte 214E to Park Rd	NB - TR Rte 214E to 214W/SS	SB - L Rte 214W to SS	SB - TR Rte 214W o 214S/Park	**Overall**
2013 - Existing Road Network										
V/C	0.06	0.39	0.24	0.10	0.05	0.03	0.32	0.25	0.04	
95% Queue	8.8	56.4	18.2	15.9	2.0	3.5	11.9	16.6	4.9	
Avg. Delay	15.5	17.7	8.2	8.1	1.0	30.2	14.2	20.5	14.7	**13.6**
LOS	B	B	A	A	A	C	B	C	B	**B**
2023 - S1 (Existing Road Network)										
V/C	0.08	0.47	0.33	0.14	0.07	0.04	0.35	0.32	0.04	
95% Queue	9.3	64.3	20.7	19.9	3.2	4.1	12.4	19.1	5.0	
Avg. Delay	14.9	18.3	8.6	8.0	1.3	27.8	13.0	20.9	14.0	**13.4**
LOS	B	B	A	A	A	C	B	C	B	**B**
2023 - S2 (South Lantz Interchange)										
V/C	0.08	0.47	0.33	0.14	0.07	0.04	0.35	0.32	0.04	
95% Queue	9.3	64.3	20.7	19.9	3.2	4.1	12.4	19.1	5.0	
Avg. Delay	14.9	18.3	8.6	8.0	1.3	27.8	13.0	20.8	14.0	**13.4**
LOS	B	B	A	A	A	C	B	C	B	**B**
2023 - S3 (North Lantz Interchange)										
V/C	0.08	0.47	0.33	0.14	0.07	0.04	0.35	0.32	0.04	
95% Queue	9.3	64.3	20.7	19.9	3.2	41.0	12.4	19.1	5.0	
Avg. Delay	14.9	18.3	8.6	8.0	1.3	27.8	13.0	20.8	14.0	**13.4**
LOS	B	B	A	A	A	C	B	C	B	**B**
2033 - S1 (Existing Road Network)										
V/C	0.10	0.60	0.45	0.19	0.10	0.05	0.39	0.37	0.05	
95% Queue	10.9	81.8	25.6	26.6	5.9	4.4	13.5	22.3	5.6	
Avg. Delay	16.2	21.9	10.2	8.4	2.3	27.7	12.6	21.6	13.8	**14.9**
LOS	B	C	B	A	A	C	B	C	B	**B**
2033 - S2 (South Lantz Interchange)										
V/C	0.10	0.60	0.45	0.19	0.10	0.05	0.39	0.37	0.05	
95% Queue	10.9	81.8	25.6	26.6	5.9	4.4	13.5	22.4	5.6	
Avg. Delay	16.2	22.0	10.2	8.4	2.3	27.7	12.5	21.7	13.8	**14.9**
LOS	B	C	B	A	A	C	B	C	B	**B**
2033 - S3 (North Lantz Interchange)										
V/C	0.10	0.60	0.45	0.19	0.10	0.05	0.39	0.37	0.05	
95% Queue	10.9	81.8	25.6	26.6	5.9	4.4	13.5	22.3	5.6	
Avg. Delay	16.2	21.9	10.2	8.4	2.3	27.7	12.6	21.6	13.8	**14.9**
LOS	B	C	B	A	A	C	B	C	B	**B**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.3 - Route 214 & Park Road/Superstore (Signalized) - PM Peak										
	EB - L Park Rd to Rte 214W	EB - TR Park Rd to S/Rte 214E	WB - L SS to Rte 214E	WB - T SS to Park Rd	WB - R SS to Rte 214W	NB - L Rte 214E to Park Rd	NB - TR Rte 214E to 214W/SS	SB - L Rte 214W to SS	SB - TR Rte 214W o 214S/Park	**Overall**
2013 - Existing Road Network										
V/C	0.08	0.29	0.10	0.39	0.25	0.17	0.60	0.69	0.14	
95% Queue	11.4	50.5	12.5	67.8	12.3	10.9	23.2	55.8	8.4	
Avg. Delay	21.3	21.1	12.6	16.0	3.0	37.3	17.1	27.1	4.8	**16.9**
LOS	C	C	B	B	A	D	B	C	A	**B**
2023 - S1 (Existing Road Network)										
V/C	0.10	0.40	0.14	0.46	0.28	0.17	0.62	1.12	0.18	
95% Queue	10.1	51.7	11.4	63.3	10.8	9.8	21.8	109.3	9.3	
Avg. Delay	17.5	19.4	9.2	13.2	2.4	29.3	14.2	108.5	5.3	**32.1**
LOS	B	B	A	B	A	C	B	F	A	**C**
2023 - S2 (South Lantz Interchange)										
V/C	0.10	0.40	0.14	0.46	0.28	0.17	0.62	1.12	0.18	
95% Queue	10.1	51.7	11.4	63.3	10.8	9.8	21.8	109.3	9.3	
Avg. Delay	17.5	19.4	9.2	13.2	2.4	29.3	14.2	108.5	5.3	**32.1**
LOS	B	B	A	B	A	C	B	F	A	**C**
2023 - S3 (North Lantz Interchange)										
V/C	0.10	0.40	0.14	0.46	0.28	0.17	0.62	1.12	0.18	
95% Queue	10.1	51.7	11.4	63.3	10.8	9.8	21.8	109.3	9.3	
Avg. Delay	17.5	19.4	9.2	13.2	2.4	29.3	14.2	108.5	5.3	**32.1**
LOS	B	B	A	B	A	C	B	F	A	**C**
2033 - S1 (Existing Road Network)										
V/C	0.16	0.57	0.24	0.63	0.36	0.21	0.69	0.91	0.17	
95% Queue	14.1	83.4	18.3	107.9	16.7	12.3	26.7	103.8	9.2	
Avg. Delay	24.3	28.4	14.8	22.2	3.8	34.7	16.1	43.6	3.9	**23.1**
LOS	C	C	B	C	A	C	B	D	A	**C**
2033 - S2 (South Lantz Interchange)										
V/C	0.16	0.57	0.24	0.63	0.36	0.21	0.69	0.91	0.17	
95% Queue	14.1	83.4	18.3	107.9	16.7	12.3	26.7	103.8	9.2	
Avg. Delay	24.3	28.4	14.8	22.2	3.8	34.7	16.1	43.6	3.9	**23.1**
LOS	C	C	B	C	A	C	B	D	A	**C**
2033 - S3 (North Lantz Interchange)										
V/C	0.16	0.57	0.24	0.63	0.04	0.21	0.69	0.91	0.17	
95% Queue	14.1	83.4	18.3	107.9	16.7	12.3	26.7	103.8	9.2	
Avg. Delay	24.3	28.4	14.8	22.2	3.8	34.7	16.1	43.6	3.9	**23.1**
LOS	C	C	B	C	A	C	B	D	A	**C**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The intersection of Route 214 with the Superstore entrance and Park Road is currently operating under very good levels of service during both the morning and evening peak travel periods. Overall the intersection experiences LOS B during both peaks with individual turning movements experiencing LOS D or better, as shown in **Tables 6.2 and 6.3** above.

Without a new interchange introduced to the surrounding roadway network (Option 1), the intersection would be expected to continue to operate under good levels of service into horizon year 2023, with a LOS B and C during the morning and evening peak periods, respectively. During the evening peak period, however, the southbound left approach to the intersection would experience significant delays, excessive queuing, and demand would exceed available capacity leading to a LOS F as indicated in Table 6.3. For the same option projected to horizon year 2033, the evening peak period would continue to operate with a good overall LOS C, though with the assumed signal optimization applied to distribute

green time appropriately to the various approaches, the eastbound and westbound through approaches, as well as the southbound left approach would experience significantly more queuing.

Selection of either Option 2 or 3 would not have a significant impact on the intersection of Route 214, Superstore and Park Road over Option 1. The results are similar for both the morning and evening peak periods for all three options.

6.3.2 Route 214 & Highway 102 Southbound Ramps (Unsignalized)

Table 6.4 - Route 214 & Hwy 102 SB Ramps (Unsignalized) - AM Peak					
	EB - TR Rte 214W to Sb ramp	WB - LT Rte 214E to Sb ramp/Rte 214W	SB - L Hwy 102 Sb ramp to Rte 214E	SB - R Hwy 102 Sb ramp to Rte 214W	**Overall**
2013 - Existing Road Network					
V/C	0.00	0.28	0.90	0.05	
95% Queue	0.0	8.9	45.4	1.3	
Avg. Delay	0.0	9.5	115.9	10.2	**14.3**
LOS	A	A	F	B	**B**
2023 - S1 (Existing Road Network)					
V/C	0.00	0.72	157.61	0.08	
95% Queue	0.0	50.2	169.0	1.8	
Avg. Delay	0.0	17.0	77532.6	11.4	**6333.3**
LOS	A	C	F	B	**F**
2023 - S2 (South Lantz Interchange)					
V/C	0.00	0.27	1.30	0.75	
95% Queue	0.0	8.4	72.8	1.8	
Avg. Delay	0.0	9.8	258.7	11.4	**27.5**
LOS	A	A	F	B	**D**
2023 - S3 (North Lantz Interchange)					
V/C	0.00	0.34	1.91	0.02	
95% Queue	0.0	11.3	105.6	3.0	
Avg. Delay	0.0	10.2	533.6	11.7	**57.7**
LOS	A	B	F	B	**F**
2033 - S1 (Existing Road Network)					
V/C	0.00	1.30	23.82	0.10	
95% Queue	0.0	345.1	194.7	2.6	
Avg. Delay	0.0	158.1	11175.1	12.7	**865.8**
LOS	A	F	F	B	**F**
2033 - S2 (South Lantz Interchange)					
V/C	0.00	0.38	4.00	0.10	
95% Queue	0.0	13.8	147.9	2.6	
Avg. Delay	0.0	11.2	1543.4	12.7	**150.1**
LOS	A	B	F	B	**F**
2033 - S3 (North Lantz Interchange)					
V/C	0.00	0.43	5.53	0.14	
95% Queue	0.0	16.7	170.3	3.6	
Avg. Delay	0.0	11.7	2271.7	13.1	**230.2**
LOS	A	B	F	B	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.5 - Route 214 & Hwy 102 SB Ramps (Unsignalized) - PM Peak					
	EB - TR Rte 214W to Sb ramp	WB - LT Rte 214E to Sb ramp/Rte 214W	SB - L Hwy 102 Sb ramp to Rte 214E	SB - R Hwy 102 Sb ramp to Rte 214W	**Overall**
2013 - Existing Road Network					
V/C	0.00	0.19	1.59	0.16	
95% Queue	0.0	5.2	84.1	4.3	
Avg. Delay	0.0	10.1	395.1	15.2	**31.2**
LOS	A	A	F	C	**D**
2023 - S1 (Existing Road Network)					
V/C	0.00	0.58	6.32	0.24	
95% Queue	0.0	29.1	190.6	6.9	
Avg. Delay	0.0	16.8	2633.2	19.4	**216.1**
LOS	A	C	F	C	**F**
2023 - S2 (South Lantz Interchange)					
V/C	0.00	0.16	2.81	0.24	
95% Queue	0.0	4.4	124.0	6.9	
Avg. Delay	0.0	11.0	975.6	19.4	**70.3**
LOS	A	B	F	C	**F**
2023 - S3 (North Lantz Interchange)					
V/C	0.00	0.24	5.21	0.29	
95% Queue	0.0	6.9	172.2	8.8	
Avg. Delay	0.0	11.5	2110.2	20.3	**176.1**
LOS	A	B	F	C	**F**
2033 - S1 (Existing Road Network)					
V/C	0.00	1.18	38.61	0.35	
95% Queue	0.0	184.3	271.7	11.5	
Avg. Delay	0.0	120.0	17957.5	26.3	**1482.6**
LOS	A	F	F	D	**F**
2033 - S2 (South Lantz Interchange)					
V/C	0.00	0.27	16.28	0.35	
95% Queue	0.0	8.1	210.4	11.5	
Avg. Delay	0.0	13.2	7439.7	26.3	**578.9**
LOS	A	B	F	D	**F**
2033 - S3 (North Lantz Interchange)					
V/C	0.00	0.36	83.09	0.40	
95% Queue	0.0	12.4	255.1	13.8	
Avg. Delay	0.0	14.3	39323.4	27.9	**3461.3**
LOS	A	B	F	D	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

As shown in **Tables 6.4 and 6.5**, the intersection of Route 214 with the Highway 102 southbound ramps is currently operating under overall level of service of B and D, apart from the southbound left turn at LOS F, during the morning and evening peak periods, respectively. Without a new interchange, by the years 2023 and 2033, it could be expected that volume demand for the southbound left turn would be significantly larger than available capacity and therefore motorists turning left from the southbound off-ramp would experience extreme delays and significant queuing during both the AM and PM peak periods. By 2033 the westbound left approach is also expected to reach LOS F with V/C ratios greater than 1.0, excessive delays

and significant queuing for both the AM and PM peak periods if a new interchange is not constructed. Despite the construction of an interchange at either location option, the intersection of Route 214 with the Highway 102 southbound ramps is still expected to reach a failing LOS F due to the delays and queuing on the southbound left turning approach. Additional mitigation measures are expected to be required at the intersection regardless of which interchange option is selected.

6.3.3 Route 214 & Highway 102 Northbound Ramps (Signalized)

Table 6.6 - Route 214 & Hwy 102 NB Ramps (Signalized) - AM Peak

	EB - L Rte 214W to Nb ramp	EB - T Rte 214W to Rte 214E	WB - T Rte 214E to Rte 214W	WB - R Rte 214E to Nb ramp	NB - L Nb ramp to Rte 214W	NB - R Nb ramp to Rte 214E	**Overall**
2013 - Existing Road Network							
V/C	0.06	0.25	0.40	0.13	0.32	0.43	
95% Queue	4.9	31.2	30.1	0.4	25.8	15.6	
Avg. Delay	4.6	5.1	4.0	0.8	36.5	9.6	**6.7**
LOS	A	A	A	A	D	A	**A**
2023 - S1 (Existing Road Network)							
V/C	0.72	0.29	1.01	0.23	0.38	0.62	
95% Queue	15.8	39.6	371.8	4.6	40.0	26.1	
Avg. Delay	74.6	5.3	48.3	3.2	55.0	75.4	**39.9**
LOS	E	A	D	A	D	E	**D**
2023 - S2 (South Lantz Interchange)							
V/C	0.31	0.33	0.83	0.24	0.28	0.32	
95% Queue	10.6	42.5	147.4	2.4	24.0	12.4	
Avg. Delay	15.0	7.4	25.1	2.0	27.9	7.6	**15.9**
LOS	B	A	C	A	C	A	**B**
2023 - S3 (North Lantz Interchange)							
V/C	0.47	0.32	0.85	0.25	0.31	0.42	
95% Queue	22.6	42.0	174.7	2.5	27.3	15.7	
Avg. Delay	25.4	6.8	25.6	1.7	33.3	8.8	**16.5**
LOS	C	A	C	A	C	A	**B**
2033 - S1 (Existing Road Network)							
V/C	0.96	0.36	1.54	0.30	0.35	0.70	
95% Queue	27.5	64.0	475.5	7.2	48.5	37.3	
Avg. Delay	143.2	8.7	268.0	15.3	57.3	75.4	**164.1**
LOS	F	A	F	B	E	E	**F**
2033 - S2 (South Lantz Interchange)							
V/C	0.64	0.37	0.99	0.29	0.33	0.38	
95% Queue	26.9	50.5	235.6	5.8	34.5	16.4	
Avg. Delay	52.1	7.5	58.2	3.4	38.2	9.5	**32.5**
LOS	D	A	E	A	D	A	**C**
2033 - S3 (North Lantz Interchange)							
V/C	0.85	0.36	1.02	0.32	0.36	0.48	
95% Queue	22.1	50.2	259.9	6.9	38.4	20.0	
Avg. Delay	95.3	7.0	78.6	4.3	44.0	81.9	**50.2**
LOS	F	A	E	A	D	F	**D**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.7 - Route 214 & Hwy 102 NB Ramps (Signalized) - PM Peak							
	EB - L Rte 214W to Nb ramp	EB - T Rte 214W to Rte 214E	WB - T Rte 214E to Rte 214W	WB - R Rte 214E to Nb ramp	NB - L Nb ramp to Rte 214W	NB - R Nb ramp to Rte 214E	**Overall**
2013 - Existing Road Network							
V/C	0.25	0.41	0.49	0.18	0.80	0.59	
95% Queue	17.2	63.8	47.8	1.0	83.2	22.1	
Avg. Delay	8.9	9.0	7.1	1.2	52.3	7.6	**13.7**
LOS	A	A	A	A	D	A	**B**
2023 - S1 (Existing Road Network)							
V/C	0.42	0.63	1.29	0.37	0.63	1.39	
95% Queue	37.6	160.3	423.0	14.6	117.4	370.9	
Avg. Delay	26.1	21.8	161.3	9.4	46.9	231.0	**121.5**
LOS	C	C	F	A	D	F	**F**
2023 - S2 (South Lantz Interchange)							
V/C	1.59	0.58	1.06	0.34	0.77	0.66	
95% Queue	53.7	92.8	202.9	3.0	96.5	50.2	
Avg. Delay	337.3	14.6	85.5	2.9	44.2	89.4	**66.6**
LOS	F	B	F	A	D	F	**E**
2023 - S3 (North Lantz Interchange)							
V/C	2.07	0.59	1.10	0.35	0.81	0.83	
95% Queue	72.4	95.8	214.8	3.5	100.2	90.4	
Avg. Delay	540.5	14.3	86.4	3.0	48.1	99.2	**86.1**
LOS	F	B	F	A	D	F	**F**
2033 - S1 (Existing Road Network)							
V/C	0.52	0.86	2.02	0.50	0.62	2.22	
95% Queue	46.1	271.0	497.2	17.8	127.2	731.3	
Avg. Delay	32.5	86.7	480.2	29.2	40.8	622.1	**366.5**
LOS	C	F	F	C	D	F	**F**
2033 - S2 (South Lantz Interchange)							
V/C	2.20	0.73	1.42	0.47	0.79	0.95	
95% Queue	78.8	166.2	326.7	24.8	125.9	155.4	
Avg. Delay	604.9	72.2	225.7	11.7	48.3	134.3	**143.3**
LOS	F	E	F	B	D	F	**F**
2033 - S3 (North Lantz Interchange)							
V/C	2.97	0.73	1.45	0.48	0.83	1.11	
95% Queue	106.2	180.0	374.8	27.3	141.4	208.1	
Avg. Delay	943.2	71.8	238.2	14.5	56.9	139.6	**172.0**
LOS	F	E	F	B	E	F	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The signalized intersection of Route 214 with the Highway 102 northbound ramps is currently operating under overall level of service of A and B during the morning and evening peak periods, respectively. Without additional network improvements, it is expected the operation of the intersection would deteriorate to overall LOS D and F, respectively for the AM and PM peak periods of 2023 and LOS F for both peak periods by 2033. For the year 2023 under Options 2 and 3, the intersection would be expected to operate with a very good overall LOS B during the AM peak period; though the westbound approach would be expected to experience some significant queuing. For the PM peak period in 2023, the eastbound left approach, westbound through approach, and northbound right approach would operate with failing LOS F and experience excessive delays regardless of the option chosen for the new interchange. The westbound through approach would also still be expected to experience significant queuing (greater than 200m) and a volume to capacity ratio greater than 1.0; though it is expected the intersection would operate better overall with the South Lantz interchange option selected (overall LOS E).

For horizon year 2033, the intersection of Route 214 and the Highway 102 northbound ramps would operate with an overall failing LOS F during the PM peak period despite which option is chosen. Excessive queuing, delay, and demands either approaching or exceeding capacity on all but the westbound right approach would be experienced at the intersection. Option 2, with a south interchange location selected would result in the intersection operating marginally better in the AM peak period compared to its operation under Option 3. The westbound through approach would still be expected to be problematic with a v/c ratio of nearly 1.0, queuing in excess of 200m and average delay of more than 50 seconds. Mitigation measures to address the intersection deficiencies are discussed later in the report.

The results described above are shown in **Tables 6.6 and 6.7**.

6.3.4 Route 214 & Elmsdale Shopping Centre (Signalized)

Table 6.8 - Route 214 & Elmsdale Shopping Centre (Signalized) - AM Peak							
	EB - L Rte 214W to ESC	EB - T Rte 214W to Rte 214E	WB - T Rte 214E to Rte 214W	WB - R Rte 214E to ESC	SB - L ESC to Rte 214E	SB - R ESC to Rte 214W	**Overall**
2013 - Existing Road Network							
V/C	0.33	0.24	0.48	0.29	0.47	0.44	
95% Queue	13.7	21.1	88.9	25.1	44.4	16.8	
Avg. Delay	5.8	4.8	17.7	6.6	37.0	7.5	**12.6**
LOS	A	A	B	A	D	A	**B**
2023 - S1 (Existing Road Network)							
V/C	1.00	0.31	0.85	0.51	0.91	0.79	
95% Queue	119.8	34.3	253.9	79.5	106.9	57.7	
Avg. Delay	140.6	4.7	32.9	13.1	90.9	28.0	**39.0**
LOS	F	A	C	B	F	C	**D**
2023 - S2 (South Lantz Interchange)							
V/C	0.84	0.22	0.54	0.58	0.67	0.63	
95% Queue	73.5	13.7	75.5	39.4	53.2	20.6	
Avg. Delay	57.6	4.1	21.6	7.9	38.0	8.0	**19.8**
LOS	E	A	C	A	D	A	**B**
2023 - S3 (North Lantz Interchange)							
V/C	0.87	0.23	0.61	0.56	0.71	0.65	
95% Queue	88.6	18.1	100.2	52.8	59.1	23.2	
Avg. Delay	81.3	4.3	23.8	10.5	45.7	9.1	**25.3**
LOS	F	A	C	B	D	A	**C**
2033 - S1 (Existing Road Network)							
V/C	1.52	0.43	1.28	0.77	0.98	1.27	
95% Queue	198.9	81.2	606.1	198.6	156.6	244.5	
Avg. Delay	299.1	7.2	162.9	25.9	104.7	172.5	**121.9**
LOS	F	A	F	C	F	F	**F**
2033 - S2 (South Lantz Interchange)							
V/C	0.96	0.22	0.58	0.80	0.93	0.84	
95% Queue	113.5	15.3	100.0	112.0	110.5	76.6	
Avg. Delay	117.6	4.0	24.8	17.6	74.3	33.0	**39.3**
LOS	F	A	C	B	E	C	**D**
2033 - S3 (North Lantz Interchange)							
V/C	1.02	0.23	0.65	0.78	0.96	0.89	
95% Queue	147.8	19.3	126.8	122.0	117.1	94.2	
Avg. Delay	118.6	4.1	28.4	20.3	86.3	74.1	**52.2**
LOS	F	A	C	C	F	E	**D**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.9 - Route 214 & Elmsdale Shopping Centre (Signalized) - PM Peak							
	EB - L Rte 214W to ESC	EB - T Rte 214W to Rte 214E	WB - T Rte 214E to Rte 214W	WB - R Rte 214E to ESC	SB - L ESC to Rte 214E	SB - R ESC to Rte 214W	**Overall**
2013 - Existing Road Network							
V/C	0.47	0.45	0.42	0.26	0.78	0.46	
95% Queue	21.9	41.2	73.0	18.5	81.9	18.0	
Avg. Delay	7.0	6.7	17.6	5.2	50.0	7.1	**15.2**
LOS	A	A	B	A	D	A	**B**
2023 - S1 (Existing Road Network)							
V/C	1.54	0.91	0.90	0.54	0.95	0.55	
95% Queue	160.0	236.7	256.0	91.6	214.1	48.8	
Avg. Delay	277.9	78.5	58.7	25.1	73.1	15.2	**88.4**
LOS	F	E	E	C	E	B	**F**
2023 - S2 (South Lantz Interchange)							
V/C	1.42	0.41	0.57	0.53	1.15	0.55	
95% Queue	173.3	73.2	79.3	38.6	169.5	20.7	
Avg. Delay	233.2	8.1	27.8	9.7	122.4	6.9	**75.5**
LOS	F	A	C	A	F	A	**E**
2023 - S3 (North Lantz Interchange)							
V/C	1.47	0.49	0.63	0.51	1.14	0.59	
95% Queue	173.3	49.7	90.9	41.1	162.2	22.0	
Avg. Delay	254.7	9.8	28.9	10.8	119.6	7.5	**76.7**
LOS	F	A	C	B	F	A	**E**
2033 - S1 (Existing Road Network)							
V/C	2.40	1.46	1.45	0.85	1.17	0.68	
95% Queue	189.3	292.3	464.7	185.9	333.5	97.8	
Avg. Delay	656.2	240.5	244.6	46.7	131.2	73.9	**242.3**
LOS	F	F	F	D	F	E	**F**
2033 - S2 (South Lantz Interchange)							
V/C	1.75	0.45	0.72	0.80	1.48	0.75	
95% Queue	273.0	55.3	120.6	110.9	303.5	79.0	
Avg. Delay	374.3	16.2	41.8	27.7	258.9	69.2	**153.7**
LOS	F	B	D	C	F	E	**F**
2033 - S3 (North Lantz Interchange)							
V/C	1.74	0.50	0.76	0.76	1.45	0.83	
95% Queue	285.4	71.4	141.8	112.4	303.4	116.1	
Avg. Delay	366.9	23.0	45.4	29.0	247.3	77.2	**149.2**
LOS	F	C	D	C	F	E	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The signalized intersection of Route 214 with the Elmsdale Shopping Centre entrance is currently operating with very good overall levels of service. LOS B is measured for the intersection for both the AM and PM peak travel periods under existing conditions. The operation of the intersection would

deteriorate into years 2023 and 2033 without any network improvement options considered. It is expected the intersection would reach LOS D and F during the AM and PM peak periods of 2023 respectively and LOS F for both peak periods by 2033 with most intersection approaches experiencing levels of excessive queuing and delay.

For the AM peak period of horizon years 2023 and 2033, the Option 2 results in the intersection operating under slightly better conditions than for Option 3. For 2023, the intersection would be expected to operate with overall LOS B in the AM peak period in 2023 compared to LOS C as with Option 3. The eastbound left approach for either option would experience longer than acceptable delays. By the year 2033 the intersection would operate with overall LOS D regardless of the option chosen, though individual approach operations could be slightly improved with Option 2. Regardless, most approaches will experience excessive queuing and the eastbound left approach and southbound left approach will experience higher than accepted delay.

The PM peak period at the intersection will operate essentially the same despite which option is chosen. Overall LOS E and LOS F can be expected for either option by 2023 and 2033 respectively. The eastbound left approach and southbound left approach can be expected to have volumes exceeding available capacity, long queues in excess of 200m by 2033 and significant delay experienced. Mitigation measures for the intersection are discussed later in the report.

The results described above are shown in **Tables 6.8 and 6.9**.

6.3.5 Route 214 & Trunk 2 (Signalized)

Table 6.10 - Route 214 & Trunk 2 (Signalized) - AM Peak								
	EB - LT Tr2W to 214W/Tr2E	EB - R Tr2W to Rte 214W	WB - LTR Tr2E to 214E Tr2W/214W	NB - L Rte 214E to Tr2w	NB - TR Rte 214E to 214W/Tr2E	SB - L Rte 214W to Tr2E	SB - TR Rte 214W to 214E/Tr2W	**Overall**
2013 - Existing Road Network								
V/C	0.36	0.32	0.53	0.57	0.16	0.01	0.44	
95% Queue	29.0	12.6	44.5	37.5	13.3	1.5	28.2	
Avg. Delay	18.4	5.0	20.7	16.1	6.8	8.0	7.0	**12.2**
LOS	B	A	C	B	A	A	A	**B**
2023 - S1 (Existing Road Network)								
V/C	1.09	0.33	1.21	1.29	0.18	0.34	1.20	
95% Queue	175.8	28.6	207.0	166.9	38.8	15.1	391.7	
Avg. Delay	122.3	9.8	160.4	206.5	16.8	86.3	136.1	**125.7**
LOS	F	A	F	F	B	F	F	**F**
2023 - S2 (South Lantz Interchange)								
V/C	0.40	0.36	0.83	0.82	0.20	0.20	0.84	
95% Queue	34.7	14.5	94.1	84.2	25.1	9.5	96.7	
Avg. Delay	25.5	5.2	42.7	51.2	10.4	41.3	37.2	**32.8**
LOS	C	A	D	D	B	D	D	**C**
2023 - S3 (North Lantz Interchange)								
V/C	0.58	0.35	0.90	0.88	0.20	0.21	0.90	
95% Queue	45.7	14.5	105.5	87.8	25.1	9.5	115.1	
Avg. Delay	31.5	5.1	51.8	62.0	10.5	42.1	42.2	**38.7**
LOS	C	A	D	E	B	D	D	**D**
2033 - S1 (Existing Road Network)								
V/C	1.66	0.36	2.15	2.36	0.25	0.36	2.05	
95% Queue	307.3	45.7	218.9	225.4	56.4	17.8	816.4	
Avg. Delay	340.6	16.0	558.3	658.7	22.6	84.4	501.6	**429.1**
LOS	F	B	F	F	C	F	F	**F**
2033 - S2 (South Lantz Interchange)								
V/C	0.75	0.39	1.11	1.08	0.23	0.34	1.07	
95% Queue	86.5	18.3	175.1	144.8	40.0	15.0	254.4	
Avg. Delay	54.9	5.6	120.0	119.7	14.0	68.4	86.3	**77.8**
LOS	D	A	F	F	B	E	F	**E**
2033 - S3 (North Lantz Interchange)								
V/C	0.83	0.37	1.17	1.20	0.23	0.33	1.09	
95% Queue	114.0	18.8	212.1	172.6	46.5	16.8	310.3	
Avg. Delay	66.2	5.5	143.7	167.9	16.6	77.3	98.7	**95.3**
LOS	E	A	F	F	B	E	F	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.11 - Route 214 & Trunk 2 (Signalized) - PM Peak								
	EB - LT Tr2W to 214W/Tr2E	EB - R Tr2W to Rte 214W	WB - LTR Tr2E to 214E Tr2W/214W	NB - L Rte 214E to Tr2w	NB - TR Rte 214E to 214W/Tr2E	SB - L Rte 214W to Tr2E	SB - TR Rte 214W to 214E/Tr2W	**Overall**
2013 - Existing Road Network								
V/C	0.77	0.37	0.30	0.67	0.50	0.04	0.35	
95% Queue	122.3	15.4	38.9	53.8	48.8	3.7	26.9	
Avg. Delay	29.9	3.7	16.5	25.5	15.6	12.6	9.9	**17.9**
LOS	C	A	B	C	B	B	A	**B**
2023 - S1 (Existing Road Network)								
V/C	1.79	0.37	3.46	2.26	1.11	0.61	1.54	
95% Queue	480.5	39.7	181.9	185.0	213.6	25.1	259.9	
Avg. Delay	383.1	8.0	1143.8	614.2	115.7	96.9	285.1	**380.2**
LOS	F	A	F	F	F	F	F	**F**
2023 - S2 (South Lantz Interchange)								
V/C	1.02	0.43	0.96	1.00	0.76	0.49	0.82	
95% Queue	185.8	27.6	119.5	123.7	126.6	20.4	80.0	
Avg. Delay	73.8	6.2	68.2	91.6	32.5	68.7	49.6	**53.5**
LOS	E	A	E	F	C	E	D	**D**
2023 - S3 (North Lantz Interchange)								
V/C	1.06	0.40	0.87	1.07	0.86	0.65	1.03	
95% Queue	259.6	39.0	137.8	153.1	188.6	27.4	148.5	
Avg. Delay	83.5	8.0	51.7	119.7	53.8	109.8	102.8	**70.4**
LOS	F	A	D	F	D	F	F	**E**
2033 - S1 (Existing Road Network)								
V/C	3.39	0.46	4.88	3.01	1.29	0.66	2.12	
95% Queue	770.6	60.6	200.2	203.3	258.9	28.0	418.5	
Avg. Delay	1093.9	12.5	1782.4	942.7	177.7	95.9	532.1	**779.0**
LOS	F	B	F	F	F	F	F	**F**
2033 - S2 (South Lantz Interchange)								
V/C	1.34	0.46	1.46	1.70	1.14	0.84	1.20	
95% Queue	370.5	59.0	202.9	221.2	289.4	35.9	228.7	
Avg. Delay	195.7	11.4	255.9	368.6	123.9	151.8	152.6	**176.9**
LOS	F	B	F	F	F	F	F	**F**
2033 - S3 (North Lantz Interchange)								
V/C	1.44	0.44	1.86	1.94	1.20	0.91	1.27	
95% Queue	440.7	63.7	178.5	242.8	315.3	38.3	258.7	
Avg. Delay	236.4	12.1	427.9	471.4	148.4	177.7	180.9	**230.4**
LOS	F	B	F	F	F	F	F	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The signalized intersection of Trunk 2 with Route 214 is currently operating with overall LOS B for both the morning and evening peak periods. This intersection is expected to fail by 2023 with volumes exceeding available capacity for both peak periods and causing long queue lengths and delays on many of the approaches.

Regardless of the option chosen for a new interchange location, the intersection of Trunk 2 by the year 2033 will continue to have operational issues which are not addressed by the new interchange, particularly during the PM peak period. For the horizon year 2023, however, it would appear Option 2 provides a better overall outlook for the intersection with an overall LOS C and D for the AM and PM periods respectively, compared to LOS D and E for resulting from Option 3. Under Option 2 the intersection would still be expected to experience some excessing queuing on westbound, northbound left and southbound through approaches during the AM period. During the PM period, the eastbound left and northbound left approach volumes would exceed capacity and experience significant queuing and delay. As well the westbound approach would also be expected to be approaching maximum capacity and experiencing excessive queuing and longer than accepted delay.

The results described above are shown in **Tables 6.10 and 6.11**.

6.3.6 Trunk 2 & Shaw Driveway (Unsignalized)

Table 6.12 - Trunk 2 & Shaw Driveway (Unsignalized) - AM Peak							
	EB - LTR New cntr to Tr2E/Sh/2W	WB - LR Shaw to Tr2W/Tr2E	NB - L Tr2W to New cntr	NB - TR Tr2W to Tr2E/Shaw	SB - LT Tr2E to Shaw/Tr2W	SB - R Tr2E to New cntr	**Overall**
2013 - Existing Road Network							
V/C		0.02		0.00	0.11		
95% Queue		0.5		0.0	0.3		
Avg. Delay		10.5		0.0	7.5		**0.4**
LOS		B		A	A		**A**
2023 - S1 (Existing Road Network)							
V/C		0.05		0.00	0.02		
95% Queue		1.2		0.0	0.6		
Avg. Delay		16.9		0.0	8.0		**0.4**
LOS		C		A	A		**A**
2023 - S2 (South Lantz Interchange)							
V/C	0.46	0.38		0.01	0.02	0.00	
95% Queue	17.6	0.9		0.2	0.3	0.0	
Avg. Delay	23.3	13.2		8.2	7.6	0.0	**3.5**
LOS	C	B		A	A	A	**A**
2023 - S3 (North Lantz Interchange)							
V/C		0.03		0.00	0.02		
95% Queue		0.7		0.0	0.5		
Avg. Delay		11.4		0.0	7.7		**0.5**
LOS		B		A	A		**A**
2033 - S1 (Existing Road Network)							
V/C		0.17		0.00	0.04		
95% Queue		4.3		0.0	0.9		
Avg. Delay		43.8		0.0	8.7		**0.5**
LOS		E		A	A		**A**
2033 - S2 (South Lantz Interchange)							
V/C	1.63	0.08	0.03	0.00	0.02	0.00	
95% Queue	146.4	1.9	0.8	0.0	0.5	0.0	
Avg. Delay	353.8	20.8	9.1	0.0	7.8	0.0	**49.8**
LOS	F	C	A	A	A	A	**E**
2033 - S3 (North Lantz Interchange)							
V/C		0.04		0.00	0.03		
95% Queue		0.9		0.0	0.7		
Avg. Delay		12.9		0.0	7.8		**0.5**
LOS		B		A	A		**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.13 - Trunk 2 & Shaw Driveway (Unsignalized) - PM Peak							
	EB - LTR New cntr to Tr2E/Sh/2W	WB - LR Shaw to Tr2W/Tr2E	NB - L Tr2W to New cntr	NB - TR Tr2W to Tr2E/Shaw	SB - LT Tr2E to Shaw/Tr2W	SB - R Tr2E to New cntr	**Overall**
2013 - Existing Road Network							
V/C		0.03		0.00	0.00		
95% Queue		0.7		0.0	0.0		
Avg. Delay		12.7		0.0	0.0		**0.3**
LOS		B		A	A		**A**
2023 - S1 (Existing Road Network)							
V/C		0.17		0.00	0.00		
95% Queue		4.6		0.0	0.1		
Avg. Delay		28.7		0.0	10.3		**0.6**
LOS		D		A	B		**A**
2023 - S2 (South Lantz Interchange)							
V/C	1.59	0.08		0.01	0.00	0.00	
95% Queue	209.7	2.1		0.1	0.05	0.0	
Avg. Delay	313.5	15.0		7.8	8.4	0.0	**93.5**
LOS	F	B		A	A	A	**F**
2023 - S3 (North Lantz Interchange)							
V/C		0.07		0.00	0.00		
95% Queue		1.8		0.0	0.0		
Avg. Delay		14.0		0.0	8.5		**0.5**
LOS		B		A	A		**A**
2033 - S1 (Existing Road Network)							
V/C		0.75		0.00	0.01		
95% Queue		23.7		0.0	0.2		
Avg. Delay		174.4		0.0	14.2		**2.7**
LOS		F		A	B		**A**
2033 - S2 (South Lantz Interchange)							
V/C	6.01	0.18	0.02	0.02	0.00	0.00	
95% Queue	688.3	5.0	0.0	0.4	0.1	0.0	
Avg. Delay	2317.6	24.6	0.0	8.2	9.2	0.0	**757.2**
LOS	F	C	A	A	A	A	**F**
2033 - S3 (North Lantz Interchange)							
V/C		0.13		0.00	0.00		
95% Queue		3.3		0.0	0.1		
Avg. Delay		18.0		0.0	9.1		**0.7**
LOS		C		A	A		**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The existing conditions at the intersection of Trunk 2 with the Shaw Brick driveway result in excellent overall levels of service during both the AM and PM peak periods. This would continue into the horizon years 2023 and 2033; however westbound turning volumes from the driveway would experience increasing delays by 2033 as gaps in the through traffic become more limited. This would be remedied with Option 3 as some of the southbound through traffic would be diverted to the North Lantz interchange.

Option 2 results in the addition of an eastbound approach to the intersection. The connector road for the south Lantz interchange location would intersect Trunk 2 across from the Shaw Brick driveway. The new eastbound approach would be expected to operate with failing LOS F during the PM peak period of 2023 and both peak periods in 2033. The remaining approaches would be expected to operate with acceptable levels of service.

The results described above are shown in **Tables 6.12 and 6.13**.

6.3.7 Trunk 2 & Route 277 (Unsignalized)

Table 6.14 - Trunk 2 & Route 277 (Unsignalized) - AM Peak				
	WB - LR Rte 277 to Tr2W/Tr2E	NB - TR Tr2W to Tr2E/Rte 277	SB - LT Tr2E to Rte 277/Tr2W	**Overall**
2013 - Existing Road Network				
V/C	0.11	0.00	0.01	
95% Queue	0.4	0.0	0.2	
Avg. Delay	10.9	0.0	7.5	**2.0**
LOS	B	A	A	**A**
2023 - S1 (Existing Road Network)				
V/C	0.31	0.00	0.02	
95% Queue	9.8	0.0	0.5	
Avg. Delay	21.1	0.0	7.9	**2.0**
LOS	C	A	A	**A**
2023 - S2 (South Lantz Interchange)				
V/C	0.41	0.00	0.02	
95% Queue	14.6	0.0	0.4	
Avg. Delay	26.0	0.0	7.9	**2.7**
LOS	D	A	A	**A**
2023 - S3 (North Lantz Interchange)				
V/C	0.16	0.00	0.02	
95% Queue	4.4	0.0	0.4	
Avg. Delay	11.9	0.0	7.6	**2.3**
LOS	B	A	A	**A**
2033 - S1 (Existing Road Network)				
V/C	1.07	0.00	0.03	
95% Queue	54.6	0.0	0.7	
Avg. Delay	177.5	0.0	8.5	**10.9**
LOS	F	A	A	**B**
2033 - S2 (South Lantz Interchange)				
V/C	1.44	0.00	0.03	
95% Queue	79.6	0.0	0.6	
Avg. Delay	324.8	0.0	8.5	**23.4**
LOS	F	A	A	**C**
2033 - S3 (North Lantz Interchange)				
V/C	0.25	0.00	0.02	
95% Queue	7.3	0.0	0.6	
Avg. Delay	14.8	0.0	7.7	**2.4**
LOS	B	A	A	**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.15 - Trunk 2 & Route 277 (Unsignalized) - PM Peak				
	WB - LR Rte 277 to Tr2W/Tr2E	NB - TR Tr2W to Tr2E/Rte 277	SB - LT Tr2E to Rte 277/Tr2W	**Overall**
2013 - Existing Road Network				
V/C	0.15	0.00	0.03	
95% Queue	3.9	0.0	0.1	
Avg. Delay	12.5	0.0	8.1	**2.0**
LOS	B	A	A	**A**
2023 - S1 (Existing Road Network)				
V/C	0.57	0.00	0.06	
95% Queue	23.1	0.0	1.5	
Avg. Delay	45.3	0.0	10.1	**3.5**
LOS	E	A	B	**A**
2023 - S2 (South Lantz Interchange)				
V/C	0.75	0.00	0.04	
95% Queue	36.0	0.0	1.0	
Avg. Delay	72.2	0.0	10.2	**5.9**
LOS	F	A	B	**A**
2023 - S3 (North Lantz Interchange)				
V/C	0.23	0.00	0.04	
95% Queue	6.6	0.0	1.0	
Avg. Delay	14.6	0.0	8.4	**2.4**
LOS	B	A	A	**A**
2033 - S1 (Existing Road Network)				
V/C	2.92	0.00	0.13	
95% Queue	108.5	0.0	3.4	
Avg. Delay	1058.3	0.0	14.4	**54.6**
LOS	F	A	B	**F**
2033 - S2 (South Lantz Interchange)				
V/C	3.85	0.00	0.10	
95% Queue	130.4	0.0	2.4	
Avg. Delay	1492.6	0.0	14.4	**86.6**
LOS	F	A	B	**F**
2033 - S3 (North Lantz Interchange)				
V/C	0.38	0.00	0.06	
95% Queue	13.1	0.0	1.4	
Avg. Delay	21.6	0.0	9.0	**3.0**
LOS	C	A	A	**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The intersection of Trunk 2 and Route 277 is currently operating under excellent overall levels of service and would be expected to continue into 2023 for both AM and PM peak periods without any network improvements. By 2033, the westbound approach of the intersection would experience a failing LOS F with excessive delays, queuing and volumes exceeding available capacity.

Option 2 results in maintaining the overall LOS A during the AM and PM peak periods in 2023, though the westbound approach during the PM peak period would experience significant delay and LOS F. By the year 2033 the westbound approach would experience significant delay, excessive queuing and volumes exceeding capacity for both the AM and PM peak periods with an overall failing LOS F during the PM peak period.

Option 3 results in improved operations for the westbound approach over the Option 2 due to the diversion of some southbound through traffic to the north interchange location. This maintains an overall LOS A for both the morning and evening peak periods into horizon year 2033. The results described above are shown in **Tables 6.14 and 6.15**.

6.3.8 South Connector Road & Highway 102 Northbound Ramps (Unsignalized)

Table 6.16 - South Connector Rd & Hwy 102 NB Ramps (Unsignalized) - AM Peak					
	EB - LT Sth cntr to Tr2E/Shaw	WB - TR Shaw to Sth cntr/Tr2E	WB - R	NB - LTR Tr2W to Sth cntr/2E/Sh	**Overall**
2023 - S2 (South Lantz Interchange)					
V/C	0.00	0.00		0.17	
95% Queue	0.0	0.0		4.5	
Avg. Delay	0.0	0.0		9.1	**2.1**
LOS	A	A		A	**A**
2033 - S2 (South Lantz Interchange)					
V/C	0.00	0.00	0.00	0.29	
95% Queue	0.0	0.0	0.0	9.3	
Avg. Delay	0.0	0.0	0.0	9.9	**2.3**
LOS	A	A	A	A	**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.17 - South Connector Rd & Hwy 102 NB Ramps (Unsignalized) - PM Peak					
	EB - LT Sth cntr to Tr2E/Shaw	WB - TR Shaw to Sth cntr/Tr2E	WB - R	NB - LTR Tr2W to Sth cntr/2E/Sh	**Overall**
2023 - S2 (South Lantz Interchange)					
V/C	0.00	0.00		0.52	
95% Queue	0.0	0.0		23.6	
Avg. Delay	0.0	0.0		12.5	**6.9**
LOS	A	A		B	**A**
2033 - S2 (South Lantz Interchange)					
V/C	0.00	0.00	0.00	0.96	
95% Queue	0.0	0.0	0.0	125.6	
Avg. Delay	0.0	0.0	0.0	41.0	**23.5**
LOS	A	A	A	E	**C**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The proposed new unsignalized intersection of the south interchange connector road and Highway 102 northbound ramps would be expected to operate with excellent overall levels of service during the AM and PM peak periods of horizon year 2023 as well as excellent overall LOS A during the AM peak of horizon year 2033. For the PM peak period of 2033, however, it is expected that the northbound approach would experience volumes that are approaching capacity as well as queuing in excess of 100m. The results described above are shown in **Tables 6.16 and 6.17**.

6.3.9 South Connector Road & Highway 102 Southbound Ramps (Unsignalized)

Table 6.18 - South Connector Rd & Hwy 102 SB Ramps (Unsignalized) - AM Peak			
	WB - L	SB - L	**Overall**
2023 - S2 (South Lantz Interchange)			
V/C	0.29	0.17	
95% Queue	0.9	4.4	
Avg. Delay	8.1	27.5	**9.3**
LOS	A	D	**A**
2033 - S2 (South Lantz Interchange)			
V/C	0.53	0.97	
95% Queue	25.1	28.6	
Avg. Delay	9.7	286.1	**21.7**
LOS	A	F	**C**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.19 - South Connector Rd & Hwy 102 SB Ramps (Unsignalized) - PM Peak			
	WB - L	SB - L	**Overall**
2023 - S2 (South Lantz Interchange)			
V/C	0.19	0.20	
95% Queue	5.2	5.6	
Avg. Delay	7.7	17.9	**9.6**
LOS	A	C	**A**
2033 - S2 (South Lantz Interchange)			
V/C	0.34	0.61	
95% Queue	11.5	24.6	
Avg. Delay	8.3	64.4	**16.0**
LOS	A	F	**C**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The proposed new unsignalized intersection of the south interchange connector road and Highway 102 southbound ramps would be expected to operate with excellent overall levels of service during the AM and PM peak periods of year 2023 and with good overall levels of service C during the AM and PM peak period of horizon year 2033. The southbound left turn would be expected to experience significant delay, particularly during the AM peak period, as well as volumes approaching capacity for the AM peak in 2033. The results described above are shown in **Tables 6.18 and 6.19**.

6.3.10 Trunk 2 & North Connector Road (Unsignalized)

Table 6.20 - Trunk 2 & North Connector Rd (Unsignalized) - AM Peak						
	EB - LR Nth cntr to Tr2E/Tr2W	NB - L Tr2W to Nth cntr	NB - T Tr2W to Tr2E	SB - TR Tr2E to Tr2W/Nth cntr	SB - R Tr2E to Nth cntr	**Overall**
2023 - S3 (North Lantz Interchange)						
V/C	0.23	0.07	0.00	0.00	0.00	
95% Queue	6.5	1.6	0.0	0.0	0.0	
Avg. Delay	12.4	8.1	0.0	0.0	0.0	**3.7**
LOS	B	A	A	A	A	**A**
2033 - S3 (North Lantz Interchange)						
V/C	0.41	0.11	0.00	0.00	0.00	
95% Queue	2.0	2.8	0.0	0.0	0.0	
Avg. Delay	16.2	8.0	0.0	0.0	0.0	**4.7**
LOS	C	A	A	A	A	**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.21 - Trunk 2 & North Connector Rd (Unsignalized) - PM Peak						
	EB - LR Nth cntr to Tr2E/Tr2W	NB - L Tr2W to Nth cntr	NB - T Tr2W to Tr2E	SB - TR Tr2E to Tr2W/Nth cntr	SB - R Tr2E to Nth cntr	**Overall**
2023 - S3 (North Lantz Interchange)						
V/C	0.10	0.10	0.00	0.00	0.00	
95% Queue	2.4	2.4	0.0	0.0	0.0	
Avg. Delay	8.0	8.0	0.0	0.0	0.0	**7.8**
LOS	A	A	A	A	A	**A**
2033 - S3 (North Lantz Interchange)						
V/C	1.31	0.12	0.00	0.00	0.00	
95% Queue	177.0	3.2	0.0	0.0	0.0	
Avg. Delay	183.1	7.9	0.0	0.0	0.0	**71.3**
LOS	F	A	A	A	A	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Option 3 would result in a new intersection being created to intersect Trunk 2 north of Route 277. This intersection is expected to operate with excellent overall levels of service during the AM and PM peak periods of horizon year 2023 as well as the AM peak period of horizon year 2033. The PM peak period of horizon year 2033, however, could be expected to experience demand volumes in excess of capacity, queuing in excess of 170m, and very high periods of delay on the eastbound approach, resulting in a LOS F for the approach as well as overall for the intersection. The results described above are shown in **Tables 6.20 and 6.21**.

6.3.11 North Connector Road & Highway 102 Northbound Ramps (Unsignalized)

Table 6.22 - North Connector Rd & Hwy 102 NB Ramps (Unsignalized) - AM Peak					
	EB - LT	WB - T	WB - R	NB - LTR	**Overall**
2023 - S3 (North Lantz Interchange)					
V/C	0.00	0.00	0.00	0.16	
95% Queue	0.0	0.0	0.0	4.4	
Avg. Delay	0.0	0.0	0.0	9.3	**2.1**
LOS	A	A	A	A	**A**
2033 - S3 (North Lantz Interchange)					
V/C	0.00	0.00	0.00	0.30	
95% Queue	0.0	0.0	0.0	9.6	
Avg. Delay	0.0	0.0	0.0	10.3	**2.2**
LOS	A	A	A	B	**A**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.23 - North Connector Rd & Hwy 102 NB Ramps (Unsignalized) - PM Peak					
	EB - LT	WB - T	WB - R	NB - LTR	**Overall**
2023 - S3 (North Lantz Interchange)					
V/C	0.00	0.00	0.00	0.49	
95% Queue	0.0	0.0	0.0	21.3	
Avg. Delay	0.0	0.0	0.0	12.5	**6.0**
LOS	A	A	A	B	**A**
2033 - S3 (North Lantz Interchange)					
V/C	0.00	0.00	0.00	1.04	
95% Queue	0.0	0.0	0.0	157.4	
Avg. Delay	0.0	0.0	0.0	63.3	**32.2**
LOS	A	A	A	F	**D**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The proposed new intersection of the north interchange connector road in Option 3 with the Highway 102 northbound ramps is expected to experience excellent overall levels of service during the AM and PM peak periods of horizon year 2023 as well as during the AM period of horizon year 2033. The PM peak period of horizon year 2033, however, could experience volumes on the northbound approach exceeding capacity, as well as queuing in excess of 150m and higher than accepted delays, resulting in LOS F for the approach and overall LOS D for the intersection. The results described above are shown in **Tables 6.22 and 6.23**.

6.3.12 North Connector Road & Highway 102 Southbound Ramps (Unsignalized)

Table 6.24 - North Connector Rd & Hwy 102 SB Ramps (Unsignalized) - AM Peak			
	WB - L	SB - L	**Overall**
2023 - S3 (North Lantz Interchange)			
V/C	0.26	0.26	
95% Queue	7.9	7.8	
Avg. Delay	8.0	26.5	**10.3**
LOS	A	D	**B**
2033 - S3 (North Lantz Interchange)			
V/C	0.52	1.96	
95% Queue	24.1	66.9	
Avg. Delay	9.6	651.0	**68.0**
LOS	A	F	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

Table 6.25 - North Connector Rd & Hwy 102 SB Ramps (Unsignalized) - PM Peak			
	WB - L	SB - L	**Overall**
2023 - S3 (North Lantz Interchange)			
V/C	0.26	0.26	
95% Queue	7.9	7.8	
Avg. Delay	8.0	26.5	**10.3**
LOS	A	D	**B**
2033 - S3 (North Lantz Interchange)			
V/C	0.34	1.28	
95% Queue	11.7	83.3	
Avg. Delay	8.4	233.2	**62.9**
LOS	A	F	**F**

Notes:
Analysis by CBCL Limited using Synchro 8
1 95% Queue - 95th percentile queue length in metres
2. V/C Ratio - Volume-to-Capacity ratio
3. Average Delay - average total delay per vehicle in seconds
4. LOS - Level of Service as per HCM 2010

The proposed new intersection of the north interchange connector road in Option 3 with the Highway 102 southbound ramps is expected to experience very good overall levels of service B during the AM and PM peak periods of horizon year 2023. The AM and PM peak periods of horizon year 2033, however, would be expected to experience volumes on the southbound approach which exceed capacity, and very high levels of delay, resulting in LOS F for both the southbound approach and intersection overall.

The results described above are shown in **Tables 6.24 and 6.25** above.

CHAPTER 7 OPERATIONAL APPRAISAL

7.1 Traffic Signal Warrant Analyses

This study includes a review of the operation of several existing and future unsignalized intersections. To determine if any of them will warrant signalization in the future, Traffic Signal Warrant Analyses were carried out for each of the intersections for each study horizon year. The Canadian Traffic Signal Warrant Procedure[1] outlined in the Manual of Uniform Traffic Control Devices for Canada (MUTCDC) was used to evaluate the need for traffic signals at these intersections. The procedure is founded on the underlying principle that the need for signal control is based primarily on the level of conflict between the traffic streams on the main roads and those on the minor approaches.

The procedure is a "cumulative factors methodology" (CFM) that is a function of the following factors:

- The cross product of individual vehicle/vehicle turning movement conflicts;
- The cross product of individual vehicle/pedestrian turning movement conflicts;
- Roadway characteristics;
- Pedestrian demographics; and
- Pedestrian exposure.

The CFM uses turning movement traffic flow data collected during the highest six (6) hours of traffic during a typical weekday. This is typically two hours in the morning, two hours around midday, and two hours in the late afternoon. For this study, traffic data were collected at the existing unsignalized intersections during these six hours.

However, for future intersections, only two hours of traffic volumes were projected. For these locations, the other four hours were estimated by using the six hours of data collected at similar existing intersections and proportioned accordingly. For example, it was found that the six hours of data collected at the intersection of Route 214 and Highway 102 southbound ramps were distributed as follows:

- 7-9 AM – 14%;
- 8-9 AM – 13%;
- 11-12 PM – 15%;
- 12-1 PM – 16%;
- 4-5 PM – 21%; and
- 5-6 PM – 21%.

[1] Canadian Traffic Signal Warrant Matrix Procedure. Transportation Association of Canada, November 2005.

Therefore, the projected AM and PM peak hour volumes for the future intersection of the Highway 102 southbound ramps at the South Connector road were assigned as 7-8 AM and 4-5 PM, respectively, and the other four hours were calculated according to the above percentages from the existing Exit 8 interchange.

The Cumulative Factors Signal Warrant Equation is based on the accumulation of a number of priority points. A traffic signal is warranted when an intersection has more than 100 points and the side street volume is at least 75 vehicles per hour.

Traffic signal warrant analyses were carried out for all applicable unsignalized intersections within the seven option/horizon scenarios; the analysis worksheets are provided in **Appendix C**. The results are shown in **Table 7.1**. Blank boxes indicate intersections that do not exist for some scenarios.

Table 7.1: Results of Traffic Signal Warrant Analyses

Intersection	Traffic Volume Scenario						
	Existing	Option 1		Option 2		Option 3	
	2013	2023	2033	2023	2033	2023	2033
Rte 214/Hwy 102 SB Ramps	**112**	338	631	**158**	**261**	**211**	**310**
Trunk 2/Shaw/South Connector	5	12	26	**99**	**270**	8	10
Trunk 2/Rte 277	10	40	89	**51**	**109**	18	31
Trunk 2/North Connector						33	82
South Connector/NB Ramps				3	11		
South Connector/SB Ramps				11	26		
North Connector/NB Ramps						4	24
North Connector/SB Ramps						18	54

Table 7.1 includes several intersections that are not expected to warrant signalization during the timeframe of this study, notably the interchange ramp intersections for both the North and South Lantz locations, though this isn't entirely relevant as they would be constructed as single-lane roundabouts. It also shows that several combinations do warrant traffic signals as they result in greater than 100 priority points, including the Route 214 intersection with the Highway 102 southbound ramps where traffic signals are warranted now with existing traffic volumes.

However, before traffic signals would be installed at any of these locations, current NSTIR policy dictates that they would first be investigated as roundabouts. The results shaded green indicate the intersections and traffic volume scenarios that were analysed as roundabouts.

7.2 Roundabout Analyses

As per the traffic signal warrant analyses, the following nine scenarios were identified for further investigation as roundabouts:

- Route 214 & Highway 102 Southbound ramps:
  - 2013 Existing;
  - 2023 with South Lantz Interchange;
  - 2033 with South Lantz Interchange;
  - 2023 with North Lantz Interchange;
  - 2033 with North Lantz Interchange;
- Trunk 2 & Shaw Brick/Connector Road:
  - 2023 with South Lantz Interchange;
  - 2033 with South Lantz Interchange;
- Trunk 2 & Route 277:
  - 2023 with South Lantz Interchange; and
  - 2033 with South Lantz Interchange.

Ourston Roundabout Engineering (now GHD) carried out the analyses and functional roundabout design for these scenarios using the latest version of the ARCADY software. The full report, with detailed analysis results and lane configuration sketches, are provided in **Appendix D**. **Table 7.2** is an excerpt from the GHD report that summarizes the findings.

Table 7.2: Summary of ARCADY Roundabout Analyses

Scenario	Year	Intersection	Peak	ID (s)	ILOS	IRC (%)	Configuration
South Lantz Interchange	2033	Trunk 2/ Route 277	AM	<=10	A	28 – 43	Partial Multilane
			PM	<=10	A	9 – 23	
		Trunk 2/ Shaw Brick	AM	<=10	A	> 35	Partial Multilane with SB RTBP
			PM	<=10	A	21 – 35	
		Hwy 102/ Elmsdale	AM	<=10	A	> 35	Partial Multilane
			PM	<=10	A	11 – 24	
	2023	Trunk 2/ Route 277	AM	<=10	A	> 35	Single-lane
			PM	8 – 12	A – B	13 – 27	
		Trunk 2/ Shaw Brick	AM	<=10	A	23 – 38	Single-lane
			PM	<=10	A	> 35	
		Hwy 102/ Elmsdale	AM	<=10	A	> 35	Partial Multilane
			PM	<=10	A	> 35	
North Lantz Interchange	2033	Hwy 102/ Elmsdale	AM	<=10	A	> 35	Partial Multilane
			PM	7 – 11	A – B	3 – 15	
	2023	Hwy 102/ Elmsdale	AM	<=10	A	> 35	Partial Multilane
			PM	<=10	A	25 – 40	
Existing	2013	Hwy 102/ Elmsdale	AM	<=10	A	> 35	Single-lane
			PM	8 - 12	A - B	20 – 35	

Table 7.2 shows that any of these intersections would operate well as roundabouts. For each scenario, GHD used the projected peak hour traffic volumes to determine an appropriate layout. This was done by starting with a simple roundabout layout and then modifying it as needed to achieve acceptable peak hour performance. They then provided an assessment of how the resulting configurations would perform during those times. Some layouts are simple single lane roundabouts, while some have multi-lane approaches. Note that ARCADY results are provided by entry or approach, not by individual movement. As shown, maximum average delays (ID) are 12 seconds or less, and the corresponding levels of service (ILOS) are A to B. Also relevant is the IRC (Intersection Residual Capacity) column. This is an indicator of how much network traffic can be added before any of the legs would reach LOS E. As shown, most of the above scenarios have 10-40% residual capacity.

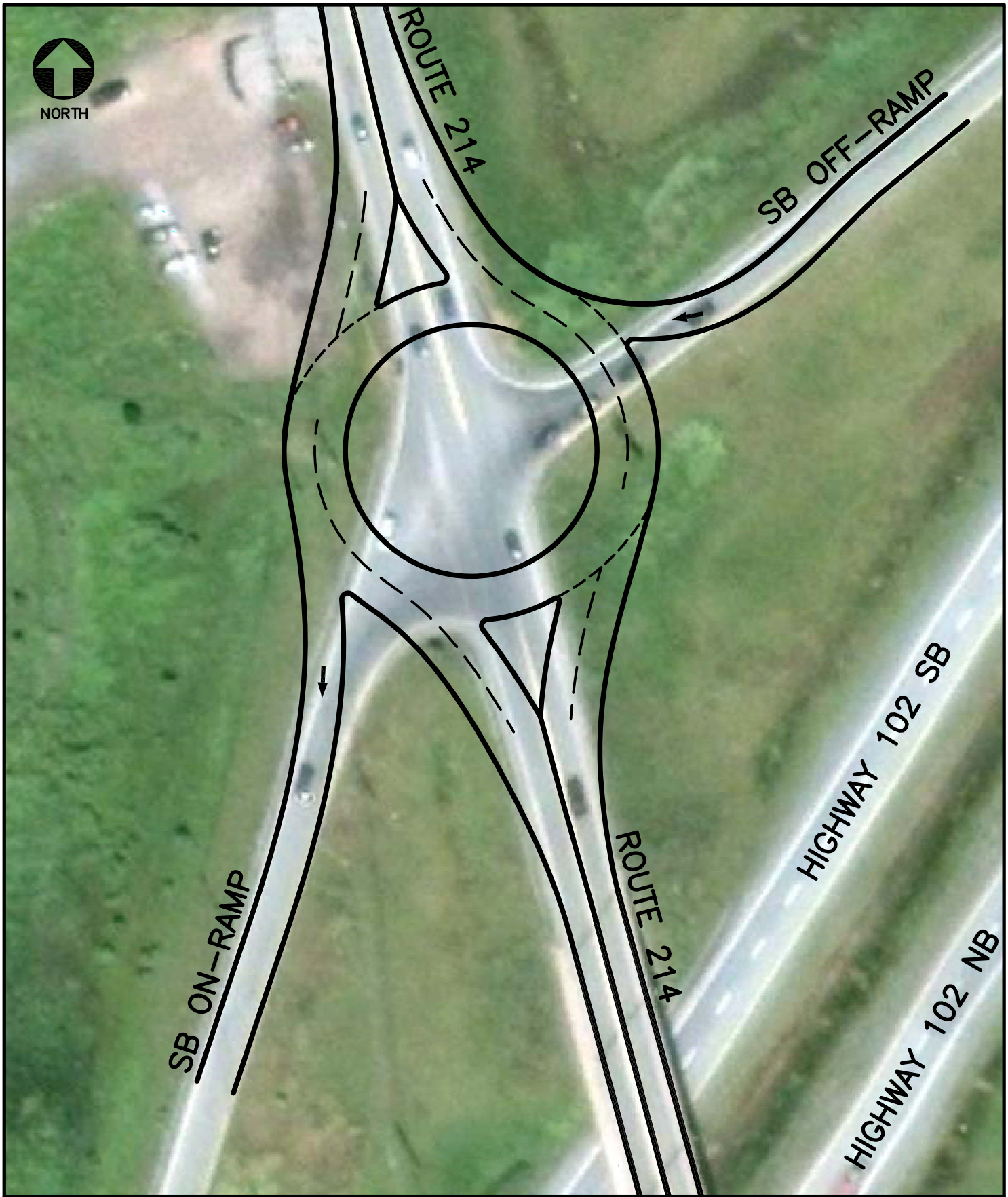
In all cases above, roundabout performance is superior to the corresponding performance of a traffic signal with the same traffic volumes. Therefore, roundabouts at these locations should certainly be considered at such time when capacity enhancements are required. However, these analyses were done in isolation, i.e. they do not take into account any conditions surrounding the intersection such as property or land use constraints, adjacent intersections, topography, or existing infrastructure. The following is a brief review of each intersection with comments and other considerations:

- Route 214 & Highway 102 Southbound Ramps:
  - Must fit with adjacent two-lane bridge structure;
  - Adjacent signalized intersections within 200-250m in each direction;
  - Grading of Route 214 and ramps;
  - Availability of ROW;
  - Size and turning characteristics of large trucks using intersection;
  - **Figure 7.1** provides a concept sketch of this roundabout.
- Trunk 2 & Shaw Brick/South Connector Road:
  - Appears that the required ROW would be available without impacting any buildings or properties;
  - Adjacent utility poles;
  - Vehicle mix in/out of Shaw Brick driveway;
- Trunk 2 & Route 277:
  - Adjacent residential properties and driveways;
  - Utility pole relocations; and
  - Adjacent commercial driveways.

7.2.1 Other Intersections

The previous chapter demonstrated that the four existing signalized intersections are expected to exhibit operational issues under projected traffic volumes. To mitigate these issues, one strategy considered for each was conversion to a roundabout. However, ARCADY roundabout analysis was not done at these locations; instead we offer the following comments on the potential feasibility of roundabout implementation. Figures 7.2 and 7.3 illustrate conceptual roundabout layouts at two of the locations.

- Route 214 & Park Street/Superstore:
  - Operational issues with future traffic expected to be relatively minor;
  - Can be addressed through revised timing/phasing plan so a traffic signal should suffice for the timeframe of this study



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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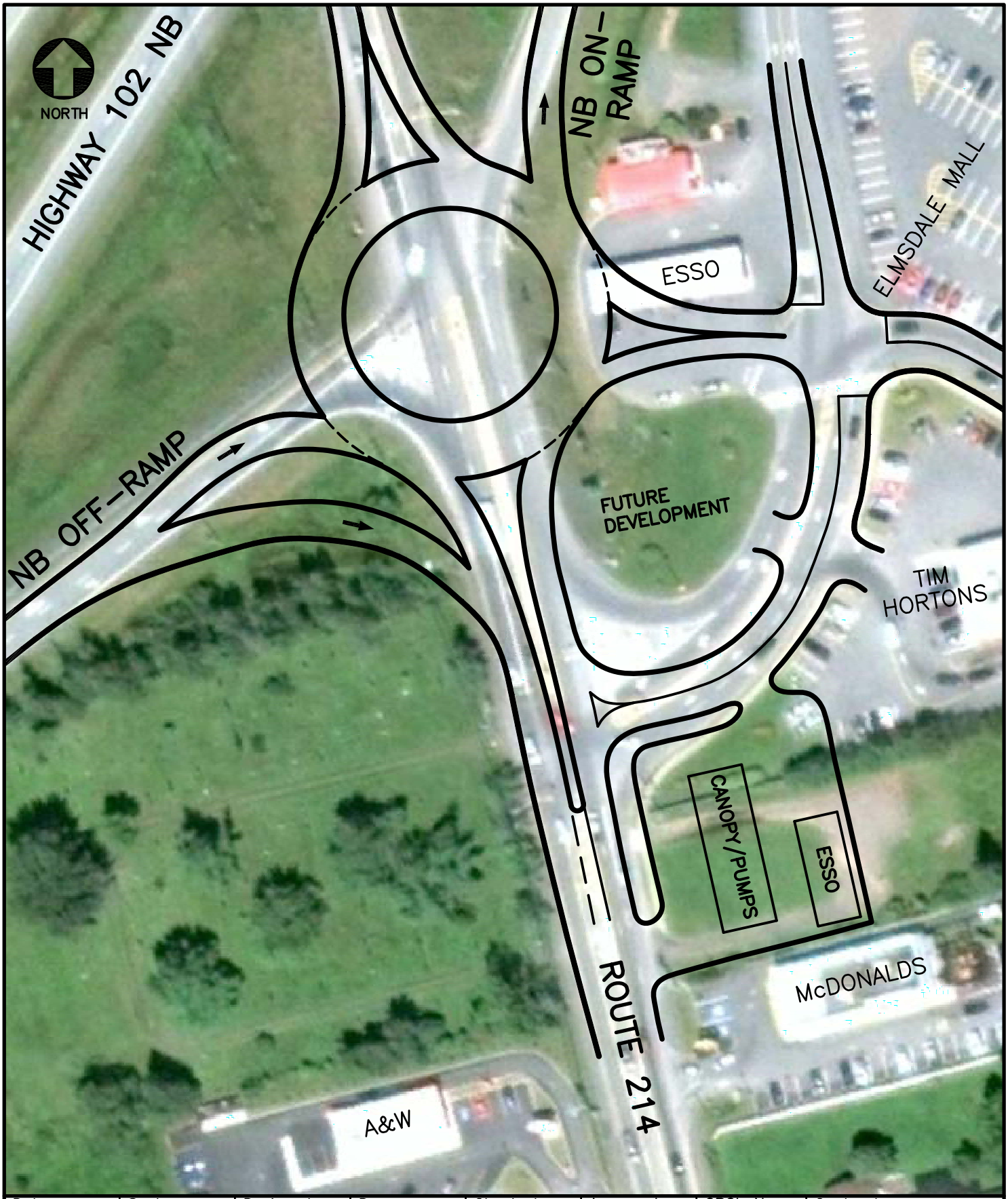
TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

INTERSECTION MITIGATION MEASURES
ROUTE 214 & HIGHWAY 102 SB RAMPS
CONCEPT ROUNDABOUT

Drawing

Fig. 7.1

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\11 TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\ROUNDABOUT-SKETCHES_RECOVERY.DWG PLOT DATE:March-28-14 4:19:55 PM CAD OPERATOR: SHANEM



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
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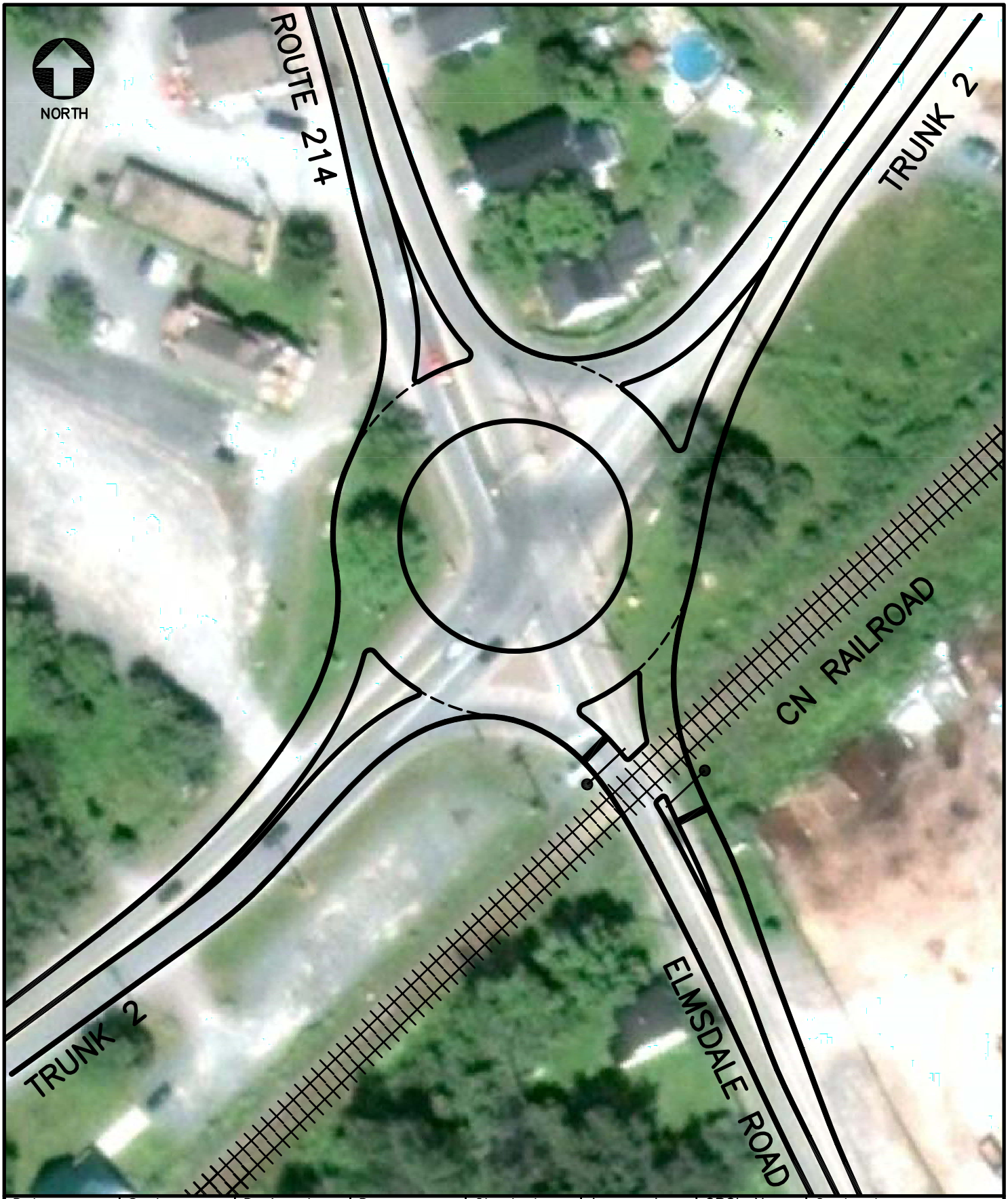
TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

INTERSECTION MITIGATION MEASURES
ROUTE 214 & 102 NB RAMP/ELMSDALE MALL
CONCEPT ROUNDABOUT

Drawing
Fig. 7.2

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\11 TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\ROUNDABOUT-SKETCHES_RECOVERY.DWG PLOT DATE:March-28-14 4:21:55 PM CAD OPERATOR: SHANEM



Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
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TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

INTERSECTION MITIGATION MEASURES
ROUTE 214 & TRUNK 2
CONCEPT ROUNDABOUT

Drawing

Fig. 7.3

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\11 TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\ROUNDABOUT-SKETCHES_RECOVERY.DWG PLOT DATE:March-28-14 4:23:30 PM CAD OPERATOR: SHANEM

  - Therefore, conversion to a roundabout is not expected to be beneficial for several years.
- Route 214 & Highway 102 northbound ramps/Elmsdale Mall:
  - Though technically separate intersections, they are only ~80m apart and share a signal controller;
  - Replacement of both intersections with individual roundabouts may work, but the close proximity would leave very little queuing space between them such that successful implementation of this arrangement may not be possible;
  - Ultimately, we suspect that both intersections could be successfully replaced with one five-leg multi-lane roundabout. Specific challenges would include avoiding the cemetery property, the steep grade differential, and relocation of the Esso gas station, possibly to the vacant land next to McDonalds;
  - **Figure 7.2** provides a concept sketch of this roundabout.
- Route 214 & Trunk 2:
  - The proximity of the active railroad crossing would make this location challenging, but having the railroad cross the east leg may be possible;
  - The adjacent residential property on the northwest corner may impact sight lines and layout options, and may have to be removed;
  - This intersection area was identified in the 2011 'East Hants Village Cores Plan' by Ekistics as a village square for Elmsdale; a roundabout may align with the future vision of the area much better than expanding the signalized intersection;
  - **Figure 7.3** provides a concept sketch of this roundabout.

7.3 Highway 102 Weaving Analysis

Weaving traffic occurs when vehicles from two different traffic streams (both heading in the same direction) cross paths and interfere with each other's choice of route. These manoeuvres take place without any traffic control devices being present and generally occur over significant lengths of highway. A weaving segment on a highway is created where merge segments (vehicles joining the highway) are followed closely by diverge segments (people leaving the highway). The distance is relative but in general 'closely' refers to a section of highway where there is not enough distance between merge and diverge segments for them to operate independently.

Due to the relatively close proximity of the proposed South Lantz interchange location to the existing Elmsdale Exit 8 interchange, NSTIR has indicated that construction of a new Highway 102 interchange at the South Lantz location would require the ramps to be joined with the existing ramps at Exit 8. This would be an especially expensive undertaking as it would also require widening of the twin Highway 102 bridges over the Nine Mile River. Using the Highway Capacity Manual (HCM) 2010, an analysis of level of service and weaving operation was undertaken for this section of Highway 102. This analysis is needed to confirm that the length of the resulting weaving section would be sufficient for safe and efficient traffic operations with the forecasted 2033 volumes.

Conducting a weaving analysis first requires an assessment of level of service on the highway section. Highways are made up of three types of segments, with each one performing a different function or type of operation for the vehicles using the highway and is analysed separately under HCM 2010. They are:

- Freeway merge and diverge;
- Freeway weaving; and
- Basic freeway.

If a new interchange is constructed at the South Lantz location, it would be approximately 1,900m north of the Route 214 overpass structure at Exit 8. The Nine Mile River Bridges are approximately 900m north of Exit 8, and would be around halfway between the two interchanges. Also, the approximate spacing between adjacent ramp terminals would be as follows:

- Northbound – 1,000m; and
- Southbound – 735m.

There are three critical operating characteristics when analysing a weaving section:

- Length of section;
- Width (number of lanes); and
- Configuration of lanes.

Lane changing activity is affected by each of these operating characteristics, which is the primary purpose of a weaving segment. Chapter 12 of the HCM 2010 sets out the methodology for undertaking the analysis of the operation of weaving segments based on the operating characteristics, in addition to the segment's free-flow speed and the demand flow rates for each movement within a weaving segment.

This analysis was carried out using FREEVAL2010 software which follows the methodology outlined in the 2010 Highway Capacity Manual. The software generally required the following information to be input:

- Segment types – this analysis consisted of three segments per direction and they were basic/weaving/basic;
- Segment lengths (feet);
- Number of lanes in each segment – two for each of the basic sections and three for the weaving section;
- Free flow speed (mph) – this was not known, but was assumed to be 75mph (120 km/h), roughly 10 km/h above the posted limit;
- Segment demand (vph) – this is the projected traffic volume for the freeway segments, entered in vehicles per hour in 15-minute intervals; and
- Ramp demand (vph) – this is the projected traffic volume for the adjacent on- and off-ramps, entered in vehicles per hour in 15-minute intervals.

The weaving analyses were carried out to represent the worst case Option 2 scenario, i.e. traffic volumes for horizon year 2033. The corresponding 15-minute 2033 AM and PM traffic volumes are shown in **Figure 7.4** below.

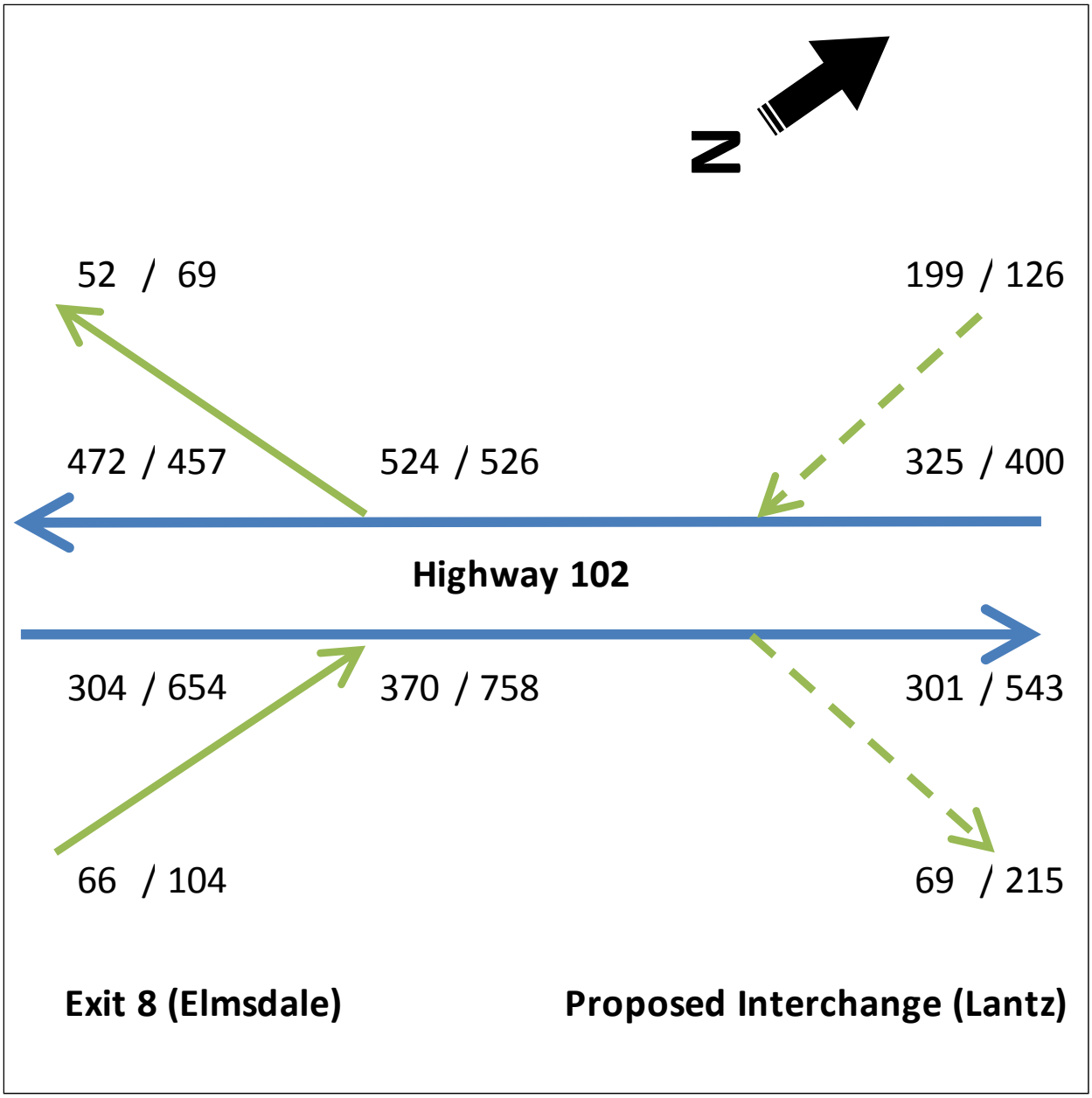


Figure 7.4: 2033 AM & PM 15-Minute Weaving Volumes

The results of the Highway 102 weaving analyses are included in **Appendix E**. For both Highway 102 directions and during both the 2033 AM and PM peaks, this weaving section is expected to operate satisfactorily. All segments are anticipated to perform at LOS (Level of Service) A, with average densities of less than five vehicles/mile/lane (3 veh/km/lane)**.**

7.4 Turning Lane Warrant Analyses

7.4.1 Left Turn Lane Warrants

The left turn lane analysis nomographs included in the Geometric Design Standards for Ontario Highways Manual were used to determine the need for inclusion of left turn storage lanes at various study area intersections for the various interchange options. This method of evaluating the need for left turn lanes uses a series of nomographs for differing approach speeds of roadways and proportion of left turning vehicle volumes in the advancing traffic volume stream. The graphs then consider both advancing and opposing volumes to determine an intersecting point on the graph. A point plotted to the right of the warrant line indicates that a left turn lane is warranted under the analysis conditions; whereas a point plotted to the left of the warrant line indicates no left turn lane is warranted.

For Option 1 where no new interchange is constructed, a left turn lane would be warranted by horizon year 2023 at the existing intersection of Route 214 at the southbound interchange ramps of Highway 102 at Exit 8. The required length of the left turn lane, governed by the higher AM peak volumes, would be 95m. In the case of Option 2 and Option 3, a left turn lane would still be warranted at the existing intersection of Route 214 and the southbound Highway 102 Exit 8 interchange ramps by 2023, despite some traffic being diverted to the proposed interchange locations. The length required for a left turn lane at the intersection for Option 2 would be 50m in 2023 and greater than 95m by 2033. Option 3 would require a left turn lane of more than 55m in length at the intersection by 2023; and greater than 95m by 2033.

The intersection of a proposed connector road with Trunk 2 as part of Option 2 would warrant a left turn lane on the northbound approach (left from Trunk 2 to the new connector road) by the year 2033. The intersection of the proposed connector road and Trunk 2 as part of Option 3 would require a northbound left turn lane by the year 2023. The left turn lane warrant analyses graphs and results are shown in **Appendix F**.

7.4.2 Right Turn Lane Warrant

The analysis of right turn lane warrants was completed using the nomographs for analysis of right turn lane warrants on two lane roadways contained in the Ohio Department of Transportation State Highway Access Management Manual. This analysis is based on advancing and right turning volumes for a maximum approach speed.

This method determined the following right turn lane warrants would be met:

- Southbound right turn lane at the Trunk 2/Shaw Brick Driveway/south interchange connector road intersection by the year 2023 as part of Option 2;
- Westbound right turn lane to the northbound on ramp from the south interchange connector road by the year 2033 as part of Option 2;
- Southbound right turn lane at the Trunk 2/north interchange connector road intersection by the year 2033 as part of Option 3;
- Eastbound right turn lane at the Trunk 2/north interchange connector road intersection by the year 2033 as part of Option 3; and

- Westbound right turn lane the northbound on ramp from the north interchange connector road by the year 2023 as part of Option 3.

The right turn lane warrant analyses results are also shown in **Appendix F**.

7.5 Route 214 Two-Way Left Turn Lane

One of the major recommendations from the 1998 Route 214 Corridor Study, conducted by Streetwise Traffic Engineering, was to widen Route 214 within the core commercial area to provide a three-lane cross-section with a center Two-Way Left Turn Lane (TWLTL). This was implemented shortly thereafter as a 150m long TWLTL and was constructed between Elmsdale Mall and Brook Court, an area that includes a gas station and two fast food restaurants which generate significant volumes of left turns at their driveways.

The segment of Route 214 south of Brook Court to Trunk 2 remains a two-lane roadway and is characterized by having a high density of driveway openings which serve a variety of land uses and traffic volumes. Most of the driveways are for single-family dwellings, but there are also several that provide access to commercial properties with moderate traffic volumes. The 1998 report states that "Route 214 is at the point where getting in and out of driveways at unsignalized locations can be accomplished relatively easily, but even small increases in through traffic will make this more difficult." Therefore, as through traffic volumes increase, the need to remove left-turning vehicles from the main traffic stream becomes increasingly necessary. The observed two-way PM peak hour volume on this section of Route 214 for this study (1,375 vehicles) is about 50% higher than that for the 1998 study (915 vehicles), so through volumes have increased significantly enough that in many cases, even lower volume driveways would warrant a left turn lane.

The Streetwise study also points out that "….it is more practical to provide a continuous two-way left turning lane rather than individual left turn storage slots." The density of driveways along this section of Route 214 is such that provision of individual left turn lanes is certainly impractical. Also, even with construction of a new Highway 102 interchange, traffic demands here are expected to increase well beyond existing levels. Therefore, it is recommended that the remainder of Route 214 southward to Trunk 2 be widened to include a two-way left turn lane within the next few years. It would blend into the Trunk 2 left turn lane at the intersection approach so that roughly 725m of road would need to be widened. Furthermore, there may be opportunities to implement better access management by eliminating redundant driveways, narrowing driveway openings, or by having adjacent businesses share driveways, as was successfully demonstrated with Irving and A&W.

CHAPTER 8 FUNCTIONAL DESIGNS AND PRELIMINARY COST ESTIMATES

8.1 Functional Designs

The functional designs for this study have been developed using the locations of the indicative corridors provided by NSTIR in the Request for Proposals document. The required right-of-way has already been purchased by NSTIR for the South Lantz Interchange, and the corresponding connector road would intersect Trunk 2 at the existing Shaw Brick driveway.

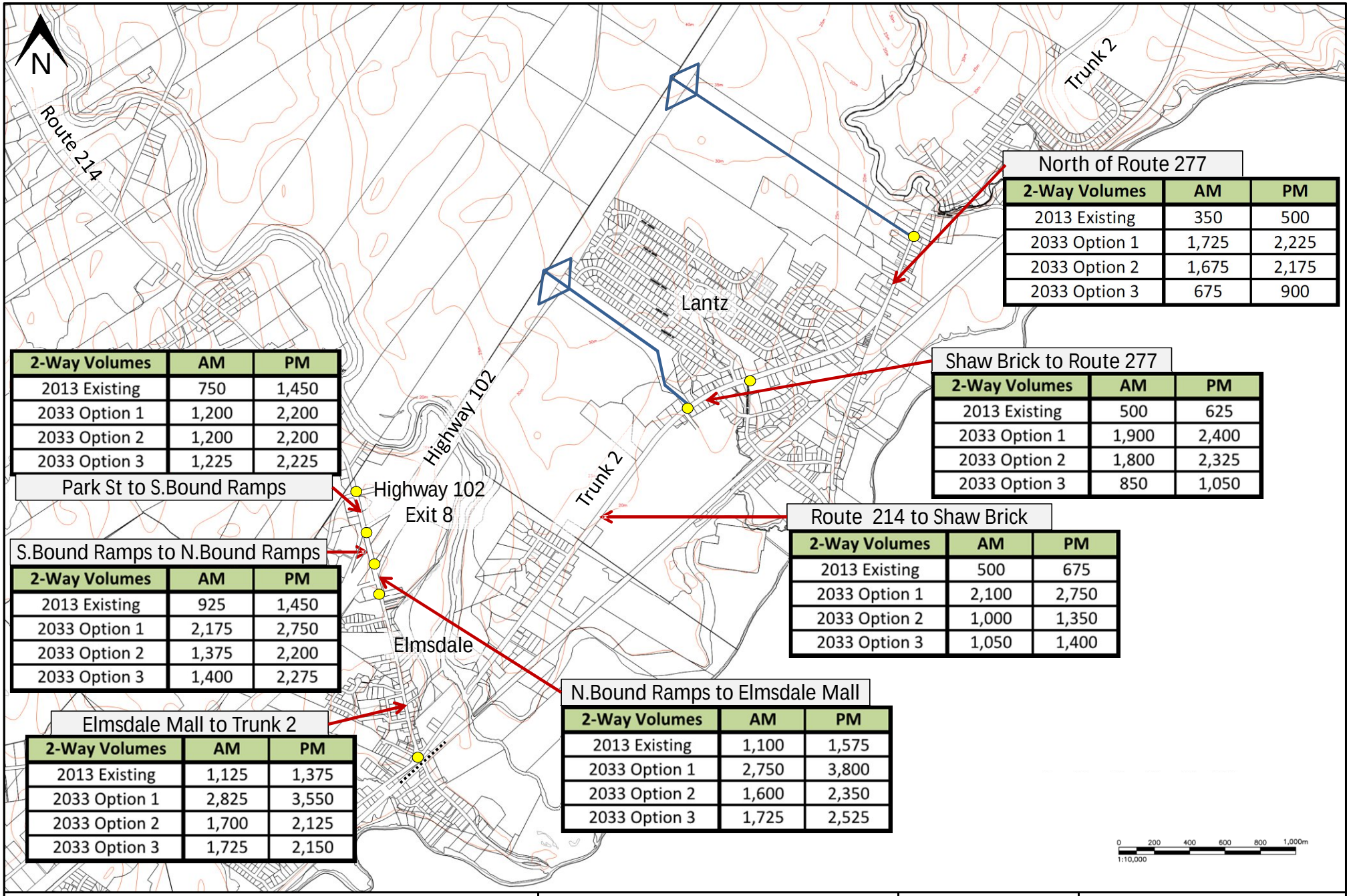
The North Lantz Interchange location would sever land currently owned by Armco Capital Inc., and, if preferred over the South Lantz option, would require that NSTIR purchase the needed right-of-way. Armco have indicated that they would be willing to provide this land and to re-design their concept plans around a new connector road, which would meet Trunk 2 somewhere between Poplar Street and Isenor Road.

Additional land would also need to be purchased to the west of Highway 102 for either the South or North Lantz Interchange options.

It should be noted that no topographical survey data were available for the study, however, there were 5m contour lines available through the data provided by East Hants. Limited profiles for the options have been prepared based on these 5m contours. A full topographic survey would need to be undertaken at the detailed design stage.

To demonstrate which option would result in the lowest link volumes for the critical parts of the network under future traffic conditions, **Figure 8.1** shows the projected 2033 two–way AM and PM peak hour traffic volumes.

The functional designs developed for this study are described in more detail below and are shown in **Drawings 1 to 4** in **Appendix G**.



North of Route 277

2-Way Volumes	AM	PM
2013 Existing	350	500
2033 Option 1	1,725	2,225
2033 Option 2	1,675	2,175
2033 Option 3	675	900

Shaw Brick to Route 277

2-Way Volumes	AM	PM
2013 Existing	500	625
2033 Option 1	1,900	2,400
2033 Option 2	1,800	2,325
2033 Option 3	850	1,050

Route 214 to Shaw Brick

2-Way Volumes	AM	PM
2013 Existing	500	675
2033 Option 1	2,100	2,750
2033 Option 2	1,000	1,350
2033 Option 3	1,050	1,400

2-Way Volumes	AM	PM
2013 Existing	750	1,450
2033 Option 1	1,200	2,200
2033 Option 2	1,200	2,200
2033 Option 3	1,225	2,225

Park St to S.Bound Ramps

S.Bound Ramps to N.Bound Ramps

2-Way Volumes	AM	PM
2013 Existing	925	1,450
2033 Option 1	2,175	2,750
2033 Option 2	1,375	2,200
2033 Option 3	1,400	2,275

N.Bound Ramps to Elmsdale Mall

2-Way Volumes	AM	PM
2013 Existing	1,100	1,575
2033 Option 1	2,750	3,800
2033 Option 2	1,600	2,350
2033 Option 3	1,725	2,525

Elmsdale Mall to Trunk 2

2-Way Volumes	AM	PM
2013 Existing	1,125	1,375
2033 Option 1	2,825	3,550
2033 Option 2	1,700	2,125
2033 Option 3	1,725	2,150

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NOVA SCOTIA
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure 8.1
Projected 2033 Two –Way Peak Hour Limit Volumes

8.2 Description of the Options

8.2.1 South Lantz Interchange Option

The South Lantz interchange option includes a full-access diamond interchange on Highway 102. The ramps would be designed to NSTIR's standards; for costing purposes, we assumed the on-ramps in both directions would be 700m long, and the off-ramps would be 500m long. As per TIR's current design philosophy for 100-series highway interchanges, the ramp intersections would be roundabouts with inscribed circle diameters (ICD's) of roughly 45m. The ramps were each assumed to be one lane wide.

This option also includes Highway 102 widening to connect the existing ramps at Exit 8 with those at the new interchange as would be required by NSTIR. This would involve widening a section of Highway 102, roughly 800m long, from two lanes per direction to three. It would also include widening both Nine Mile Creek bridge structures from two lanes to three.

A connector road would link the interchange with Trunk 2 and form a four-way intersection with the Shaw Brick driveway. We assumed it would be designed as a TIR Minor Arterial Type C, giving it a width of 13.0m, without a guardrail, or 14.0m where a guardrail is required, i.e. as the connector road rises to meet the overpass structure. The connector road for this option would be approximately 1,000m long.

8.2.2 North Lantz Interchange Option

The North Lantz interchange option is very similar to the South Lantz alternative. It would include a full-access Highway 102 interchange with a typical diamond configuration and roundabouts for the ramp intersections. In this case, the connector road would be roughly 1,500m long and would create a new 3-way intersection on Trunk 2 between Poplar Street and Isenor Road.

8.3 Conceptual Estimates of Probable Construction Costs

Probable construction cost estimates (Class 'D') were prepared for both concept interchange options. These costs, which are based on current rates, were used to define the probable construction cost for each of the options.

It should also be noted that these are construction estimates only and do not include items such as engineering and geotechnical, etc. Quantity estimates for grading have been done without the benefit of a topographic survey. Five metre interval contour information was used to generate existing grade surfaces, therefore actual grading quantities could vary significantly. The estimates are to be used for comparison of options, and not to set budgets.

The details of the preliminary cost estimates for the options developed are shown in **Table 8.1** overleaf [please note for ease of reading, that this table should be printed at Tabloid size (11x17")].

8.3.1 Methodology

From the documentation and information provided, quantities of all major elements were assessed or measured where possible and priced at rates considered competitive for a project of this type under a Unit Price Civil Works Contract in Lantz, Municipality of East Hants, Nova Scotia.

Table 8.1 - Preliminary Cost Estimates for South and North Lantz Interchange Options

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ESTIMATE OF PROBABLE CONSTRUCTION COST

Trunk 2/ Route 214 Corridor Traffic Study
Lantz Interchanges - South and North Interchange Options

Summary Conceptual Construction Cost Options

DATE:	31-Mar-14
CBCL NUMBER:	131021.00
PREPARED BY:	AT/KM/PS
EST. DESCRIPTION:	Class D

ITEM	DESCRIPTION	UNIT	SOUTH LANTZ INTERCHANGE Option # 2 EST. QTY.	UNIT COST	TOTAL	NORTH LANTZ INTERCHANGE Option # 3 EST. QTY.	UNIT COST	TOTAL
1.0	**Mobilization & Demobilization**							
	.1 Mobilization & Demobilization	LS	1	$ 200,000	$ 200,000	1	$ 200,000	$ 200,000
	.2 Trafffic Control	LS	1	$ 120,000	$ 120,000	1	$ 120,000	$ 120,000
2.0	**Environmental Protection**							
	.1 Silt Fencing, Flow Checks, Ground Cover	LS	1	$ 250,000	$ 250,000	1	$ 250,000	$ 250,000
3.0	**Earthworks**							
	.1 Clearing	ha	9.6	$ 5,000.00	$ 48,000	12.8	$ 5,000.00	$ 64,000
	.2 Grubbing	ha	9.6	$ 30,000.00	$ 288,000	12.8	$ 30,000.00	$ 384,000
	.3 Mass Cut Excavation - Common	m^3	91,430	$ 6.00	$ 548,580	223,320	$ 6.00	$ 1,339,920
	.4 Borrow	m^3	113,052	$ 12.00	$ 1,356,624	82,455	$ 12.00	$ 989,460
	.5 Compaction	m^3	189,617	$ 0.50	$ 94,809	289,436	$ 0.50	$ 144,718
	.6 Fine Grading	m^2	51,125	$ 0.50	$ 25,563	60,540	$ 0.50	$ 30,270
	.7 Loose Laid Rip Rap	t	1,690	$ 25.00	$ 42,250	1,865	$ 25.00	$ 46,625
4.0	**Storm Drainage**							
	.1 900mm dia Concrete Culverts	m	60	$ 500.00	$ 30,000	60	$ 500.00	$ 30,000
	.2 Catch Basins	Ea	6	$ 5,000.00	$ 30,000	6	$ 5,000.00	$ 30,000
5.0	**Structures**							
	1. Underpass Structure	m^2	840	$ 4,000.00	$ 3,360,000	840	$ 4,000.00	$ 3,360,000
	2. Widen Nine Mile Creek Bridge Structures	LS	1	$ 2,000,000.00	$ 2,000,000	-	$ -	$ -
6.0	**Roundabouts**							$ -
	1. Aprons, Landscaping, Electrical	LS	2	$ 160,000	$ 320,000	2	$ 160,000	$ 320,000
7.0	**Roadwork**							$ -
	.1 GeoTextile	m^2	51,125	$ 3.00	$ 153,375	60,540	$ 3.00	$ 181,620
	.2 Type 1 Gravels	t	18,691	$ 18.00	$ 336,438	21,978	$ 18.00	$ 395,604
	.3 Type 2 Gravels	t	75,232	$ 18.00	$ 1,354,176	88,842	$ 18.00	$ 1,599,156
	.4 Curb & Gutter	m	805	$ 90.00	$ 72,450	805	$ 90.00	$ 72,450
	.5 Emulsified Asphalt Tack	L	3,258	$ 2.15	$ 7,005	3,866	$ 2.15	$ 8,312
	.6 Asphalt Binder	t	420	$ 750.00	$ 315,000	497	$ 750.00	$ 372,750
	.7 Liquid Asphalt Primer	L	34,905	$ 2.00	$ 69,810	41,422	$ 2.00	$ 82,844
	.8 Asphalt B -HF (Base Course)	t	5,585	$ 66.00	$ 368,610	6,630	$ 66.00	$ 437,580
	.9 Asphalt C-HF (Surface Course)	t	2,796	$ 66.00	$ 184,536	3,312	$ 66.00	$ 218,592
	.10 Guardrail ~ Strong Post	m	1,530	$ 110.00	$ 168,300	1,920	$ 110.00	$ 211,200
	.11 Widen Highway 102 to 3 Lanes	LS	1	$ 2,000,000.00	$ 2,000,000	-	$ -	$ -
8.0	**Signage**							
	.1 Aluminum Three Post	Ea	2	$ 50,000.00	$ 100,000	2	$ 50,000.00	$ 100,000
	.2 Aluminum Two Post	Ea	6	$ 7,500.00	$ 45,000	6	$ 7,500.00	$ 45,000
	.3 Aluminum Telespar	Ea	15	$ 500.00	$ 7,500	15	$ 500.00	$ 7,500
9.0	**Landscaping**				$ -			$ -
	.1 Hydroseeding / Erosion Matt	m^2	44,440	$ 4.00	$ 177,760	67,730	$ 4.00	$ 270,920
	.2 Topsoil & Sod	m^2	2,826	$ 11.00	$ 31,086	2,826	$ 11.00	$ 31,086
	.3 Plantings	LS	2	$ 10,000.00	$ 20,000	2	$ 10,000.00	$ 20,000
10.0	**Provisional**							
	.1 Provisional Items	LS	1	$ 50,000.00	$ 50,000.00	1	$ 50,000.00	$ 50,000.00
	TOTAL CONSTRUCTION COST w/o CONTINGENCY			**Interchange Option # 2**	**$ 14,200,000**		**Interchange Option # 3**	**$ 11,400,000**
	CONTINGENCIES and ALLOWANCES							
A	Design Development Contingency		30%		$ 4,260,000	30%		$ 3,420,000
B	Construction Contingency		10%		$ 1,420,000	10%		$ 1,140,000
	TOTAL CONSTRUCTION with CONTINGENCIES w/o HST			**Interchange Option # 2**	**$ 19,900,000**		**Interchange Option # 3**	**$ 16,000,000**

Note: Estimated earthworks quantity based on existing surface derived from contour mapping with 5m intervals. Actual quantities could vary significantly once Topographical Surveys are carried out.

The pricing shown reflects probable construction costs obtainable in the Lantz area on the effective date of this report. This budget is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.

8.3.2 Exclusions

The Class 'D' cost estimates do not provide for the following, if required; except to the extent specified in the estimate if applicable.

- Escalation Allowance;
- Preventative Maintenance Contracts;
- Legal Fees and Expenses;
- Land Acquisition;
- Right-of-Way Charges or Easement Requirements;
- Financing Fee's and Carrying Costs;
- Removal or Mitigation, Remediation of contaminated soils;
- Rock Excavation (blasting or chipping) and Removal; and
- Removal of Buried Obstructions (foundations, boulders, debris, etc.).

8.3.3 Contingencies

A Design Development Allowance of 30% has been included to cover design and pricing unknowns. This allowance is not intended to cover any additions or modifications but rather to provide some flexibility for the designers and cost planners during the remaining contract document stages.

A Construction Contingency of 10% has been included to cover post contract variances during construction.

8.3.4 Unit Rates

The unit rates in the preparation of this Class 'D' Budget include labour, labour burdens, materials, equipment, and contractor overheads and profit.

8.3.5 Taxes

It should be noted that HST Tax for Nova Scotia of 15% has not been included.

8.3.6 Summary of Probable Construction Costs for Options

The indicative construction costs of the Lantz interchange options (with and without contingencies and excluding land costs) are summarised in **Table 8.2** below.

Table 8.2: Summary of Probable Construction Costs

Option	Estimated Construction Cost without Contingencies	Estimated Construction Cost with Contingencies
South Lantz Interchange	$14.2m	$19.9m
North Lantz Interchange	$11.4m	$16.0m

As indicated, we estimate that the South Lantz option would cost approximately $3.0 million more than the North Lantz location. This is in spite of the north option requiring much more land acquisition, a longer connector road, and significantly more excavation. The biggest factor in this is the required Highway 102 and bridge widening to connect the Exit 8 ramps with those at the South Lantz interchange; we estimate that connecting the ramps would add roughly $4.0 million to the total project cost.

8.4 Preferred Cost Option

Based on the above cost estimates, CBCL has selected the **North Lantz Interchange Option** as the preferred option as it is expected to be the least expensive alternative to construct. It also is expected to result in dramatically lower Trunk 2 peak hour traffic volumes north of Shaw Brick compared to those forecast with a South Lantz interchange. Volumes south of Shaw Brick and along Route 214 are expected to be only slightly higher.

CHAPTER 9 PREFERRED OPTION

9.1 Identification of Preferred Option

We now have sufficient information to identify a preferred option to address the future transportation needs of the Elmsdale and Lantz areas. There are several planned residential developments in Elmsdale and Lantz, but in particular those along Trunk 2 to the north of Route 214 (Clayton, Armco, and Others) include over 2,800 new residential units. For the purposes of this study, they were assumed to be constructed by the horizon year 2033. Once occupied, the residents of these future subdivisions are expected to generate large amounts of new traffic, in some cases three to six times more than existing traffic levels. To accommodate the increased demand, we have considered the three options.

9.2 Option 1 – No Lantz Interchange

Option 1 involves maintaining the current roadway network and would require significant capacity upgrades to Trunk 2, Route 214, and several intersections for the network to accommodate the new traffic while keeping operations within acceptable parameters. These changes would also require significant land acquisition, and purchase/demolition of existing buildings to create space for road widening. This would generally have a negative impact on the local community and the aesthetics of these roadways. In particular, the area adjacent to the Route 214/Trunk 2 intersection has been designated as the Village Core for Elmsdale, and plans call for changes in this area such as improved pedestrian amenities, streetscaping, traffic calming, and property redevelopment. Adding the required traffic capacity for Option 1 would involve significant intersection widening or conversion to a multi-lane roundabout, either of which would be challenging to implement due to constraints such as the close proximity of the railroad crossing. It is expected that such changes would not resonate with the vision of the village core area, and may also not be popular with nearby residents.

Therefore, the addition of a new Highway 102 connection is necessary to lessen the impact on existing streets and the surrounding neighbourhood. Construction of a new interchange, in either South or North Lantz, would divert much of the new traffic, and some existing traffic, away from the Route 214 and Exit 8 areas which are already congested during peak travel periods. Traffic volumes in these areas are still forecast to increase and some improvements will be necessary, but a new interchange should greatly reduce the urgency and magnitude of these improvements.

9.3 Option 2 (South Lantz Interchange) or 3 (North Lantz Interchange)

The next steps are to decide where to construct a new connection and what that new connection would look like. An estimate of probable cost is also required for how much it would cost to construct the new connection. The following assumptions have been made for the purposes of estimating construction and land acquisition costs for Options 2 and 3:

Common Aspects of both North and South Lantz locations:

- Highway 102 Diamond Interchange:
  - Single-lane ramps:
    - On-ramps 700m long;
    - Off-ramps 500m long;
  - Two-lane bridge structure, 85m long & 14m wide (with either sidewalks or a separated multi-use path);
  - Roundabout ramp intersections;
  - Street lighting to TAC/NSTIR standards;
- Connector Road to Trunk 2:
  - 100m ROW (as per that reserved for South Lantz location);
  - NSTIR Minor Arterial Type C with asphalt width of 9.4m;
  - Two-lane roadway with turning lanes at intersections;
  - Guiderail as needed;
  - Open ditch (no curb); and
  - Street lighting at intersections.

Specific Characteristics:

- South Lantz Location:
  - Connector road roughly 1,000m long;
  - Land required for additional ROW on the west side of Highway 102 for the southbound ramps;
  - Signal is warranted for Trunk 2 intersection with Shaw Brick; instead assume a 50m ICD roundabout;
  - NSTIR would require the new interchange ramps to be extended southward to connect with the Exit 8 ramps, which would involve widening roughly 800m of Highway 102 (including two bridge structures) to six lanes.
- North Lantz Location:
  - Connector road roughly 1,500m long;
  - Land required for ROW (50m ROW through Armco land + west side of Highway 102 for SB ramps); and
  - Signal not warranted for Trunk 2 intersection; therefore assume simple intersection with two-way stop control.

9.4 Conclusion

Based on the above analysis, we have selected **Option 3 (North Lantz Interchange)** and recommend that NSTIR proceed with a new connector road and interchange at the North Lantz location. The following points illustrate why this was selected as the preferred option:

- Option 3 is expected to result in only moderately higher traffic volumes along Trunk 2 (south of Shaw Brick), Route 214 and at Exit 8 compared to Option 2;
- Considerably lower Trunk 2 peak hour volumes can be expected north of Shaw Brick with Option 3 vs. Option 2;
- Option 3 would not require any Highway 102 or bridge widening;
- Armco have indicated they are willing and eager to modify their subdivision layout to accommodate a connector road through their property, provide the required ROW, and they may be willing to cost-share construction of the connector and interchange with NSTIR;
- Option 3 connector road can simply be added as a new Trunk 2 intersection with two-way stop control; and
- At an estimated cost of $16.0m, Option 3 is expected to be significantly less expensive than Option 2.

CHAPTER 10 OPTION 3 INTERCHANGE MITIGATION MEASURES

10.1 Assumptions

Due to the relative similarity of the options that have been analysed as part of this study, only mitigation measures for the preferred option have been developed. More specific and detailed mitigation measures will need to be developed once the preferred option has been confirmed by NSTIR and East Hants.

10.2 Network Deficiencies

Option 3 has now been identified as the preferred alternative so this chapter identifies and discusses intersection improvements that would be needed to accommodate the projected Option 3 traffic volumes. Note that this task was not carried out for Option 1 as it has been removed from further consideration as a viable alternative. The same decision was made for Option 2 as it has estimated traffic volumes which are only slightly lower than Option 3, and these would have led to similar mitigation recommendations.

Therefore, we carried out further Synchro analysis to identify what intersection upgrades would be required to maintain acceptable operations under the projected volumes for 2023 and 2033. This task revealed that most of the study intersections would need capacity improvements before the projected traffic demands are reached. **Table 10.1** summarizes the upgrades expected to be needed for 2023 and the further changes needed for 2033. **Figures 10.1 to 10.6** illustrate these changes.

Table 10.1: Summary of Anticipated Option 3 Mitigation Measures

Intersection	Proposed Improvements to Mitigate Anticipated Option 3 Impacts	
	2023	2033
Route 214 & Park Road /Superstore	No geometric changes. Optimize signal timing so that southbound queue extends a maximum of 60m.	No geometric changes. Optimize signal timing so that southbound queue extends a maximum of 60m.

No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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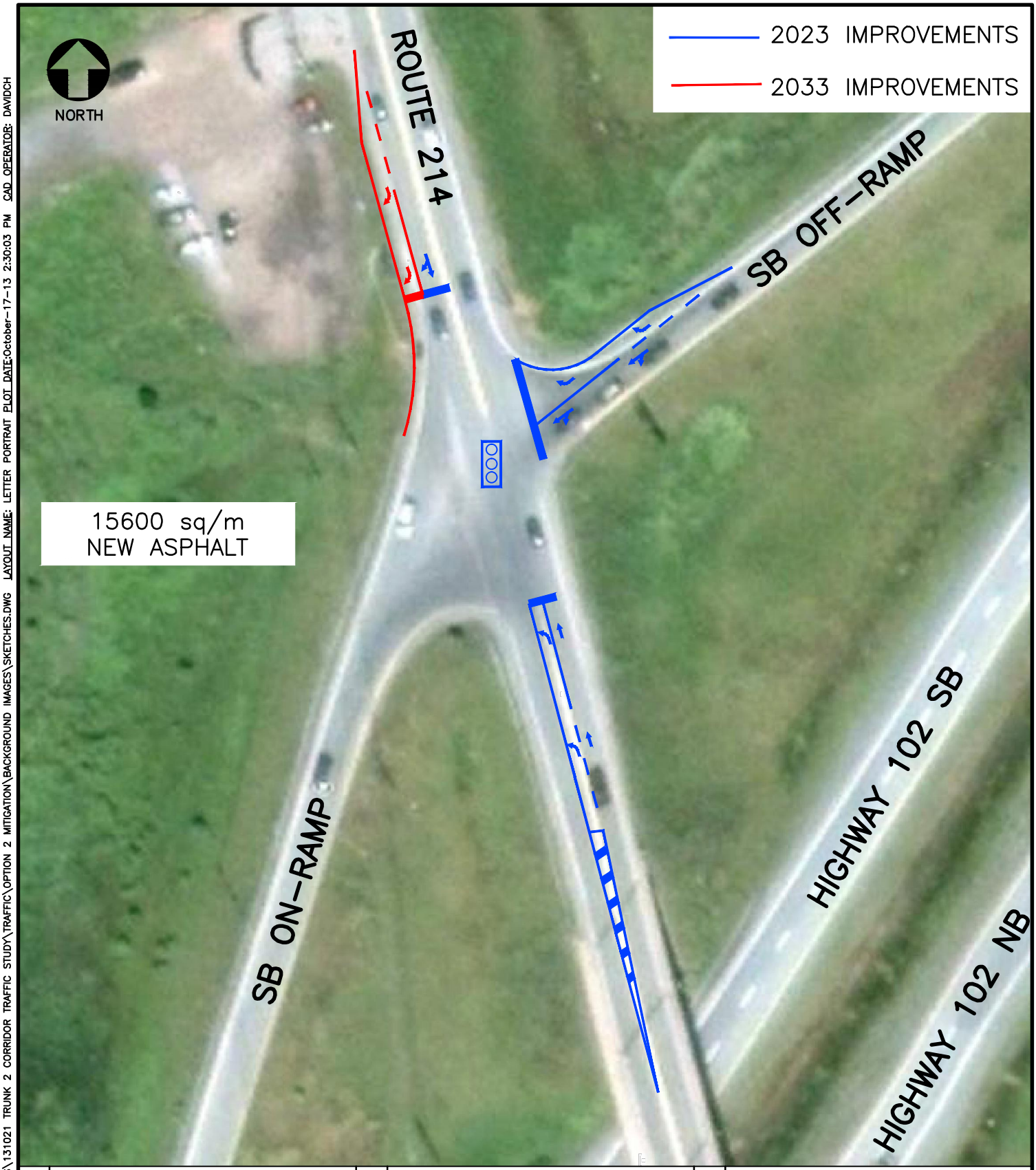
TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
ROUTE 214 & PARK ROAD

Drawing
Fig. 10.1

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\SKETCHES.DWG LAYOUT NAME: LETTER PORTRAIT PLOT DATE:October-17-13 2:29:13 PM CAD OPERATOR: DAVIDCH



No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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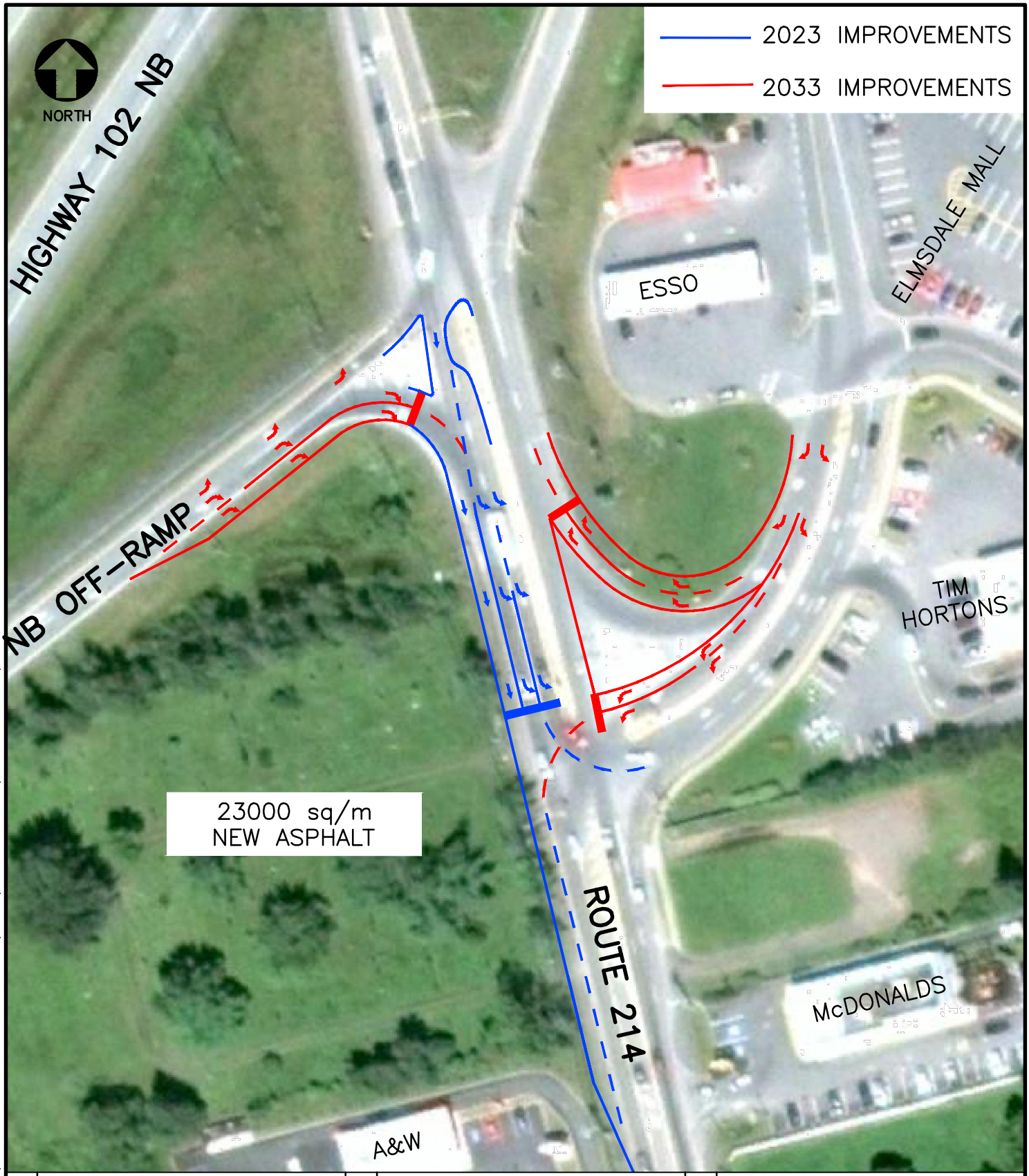
TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
ROUTE 214 & HIGHWAY 102 SB RAMPS

Drawing
Fig. 10.2

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\SKETCHES.DWG LAYOUT NAME: LETTER PORTRAIT PLOT DATE:October-17-13 2:30:03 PM CAD OPERATOR: DAVIDCH



No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

CBCL LIMITED
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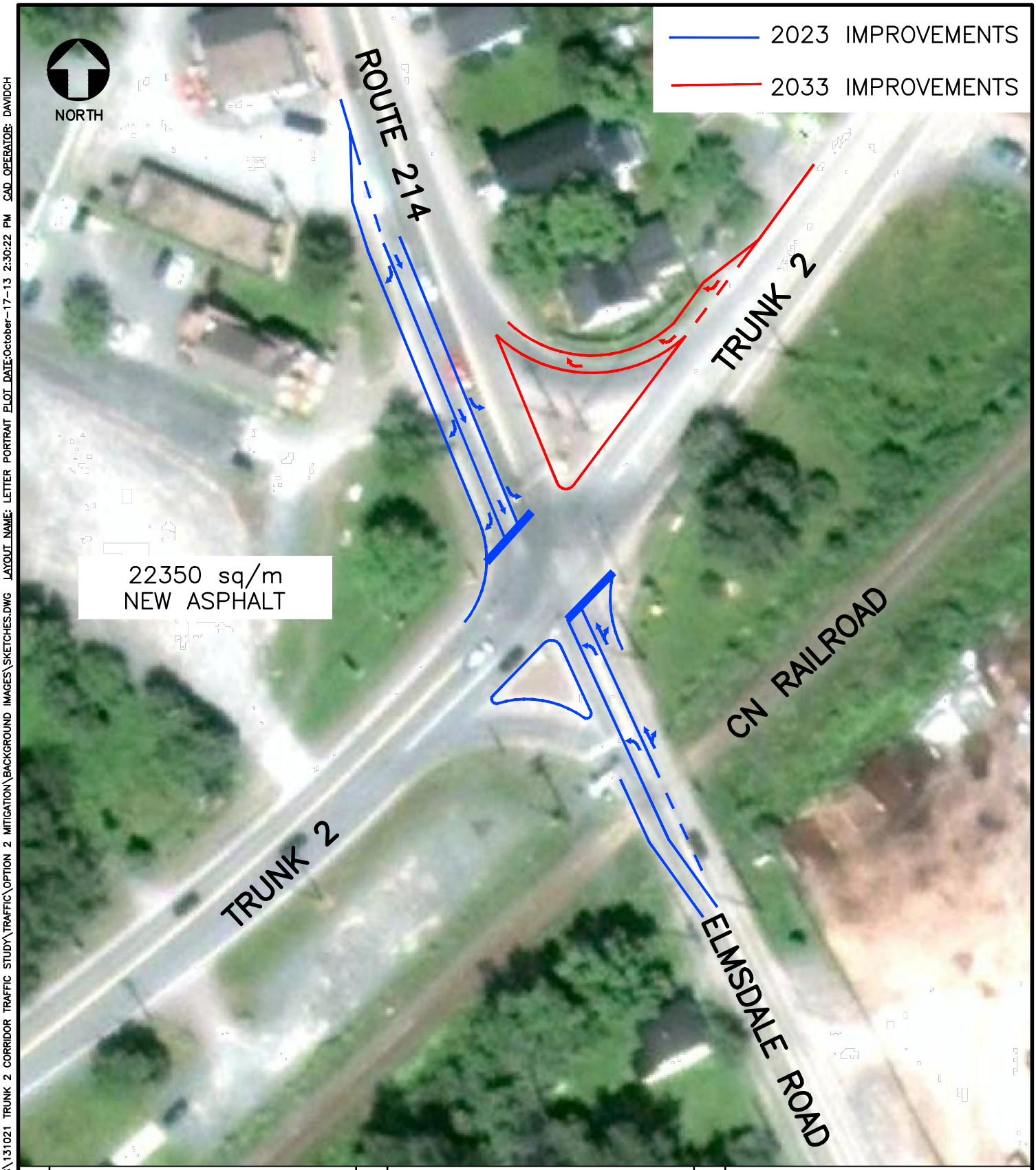
TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
ROUTE 214 & 102 NB RAMP/ELMSDALE MALL

Drawing
Fig. 10.3

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\SKETCHES.DWG LAYOUT NAME: LETTER PORTRAIT PLOT DATE:October-17-13 2:29:29 PM CAD OPERATOR: DAVIDCH



No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
ROUTE 214 & TRUNK 2

Drawing
Fig. 10.4

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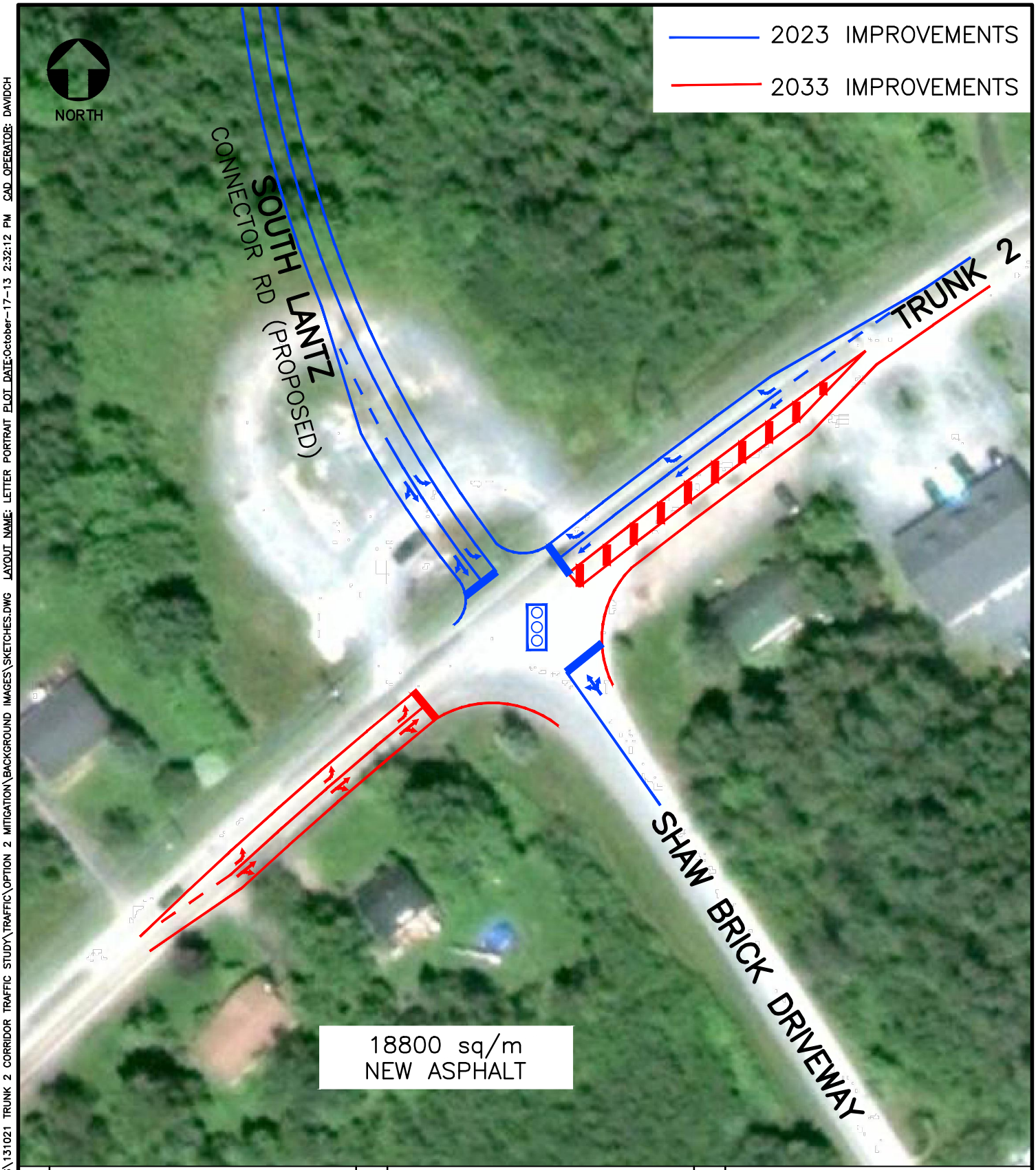

No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
TRUNK 2 & SHAW BRICK DRIVEWAY/SOUTH LANTZ CONNECTOR

Drawing
Fig. 10.5

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No.	Description	No.	Description	No.	Description

Date	Scale	Designed	Drawn	Checked	Approved	CBCL No.	Contract
OCT 2013	NTS	MRM	DRC			131021.00	

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TRUNK 2/ROUTE 214 CORRIDOR TRAFFIC STUDY

OPTION 2 MITIGATION MEASURES
TRUNK 2 & ROUTE 277

Drawing
Fig. 10.6

DRAWING NAME: Y:\HALIFAX\DATA\PROJECTS\131021 TRUNK 2 CORRIDOR TRAFFIC STUDY\TRAFFIC\OPTION 2 MITIGATION\BACKGROUND IMAGES\SKETCHES.DWG LAYOUT NAME: LETTER PORTRAIT PLOT DATE:October-17-13 2:31:56 PM CAD OPERATOR: DAVIDCH

Intersection	Proposed Improvements to Mitigate Anticipated Option 3 Impacts	
	2023	2033
Route 214 & Hwy 102 SB ramps	Signalize (2-phase, 60-sec cycle). Add short SB RT lane. Add WB LT lane (assuming this can be done without widening bridge, i.e. revise striping only, similar to EB LT lane to NB on-ramp).	Revise to 70-second cycle length. Add EB RT lane.
Route 214 & Hwy 102 NB ramps	Revise EB LT lane to protected-permitted operation. Signal optimization.	Add NB RT lane (double right). Signal optimization.
Route 214 & Elmsdale Mall	Widen EB approach to provide double LT into Elmsdale Mall with protected-permitted operation. Signal optimization.	Widen SB approach to provide double LT + double RT lanes. Signal optimization.
Route 214 & Trunk 2	Widen EB approach to provide Left/Thru/Right configuration. Add WB LT lane. All LT lanes to have protected-permitted operation. Signal optimization with 80-second cycle.	Signal optimization + revise cycle length to 100 seconds.
Trunk 2 & Shaw Brick	Signalize (2-phase, 60-second cycle), though not quite warranted at 99 points. Add SB RT lane and EB LT lane.	Revise signals to 3-phase with 120-second cycle length. Add NB LT lane. Revise EB LT to have protected-permitted operation.
Trunk 2 & Route 277	Widen WB approach to provide separate RT and LT lanes. (WB left turn movement will still operate at LOS F during peak periods, but signal optimization is not warranted).	Signalize (2-phase, 100-second cycle). Add NB RT lane. Add SB LT lane.

Table 10.2 summarizes the anticipated intersection performance with the future Option 3 volumes and with the recommended mitigation measures implemented.

Table 10.2: Summary of Anticipated Option 3 Mitigation Measures

Intersection / Approach		2023		2033	
		AM	PM	AM	PM
Route 214 & Park Road/ Superstore	EB	B	C	C	C
	WB	A	B	A	B
	NB	B	B	B	B
	SB	B	C	C	D
Route 214 & Hwy 102 SB Ramps	EB	A	B	A	B
	WB	C	B	C	C
	SB	D	C	B	C
Route 214 & Hwy 102 NB Ramps	EB	A	C	A	C
	WB	B	D	C	D
	NB	B	C	B	D
Route 214 & Elmsdale Mall	EB	E	B	A	B
	WB	B	B	B	B
	SB	B	C	E	C
Route 214 & Trunk 2	EB	B	C	B	D
	WB	D	C	C	D
	NB	D	D	C	D
	SB	D	C	B	B
Trunk 2 & Shaw Brick	WB	B	A	A	A
	NB	A	A	A	A
	SB	A	A	A	A
Trunk 2 & Route 277	WB	B	C	B	B
	NB	A	A	A	A
	SB	A	A	A	A

Note: Route 214 is assumed to be East-West and Trunk 2 North-South

10.3 Estimated Construction Costs

The details of the approximate preliminary cost estimates for the Option 2 mitigation measures are shown in **Table 10.2**. A summary of the cost estimates of these mitigation measures is presented in **Table 10.3**.

The same exclusions apply to the mitigation measures cost estimate as for the full interchange options cost estimates, and it should be noted that a Design Development Allowance of 20% has been included to cover design and pricing unknowns in this case. This allowance is not intended to cover any additions or modifications but rather to provide some flexibility for the designers and cost planners during the remaining contract document stages. A Construction Contingency of 10% has been included to cover post contract variances during construction.

Table 10.3: Summary of Probable Construction Costs for Mitigation Measures

Option 3 Mitigation Measure	Construction Cost without Contingencies	Construction Cost with Contingencies
Rte 214/Hwy 102 SB Ramps	$1.3m	$1.7m
Rte 214/Hwy 102 NB Ramps & Elmsdale Mall	$1.8m	$2.4m
Rte 214/Trunk 2	$1.8m	$2.3m
Trunk 2/Shaw Brick/South Lantz Int Connector	$1.5m	$2.0m
Trunk 2/Rte 277 Dutch Settlement Rd	$1.1m	$1.5m
Route 214 Two-Way Left Turn Lane, Brook Ct to Trunk 2 (~800m)	$1.05m	$1.2m

10.4 Roundabout Alternatives

Note that roundabouts could also be considered for adding future capacity for several of these intersections, and were previously investigated in Chapter 7. Figures 7.1, 7.2, and 7.3 illustrate concept roundabouts at the intersections of Route 214 and Highway 102 SB Ramps, Highway 102 NB Ramps/Elmsdale Mall, and Trunk 2, respectively. In each of these cases, the roundabout alternative is considered superior and is therefore recommended over the improvements suggested in Section 10.1.

10.4.1 Route 214 and Highway 102 SB Ramps

A roundabout here would greatly improve existing operations, particularly for the left turn movement from the off-ramp. It would serve to control speeds along Route 214 and would accommodate anticipated 2033 traffic volumes. It could initially be constructed as a single lane roundabout with provision to expand it to a multi-lane layout when volumes warrant improvements. Alternatively, the multi-lane version could be built now. Either way, the existing two-lane overpass structure should not require widening. The approximate construction cost would be $1.5 to 2.0 million.

10.4.2 Route 214 and Highway 102 NB Ramps/Elmsdale Mall

There are no simple solutions for adding the necessary capacity at this location. There may be other possible improvements worth investigating for this pair of intersections, such as widening Route 214 to create two through lanes per direction, or revising signalization to provide clean-out phases, but we feel that combining the intersections into a single multi-lane roundabout would be the optimal improvement strategy. However, there are many significant constraints, including the adjacent cemetery, steep slopes, the Esso gas station, and the narrow existing overpass structure. The concept layout in Figure 7.2 does not encroach on the cemetery and shows a possible new location for the Esso. Additional study and analysis would be needed to identify lane requirements and to determine if the overpass would need to be widened or modified. More work would also be needed to develop rough grading plans and vertical geometry to overcome the significant elevation differences between Route 214 and the Elmsdale Mall parking lot. Not including relocation of the gas station, the approximate construction cost would likely be in the range of $3.0 to 5.0 million.

10.4.3 Route 214 and Trunk 2

With the future vision of establishing this intersection area as a village centre for Elmsdale, the modifications outlined in Section 10.1 would not likely be welcomed by residents. However,

implementation of a roundabout here would provide an aesthetic improvement and it could serve as a focal point to stimulate further investment and redevelopment of the surrounding lands. The appropriate size, layout and lane configuration would be investigated and determined through additional study. Relocation of existing monuments and reconfiguration of the park area on the southwest corner may be necessary. The railroad track to the east would also pose a challenge, but as shown in Figure 7.3, it should be possible to situate the roundabout so that the track passes through the splitter island on the east leg. Traditional railroad gates would be installed to stop traffic when trains are passing through; the impact of this on roundabout operations would require careful planning and design. The approximate cost to construct a roundabout here would be in the range of $2.0 to 3.0 million.

CHAPTER 11 PROPOSED INLAND CONTAINER TERMINAL

11.1 Overview

The Port of Halifax is a major commercial port and the only one on North America's east coast that can handle post-Panamax container vessels. Its two container terminals (South End and Fairview Cove) have a combined current estimated capacity of 800,000 to 900,000 TEUs (Twenty-Foot Equivalent Units) per year. During the period from 2000 to 2007, the port consistently handled 500,000 to 550,000 TEUs annually, and the Halifax Port Authority (HPA) subsequently began to investigate expansion options once the port reaches its practical capacity.

One of the options now on the table is the construction of a large inland port and intermodal terminal which would both enhance port capacity and remove significant volumes of trucks from the downtown streets of Halifax. A 2006 report prepared jointly for HPA and HRM by MariNova Consulting Ltd. considered seven possible sites for such an inland facility to be located. Two of these sites were short-listed for further evaluation, one in Rocky Lake and the other just off Trunk 2 in Milford Station, a short distance north of the Trunk 2/Route 214 study area. The MariNova report recommended that the Rocky Lake site be selected for closer analysis and conceptual design, leaving the Milford Station site as the second best alternative. Given that there is no guarantee that the terminal would be located in Rocky Lake, consideration of it being situated in Milford Station is warranted for this study.

11.2 Proposed Milford Site

The MariNova report provided a conceptual layout, shown in **Figure 11.1**, for an inland terminal at Milford. The site includes approximately 600 acres between Trunk 2 and the Shubenacadie River near the National Gypsum Quarry. Several other concepts have been developed, some of which include other land uses such as a business park, logistics park, as well as commercial and residential development. Most of those concept layouts include a dedicated Highway 102 interchange from the proposed site.

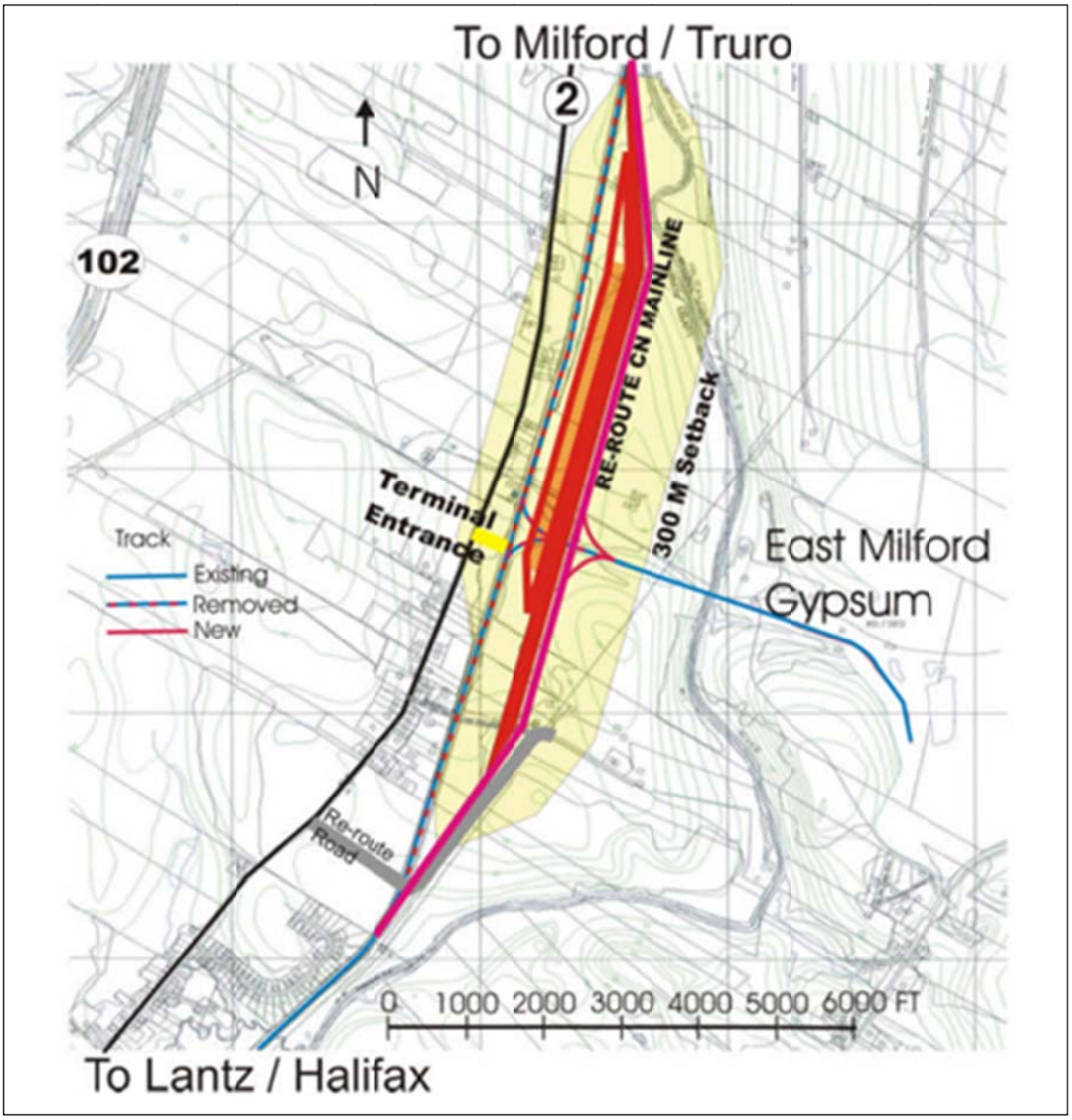


Figure 11.1: Milford Inland Terminal Concept (MariNova Report, 2006)

11.3 Highway Access

Highway access would be extremely important for this site to accommodate the significant numbers of daily truck movements in and out of the facility. Downtown Halifax streets currently handle several hundred large trucks per day (a 2003 HRM study indicated 568 large trucks in an 11-hour period) and many of these movements would be relocated to Milford with the construction of an inland terminal. Although Highway 102 is very close to the proposed site, there is currently no direct access to it. The proposed terminal entrance would be off Trunk 2 roughly 4.2 kilometres north of the proposed location of the South Lantz Interchange, and about 2.9 kilometres north of the preferred location for a new interchange in North Lantz. Travel to either of these interchange locations would require using Trunk 2

for several kilometres. However, though it is classified as a truck route, Trunk 2 functions as a local road and has many residences along its length between Milford and Elmsdale. This could be a major potential obstacle for the project in gaining local approval. Therefore, it would be necessary to identify an alternate solution to address the truck traffic and to minimize the impact on nearby residents.

We have considered the following three options for the proposed inland container terminal in Milford as they pertain to addressing these concerns:

1. New Milford Interchange + No Lantz interchange (Milford Option 1).
2. New Milford Interchange + South Lantz interchange (Milford Option 2).
3. North Lantz Interchange + Direct connection to Milford terminal entrance (Milford Option 3).

11.3.1 Milford Option 1: New Milford Interchange + No Lantz Interchange

Even though the North Lantz interchange location is recommended as the optimum location for a new interchange, we will consider this Milford option to see if it has any impact on that recommendation. The MariNova Study suggests that a new Highway 102 interchange, shown in **Figure 11.1**, could be built to provide direct truck access to the terminal. The report also notes that the truck volumes associated with the terminal would not be sufficient to warrant an interchange, though it may be possible to justify it in other ways including preserving Trunk 2 as a local non-industrial road, and minimizing travel times to and from the site. A connector road about 1.8 km in length would be needed to connect the interchange with Trunk 2 directly opposite the terminal entrance. With this option, trucks would not need to travel on Trunk 2, only cross over it.

An interchange at the Milford location would not attract much non-terminal traffic. It may draw some northbound trips from Lantz and some southbound trips from Milford, but most area motorists would likely continue to use Exits 8 and 9 as they do currently. The interchange would be too far north of the larger population centres in Elmsdale and Lantz to noticeably relieve any congestion from the Exit 8 and Route 214 area.

This option would of course achieve the objectives of minimizing the impact of an inland terminal on local residents, but it would not address the need for a new Highway 102 interchange in the Lantz area.

11.3.2 Milford Option 2: New Milford Interchange + South Lantz Interchange

This option includes the Milford terminal interchange as described in the previous section in conjunction with a new interchange in South Lantz. This alternative would appear to be quite beneficial for the Municipality of East Hants, its residents, and the prospect of HPA proceeding with an inland container terminal facility.

As discussed earlier in this report, it is expected that the South Lantz Interchange would attract somewhat more existing and future traffic than the North Lantz location and in turn, would provide the most relief for the Route 214 intersection and Exit 8 areas. A new Milford Interchange would have a similar effect as described in the previous section in that it would accommodate most terminal traffic, including all trucks.

11.3.3 Milford Option 3: New Milford Connector + North Lantz Interchange

This option would be contingent upon construction of an interchange in the North Lantz location, which is preferred and recommended. In lieu of a separate Milford Interchange, this option would involve construction of one interchange instead of two. It would involve construction of a new roadway, generally parallel to Trunk 2, which would provide direct access between the terminal and the North Lantz connector road. We envision that this road would have characteristics similar to the proposed interchange connector road, except that it may be desirable to limit access to traffic associated with the inland terminal. The preferred routing for such a road is unclear. It would need to be at least 3 km long; two possible routes are shown in Figure 11.2, however, both have considerable obstacles, as described in the following sections.

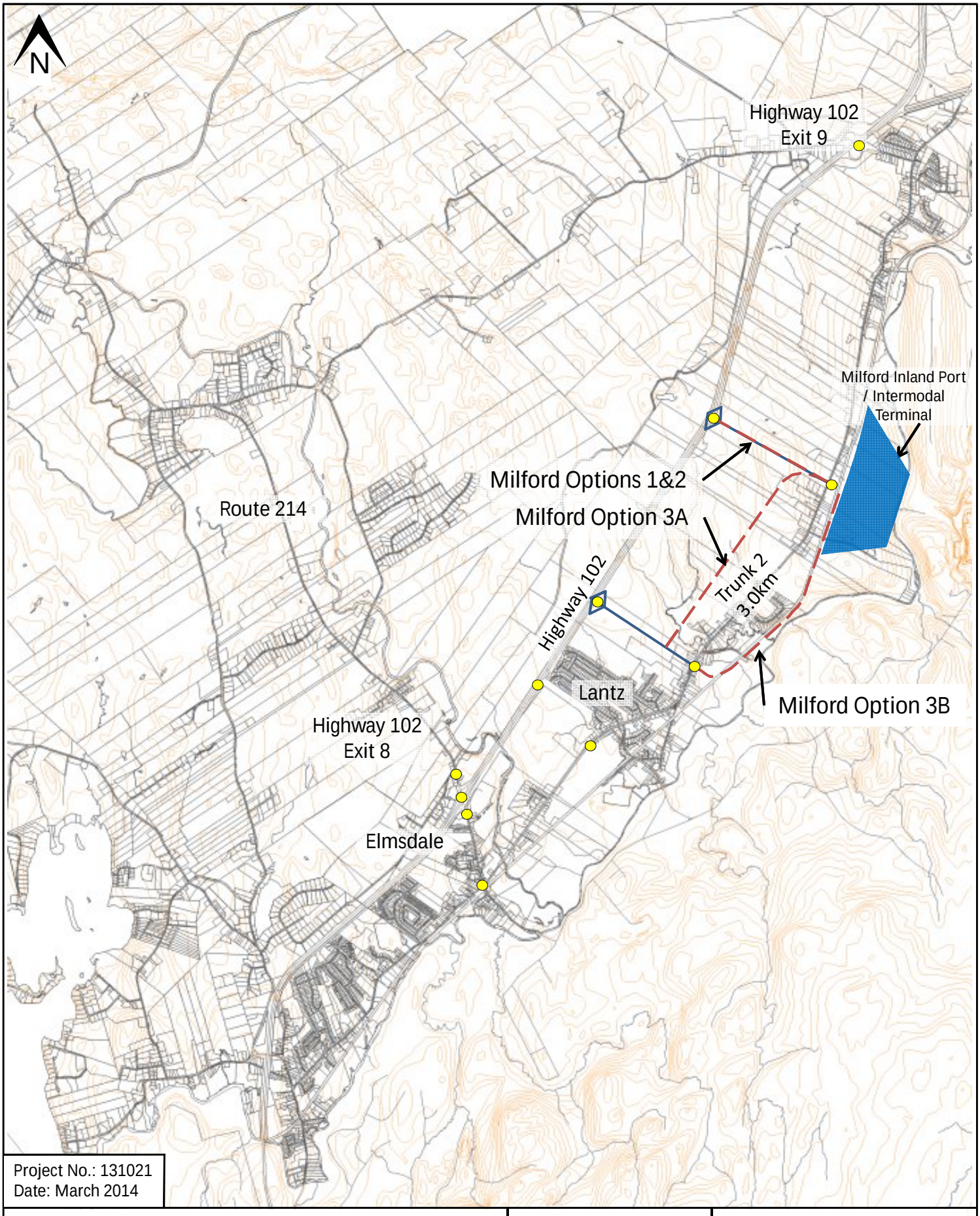
11.3.3.1 MILFORD OPTION 3A

The route to the west of Trunk 2 is shown close to Trunk 2 in the interest of keeping the road as short as practical. Alternatively, it could be placed closer to Highway 102, but this would require a longer and more expensive road. In either case, it would have to pass through and bisect land owned by Armco which extends from Highway 102 to Trunk 2. Armco has plans for extensive multi-use residential development, and having a truck route through the middle of this development would presumably impact these plans negatively. To effectively control access, it may be necessary to have expensive grade-separated crossings of Trunk 2 and future roadways within Armco's development. In the end, there may not be a suitable route through the Armco property that all parties would agree to.

11.3.3.2 MILFORD OPTION 3B

A second route is shown along CN's railroad on the east side of Trunk 2. It would be slightly longer at about 3.3 km, and would have to cross both Isenor Road and the railroad. However, it may be easier to control access along this route and this approach would not disrupt Armco's proposed development. There does not appear to be sufficient space on the west side of the railroad, particularly behind some Robert Scott Drive residences, so it seems that the road would have to be constructed on the east side of the tracks. It would form a four-way intersection on Trunk 2 with the North Lantz connector road, and truck traffic would cross Trunk 2 here. It appears that some Trunk 2 residential properties would need to be obtained to secure the needed right-of-way for this intersection. There may be other issues obtaining right-way-way along the CN rail corridor, including the fact that there are adjacent transmission towers, which could negatively impact the feasibility of this option. There could also be public opposition, particularly from residents of Woodworth Road, Isenor Road and Robert Scott Drive, citing concerns with noise and privacy.

In either of the cases above, the net result would essentially be an expensive limited-access bypass road to keep the truck traffic away from existing residences on or near Trunk 2 and this may be difficult to justify instead of using Trunk 2 which is an existing truck route. However, while the use of Trunk 2 to access a new North Lantz interchange would impact significantly fewer residents than if trucks were to travel to the South Lantz location, there are many homes along the three-kilometer section from the terminal entrance to the North connector road, and many more planned, particularly near Robert Scott Drive. Therefore, we feel that if the facility does not have a dedicated Highway 102 interchange, a truck bypass roadway would be needed.



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Trunk 2/Route 214
Corridor Traffic Study

Figure 11.2
Milford Inland Port / Intermodal Terminal with Trunk 2 Interchange and Connector Road Options

11.4 Preferred Option

Construction of a new Highway 102 interchange would drive the cost of Milford Options 1 and 2 significantly higher than the cost of those for Options 3A or/and 3B. The selection of the North Lantz location as the recommended interchange option also favours the Option 3 alternatives. Option 3A may be very disruptive in terms of future Armco development, and there may not be an agreeable route through the lands west of Trunk 2 for a truck bypass road. Therefore, we recommend Option 3B as the preferred strategy to accommodate truck traffic if the Milford Inland Terminal proceeds. This route passes through mostly undeveloped land and should have minimal impact to most area residents. Also, the argument for a new dedicated Milford interchange to serve the terminal becomes weaker if the more proximate North Lantz interchange is constructed.

CHAPTER 12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Conclusions

CBCL Limited was engaged by the Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR), Highway Engineering Services, and the Municipality of East Hants to undertake the Trunk 2/Route 214 Corridor Traffic Study on their behalf. The project terms of reference required that four primary objectives be addressed for this important study, namely:

1. To assess future traffic flow patterns on Trunk 2 and Route 214 based on projected developments within the study area and for three interchange options.
2. Identify roadway deficiencies for each study horizon based on estimated traffic flow patterns for each of the three interchange options. This objective is to include recommendations for mitigation measures and associated costs.
3. To service a possible inland container terminal near Milford.
4. Recommend an interchange option taking into consideration analysis of traffic flow, roadway deficiencies, mitigation costs, construction costs, and potential benefits to future development including an inland container terminal near Milford.

These objectives clearly set out the client's requirements in determining the optimum solution for traffic and future infrastructure to accommodate the anticipated levels of growth within the study corridor. The full terms of reference for the project are included in **Appendix H**.

As part of the Trunk 2/Route 214 Corridor Traffic Study, three interchange options were identified and analysed, from which the preferred option was selected. The interchange options examined as part of this study were:

- No Lantz Interchange;
- South Lantz Interchange location; and
- North Lantz Interchange location.

The locations of these options in the context of the existing road network are shown in Figure 3.1.

Our approach to the traffic study was based on our general understanding of traffic operation conditions within the study area and the availability of relevant information. To supplement existing and historical information, we undertook a number of traffic turning movement counts at key intersections within the study area. These data were collected, processed and used as input to the Synchro models created for

the study intersections. The Synchro analyses, along with the ARCADY analyses, traffic signal warrant analyses, weaving analyses and turning lane analyses provided a detailed picture of current and future conditions taking into account each of the three interchange options.

It should be noted that the preparation of functional designs and preliminary cost estimates is intended to highlight the key features and differences at a comparative level in order to facilitate the identification of the preferred option which should then be considered in more detail.

Our study conclusions are based on the following information and assumptions:

- Planned developments along Trunk 2 north of Route 214 (Clayton + Armco + Other) include over 2,800 residential units (60% Single Family / 11% Semi-detached / 5% Townhomes / 24% Apartments), and for the purposes of this study, they were assumed to be constructed within 20 years by 2033;
- Once occupied, these residential units will generate large amounts of new traffic, significantly more than the existing levels of traffic for some intersection movements;
- Therefore, the existing local road network and intersections, particularly Trunk 2 and Route 214, would need significant upgrades to accommodate the additional traffic while keeping traffic operations within acceptable parameters;
- Many of these changes would require land acquisition and development, purchase/demolition of existing buildings, which in turn could affect a negative impact on the look and feel of the community;
- The area adjacent to the Route 214/Trunk 2 intersection is designated as the Village Core for Elmsdale, and long-term plans call for improved pedestrian amenities, streetscaping, traffic calming and redevelopment. Adding the necessary traffic capacity for Option 1 – No Lantz Interchange (road widening and significant alterations to the existing intersection) would severely limit these plans or render them impossible;
- Necessary Option 1 intersection improvements for the Trunk 2/Route 214 intersection would likely include constructing an eastbound double left turn, southbound double right turn, other storage lanes, approach widening, etc., or converting the signalized intersection to a multi-lane roundabout. The presence of the adjacent public square and the railroad crossing only 30m away would greatly impact what could physically be done here. Therefore, efforts should be made to maintain intersection traffic volumes at or close to existing levels so that few, if any, minor improvements would be needed in the coming years; and
- Construction of a new interchange, either South or North Lantz, would divert much of the new traffic, and some of the existing traffic, away from Route 214/Exit 8, greatly reducing the urgency and magnitude of these improvements.

Deciding between either the South or North Lantz Interchange location was based on the following comparison of key features:

- South Lantz Interchange:
  - Provides the greatest reduction in Elmsdale traffic volumes passing through Exit 8 and along Route 214;
  - No new Trunk 2 intersection would be required, simply adding a 4th leg to the existing Shaw Brick driveway intersection would provide an adequate connection. A roundabout would likely

work well at this location and the space appears to be available without impacting any neighboring buildings;
  - The connector road would be the shortest at 1.1km;
  - NSTIR already owns the land for the interchange/connector road, except for the lands to the west of Highway 102 for the southbound ramps;
  - Given the close proximity to Exit 8, NSTIR would require auxiliary lanes to connect the ramps, and this would necessitate widening both Highway 102 and the two bridge structures over Nine Mile River about halfway between the two interchanges;
- North Lantz Interchange:
  - Slightly less reduction in Elmsdale volumes through Exit 8 and along Route 214 compared to the South Lantz Interchange location, but a much greater reduction along Trunk 2 north of Shaw Brick's driveway;
  - The connector road would be around 500m longer at 1.6km;
  - The intersection with Trunk 2 could be constructed as a roundabout, but this may impact nearby properties/buildings;
  - The interchange would be approximately 3.2km north of Exit 8, so it could operate independently i.e. no auxiliary lanes required for weaving;
  - NSTIR does not own any of the land required for this option; Armco owns most of it to the east of Highway 102, however, another private land owner owns the land to the west of the highway. Therefore, there would be significant NSTIR land purchases required for this option;
  - Armco has a residential development plan that currently occupies the entire connector road area, i.e. does not include plans for a minor arterial connector road;
  - Armco prefers this option as it would provide direct access between their lands and Highway 102, however, have currently made no offer to provide the required land for the connector road and the interchange ramps.
- The intersection of Route 214/Highway 102 southbound ramps already requires upgrading. A traffic signal is warranted, although this location could be considered for a roundabout which would likely reduce the need to widen the overpass structure;
- The Route 214 intersections at Highway 102 northbound ramps and at Elmsdale Mall are both currently signalized and only around 80m apart. Consideration was given to convert these intersections to a single 5-leg roundabout, however, the Esso gas station would most likely need to be relocated;
- For either connector road, the intermediate intersection (to either Clayton/Towerview or Armco) could work well as a roundabout; and
- The Route 214/Park Road/Superstore intersection can likely remain as-is.

In considering the possible traffic impacts of a new interchange and connector road, the road would provide an attractive alternative route for strategic traffic and for some local trips to avoid travelling along Trunk 2, Route 214 and accessing Highway 102 at Exit 8.

With regards to the functional designs, it should be noted that only basic information is currently available to distinguish between the three interchange options at this stage. Consequently, the analyses focused more on identifying and analysing the common and contrasting features of each of the options.

Table 10.1 summarizes the upgrades expected to be needed for 2023 and the further changes needed for 2033. Figures 10.1 to 10.6 illustrate these changes.

Table 10.1: Summary of Anticipated Option 3 Mitigation Measures

Intersection	Proposed Improvements to Mitigate Anticipated Option 3 Impacts	
	2023	2033
Route 214 & Park Road /Superstore	No geometric changes. Optimize signal timing so that southbound queue extends a maximum of 60m.	No geometric changes. Optimize signal timing so that southbound queue extends a maximum of 60m.
Route 214 & Hwy 102 SB ramps	Signalize (2-phase, 60-sec cycle). Add short SB RT lane. Add WB LT lane (assuming this can be done without widening bridge, i.e. revise striping only, similar to EB LT lane to NB on-ramp).	Revise to 70-second cycle length. Add EB RT lane.
Route 214 & Hwy 102 NB ramps	Revise EB LT lane to protected-permitted operation. Signal optimization.	Add NB RT lane (double right). Signal optimization.
Route 214 & Elmsdale Mall	Widen EB approach to provide double LT into Elmsdale Mall with protected-permitted operation. Signal optimization.	Widen SB approach to provide double LT + double RT lanes. Signal optimization.
Route 214 & Trunk 2	Widen EB approach to provide Left/Thru/Right configuration. Add WB LT lane. All LT lanes to have protected-permitted operation. Signal optimization with 80-second cycle.	Signal optimization + revise cycle length to 100 seconds.
Trunk 2 & Shaw Brick	Signalize (2-phase, 60-second cycle), though not quite warranted at 99 points. Add SB RT lane and EB LT lane.	Revise signals to 3-phase with 120-second cycle length. Add NB LT lane. Revise EB LT to have protected-permitted operation.
Trunk 2 & Route 277	Widen WB approach to provide separate RT and LT lanes. (WB left turn movement will still operate at LOS F during peak periods, but signal optimization is not warranted).	Signalize (2-phase, 100-second cycle). Add NB RT lane. Add SB LT lane.

Table 10.2 summarizes the anticipated intersection performance with the future Option 3 volumes and with the recommended mitigation measures implemented.

Table 10.2: Summary of Anticipated Option 3 Mitigation Measures

Intersection / Approach		2023 AM	2023 PM	2033 AM	2033 PM
Route 214 & Park Road/ Superstore	EB	B	C	C	C
	WB	A	B	A	B
	NB	B	B	B	B
	SB	B	C	C	D
Route 214 & Hwy 102 SB Ramps	EB	A	B	A	B
	WB	C	B	C	C
	SB	D	C	B	C
Route 214 & Hwy 102 NB Ramps	EB	A	C	A	C
	WB	B	D	C	D
	NB	B	C	B	D
Route 214 & Elmsdale Mall	EB	E	B	A	B
	WB	B	B	B	B
	SB	B	C	E	C
Route 214 & Trunk 2	EB	B	C	B	D
	WB	D	C	C	D
	NB	D	D	C	D
	SB	D	C	B	B
Trunk 2 & Shaw Brick	WB	B	A	A	A
	NB	A	A	A	A
	SB	A	A	A	A
Trunk 2 & Route 277	WB	B	C	B	B
	NB	A	A	A	A
	SB	A	A	A	A

Note: Route 214 is assumed to be East-West and Trunk 2 North-South

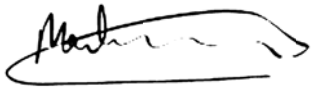
Option 3B, with an exclusive terminal roadway east of the CN tracks and connecting with the North Lantz Interchange, is the recommended strategy to access a possible inland container terminal that the Halifax Port Authority is considering in nearby Milford.

12.2 Recommendation

Based on the findings of the study, it is recommended that a new Highway 102 interchange be constructed at the **North Lantz Interchange** location. This option provides the most benefits to road users and the local communities, and will also accommodate the additional traffic associated with the numerous planned developments in the area. It is also significantly less expensive to construct as there would be no need to construct Highway 102 auxiliary lanes.

Finally, it is worth noting that travel demand changes over time, and that we are currently on the verge of a period of significant change in modes of transport, personal mobility challenges and opportunity, including demands for more active transportation opportunities and public transit. The assumptions

contained in this report therefore should to be reviewed from time to time as land development progresses and the impacts are analysed on the existing road infrastructure. Adjustments in the timing of upgrades and other improvements may need to be revisited as a result of this analysis.



Prepared by:
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Reviewed by:
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APPENDIX A

Turning Movement Traffic Counts

Study Name East Hants Corridor
Start Date 06/20/2013
Start Time 6:45 AM
Site Code Int 1-Route 214 at Park - Superstore
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	SuperStore Driveway Southbound					Trunk 214 Westbound					Park Street Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM	0	2	20	0	22	11	21	30	0	62	8	2	0	0	10	5	74	9	0	88	182
7:00 AM	3	3	17	0	23	8	25	20	0	53	10	0	1	0	11	2	77	10	0	89	176
7:15 AM	1	2	17	0	20	8	20	14	0	42	8	2	0	0	10	1	80	10	0	91	163
7:30 AM	2	2	14	0	18	9	23	27	0	59	20	1	1	0	22	5	85	9	0	99	198
7:45 AM	2	4	13	0	19	11	26	43	0	80	17	1	3	0	21	7	83	13	0	103	223
8:00 AM	2	1	25	0	28	17	35	25	0	77	8	0	1	0	9	6	58	5	0	69	183
8:15 AM	0	1	20	0	21	7	30	46	0	83	17	4	0	0	21	9	45	5	0	59	184
8:30 AM	0	5	16	0	21	14	25	28	0	67	17	1	0	0	18	6	52	2	0	60	166
8:45 AM	4	0	16	0	20	12	25	33	0	70	14	3	2	0	19	3	43	4	0	50	159
9:00 AM	3	0	15	0	18	11	31	25	0	67	31	2	1	0	34	9	29	2	0	40	159
Peak Hour Total by Movement					86					299					73					330	788
					86					299					73					330	788

Car	92%
Medium	6%
Heavy	2%
Total	100%

Study Name East Hants Corridor
Start Date 06/20/2013
Start Time 3:45 PM
Site Code Int 1-Route 214 at Park - Superstore
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	SuperStore Driveway Southbound					Trunk 214 Westbound					Park Street Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM	17	1	35	0	53	38	66	19	0	123	23	2	5	0	30	2	32	10	0	44	250
4:00 PM	14	0	47	0	61	47	73	16	0	136	24	4	6	0	34	1	45	5	0	51	282
4:15 PM	19	2	72	0	93	52	81	9	0	142	33	3	7	0	43	1	44	13	0	58	336
4:30 PM	18	2	68	0	88	53	85	20	0	158	62	13	4	0	79	1	56	7	0	64	389
4:45 PM	16	0	85	0	101	41	76	14	0	131	25	1	3	0	29	1	47	8	0	56	317
5:00 PM	25	0	64	0	89	58	94	10	0	162	33	8	8	0	49	3	46	2	0	51	351
5:15 PM	23	1	71	0	95	50	96	11	0	157	11	2	2	0	15	1	42	5	0	48	315
5:30 PM	18	1	77	0	96	59	77	9	0	145	20	1	3	0	24	1	51	9	0	61	326
5:45 PM	14	1	67	0	82	44	64	7	0	115	11	1	1	0	13	1	43	16	0	60	270
6:00 PM	10	0	60	0	70	39	71	5	0	115	17	2	1	0	20	0	57	7	0	64	269
Peak Hour Total by Movement					371 371					593 593					200 200					229 229	1393 1393

Car	98%
Medium	1%
Heavy	0%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 6:45 AM
Site Code Int 2-Hwy 102 North Ramps at Route 214 - AM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Hwy 102 Off Ramp Southbound					Trunk 214 Westbound					Hwy 102 On Ramp Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM	0	0	0		0		0	0	0	0					0	0	0		0	0	0
7:00 AM	4	0	13		17		24	81	0	105					0	47	35		0	82	204
7:15 AM	14	0	14		28		32	85	0	117					0	43	59		0	102	247
7:30 AM	14	0	23		37		64	84	0	148					0	50	49		0	99	284
7:45 AM	18	0	24		42		81	81	0	162					0	45	73		0	118	322
8:00 AM	11	1	22		34		64	69	0	133					0	41	60		0	101	268
8:15 AM	11	0	24		35		78	59	0	137					0	26	59		0	85	257
8:30 AM	12	1	17		30		75	58	0	133					0	16	59		0	75	238
8:45 AM	11	0	24		35		76	29	0	105					0	21	66		0	87	227
9:00 AM	10	0	16		26		66	26	0	92					0	22	59		0	81	199
Peak Hour Total by Movement					148 148					580 580					0 0					403 403	1131 1131

Car	95%
Medium	3%
Heavy	3%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 10:45 AM
Site Code Int 2-Hwy 102 North Ramps at Route 214 - Noon
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Hwy 102 Off Ramp Southbound					Trunk 214 Westbound					Hwy 102 On Ramp Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
10:45 AM	0	0	19		19		111	35	0	146					0	31	92		0	123	288
11:00 AM	8	0	16		24		104	30	0	134					0	22	89		0	111	269
11:15 AM	16	0	29		45		111	37	0	148					0	24	98		0	122	315
11:30 AM	21	0	24		45		90	39	0	129					0	27	101		0	128	302
11:45 AM	12	0	18		30		99	39	0	138					0	34	95		0	129	297
12:00 PM	18	0	22		40		103	41	0	144					0	30	128		0	158	342
12:15 PM	16	1	14		31		106	49	0	155					0	26	94		0	120	306
12:30 PM	13	0	17		30		112	40	0	152					0	29	95		0	124	306
12:45 PM	13	0	18		31		114	26	0	140					0	24	83		0	107	278
1:00 PM	11	0	19		30		125	45	0	170					0	24	73		0	97	297
Peak Hour Total by Movement					131 131					589 589					0 0					531 531	1251 1251

Car	94%
Medium	4%
Heavy	3%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 3:45 PM
Site Code Int 2-Hwy 102 North Ramps at Route 214 - PM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Hwy 102 Off Ramp Southbound					Trunk 214 Westbound					Hwy 102 On Ramp Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM	22	0	20		42		137	33	0	170					0	54	108		0	162	374
4:00 PM	19	1	17		37		153	44	0	197					0	34	117		0	151	385
4:15 PM	34	0	14		48		197	28	0	225					0	49	109		0	158	431
4:30 PM	21	0	27		48		147	30	0	177					0	40	140		0	180	405
4:45 PM	20	0	24		44		165	39	0	204					0	36	149		0	185	433
5:00 PM	26	0	24		50		174	38	0	212					0	37	113		0	150	412
5:15 PM	26	0	21		47		188	42	0	230					0	41	118		0	159	436
5:30 PM	29	0	15		44		163	49	0	212					0	28	119		0	147	403
5:45 PM	21	0	23		44		122	39	0	161					0	34	104		0	138	343
6:00 PM	14	0	13		27		107	44	0	151					0	23	85		0	108	286
Peak Hour Total by Movement					189 189					823 823					0 0					674 674	1686 1686

Car	98%
Medium	2%
Heavy	0%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 6:45 AM
Site Code Int 3-Hwy 102 South Ramps at Route 214
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Hwy 102 On Ramp Southbound					Trunk 214 Westbound					Hwy 102 Off Ramp Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM					0	23	132		0	155	21	0	15		36		46	4	0	50	241
7:00 AM					0	25	130		0	155	23	1	7		31		59	2	0	61	247
7:15 AM					0	34	110		0	144	34	1	7		42		72	4	0	76	262
7:30 AM					0	34	138		0	172	36	0	18		54		71	9	0	80	306
7:45 AM					0	33	134		0	167	35	0	22		57		88	5	0	93	317
8:00 AM					0	45	111		0	156	37	0	15		52		71	11	0	82	290
8:15 AM					0	31	119		0	150	37	1	21		59		77	8	0	85	294
8:30 AM					0	28	114		0	142	33	0	21		54		66	10	0	76	272
8:45 AM					0	31	85		0	116	38	0	17		55		83	6	0	89	260
9:00 AM					0	33	72		0	105	31	0	16		47		70	6	0	76	228
Peak Hour Total by Movement					0					645					222					340	1207
					0					645					222					340	1207

Car	92%
Medium	4%
Heavy	3%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 3:45 PM
Site Code Int 3-Hwy 102 South Ramps at Route 214
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Hwy 102 On Ramp Southbound					Trunk 214 Westbound					Hwy 102 Off Ramp Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM					0	42	115		0	157	85	0	51		136		107	24	0	131	424
4:00 PM					0	44	122		0	166	91	0	88		179		104	24	0	128	473
4:15 PM					0	41	127		0	168	81	0	81		162		112	25	0	137	467
4:30 PM					0	38	122		0	160	70	1	65		136		138	28	0	166	462
4:45 PM					0	56	123		0	179	73	0	79		152		142	23	0	165	496
5:00 PM					0	62	136		0	198	83	0	67		150		105	31	0	136	484
5:15 PM					0	38	154		0	192	88	0	78		166		124	17	0	141	499
5:30 PM					0	35	148		0	183	97	0	56		153		101	33	0	134	470
5:45 PM					0	48	111		0	159	69	1	51		121		98	19	0	117	397
6:00 PM					0	58	111		0	169	53	0	42		95		84	20	0	104	368
Peak Hour Total by Movement					0					752					621					576	1949
					0					752					621					576	1949

Car	97%
Medium	2%
Heavy	1%
Total	100%

Study Name East Hants Corridor
Start Date 06/21/2013
Start Time 6:45 AM
Site Code Int 4-Route 214 at Sobeys - Tim Hortons
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Sobeys Mall Southbound					Trunk 214 Westbound					n/a Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM	46		19	0	65	40	113		0	153					0		40	41	0	81	299
7:00 AM	63		17	0	80	51	97		0	148					0		48	33	0	81	309
7:15 AM	55		26	0	81	64	93		0	157					0		55	44	0	99	337
7:30 AM	57		20	0	77	44	109		0	153					0		58	42	0	100	330
7:45 AM	50		35	0	85	52	121		0	173					0		86	45	0	131	389
8:00 AM	40		28	0	68	74	114		0	188					0		74	35	0	109	365
8:15 AM	57		45	0	102	67	92		0	159					0		70	42	0	112	373
8:30 AM	44		41	0	85	54	105		0	159					0		55	50	0	105	349
8:45 AM	42		38	0	80	59	67		0	126					0		79	38	0	117	323
9:00 AM	40		38	0	78	58	67		0	125					0		61	38	0	99	302
Peak Hour Total by Movement					340 340					679 679					0 0					457 457	1476 1476

Car	94%
Medium	4%
Heavy	3%
Total	100%

Study Name East Hants Corridor
Start Date 06/24/2013
Start Time 3:45 PM
Site Code Int 4-Route 214 at Sobeys - Tim Hortons
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Sobeys Driveway Southbound					Trunk 214 Westbound					n/a Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM	59		53	0	112	66	73		0	139					0		110	50	0	160	411
4:00 PM	50		69	0	119	46	88		0	134					0		123	64	0	187	440
4:15 PM	57		64	0	121	52	95		0	147					0		101	52	0	153	421
4:30 PM	55		60	0	115	48	84		0	132					0		116	62	0	178	425
4:45 PM	52		66	0	118	59	101		0	160					0		137	62	0	199	477
5:00 PM	63		69	0	132	50	100		0	150					0		144	78	0	222	504
5:15 PM	55		82	0	137	54	83		0	137					0		123	58	0	181	455
5:30 PM	63		47	0	110	43	63		0	106					0		102	51	0	153	369
5:45 PM	44		55	0	99	47	88		0	135					0		111	30	0	141	375
6:00 PM	44		46	0	90	54	63		0	117					0		106	46	0	152	359
Peak Hour Total by Movement					502 502					579 579					0 0					780 780	1861 1861

Car	97%
Medium	2%
Heavy	1%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 6:50 AM
Site Code Int 5-Trunk 2 @ Route 214 - Lights & CN Rail - AM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Trunk 214 Westbound					Route 2 Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:50 AM	55	17	1	0	73	2	53	20	0	75	10	10	31	0	51	35	16	17	0	68	267
7:05 AM	59	22	3	0	84	2	57	16	0	75	8	3	35	0	46	21	14	17	0	52	257
7:20 AM	61	23	1	0	85	1	63	13	0	77	2	13	31	0	46	31	12	18	0	61	269
7:35 AM	65	40	1	0	106	1	45	20	0	66	9	21	45	0	75	54	13	14	0	81	328
7:50 AM	60	29	2	0	91	1	31	16	0	48	11	28	65	0	104	41	23	23	0	87	330
8:05 AM	54	21	0	0	75	2	34	8	0	44	10	15	58	0	83	46	18	14	0	78	280
8:20 AM	34	24	1	0	59	6	38	15	0	59	6	18	62	0	86	33	20	11	0	64	268
8:35 AM	45	16	3	0	64	1	31	14	0	46	13	19	55	0	87	36	26	27	0	89	286
8:50 AM	29	10	4	0	43	3	33	6	0	42	3	20	47	0	70	39	12	14	0	65	220
					0					0					0					0	0
Peak Hour Total by Movement					357 357					235 235					308 308					307 307	1207 1207

Car	91%
Medium	5%
Heavy	4%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 3:55 PM
Site Code Int 5-Trunk 2 @ Route 214 - Lights & CN Rail - PM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Trunk 214 Westbound					Route 2 Northbound					Trunk 214 Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:55 PM	30	22	4	0	56	6	33	10	0	49	24	33	82	0	139	71	43	47	0	161	405
4:10 PM	35	32	4	0	71	3	27	11	0	41	38	41	63	0	142	74	40	47	0	161	415
4:25 PM	32	30	3	0	65	4	30	13	0	47	26	56	64	0	146	81	52	54	0	187	445
4:40 PM	37	25	1	0	63	3	34	8	0	45	30	46	67	0	143	64	50	49	0	163	414
4:55 PM	25	18	3	0	46	1	37	9	0	47	33	58	73	0	164	72	62	67	0	201	458
5:10 PM	29	20	5	0	54	6	25	10	0	41	36	39	64	0	139	66	49	62	0	177	411
5:25 PM	31	27	3	0	61	3	26	17	0	46	27	41	49	0	117	60	58	48	0	166	390
5:40 PM	26	22	3	0	51	7	26	23	0	56	16	84	65	0	165	71	33	83	0	187	459
5:55 PM	35	28	6	0	69	5	28	17	0	50	22	55	68	0	145	66	29	61	0	156	420
					0					0					0					0	0
Peak Hour Total by Movement					245 245					180 180					595 595					712 712	1732 1732

Car	96%
Medium	3%
Heavy	1%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 6:45 AM
Site Code Int 6-Trunk 2 & Shaw Driveway - AM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Shaw Driveway Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM		59	4	0	63	3		1	0	4	4	12		0	16					0	83
7:00 AM		72	4	0	76	0		2	0	2	1	20		0	21					0	99
7:15 AM		89	3	0	92	3		0	0	3	5	15		0	20					0	115
7:30 AM		100	6	0	106	1		3	0	4	5	28		0	33					0	143
7:45 AM		94	3	0	97	2		1	0	3	8	49		0	57					0	157
8:00 AM		66	3	0	69	0		0	0	0	4	31		0	35					0	104
8:15 AM		52	1	0	53	2		5	0	7	2	29		0	31					0	91
8:30 AM		54	0	0	54	4		4	0	8	1	30		0	31					0	93
8:45 AM		46	2	0	48	4		3	0	7	7	37		0	44					0	99
9:00 AM		35	4	1	40	5		6	0	11	0	21		0	21					0	72
Peak Hour Total					364					10					145					0	519
by Movement					364					10					145					0	519

Car	94%
Medium	1%
Heavy	4%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 10:45 AM
Site Code Int 6-Trunk 2 & Shaw Driveway - Noon
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Shaw Driveway Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
10:45 AM		36	0	0	36	1		5	0	6	2	39		0	41					0	83
11:00 AM		35	2	0	37	1		6	0	7	2	27		0	29					0	73
11:15 AM		44	1	0	45	1		1	0	2	3	38		0	41					0	88
11:30 AM		28	1	0	29	4		3	0	7	1	33		0	34					0	70
11:45 AM		55	1	0	56	1		3	0	4	1	44		0	45					0	105
12:00 PM		66	3	0	69	5		6	0	11	2	55		0	57					0	137
12:15 PM		53	3	0	56	10		5	0	15	3	35		0	38					0	109
12:30 PM		58	3	0	61	6		6	0	12	4	44		0	48					0	121
12:45 PM		56	2	0	58	1		1	0	2	3	42		0	45					0	105
1:00 PM		59	1	0	60	4		5	0	9	4	47		0	51					0	120
Peak Hour Total by Movement					242 242					42 42					188 188					0 0	472 472

Car	95%
Medium	1%
Heavy	4%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 3:45 PM
Site Code Int 6-Trunk 2 & Shaw Driveway - PM
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Shaw Driveway Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM		48	2	0	50	8		4	0	12	3	52		0	55					0	117
4:00 PM		55	2	0	57	6		8	0	14	0	82		0	82					0	153
4:15 PM		50	0	0	50	1		7	0	8	2	74		0	76					0	134
4:30 PM		65	0	0	65	3		5	0	8	2	107		0	109					0	182
4:45 PM		49	0	0	49	1		2	0	3	1	89		0	90					0	142
5:00 PM		42	0	0	42	2		0	0	2	0	118		0	118					0	162
5:15 PM		61	0	0	61	0		1	0	1	0	92		0	92					0	154
5:30 PM		53	1	0	54	1		2	0	3	0	83		0	83					0	140
5:45 PM		74	2	0	76	2		1	1	4	1	102		0	103					0	183
6:00 PM		63	0	0	63	1		2	0	3	0	82		0	82					0	148
Peak Hour Total by Movement					217 217					14 14					409 409					0 0	640 640

Car	98%
Medium	1%
Heavy	1%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 6:45 AM
Site Code Int 7-Trunk 2 & Dutch Settlement Road (Rt 277) - AM Peak
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Trunk 277 Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
6:45 AM		34	4	0	38	1		19	0	20	1	13		0	14					0	72
7:00 AM		56	0	0	56	6		10	0	16	4	19		0	23					0	95
7:15 AM		52	3	0	55	2		6	0	8	0	16		0	16					0	79
7:30 AM		74	3	0	77	5		21	0	26	2	24		0	26					0	129
7:45 AM		52	2	0	54	5		13	0	18	8	35		0	43					0	115
8:00 AM		51	2	0	53	5		7	0	12	2	29		0	31					0	96
8:15 AM		41	4	0	45	8		5	0	13	4	18		0	22					0	80
8:30 AM		37	1	0	38	4		13	0	17	4	32		0	36					0	91
8:45 AM		32	2	0	34	1		2	0	3	6	29		0	35					0	72
9:00 AM		30	1	0	31	3		5	0	8	2	17		0	19					0	58
Peak Hour Total					229					69					122					0	420
by Movement					229					69					122					0	420

Car	93%
Medium	2%
Heavy	5%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 10:45 AM
Site Code Int 7-Trunk 2 & Dutch Settlement Road (Rt 277) - Noon Peak
Project 131021 - East Hants Corridor Study

Type Road
Classification Totals

	Route 2 Southbound					Trunk 277 Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
10:45 AM		22	5	0	27	7		7	0	14	1	31		0	32					0	73
11:00 AM		32	2	0	34	2		1	0	3	6	20		0	26					0	63
11:15 AM		36	6	0	42	3		7	0	10	10	22		0	32					0	84
11:30 AM		25	2	0	27	2		6	0	8	5	25		0	30					0	65
11:45 AM		42	5	0	47	7		7	0	14	9	28		0	37					0	98
12:00 PM		44	3	0	47	6		10	0	16	9	33		0	42					0	105
12:15 PM		35	8	0	43	6		11	0	17	6	31		0	37					0	97
12:30 PM		38	6	0	44	8		9	0	17	6	34		0	40					0	101
12:45 PM		40	6	0	46	6		7	0	13	2	33		0	35					0	94
1:00 PM		40	1	0	41	4		6	0	10	9	29		0	38					0	89
Peak Hour Total					181					64					156					0	401
by Movement					181					64					156					0	401

Car	97%
Medium	2%
Heavy	2%
Total	100%

Study Name East Hants Corridor
Start Date 06/17/2013
Start Time 3:45 PM
Site Code Int 7-Trunk 2 & Dutch Settlement Road (Rt 277) - PM Peak
Project 131021 - East Hants Corridor Study

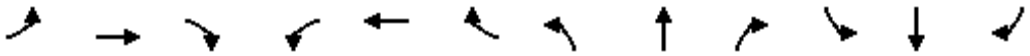
Type Road
Classification Totals

	Route 2 Southbound					Trunk 277 Westbound					Route 2 Northbound					n/a Eastbound					Peak Hour
Start Time	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Right	Thru	Left	U-Turn	TOTAL	Identified
3:45 PM		38	0	0	38	3		12	0	15	13	44		0	57					0	110
4:00 PM		42	6	0	48	6		5	0	11	15	50		0	65					0	124
4:15 PM		43	5	0	48	5		4	0	9	9	47		0	56					0	113
4:30 PM		46	3	0	49	5		11	0	16	18	63		0	81					0	146
4:45 PM		32	8	0	40	8		7	0	15	11	71		0	82					0	137
5:00 PM		35	7	0	42	13		9	0	22	13	79		0	92					0	156
5:15 PM		45	10	0	55	11		13	0	24	15	59		0	74					0	153
5:30 PM		37	7	0	44	13		11	0	24	10	58		0	68					0	136
5:45 PM		42	9	0	51	6		10	0	16	10	64		0	74					0	141
6:00 PM		54	4	0	58	8		8	0	16	18	52		0	70					0	144
Peak Hour Total					186					77					329					0	592
by Movement					186					77					329					0	592

Car	98%
Medium	1%
Heavy	1%
Total	100%

APPENDIX B

Synchro Analyses Results



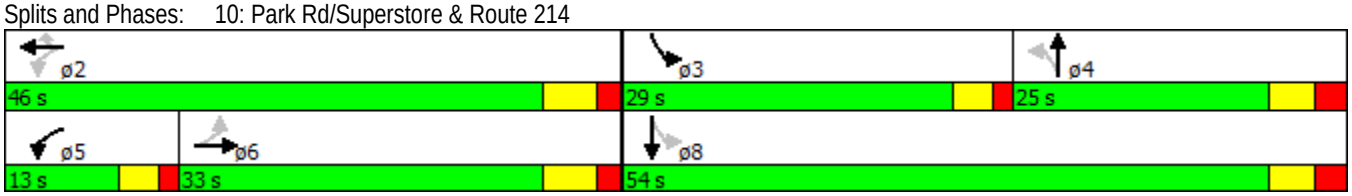
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	271	27	141	114	44	5	6	62	72	8	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1627	0	1789	1759	0
Flt Permitted	0.677			0.446			0.747			0.399		
Satd. Flow (perm)	1275	1859	0	840	1883	1601	1407	1627	0	751	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				82		67			7	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	35	295	29	153	124	48	5	7	67	78	9	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	324	0	153	124	48	5	74	0	78	16	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	33.0	33.0		13.0	46.0	46.0	25.0	25.0		29.0	54.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	31.2	31.2		45.1	45.0	45.0	7.4	7.4		18.5	17.3	
Actuated g/C Ratio	0.45	0.45		0.64	0.64	0.64	0.11	0.11		0.26	0.25	
v/c Ratio	0.06	0.39		0.24	0.10	0.05	0.03	0.32		0.25	0.04	
Control Delay	15.5	17.7		8.2	8.1	1.0	30.2	14.2		20.5	14.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.5	17.7		8.2	8.1	1.0	30.2	14.2		20.5	14.7	
LOS	B	B		A	A	A	C	B		C	B	
Approach Delay		17.5			7.1			15.3			19.5	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	2.9	31.0		8.4	7.1	0.0	0.6	0.9		7.7	0.9	
Queue Length 95th (m)	8.8	56.4		18.2	15.9	2.0	3.5	11.9		16.6	4.9	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	568	831		657	1210	1058	383	492		629	1214	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.39		0.23	0.10	0.05	0.01	0.15		0.12	0.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 13.6		Intersection LOS: B	

Intersection Capacity Utilization 48.1% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	14.3

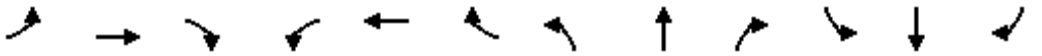
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	241	162	293	287	0	0	0	0	93	1	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	262	176	318	312	0	0	0	0	101	1	59

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	312	0	0	438	0	0				1299	1387	312
Stage 1	-	-	-	-	-	-				949	949	-
Stage 2	-	-	-	-	-	-				350	438	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	1248	-	-	1122	-	-				178	143	728
Stage 1	-	-	-	-	-	-				376	339	-
Stage 2	-	-	-	-	-	-				713	579	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1248	-	-	1122	-	-				117	# 0	728
Mov Capacity-2 Maneuver	-	-	-	-	-	-				117	# 0	-
Stage 1	-	-	-	-	-	-				247	# 0	-
Stage 2	-	-	-	-	-	-				713	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.8	90.2
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1248	-	-	1122	-	-	135	728
HCM Lane V/C Ratio	-	-	-	0.284	-	-	0.902	0.054
HCM Control Delay (s)	0	-	-	9.475	0	-	115.9	10.2
HCM Lane LOS	A			A	A		F	B
HCM 95th %tile Q(veh)	0	-	-	1.175	-	-	5.978	0.17

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

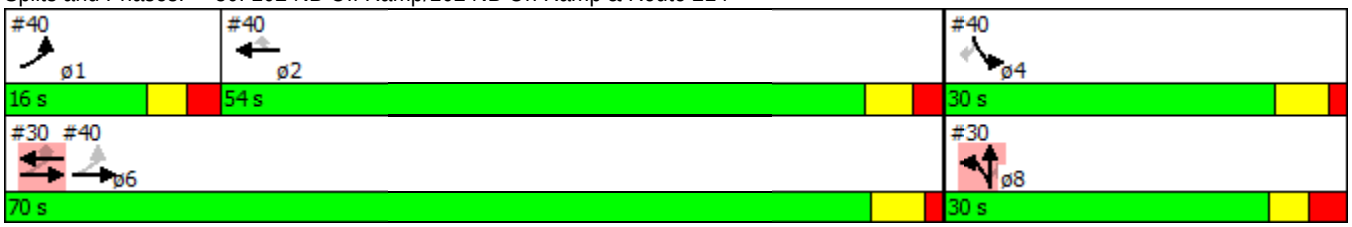


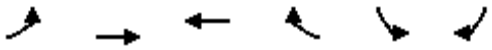
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	307	0	0	502	143	76	1	145	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.424							0.953				
Satd. Flow (perm)	799	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						155			158			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	36	334	0	0	546	155	83	1	158	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	334	0	0	546	155	0	84	158	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		6			6		8	8				
Permitted Phases	6					6			8			
Total Split (s)	70.0	70.0			70.0	70.0	30.0	30.0	30.0			
Total Lost Time (s)	5.5	5.5			5.5	5.5		6.0	6.0			
Act Effct Green (s)	62.6	62.6			62.6	62.6		12.6	12.6			
Actuated g/C Ratio	0.72	0.72			0.72	0.72		0.15	0.15			
v/c Ratio	0.06	0.25			0.40	0.13		0.32	0.43			
Control Delay	4.6	5.1			3.7	0.5		36.5	9.6			
Queue Delay	0.0	0.0			0.3	0.3		0.0	0.0			
Total Delay	4.6	5.1			4.0	0.8		36.5	9.6			
LOS	A	A			A	A		D	A			
Approach Delay		5.0			3.3			18.9				
Approach LOS		A			A			B				
Queue Length 50th (m)	1.4	15.5			11.9	0.0		12.6	0.0			
Queue Length 95th (m)	4.9	31.2			30.1	0.4		25.8	15.6			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	595	1403			1403	1233		498	558			
Starvation Cap Reductn	0	0			341	671		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.06	0.24			0.51	0.28		0.17	0.28			

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 86.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 6.7		Intersection LOS: A	

Intersection Capacity Utilization 42.8%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214





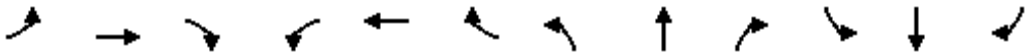
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	172	285	432	247	149	191	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.358				0.950		
Satd. Flow (perm)	674	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				169		208	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	187	310	470	268	162	208	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	187	310	470	268	162	208	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	1	6	2		4		8
Permitted Phases	6			2		4	
Total Split (s)	16.0	70.0	54.0	54.0	30.0	30.0	30.0
Total Lost Time (s)	5.5	5.5	6.0	6.0	5.5	5.5	
Act Effct Green (s)	63.4	63.4	48.4	48.4	18.0	18.0	
Actuated g/C Ratio	0.69	0.69	0.52	0.52	0.19	0.19	
v/c Ratio	0.33	0.24	0.48	0.29	0.47	0.44	
Control Delay	5.5	4.3	17.7	6.6	37.0	7.5	
Queue Delay	0.3	0.5	0.0	0.0	0.0	0.0	
Total Delay	5.8	4.8	17.7	6.6	37.0	7.5	
LOS	A	A	B	A	D	A	
Approach Delay		5.2	13.7		20.4		
Approach LOS		A	B		C		
Queue Length 50th (m)	5.4	9.3	59.6	10.0	25.8	0.0	
Queue Length 95th (m)	13.7	21.1	88.9	25.1	44.4	16.8	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	589	1325	985	919	478	580	
Starvation Cap Reductn	121	617	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	0.40	0.44	0.48	0.29	0.34	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: Err			
Intersection Signal Delay: 12.6		Intersection LOS: B	

Intersection Capacity Utilization 54.7% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 40: Route 214 & Sobeys

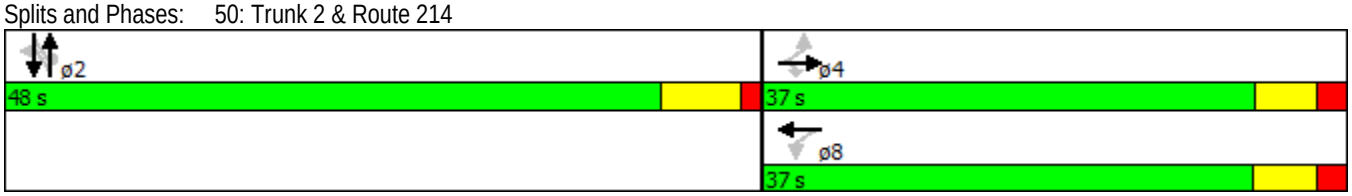


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	74	174	59	148	10	230	82	36	4	114	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1842	1601	0	1848	0	1789	1797	0	1789	1699	0
Flt Permitted		0.784			0.859		0.548			0.675		
Satd. Flow (perm)	0	1477	1601	0	1608	0	1032	1797	0	1271	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		3			36			155	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	67	80	189	64	161	11	250	89	39	4	124	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	189	0	236	0	250	128	0	4	356	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			2	
Permitted Phases	4		4	8			2			2		
Total Split (s)	37.0	37.0	37.0	37.0	37.0		48.0	48.0		48.0	48.0	
Total Lost Time (s)		6.0	6.0		6.1		6.5	6.5		6.5	6.5	
Act Effct Green (s)		13.0	13.0		12.9		19.5	19.5		19.5	19.5	
Actuated g/C Ratio		0.28	0.28		0.28		0.42	0.42		0.42	0.42	
v/c Ratio		0.36	0.32		0.53		0.57	0.16		0.01	0.44	
Control Delay		18.4	5.0		20.7		16.1	6.8		8.0	7.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		18.4	5.0		20.7		16.1	6.8		8.0	7.0	
LOS		B	A		C		B	A		A	A	
Approach Delay		10.9			20.7			12.9			7.0	
Approach LOS		B			C			B			A	
Queue Length 50th (m)		8.6	0.0		14.4		13.0	3.8		0.2	9.0	
Queue Length 95th (m)		29.0	12.6		44.5		37.5	13.3		1.5	28.2	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		1065	1208		1158		897	1566		1104	1497	
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		0.14	0.16		0.20		0.28	0.08		0.00	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 46.2			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 12.2		Intersection LOS: B	

Intersection Capacity Utilization 66.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	4	6	123	22	15	349
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	7	134	24	16	379

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	146	0	0	158	0
Stage 1	146	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	491	901	-	-	1422	-
Stage 1	881	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	484	901	-	-	1422	-
Mov Capacity-2 Maneuver	484	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0.3
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	670	1422	-
HCM Lane V/C Ratio	-	-	0.016	0.011	-
HCM Control Delay (s)	-	-	10.5	7.561	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.049	0.035	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

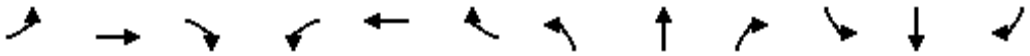
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	46	23	106	16	11	218
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	25	115	17	12	237

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	385	124	0	0	133	0
Stage 1	124	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	618	927	-	-	1452	-
Stage 1	902	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	612	927	-	-	1452	-
Mov Capacity-2 Maneuver	612	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0.4
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	690	1452	-
HCM Lane V/C Ratio	-	-	0.109	0.008	-
HCM Control Delay (s)	-	-	10.9	7.5	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.364	0.025	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

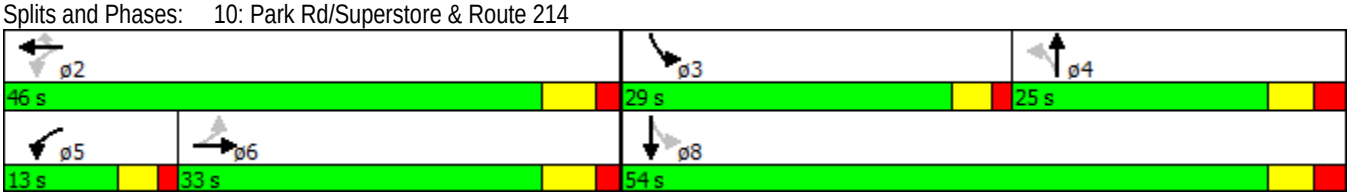


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	193	7	53	336	204	22	25	153	289	4	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1872	0	1789	1883	1601	1789	1640	0	1789	1614	0
Flt Permitted	0.544			0.532			0.699			0.303		
Satd. Flow (perm)	1025	1872	0	1002	1883	1601	1317	1640	0	571	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				222		166			85	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	33	210	8	58	365	222	24	27	166	314	4	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	218	0	58	365	222	24	193	0	314	89	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	33.0	33.0		13.0	46.0	46.0	25.0	25.0		29.0	54.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	33.2	33.2		41.7	40.2	40.2	8.7	8.7		30.9	29.4	
Actuated g/C Ratio	0.41	0.41		0.51	0.49	0.49	0.11	0.11		0.38	0.36	
v/c Ratio	0.08	0.29		0.10	0.39	0.25	0.17	0.60		0.69	0.14	
Control Delay	21.3	21.1		12.6	16.0	3.0	37.3	17.1		27.1	4.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.3	21.1		12.6	16.0	3.0	37.3	17.1		27.1	4.8	
LOS	C	C		B	B	A	D	B		C	A	
Approach Delay		21.1			11.2			19.4			22.1	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	3.3	23.3		4.1	32.3	0.0	3.5	3.9		35.8	0.4	
Queue Length 95th (m)	11.4	50.5		12.5	67.8	12.3	10.9	23.2		55.8	8.4	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	417	762		593	926	900	307	510		583	987	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.29		0.10	0.39	0.25	0.08	0.38		0.54	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 81.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 16.9		Intersection LOS: B	

Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	31.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	520	154	149	674	0	0	0	0	96	0	93
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	565	167	162	733	0	0	0	0	104	0	101

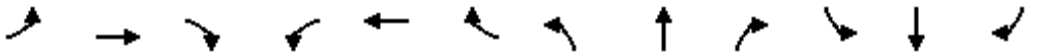
Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	733	0	0	733	0	0				1706	1790	733
Stage 1	-	-	-	-	-	-				1057	1057	-
Stage 2	-	-	-	-	-	-				649	733	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	872	-	-	872	-	-				# 100	81	421
Stage 1	-	-	-	-	-	-				334	302	-
Stage 2	-	-	-	-	-	-				520	426	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	872	-	-	872	-	-				# 69	0	421
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 69	0	-
Stage 1	-	-	-	-	-	-				229	0	-
Stage 2	-	-	-	-	-	-				520	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.8	270.5
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	872	-	-	872	-	-	87	421
HCM Lane V/C Ratio	-	-	-	0.186	-	-	1.587	0.16
HCM Control Delay (s)	0	-	-	10.068	0	-	$ 395.1	15.2
HCM Lane LOS	A			B	A		F	C
HCM 95th %tile Q(veh)	0	-	-	0.679	-	-	11.061	0.565

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined



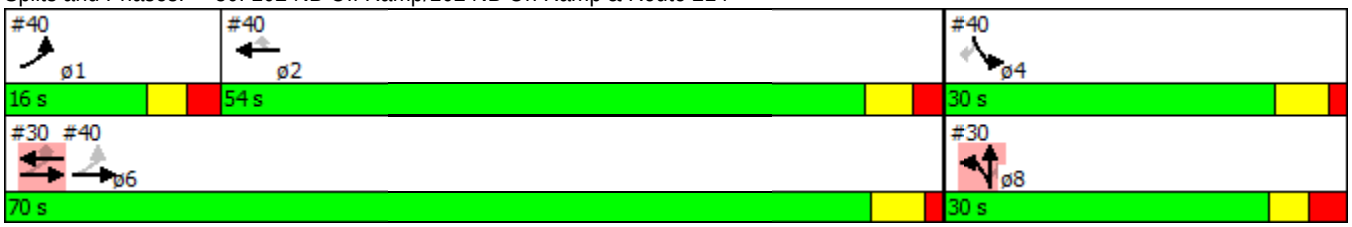
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	472	0	0	561	191	280	0	341	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1789	1601	0	0	0
Flt Permitted	0.360							0.950				
Satd. Flow (perm)	678	1883	0	0	1883	1601	0	1789	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						208			371			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	113	513	0	0	610	208	304	0	371	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	513	0	0	610	208	0	304	371	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		6			6		8	8				
Permitted Phases	6					6			8			
Total Split (s)	70.0	70.0			70.0	70.0	30.0	30.0	30.0			
Total Lost Time (s)	5.5	5.5			5.5	5.5		6.0	6.0			
Act Effct Green (s)	64.0	64.0			64.0	64.0		20.4	20.4			
Actuated g/C Ratio	0.67	0.67			0.67	0.67		0.21	0.21			
v/c Ratio	0.25	0.41			0.49	0.18		0.80	0.59			
Control Delay	8.9	9.0			6.5	0.8		52.3	7.6			
Queue Delay	0.0	0.0			0.6	0.5		0.0	0.0			
Total Delay	8.9	9.0			7.1	1.2		52.3	7.6			
LOS	A	A			A	A		D	A			
Approach Delay		9.0			5.6			27.8				
Approach LOS		A			A			C				
Queue Length 50th (m)	8.1	42.1			26.0	0.0		54.1	0.0			
Queue Length 95th (m)	17.2	63.8			47.8	1.0		83.2	22.1			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	457	1270			1270	1147		449	680			
Starvation Cap Reductn	0	0			323	586		0	0			
Spillback Cap Reductn	0	33			0	0		0	6			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.25	0.41			0.64	0.37		0.68	0.55			

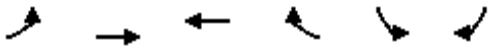
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 95.9			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 13.7		Intersection LOS: B	

Intersection Capacity Utilization 65.0% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214





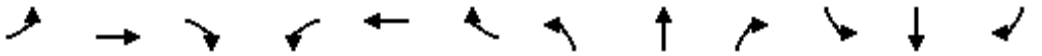
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	260	520	368	211	277	225	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.399				0.950		
Satd. Flow (perm)	751	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				170		245	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	283	565	400	229	301	245	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	283	565	400	229	301	245	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	1	6	2		4		8
Permitted Phases	6			2		4	
Total Split (s)	16.0	70.0	54.0	54.0	30.0	30.0	30.0
Total Lost Time (s)	5.5	5.5	6.0	6.0	5.5	5.5	
Act Effct Green (s)	64.0	64.0	48.2	48.2	20.7	20.7	
Actuated g/C Ratio	0.67	0.67	0.50	0.50	0.22	0.22	
v/c Ratio	0.47	0.45	0.42	0.26	0.78	0.46	
Control Delay	6.7	6.1	17.6	5.2	50.0	7.0	
Queue Delay	0.3	0.6	0.0	0.0	0.0	0.0	
Total Delay	7.0	6.7	17.6	5.2	50.0	7.1	
LOS	A	A	B	A	D	A	
Approach Delay		6.8	13.1		30.7		
Approach LOS		A	B		C		
Queue Length 50th (m)	9.3	19.9	46.9	5.7	53.1	0.0	
Queue Length 95th (m)	21.9	41.2	73.0	18.5	81.9	18.0	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	616	1273	947	889	459	593	
Starvation Cap Reductn	60	351	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	4	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.51	0.61	0.42	0.26	0.66	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 95.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 15.2		Intersection LOS: B	

Intersection Capacity Utilization 63.3% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 40: Route 214 & Sobeys



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	204	291	41	128	11	267	201	127	11	105	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1836	1601	0	1848	0	1789	1774	0	1789	1727	0
Flt Permitted		0.759			0.835		0.602			0.477		
Satd. Flow (perm)	0	1430	1601	0	1560	0	1134	1774	0	898	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			316		4			52			102	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	236	222	316	45	139	12	290	218	138	12	114	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	458	316	0	196	0	290	356	0	12	254	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			2	
Permitted Phases	4		4	8			2			2		
Total Split (s)	37.0	37.0	37.0	37.0	37.0		48.0	48.0		48.0	48.0	
Total Lost Time (s)		6.0	6.0		6.1		6.5	6.5		6.5	6.5	
Act Effct Green (s)		26.9	26.9		26.8		24.6	24.6		24.6	24.6	
Actuated g/C Ratio		0.41	0.41		0.41		0.38	0.38		0.38	0.38	
v/c Ratio		0.77	0.37		0.30		0.67	0.50		0.04	0.35	
Control Delay		29.9	3.7		16.5		25.5	15.6		12.6	9.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		29.9	3.7		16.5		25.5	15.6		12.6	9.9	
LOS		C	A		B		C	B		B	A	
Approach Delay		19.2			16.5			20.0			10.1	
Approach LOS		B			B			C			B	
Queue Length 50th (m)		44.2	0.0		14.5		30.9	29.3		1.0	13.2	
Queue Length 95th (m)		#122.3	15.4		38.9		53.8	48.8		3.7	26.9	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		730	972		796		769	1219		609	1204	
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		0.63	0.33		0.25		0.38	0.29		0.02	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 64.9			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.9		Intersection LOS: B	

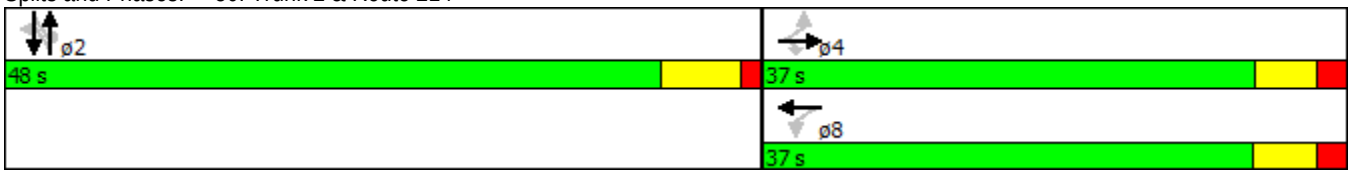
Intersection Capacity Utilization 81.6% ICU Level of Service D

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	8	6	406	3	0	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	7	441	3	0	236

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	679	443	0	0	445	0
Stage 1	443	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	417	615	-	-	1115	-
Stage 1	647	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	417	615	-	-	1115	-
Mov Capacity-2 Maneuver	417	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	803	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	484	1115	-
HCM Lane V/C Ratio	-	-	0.031	-	-
HCM Control Delay (s)	-	-	12.7	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.097	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	40	37	272	57	28	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	40	296	62	30	172

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	560	327	0	0	358	0
Stage 1	327	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	489	714	-	-	1201	-
Stage 1	731	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	475	714	-	-	1201	-
Mov Capacity-2 Maneuver	475	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	1.2
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	566	1201	-
HCM Lane V/C Ratio	-	-	0.148	0.025	-
HCM Control Delay (s)	-	-	12.5	8.075	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.516	0.078	-

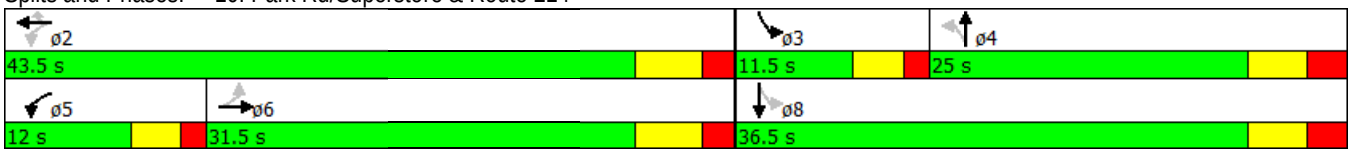
Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	324	31	175	159	67	6	7	75	89	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1625	0	1789	1757	0
Flt Permitted	0.648			0.386			0.746			0.396		
Satd. Flow (perm)	1220	1859	0	727	1883	1601	1405	1625	0	746	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		82			8	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	40	352	34	190	173	73	7	8	82	97	10	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	386	0	190	173	73	7	90	0	97	18	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	31.5	31.5		12.0	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	29.1	29.1		42.6	42.4	42.4	7.5	7.5		17.6	16.4	
Actuated g/C Ratio	0.44	0.44		0.64	0.64	0.64	0.11	0.11		0.26	0.25	
v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.04	0.35		0.32	0.04	
Control Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
LOS	B	B		A	A	A	C	B		C	B	
Approach Delay		18.0			7.1			14.1			19.7	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	3.2	36.8		10.3	9.8	0.0	0.8	0.9		9.1	0.9	
Queue Length 95th (m)	9.3	64.3		20.7	19.9	3.2	4.1	12.4		19.1	5.0	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	533	816		584	1199	1057	402	524		307	812	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.02	0.17		0.32	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	6333.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	304	188	687	411	0	0	0	0	123	1	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	330	204	747	447	0	0	0	0	134	1	68

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	447	0	0	535	0	0				2373	2475	447
Stage 1	-	-	-	-	-	-				1940	1940	-
Stage 2	-	-	-	-	-	-				433	535	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	1113	-	-	1033	-	-				# 38	30	612
Stage 1	-	-	-	-	-	-				# 123	112	-
Stage 2	-	-	-	-	-	-				654	524	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1113	-	-	1033	-	-				# 1	# 0	612
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 1	# 0	-
Stage 1	-	-	-	-	-	-				# 5	# 0	-
Stage 2	-	-	-	-	-	-				654	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	10.6	$ 60121.4
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1113	-	-	1033	-	-	1	612
HCM Lane V/C Ratio	-	-	-	0.723	-	-	157.609	0.075
HCM Control Delay (s)	0	-	-	16.995	0	-	$ 77532.6	11.4
HCM Lane LOS	A			C	A		F	B
HCM 95th %tile Q(veh)	0	-	-	6.606	-	-	22.234	0.241

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	386	0	0	1007	206	88	1	277	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.040							0.953				
Satd. Flow (perm)	75	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						146			301			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	41	420	0	0	1095	224	96	1	301	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	420	0	0	1095	224	0	97	301	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	105.0	105.0			80.6	80.6	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	99.0	99.0			74.6	74.6		18.5	18.5			
Actuated g/C Ratio	0.76	0.76			0.58	0.58		0.14	0.14			
v/c Ratio	0.72	0.29			1.01	0.23		0.38	0.62			
Control Delay	74.6	5.3			38.5	1.6		55.0	11.4			
Queue Delay	0.0	0.1			9.7	1.6		0.0	63.9			
Total Delay	74.6	5.3			48.3	3.2		55.0	75.4			
LOS	E	A			D	A		E	E			
Approach Delay		11.5			40.6			70.4				
Approach LOS		B			D			E				
Queue Length 50th (m)	4.8	28.5			~286.9	0.3		22.8	0.0			
Queue Length 95th (m)	#15.8	39.6			#371.8	m4.6		40.0	26.1			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	57	1439			1084	983		263	492			
Starvation Cap Reductn	0	0			32	586		0	0			
Spillback Cap Reductn	0	215			0	0		0	295			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.72	0.34			1.04	0.56		0.37	1.53			

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 129.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 39.9		Intersection LOS: D	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	

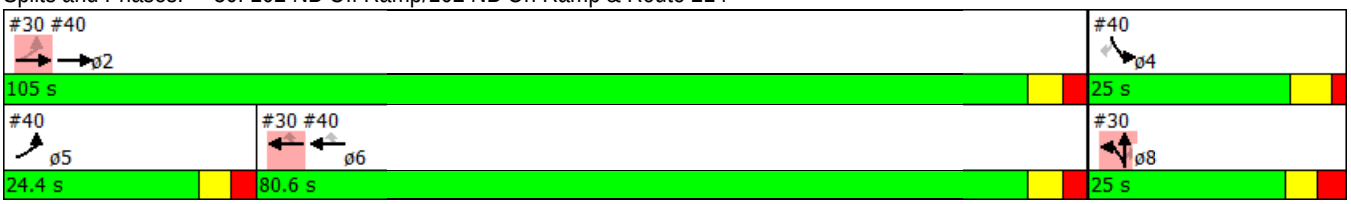
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	239	415	844	467	219	371	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				154		326	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	260	451	917	508	238	403	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	260	451	917	508	238	403	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	24.4	105.0	80.6	80.6	25.0	25.0	25.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	18.9	99.0	74.6	74.6	19.0	19.0	
Actuated g/C Ratio	0.15	0.76	0.58	0.58	0.15	0.15	
v/c Ratio	1.00	0.31	0.85	0.51	0.91	0.79	
Control Delay	104.4	3.8	31.9	13.1	90.9	23.3	
Queue Delay	36.2	0.9	1.0	0.0	0.0	4.7	
Total Delay	140.6	4.7	32.9	13.1	90.9	28.0	
LOS	F	A	C	B	F	C	
Approach Delay		54.4	25.8		51.4		
Approach LOS		D	C		D		
Queue Length 50th (m)	~63.7	14.4	186.5	51.3	60.6	17.9	
Queue Length 95th (m)	#119.8	34.3	253.9	79.5	#106.9	#57.7	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	261	1439	1084	987	269	518	
Starvation Cap Reductn	66	679	0	0	0	0	
Spillback Cap Reductn	0	0	44	0	0	65	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.33	0.59	0.88	0.51	0.88	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 129.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 39.0		Intersection LOS: D	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	

Analysis Period (min) 15

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	211	105	202	98	240	26	267	112	52	18	186	676
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1823	1601	0	1840	0	1789	1793	0	1789	1661	0
Flt Permitted		0.493			0.516		0.950			0.950		
Satd. Flow (perm)	0	929	1601	0	962	0	1789	1793	0	1789	1661	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			177		3			23			150	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	229	114	220	107	261	28	290	122	57	20	202	735
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	343	220	0	396	0	290	179	0	20	937	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	57.0	57.0	57.0	57.0	57.0		24.0	83.0		10.0	69.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		51.0	51.0		50.9		19.0	80.5		5.0	62.5	
Actuated g/C Ratio		0.34	0.34		0.34		0.13	0.54		0.03	0.42	
v/c Ratio		1.09	0.33		1.21		1.28	0.18		0.34	1.20	
Control Delay		122.3	9.8		160.4		206.5	16.8		86.3	136.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		122.3	9.8		160.4		206.5	16.8		86.3	136.1	
LOS		F	A		F		F	B		F	F	
Approach Delay		78.4			160.4			134.1			135.1	
Approach LOS		E			F			F			F	
Queue Length 50th (m)		~114.1	8.7		~142.9		~109.0	24.4		5.9	~311.0	
Queue Length 95th (m)		#175.8	28.6		#207.9		#166.9	38.8		15.1	#391.7	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		315	661		328		226	972		59	779	
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		1.09	0.33		1.21		1.28	0.18		0.34	1.20	

Intersection Summary

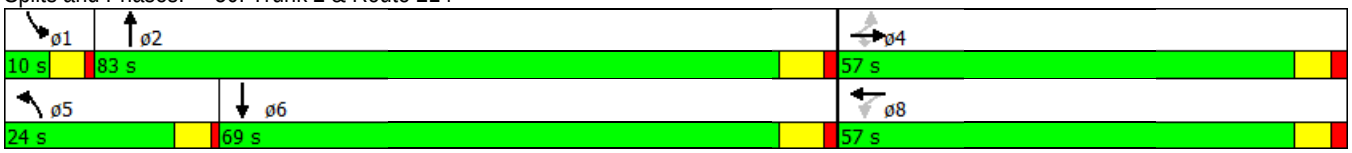
Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.28
Intersection Signal Delay: 125.7 Intersection LOS: F
Intersection Capacity Utilization 118.4% ICU Level of Service H

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	9	284	29	27	824
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	10	309	32	29	896

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1278	324	0	0	340	0
Stage 1	324	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	183	717	-	-	1219	-
Stage 1	733	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	174	717	-	-	1219	-
Mov Capacity-2 Maneuver	174	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	356	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0.3
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	319	1219	-
HCM Lane V/C Ratio	-	-	0.051	0.024	-
HCM Control Delay (s)	-	-	16.9	8.026	0
HCM Lane LOS			C	A	A
HCM 95th %tile Q(veh)	-	-	0.161	0.074	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	55	37	264	21	23	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	40	287	23	25	730

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1078	298	0	0	310	0
Stage 1	298	-	-	-	-	-
Stage 2	780	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	242	741	-	-	1250	-
Stage 1	753	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	234	741	-	-	1250	-
Mov Capacity-2 Maneuver	234	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	437	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	0.3
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	323	1250	-
HCM Lane V/C Ratio	-	-	0.31	0.02	-
HCM Control Delay (s)	-	-	21.1	7.939	0
HCM Lane LOS			C	A	A
HCM 95th %tile Q(veh)	-	-	1.286	0.061	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	253	8	69	407	247	26	29	189	352	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1874	0	1789	1883	1601	1789	1639	0	1789	1614	0
Flt Permitted	0.507			0.459			0.690			0.301		
Satd. Flow (perm)	955	1874	0	864	1883	1601	1300	1639	0	567	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				268		205			99	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	38	275	9	75	442	268	28	32	205	383	5	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	284	0	75	442	268	28	237	0	383	104	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		11.5	41.8	41.8	25.0	25.0		13.2	38.2	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.7	26.7		37.3	35.8	35.8	8.8	8.8		23.5	22.0	
Actuated g/C Ratio	0.38	0.38		0.53	0.51	0.51	0.13	0.13		0.34	0.32	
v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.17	0.62		1.12	0.18	
Control Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
LOS	B	B		A	B	A	C	B		F	A	
Approach Delay		19.2			9.1			15.8			86.5	
Approach LOS		B			A			B			F	
Queue Length 50th (m)	3.2	26.4		4.1	32.0	0.0	3.3	3.8		~42.7	0.5	
Queue Length 95th (m)	10.1	51.7		11.4	63.3	10.8	9.8	21.8		#109.3	9.3	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	365	717		555	966	951	354	595		343	798	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.08	0.40		1.12	0.13	

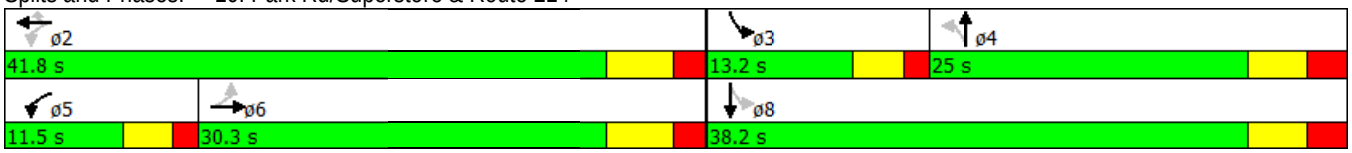
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 10: Park Rd/Superstore & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	699	179	387	847	0	0	0	0	155	1	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		20.0
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1831	0	0	1855	0	0	0	0	0	1795	1601
Flt Permitted					0.985						0.953	
Satd. Flow (perm)	0	1831	0	0	1855	0	0	0	0	0	1795	1601
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		241.7			236.2			270.9			280.1	
Travel Time (s)		17.4			17.0			12.2			12.6	
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
Adj. Flow (vph)	0	760	195	421	921	0	0	0	0	168	1	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	955	0	0	1342	0	0	0	0	0	169	117
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	659	0	0	930	251	325	0	844	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1789	1601	0	0	0
Flt Permitted	0.062							0.950				
Satd. Flow (perm)	117	1883	0	0	1883	1601	0	1789	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						131			232			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	132	716	0	0	1011	273	353	0	917	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	716	0	0	1011	273	0	353	917	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	26.0	90.0			64.0	64.0	50.0	50.0	50.0			
Total Lost Time (s)	5.5	5.5			5.5	5.5		6.0	6.0			
Act Effct Green (s)	84.5	84.5			58.5	58.5		44.0	44.0			
Actuated g/C Ratio	0.60	0.60			0.42	0.42		0.31	0.31			
v/c Ratio	0.42	0.63			1.29	0.37		0.63	1.39			
Control Delay	26.1	20.9			161.3	6.9		46.9	210.9			
Queue Delay	0.0	1.0			0.1	2.6		0.0	20.1			
Total Delay	26.1	21.8			161.3	9.4		46.9	231.0			
LOS	C	C			F	A		D	F			
Approach Delay		22.5			129.0			179.9				
Approach LOS		C			F			F				
Queue Length 50th (m)	17.1	120.9			~357.6	0.9		83.6	~291.7			
Queue Length 95th (m)	37.6	160.3			m#423.0	m14.6		117.4	#370.9			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	315	1136			786	745		562	662			
Starvation Cap Reductn	0	0			10	350		0	0			
Spillback Cap Reductn	0	191			0	0		0	530			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.42	0.76			1.30	0.69		0.63	6.95			

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 121.5		Intersection LOS: F	
Intersection Capacity Utilization 96.5%		ICU Level of Service F	

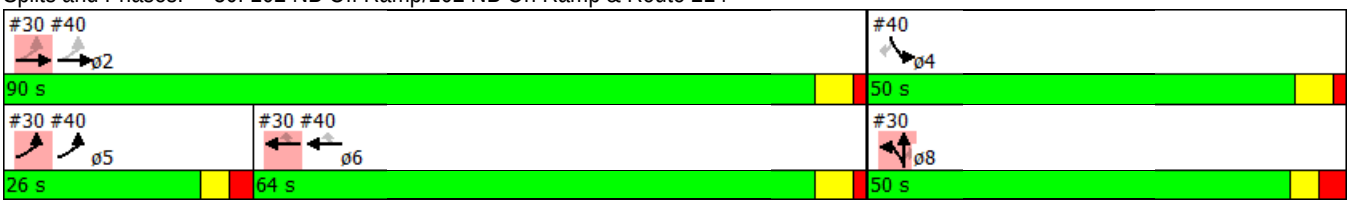
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	453	955	653	365	494	360	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.067				0.950		
Satd. Flow (perm)	126	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				106		302	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	492	1038	710	397	537	391	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	492	1038	710	397	537	391	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases	2			6		4	
Total Split (s)	26.0	90.0	64.0	64.0	50.0	50.0	50.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	
Act Effct Green (s)	84.5	84.5	58.5	58.5	44.5	44.5	
Actuated g/C Ratio	0.60	0.60	0.42	0.42	0.32	0.32	
v/c Ratio	1.54	0.91	0.90	0.54	0.95	0.55	
Control Delay	274.9	31.9	54.4	25.1	73.1	12.2	
Queue Delay	3.0	46.7	4.3	0.0	0.0	2.9	
Total Delay	277.9	78.5	58.7	25.1	73.1	15.2	
LOS	F	E	E	C	E	B	
Approach Delay		142.7	46.6		48.7		
Approach LOS		F	D		D		
Queue Length 50th (m)	~174.0	278.8	181.7	59.8	145.1	17.8	
Queue Length 95th (m)	m#160.0	m236.7	#256.0	91.6	#214.1	48.8	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	319	1136	786	730	568	714	
Starvation Cap Reductn	68	288	0	0	0	0	
Spillback Cap Reductn	0	0	41	0	0	217	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.96	1.22	0.95	0.54	0.95	0.79	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 88.4		Intersection LOS: F	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	

Analysis Period (min) 15

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

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	711	338	338	82	204	35	310	290	203	33	156	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1821	1601	0	1831	0	1789	1767	0	1789	1676	0
Flt Permitted		0.590			0.092		0.950			0.950		
Satd. Flow (perm)	0	1111	1601	0	171	0	1789	1767	0	1789	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		7			28			101	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	773	367	367	89	222	38	337	315	221	36	170	461
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1140	367	0	349	0	337	536	0	36	631	0
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6								
Total Split (s)	12.0	75.0	75.0	63.0	63.0		15.0	36.0		9.0	30.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		69.0	69.0		68.9		10.0	31.3		4.0	23.5	
Actuated g/C Ratio		0.58	0.58		0.57		0.08	0.26		0.03	0.20	
v/c Ratio		1.79	0.37		3.46		2.26	1.11		0.61	1.54	
Control Delay		383.1	8.0		1143.8		614.2	115.7		96.9	285.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		383.1	8.0		1143.8		614.2	115.7		96.9	285.1	
LOS		F	A		F		F	F		F	F	
Approach Delay		291.8			1143.8			308.2			275.0	
Approach LOS		F			F			F			F	
Queue Length 50th (m)		~402.1	21.3		~124.1		~128.6	~146.4		8.5	~190.1	
Queue Length 95th (m)		#480.5	39.7		#181.9		#185.0	#213.6		#25.1	#259.9	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		638	993		101		149	481		59	409	
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		1.79	0.37		3.46		2.26	1.11		0.61	1.54	

Intersection Summary

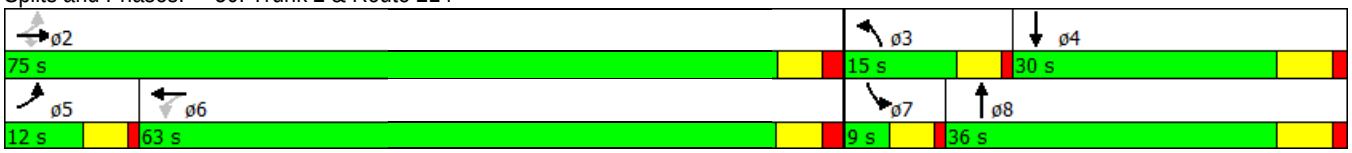
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 3.46
Intersection Signal Delay: 380.2 Intersection LOS: F
Intersection Capacity Utilization 145.7% ICU Level of Service H

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	12	17	924	4	2	526
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	18	1004	4	2	572

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1583	1007	0	0	1009	0
Stage 1	1007	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	120	292	-	-	687	-
Stage 1	353	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	120	292	-	-	687	-
Mov Capacity-2 Maneuver	120	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.7	0	0
HCM LOS	D		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	183	687	-
HCM Lane V/C Ratio	-	-	0.172	0.003	-
HCM Control Delay (s)	-	-	28.7	10.257	0
HCM Lane LOS			D	B	A
HCM 95th %tile Q(veh)	-	-	0.605	0.01	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	48	53	769	68	42	457
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	58	836	74	46	497

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1461	873	0	0	910	0
Stage 1	873	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	142	349	-	-	748	-
Stage 1	409	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	130	349	-	-	748	-
Mov Capacity-2 Maneuver	130	-	-	-	-	-
Stage 1	409	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	45.3	0	0.9
HCM LOS	E		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	194	748	-
HCM Lane V/C Ratio	-	-	0.566	0.061	-
HCM Control Delay (s)	-	-	45.3	10.125	0
HCM Lane LOS			E	B	A
HCM 95th %tile Q(veh)	-	-	3.035	0.195	-

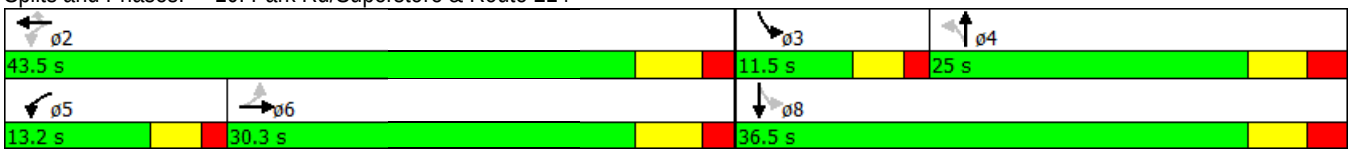
Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	384	36	214	213	94	7	8	92	108	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1624	0	1789	1763	0
Flt Permitted	0.614			0.303			0.744			0.390		
Satd. Flow (perm)	1156	1859	0	571	1883	1601	1401	1624	0	735	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		100			9	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	47	417	39	233	232	102	8	9	100	117	12	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	456	0	233	232	102	8	109	0	117	21	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		13.2	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.5	26.5		41.1	41.2	41.2	7.7	7.7		17.5	16.4	
Actuated g/C Ratio	0.41	0.41		0.64	0.64	0.64	0.12	0.12		0.27	0.25	
v/c Ratio	0.10	0.60		0.45	0.19	0.10	0.05	0.39		0.37	0.05	
Control Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
LOS	B	C		B	A	A	C	B		C	B	
Approach Delay		21.4			8.1			13.6			20.4	
Approach LOS		C			A			B			C	
Queue Length 50th (m)	3.9	47.5		13.0	13.7	0.0	1.0	1.1		11.1	1.1	
Queue Length 95th (m)	10.9	81.8		25.6	26.6	5.9	4.4	13.5		22.3	5.6	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	474	766		529	1197	1055	419	556		315	852	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.60		0.44	0.19	0.10	0.02	0.20		0.37	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 60.6%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	865.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	370	218	1129	529	0	0	0	0	150	1	73
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	402	237	1227	575	0	0	0	0	163	1	79

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	575	0	0	639	0	0				3550	3668	575
Stage 1	-	-	-	-	-	-				3029	3029	-
Stage 2	-	-	-	-	-	-				521	639	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	998	-	-	# 945	-	-				# 7	5	518
Stage 1	-	-	-	-	-	-				# 33	30	-
Stage 2	-	-	-	-	-	-				596	470	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	998	-	-	# 945	-	-				# 7	# 0	518
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 7	# 0	-
Stage 1	-	-	-	-	-	-				# 33	# 0	-
Stage 2	-	-	-	-	-	-				596	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	107.7	$ 8749.9
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	998	-	-	# 945	-	-	8	518
HCM Lane V/C Ratio	-	-	-	1.299	-	-	23.822	0.102
HCM Control Delay (s)	0	-	-	158.091	0		$ 11175.1	12.7
HCM Lane LOS	A			F	A		F	B
HCM 95th %tile Q(veh)	0	-	-	45.407	-	-	25.613	0.339

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	464	0	0	1552	265	102	1	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.036							0.953				
Satd. Flow (perm)	68	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						107			454			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	48	504	0	0	1687	288	111	1	464	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	504	0	0	1687	288	0	112	464	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	117.0	117.0			93.0	93.0	33.0	33.0	33.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	111.0	111.0			87.0	87.0		27.0	27.0			
Actuated g/C Ratio	0.74	0.74			0.58	0.58		0.18	0.18			
v/c Ratio	0.96	0.36			1.54	0.30		0.35	0.70			
Control Delay	143.2	7.8			267.8	5.9		57.3	11.5			
Queue Delay	0.0	0.9			0.3	9.4		0.0	63.9			
Total Delay	143.2	8.7			268.0	15.3		57.3	75.4			
LOS	F	A			F	B		E	E			
Approach Delay		20.4			231.2			71.9				
Approach LOS		C			F			E				
Queue Length 50th (m)	11.4	47.9			~704.5	11.9		29.5	2.5			
Queue Length 95th (m)	#27.5	64.0			m#475.5	m7.2		48.5	37.3			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	50	1393			1092	973		323	660			
Starvation Cap Reductn	0	0			61	643		0	0			
Spillback Cap Reductn	0	588			0	0		0	465			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.96	0.63			1.64	0.87		0.35	2.38			

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 164.1		Intersection LOS: F	
Intersection Capacity Utilization 97.5%		ICU Level of Service F	

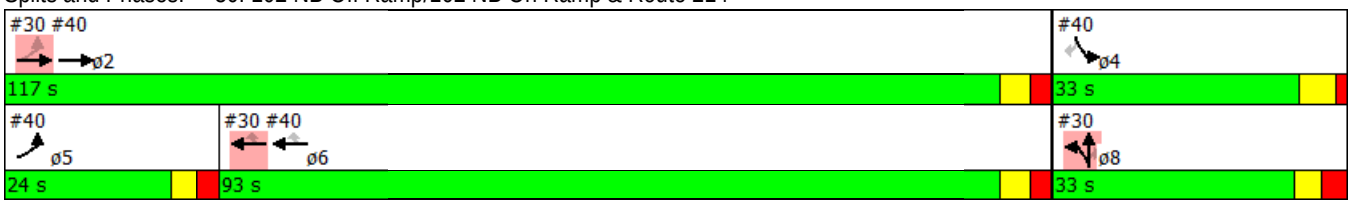
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	308	554	1286	700	294	560	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				133		226	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	335	602	1398	761	320	609	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	335	602	1398	761	320	609	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	24.0	117.0	93.0	93.0	33.0	33.0	33.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	18.5	111.0	87.0	87.0	27.5	27.5	
Actuated g/C Ratio	0.12	0.74	0.58	0.58	0.18	0.18	
v/c Ratio	1.52	0.43	1.28	0.77	0.98	1.27	
Control Delay	295.1	6.2	162.7	25.9	104.7	168.8	
Queue Delay	4.0	1.0	0.2	0.0	0.0	3.7	
Total Delay	299.1	7.2	162.9	25.9	104.7	172.5	
LOS	F	A	F	C	F	F	
Approach Delay		111.6	114.6		149.2		
Approach LOS		F	F		F		
Queue Length 50th (m)	~135.6	29.6	~525.3	141.0	95.8	~170.8	
Queue Length 95th (m)	#198.9	81.2	#606.1	198.6	#156.6	#244.5	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	220	1393	1092	984	327	478	
Starvation Cap Reductn	49	505	0	0	0	0	
Spillback Cap Reductn	0	0	38	0	0	151	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.96	0.68	1.33	0.77	0.98	1.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 121.9		Intersection LOS: F	
Intersection Capacity Utilization 115.2%		ICU Level of Service H	

Analysis Period (min) 15

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	386	119	234	109	267	32	310	148	58	23	272	1232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1814	1601	0	1839	0	1789	1804	0	1789	1652	0
Flt Permitted		0.455			0.284		0.950			0.950		
Satd. Flow (perm)	0	857	1601	0	529	0	1789	1804	0	1789	1652	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137		3			17			186	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	420	129	254	118	290	35	337	161	63	25	296	1339
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	549	254	0	443	0	337	224	0	25	1635	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	64.0	64.0	64.0	64.0	64.0		17.0	75.0		11.0	69.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		58.0	58.0		57.9		12.0	72.9		5.9	62.5	
Actuated g/C Ratio		0.39	0.39		0.39		0.08	0.49		0.04	0.42	
v/c Ratio		1.66	0.36		2.15		2.36	0.25		0.36	2.05	
Control Delay		340.6	16.0		558.3		658.7	22.6		84.4	501.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		340.6	16.0		558.3		658.7	22.6		84.4	501.6	
LOS		F	B		F		F	C		F	F	
Approach Delay		237.9			558.3			404.7			495.3	
Approach LOS		F			F			F			F	
Queue Length 50th (m)		~236.4	23.2		~211.1		~163.7	37.4		7.4	~735.2	
Queue Length 95th (m)		#307.3	45.7		#218.9		#225.4	56.4		17.8	#816.4	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		331	703		206		143	885		71	796	
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		1.66	0.36		2.15		2.36	0.25		0.35	2.05	

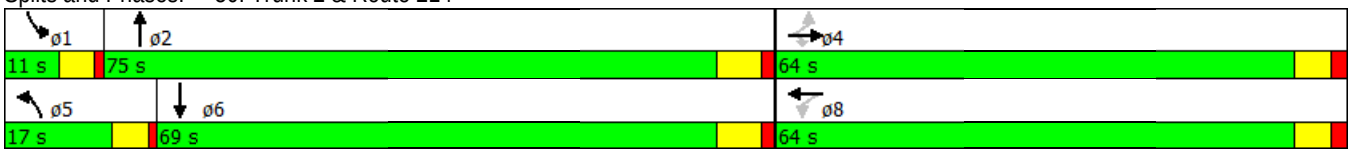
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.36			
Intersection Signal Delay: 429.1		Intersection LOS: F	
Intersection Capacity Utilization 176.7%		ICU Level of Service H	

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	11	471	33	35	1374
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	12	512	36	38	1493

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2100	530	0	0	548	0
Stage 1	530	-	-	-	-	-
Stage 2	1570	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	57	549	-	-	1021	-
Stage 1	590	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	45	549	-	-	1021	-
Mov Capacity-2 Maneuver	45	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	147	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.8	0	0.2
HCM LOS	E		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	111	1021	-
HCM Lane V/C Ratio	-	-	0.166	0.037	-
HCM Control Delay (s)	-	-	43.8	8.662	0
HCM Lane LOS			E	A	A
HCM 95th %tile Q(veh)	-	-	0.571	0.116	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	10.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	64	46	448	24	30	1198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	50	487	26	33	1302

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1867	500	0	0	513	0
Stage 1	500	-	-	-	-	-
Stage 2	1367	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	80	571	-	-	1052	-
Stage 1	609	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	71	571	-	-	1052	-
Mov Capacity-2 Maneuver	71	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	210	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	177.5	0	0.2
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	112	1052	-
HCM Lane V/C Ratio	-	-	1.068	0.031	-
HCM Control Delay (s)	-	-	177.5	8.531	0
HCM Lane LOS			F	A	A
HCM 95th %tile Q(veh)	-	-	7.186	0.096	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	322	9	86	490	297	30	34	231	426	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1876	0	1789	1883	1601	1789	1637	0	1789	1612	0
Flt Permitted	0.419			0.336			0.681			0.282		
Satd. Flow (perm)	789	1876	0	633	1883	1601	1283	1637	0	531	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				306		251			114	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	43	350	10	93	533	323	33	37	251	463	5	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	360	0	93	533	323	33	288	0	463	119	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.5	30.5		11.5	42.0	42.0	25.0	25.0		23.0	48.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	27.0	27.0		37.6	36.1	36.1	9.7	9.7		34.0	32.5	
Actuated g/C Ratio	0.33	0.33		0.47	0.45	0.45	0.12	0.12		0.42	0.40	
v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.21	0.69		0.91	0.17	
Control Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
LOS	C	C		B	C	A	C	B		D	A	
Approach Delay		27.9			15.2			18.0			35.5	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	4.6	44.9		7.3	57.3	1.3	4.7	5.2		53.4	0.4	
Queue Length 95th (m)	14.1	83.4		18.3	107.9	16.7	12.3	26.7		#103.8	9.2	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	264	629		395	843	885	303	578		513	896	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.11	0.50		0.90	0.13	

Intersection Summary

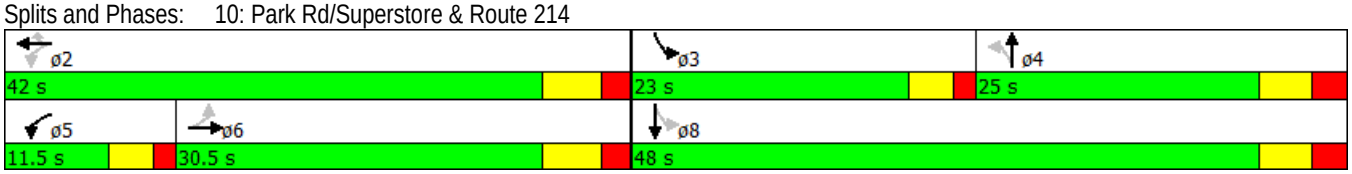
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 80.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 90.0% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	1482.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	864	207	650	1013	0	0	0	0	206	1	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	939	225	707	1101	0	0	0	0	224	1	136

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	1101	0	0	1164	0	0				3566	3678	1101
Stage 1	-	-	-	-	-	-				2514	2514	-
Stage 2	-	-	-	-	-	-				1052	1164	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	634	-	-	# 600	-	-				# 6	5	258
Stage 1	-	-	-	-	-	-				# 62	57	-
Stage 2	-	-	-	-	-	-				336	269	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	634	-	-	# 600	-	-				# 6	# 0	258
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 6	# 0	-
Stage 1	-	-	-	-	-	-				# 62	# 0	-
Stage 2	-	-	-	-	-	-				336	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	46.9	$ 13456.7
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	634	-	-	# 600	-	-	7	258
HCM Lane V/C Ratio	-	-	-	1.178	-	-	38.613	0.351
HCM Control Delay (s)	0	-	-	120.047	0	-	$ 17957.5	26.3
HCM Lane LOS	A			F	A		F	D
HCM 95th %tile Q(veh)	0	-	-	24.244	-	-	35.747	1.514

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	815	0	0	1310	306	377	0	1377	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1789	1601	0	0	0
Flt Permitted	0.069							0.950				
Satd. Flow (perm)	130	1883	0	0	1883	1601	0	1789	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						106			128			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	152	886	0	0	1424	333	410	0	1497	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	886	0	0	1424	333	0	410	1497	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	24.0	82.0			58.0	58.0	58.0	58.0	58.0			
Total Lost Time (s)	5.5	5.5			5.5	5.5		6.0	6.0			
Act Effct Green (s)	76.5	76.5			52.5	52.5		52.0	52.0			
Actuated g/C Ratio	0.55	0.55			0.38	0.38		0.37	0.37			
v/c Ratio	0.52	0.86			2.02	0.50		0.62	2.22			
Control Delay	32.5	37.6			480.2	13.0		40.8	574.9			
Queue Delay	0.0	49.1			0.0	16.2		0.0	47.2			
Total Delay	32.5	86.7			480.2	29.2		40.8	622.1			
LOS	C	F			F	C		D	F			
Approach Delay		78.7			394.7			497.1				
Approach LOS		E			F			F				
Queue Length 50th (m)	23.1	203.2			~611.7	17.4		92.1	~649.1			
Queue Length 95th (m)	46.1	271.0			m#497.2	m17.8		127.2	#731.3			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	290	1028			706	666		664	675			
Starvation Cap Reductn	0	0			0	316		0	0			
Spillback Cap Reductn	0	319			0	0		0	626			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.52	1.25			2.02	0.95		0.62	30.55			

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.40			
Intersection Signal Delay: 366.5		Intersection LOS: F	
Intersection Capacity Utilization 137.7%		ICU Level of Service H	

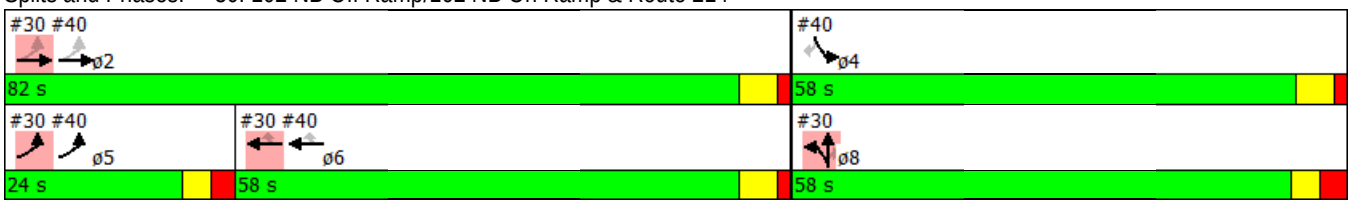
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	641	1381	942	518	721	496	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.069				0.950		
Satd. Flow (perm)	130	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				97		304	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	697	1501	1024	563	784	539	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	697	1501	1024	563	784	539	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases	2			6		4	
Total Split (s)	24.0	82.0	58.0	58.0	58.0	58.0	58.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	
Act Effct Green (s)	76.5	76.5	52.5	52.5	52.5	52.5	
Actuated g/C Ratio	0.55	0.55	0.38	0.38	0.38	0.38	
v/c Ratio	2.40	1.46	1.45	0.85	1.17	0.68	
Control Delay	653.5	238.7	244.2	46.7	131.2	20.1	
Queue Delay	2.7	1.8	0.4	0.0	0.0	53.8	
Total Delay	656.2	240.5	244.6	46.7	131.2	73.9	
LOS	F	F	F	D	F	E	
Approach Delay		372.3	174.4		107.9		
Approach LOS		F	F		F		
Queue Length 50th (m)	~305.1	~577.6	~385.4	121.8	~257.7	55.2	
Queue Length 95th (m)	m#189.3	m#292.3	#464.7	#185.9	#333.5	97.8	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	290	1028	706	661	670	790	
Starvation Cap Reductn	54	293	0	0	0	0	
Spillback Cap Reductn	0	0	41	0	0	319	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	2.95	2.04	1.54	0.85	1.17	1.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.40			
Intersection Signal Delay: 242.3		Intersection LOS: F	
Intersection Capacity Utilization 138.8%		ICU Level of Service H	

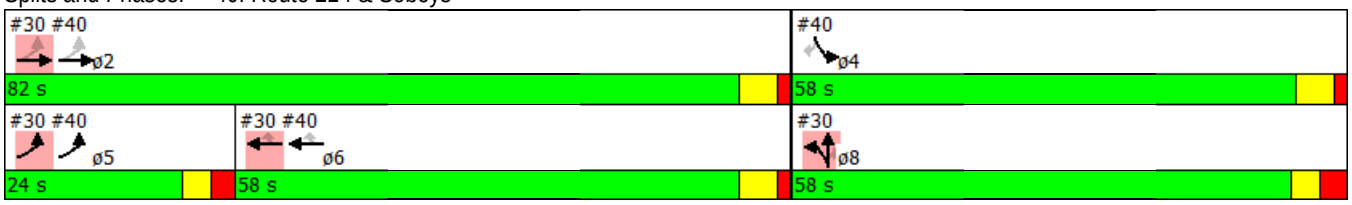
Analysis Period (min) 15

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

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

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

Splits and Phases: 40: Route 214 & Sobeys



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1288	376	392	89	227	42	360	396	227	40	215	762
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1814	1601	0	1831	0	1789	1780	0	1789	1663	0
Flt Permitted		0.529			0.077		0.950			0.950		
Satd. Flow (perm)	0	996	1601	0	143	0	1789	1780	0	1789	1663	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			126		8			26			151	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	1400	409	426	97	247	46	391	430	247	43	234	828
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1809	426	0	390	0	391	677	0	43	1062	0
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6								
Total Split (s)	12.0	65.0	65.0	53.0	53.0		13.0	36.0		9.0	32.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		59.0	59.0		58.9		8.0	31.3		4.0	25.5	
Actuated g/C Ratio		0.54	0.54		0.54		0.07	0.28		0.04	0.23	
v/c Ratio		3.39	0.46		4.88		3.01	1.29		0.66	2.12	
Control Delay		1093.9	12.5		1782.4		942.7	177.7		95.9	532.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		1093.9	12.5		1782.4		942.7	177.7		95.9	532.1	
LOS		F	B		F		F	F		F	F	
Approach Delay		887.8			1782.4			457.8			515.1	
Approach LOS		F			F			F			F	
Queue Length 50th (m)		~690.4	36.7		~141.8		~146.0	~189.1		9.3	~341.0	
Queue Length 95th (m)		#770.6	60.6		#200.2		#203.3	#258.9		#28.0	#418.5	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		534	917		80		130	525		65	501	
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		3.39	0.46		4.88		3.01	1.29		0.66	2.12	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 4.88
Intersection Signal Delay: 779.0 Intersection LOS: F
Intersection Capacity Utilization 208.4% ICU Level of Service H

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214

Intersection	
Intersection Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	23	1501	5	3	865
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	25	1632	5	3	940

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2581	1634	0	0	1637	0
Stage 1	1634	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	28	125	-	-	396	-
Stage 1	175	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	28	125	-	-	396	-
Mov Capacity-2 Maneuver	28	-	-	-	-	-
Stage 1	175	-	-	-	-	-
Stage 2	371	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	174.4	0	0
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	54	396	-
HCM Lane V/C Ratio	-	-	0.745	0.008	-
HCM Control Delay (s)	-	-	174.4	14.166	0
HCM Lane LOS			F	B	A
HCM 95th %tile Q(veh)	-	-	3.116	0.025	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	54.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	56	65	1320	79	53	786
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	71	1435	86	58	854

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2448	1478	0	0	1521	0
Stage 1	1478	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 34	155	-	-	439	-
Stage 1	209	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	# 25	155	-	-	439	-
Mov Capacity-2 Maneuver	# 25	-	-	-	-	-
Stage 1	209	-	-	-	-	-
Stage 2	276	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1058.3	0	0.9
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	45	439	-
HCM Lane V/C Ratio	-	-	2.923	0.131	-
HCM Control Delay (s)	-	-	$ 1058.3	14.435	0
HCM Lane LOS			F	B	A
HCM 95th %tile Q(veh)	-	-	14.271	0.449	-

Notes

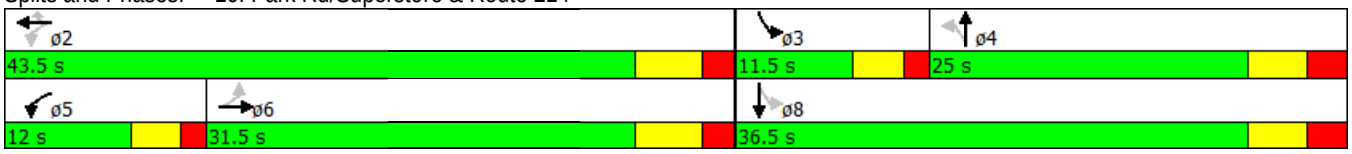
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	324	31	175	159	67	6	7	75	89	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1625	0	1789	1757	0
Flt Permitted	0.648			0.386			0.746			0.396		
Satd. Flow (perm)	1220	1859	0	727	1883	1601	1405	1625	0	746	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		82			8	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	40	352	34	190	173	73	7	8	82	97	10	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	386	0	190	173	73	7	90	0	97	18	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	31.5	31.5		12.0	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	29.1	29.1		42.6	42.4	42.4	7.5	7.5		17.6	16.4	
Actuated g/C Ratio	0.44	0.44		0.64	0.64	0.64	0.11	0.11		0.26	0.25	
v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.04	0.35		0.32	0.04	
Control Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
LOS	B	B		A	A	A	C	B		C	B	
Approach Delay		18.0			7.1			14.1			19.7	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	3.2	36.8		10.3	9.8	0.0	0.8	0.9		9.1	0.9	
Queue Length 95th (m)	9.3	64.3		20.7	19.9	3.2	4.1	12.4		19.1	5.0	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	533	816		584	1199	1057	402	524		307	812	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.02	0.17		0.32	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	27.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	304	188	257	411	0	0	0	0	108	1	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	330	204	279	447	0	0	0	0	117	1	68

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	447	0	0	535	0	0				1438	1540	447
Stage 1	-	-	-	-	-	-				1005	1005	-
Stage 2	-	-	-	-	-	-				433	535	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	1113	-	-	1033	-	-				147	115	612
Stage 1	-	-	-	-	-	-				354	319	-
Stage 2	-	-	-	-	-	-				654	524	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1113	-	-	1033	-	-				# 94	# 0	612
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 94	# 0	-
Stage 1	-	-	-	-	-	-				227	# 0	-
Stage 2	-	-	-	-	-	-				654	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.8	198.3
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1113	-	-	1033	-	-	109	612
HCM Lane V/C Ratio	-	-	-	0.27	-	-	1.296	0.075
HCM Control Delay (s)	0	-	-	9.772	0	-	258.7	11.4
HCM Lane LOS	A			A	A		F	B
HCM 95th %tile Q(veh)	0	-	-	1.099	-	-	9.573	0.241

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	372	0	0	578	165	88	1	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.108							0.953				
Satd. Flow (perm)	203	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						179			130			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	41	404	0	0	628	179	96	1	130	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	404	0	0	628	179	0	97	130	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	55.0	55.0			36.0	36.0	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	49.1	49.1			30.5	30.5		14.4	14.4			
Actuated g/C Ratio	0.65	0.65			0.40	0.40		0.19	0.19			
v/c Ratio	0.31	0.33			0.83	0.24		0.28	0.32			
Control Delay	15.0	7.4			23.9	1.6		27.9	7.3			
Queue Delay	0.0	0.0			1.2	0.4		0.0	0.3			
Total Delay	15.0	7.4			25.1	2.0		27.9	7.6			
LOS	B	A			C	A		C	A			
Approach Delay		8.1			20.0			16.3				
Approach LOS		A			B			B				
Queue Length 50th (m)	2.2	22.4			35.7	0.0		11.9	0.0			
Queue Length 95th (m)	10.6	42.5			#147.4	2.4		24.0	12.4			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	131	1223			759	752		452	500			
Starvation Cap Reductn	0	0			34	257		0	0			
Spillback Cap Reductn	0	52			0	0		0	106			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.31	0.35			0.87	0.36		0.21	0.33			

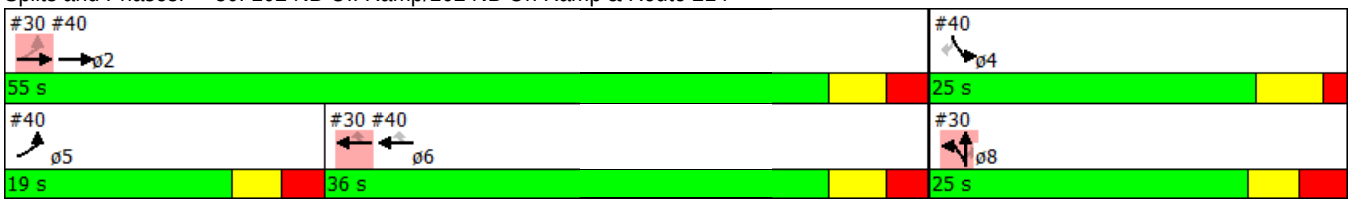
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 47.4%		ICU Level of Service A	

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	239	243	374	467	219	371	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				385		403	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	260	264	407	508	238	403	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	260	264	407	508	238	403	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	19.0	55.0	36.0	36.0	25.0	25.0	25.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	13.1	49.1	30.5	30.5	14.9	14.9	
Actuated g/C Ratio	0.17	0.65	0.40	0.40	0.20	0.20	
v/c Ratio	0.84	0.22	0.54	0.58	0.67	0.63	
Control Delay	54.1	3.6	21.4	7.9	38.0	7.9	
Queue Delay	3.5	0.5	0.2	0.0	0.0	0.2	
Total Delay	57.6	4.1	21.6	7.9	38.0	8.0	
LOS	E	A	C	A	D	A	
Approach Delay		30.7	14.0		19.1		
Approach LOS		C	B		B		
Queue Length 50th (m)	25.5	5.3	43.4	11.2	31.6	0.0	
Queue Length 95th (m)	#73.5	13.7	75.5	39.4	53.2	20.6	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	320	1223	759	875	462	713	
Starvation Cap Reductn	21	585	0	0	0	0	
Spillback Cap Reductn	0	0	55	0	0	32	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.87	0.41	0.58	0.58	0.52	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	96	202	98	223	26	267	112	52	18	186	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1853	1601	0	1839	0	1789	1793	0	1789	1729	0
Flt Permitted		0.729			0.850		0.950			0.950		
Satd. Flow (perm)	0	1373	1601	0	1585	0	1789	1793	0	1789	1729	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220		5			37			76	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	52	104	220	107	242	28	290	122	57	20	202	242
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	220	0	377	0	290	179	0	20	444	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	30.0	30.0	30.0	30.0	30.0		20.0	41.0		9.0	30.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		20.8	20.8		20.7		14.4	36.2		4.1	20.0	
Actuated g/C Ratio		0.28	0.28		0.28		0.20	0.50		0.06	0.27	
v/c Ratio		0.40	0.36		0.83		0.82	0.20		0.20	0.84	
Control Delay		25.5	5.2		42.7		51.2	10.4		41.3	37.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		25.5	5.2		42.7		51.2	10.4		41.3	37.2	
LOS		C	A		D		D	B		D	D	
Approach Delay		13.6			42.7			35.7			37.4	
Approach LOS		B			D			D			D	
Queue Length 50th (m)		18.5	0.0		51.4		43.0	10.0		3.0	51.6	
Queue Length 95th (m)		34.7	14.5		#94.1		#84.2	25.1		9.5	#96.7	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		460	683		533		375	941		99	618	
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		0.34	0.32		0.71		0.77	0.19		0.20	0.72	

Intersection Summary

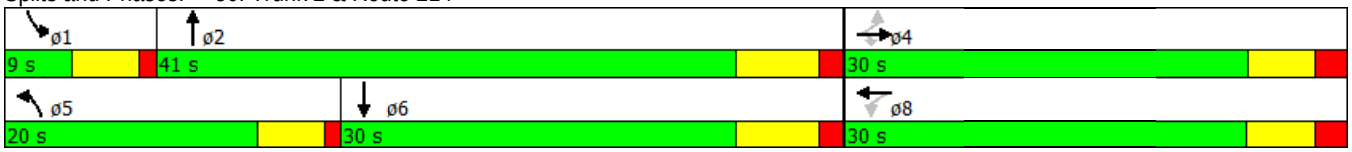
Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 73.1
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 32.8 Intersection LOS: C
Intersection Capacity Utilization 78.3% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	125	22	4	4	6	6	11	140	16	19	402	368
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	1000
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	24	4	4	7	7	12	152	17	21	437	400

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	669	671	437	677	663	161	437	0	0	170	0	0
Stage 1	478	478	-	185	185	-	-	-	-	-	-	-
Stage 2	191	193	-	492	478	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	371	378	620	367	382	884	1123	-	-	1407	-	-
Stage 1	568	556	-	817	747	-	-	-	-	-	-	-
Stage 2	811	741	-	558	556	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	352	362	620	335	366	884	1123	-	-	1407	-	-
Mov Capacity-2 Maneuver	352	362	-	335	366	-	-	-	-	-	-	-
Stage 1	561	539	-	807	738	-	-	-	-	-	-	-
Stage 2	788	732	-	514	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.3	13.2	0.5	0.2
HCM LOS	C	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1123	-	-	358	456	1407	-	-
HCM Lane V/C Ratio	0.011	-	-	0.458	0.038	0.015	-	-
HCM Control Delay (s)	8.24	0	-	23.3	13.2	7.597	0	-
HCM Lane LOS	A	A		C	B	A	A	
HCM 95th %tile Q(veh)	0.032	-	-	2.318	0.119	0.045	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	83	26	256	35	18	663
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	28	278	38	20	721

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1057	297	0	0	316	0
Stage 1	297	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	249	742	-	-	1244	-
Stage 1	754	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	242	742	-	-	1244	-
Mov Capacity-2 Maneuver	242	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	450	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26	0	0.2
HCM LOS	D		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	288	1244	-
HCM Lane V/C Ratio	-	-	0.411	0.016	-
HCM Control Delay (s)	-	-	26	7.94	0
HCM Lane LOS			D	A	A
HCM 95th %tile Q(veh)	-	-	1.922	0.048	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	29	0	0	430	58	0	0	158	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	32	0	0	467	63	0	0	172	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	530	0	0	32	0	0	531	562	32
Stage 1	-	-	-	-	-	-	32	32	-
Stage 2	-	-	-	-	-	-	499	530	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1037	-	-	1580	-	-	509	436	1042
Stage 1	-	-	-	-	-	-	991	868	-
Stage 2	-	-	-	-	-	-	610	527	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1037	-	-	1580	-	-	509	0	1042
Mov Capacity-2 Maneuver	-	-	-	-	-	-	509	0	-
Stage 1	-	-	-	-	-	-	991	0	-
Stage 2	-	-	-	-	-	-	610	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	1042	1037	-	-	1580	-	-
HCM Lane V/C Ratio	0.165	-	-	-	-	-	-
HCM Control Delay (s)	9.1	0	-	-	0	-	-
HCM Lane LOS	A	A			A		
HCM 95th %tile Q(veh)	0.589	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	430	0	0	0	29	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	467	0	0	0	32	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		935	0	935	935
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		935	0	935	935
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	71		100	100	83	100
cM capacity (veh/h)	1623		189	1085	191	189

Direction, Lane #	WB 1	SB 1
Volume Total	467	32
Volume Left	467	32
Volume Right	0	0
cSH	1623	191
Volume to Capacity	0.29	0.17
Queue Length 95th (m)	9.1	4.4
Control Delay (s)	8.1	27.5
Lane LOS	A	D
Approach Delay (s)	8.1	27.5
Approach LOS		D

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	253	8	69	407	247	26	29	189	352	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1874	0	1789	1883	1601	1789	1639	0	1789	1614	0
Flt Permitted	0.507			0.459			0.690			0.301		
Satd. Flow (perm)	955	1874	0	864	1883	1601	1300	1639	0	567	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				268		205			99	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	38	275	9	75	442	268	28	32	205	383	5	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	284	0	75	442	268	28	237	0	383	104	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		11.5	41.8	41.8	25.0	25.0		13.2	38.2	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.7	26.7		37.3	35.8	35.8	8.8	8.8		23.5	22.0	
Actuated g/C Ratio	0.38	0.38		0.53	0.51	0.51	0.13	0.13		0.34	0.32	
v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.17	0.62		1.12	0.18	
Control Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
LOS	B	B		A	B	A	C	B		F	A	
Approach Delay		19.2			9.1			15.8			86.5	
Approach LOS		B			A			B			F	
Queue Length 50th (m)	3.2	26.4		4.1	32.0	0.0	3.3	3.8		~42.7	0.5	
Queue Length 95th (m)	10.1	51.7		11.4	63.3	10.8	9.8	21.8		#109.3	9.3	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	365	717		555	966	951	354	595		343	798	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.08	0.40		1.12	0.13	

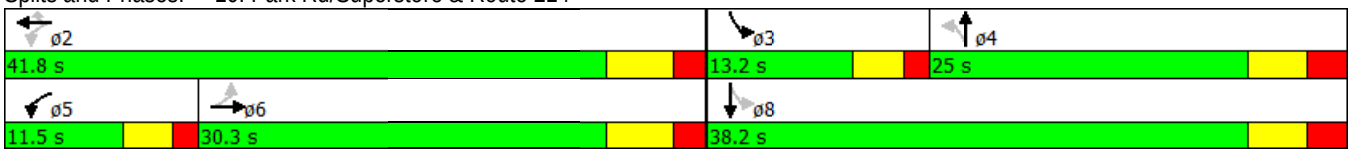
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	70.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	699	179	107	847	0	0	0	0	108	1	108
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	760	195	116	921	0	0	0	0	117	1	117

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	921	0	0	954	0	0				2010	2107	921
Stage 1	-	-	-	-	-	-				1153	1153	-
Stage 2	-	-	-	-	-	-				857	954	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	741	-	-	720	-	-				# 65	51	328
Stage 1	-	-	-	-	-	-				301	272	-
Stage 2	-	-	-	-	-	-				416	337	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	741	-	-	720	-	-				# 44	# 0	328
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 44	# 0	-
Stage 1	-	-	-	-	-	-				202	# 0	-
Stage 2	-	-	-	-	-	-				416	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.2	$ 658.3
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	741	-	-	720	-	-	56	328
HCM Lane V/C Ratio	-	-	-	0.162	-	-	2.814	0.239
HCM Control Delay (s)	0	-	-	10.961	0	-	$ 975.6	19.4
HCM Lane LOS	A			B	A		F	C
HCM 95th %tile Q(veh)	0	-	-	0.574	-	-	16.322	0.913

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	612	0	0	651	226	325	1	368	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.073							0.953				
Satd. Flow (perm)	137	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						237			264			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	132	665	0	0	708	246	353	1	400	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	665	0	0	708	246	0	354	400	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	61.0	61.0			38.0	38.0	29.0	29.0	29.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	55.0	55.0			32.0	32.0		23.0	23.0			
Actuated g/C Ratio	0.61	0.61			0.36	0.36		0.26	0.26			
v/c Ratio	1.59	0.58			1.06	0.34		0.77	0.66			
Control Delay	337.3	13.1			72.9	2.3		44.2	16.2			
Queue Delay	0.0	1.6			12.5	0.6		0.0	73.2			
Total Delay	337.3	14.6			85.5	2.9		44.2	89.4			
LOS	F	B			F	A		D	F			
Approach Delay		68.1			64.2			68.2				
Approach LOS		E			E			E				
Queue Length 50th (m)	~32.8	63.1			~136.0	0.1		56.8	19.2			
Queue Length 95th (m)	#53.7	92.8			#202.9	3.0		#96.5	50.2			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	83	1150			669	721		458	605			
Starvation Cap Reductn	0	0			20	219		0	0			
Spillback Cap Reductn	0	299			0	0		0	486			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	1.59	0.78			1.09	0.49		0.77	3.36			

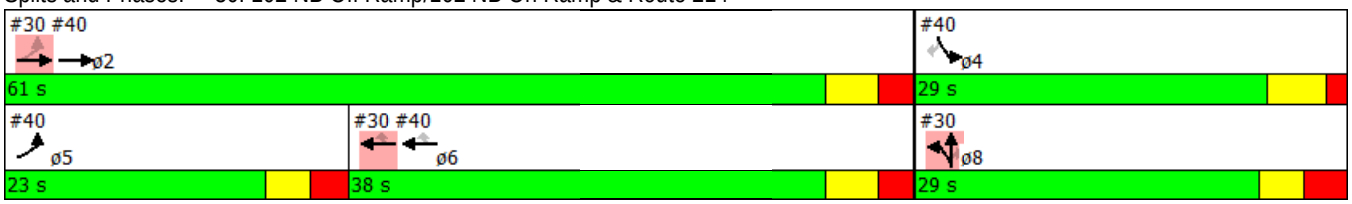
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.59			
Intersection Signal Delay: 66.6		Intersection LOS: E	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	453	432	348	365	494	360	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				280		391	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	492	470	378	397	537	391	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	492	470	378	397	537	391	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	23.0	61.0	38.0	38.0	29.0	29.0	29.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	17.5	55.0	32.0	32.0	23.5	23.5	
Actuated g/C Ratio	0.19	0.61	0.36	0.36	0.26	0.26	
v/c Ratio	1.42	0.41	0.57	0.53	1.15	0.55	
Control Delay	231.5	6.9	27.4	9.7	122.4	6.3	
Queue Delay	1.7	1.2	0.4	0.0	0.0	0.6	
Total Delay	233.2	8.1	27.8	9.7	122.4	6.9	
LOS	F	A	C	A	F	A	
Approach Delay		123.2	18.5		73.7		
Approach LOS		F	B		E		
Queue Length 50th (m)	~113.0	23.3	51.9	13.9	~110.3	0.0	
Queue Length 95th (m)	#173.3	37.2	79.3	38.6	#169.5	20.7	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	347	1150	669	749	467	706	
Starvation Cap Reductn	47	446	0	0	0	0	
Spillback Cap Reductn	0	0	63	0	0	89	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.64	0.67	0.62	0.53	1.15	0.63	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.59			
Intersection Signal Delay: 75.5		Intersection LOS: E	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	

Analysis Period (min) 15

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	314	338	82	189	35	310	290	203	33	156	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1846	1601	0	1831	0	1789	1767	0	1789	1752	0
Flt Permitted		0.694			0.433		0.950			0.950		
Satd. Flow (perm)	0	1307	1601	0	803	0	1789	1767	0	1789	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			297		8			40			41	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	230	341	367	89	205	38	337	315	221	36	170	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	571	367	0	332	0	337	536	0	36	317	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	47.0	47.0	47.0	47.0	47.0		23.0	44.0		9.0	30.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		41.1	41.1		41.0		18.0	37.2		4.0	19.4	
Actuated g/C Ratio		0.43	0.43		0.43		0.19	0.39		0.04	0.20	
v/c Ratio		1.02	0.43		0.96		1.00	0.76		0.49	0.82	
Control Delay		73.8	6.2		68.2		91.6	32.5		68.7	49.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		73.8	6.2		68.2		91.6	32.5		68.7	49.6	
LOS		E	A		E		F	C		E	D	
Approach Delay		47.3			68.2			55.3			51.5	
Approach LOS		D			E			E			D	
Queue Length 50th (m)		~116.5	7.8		58.6		~65.7	84.2		6.8	49.6	
Queue Length 95th (m)		#185.8	27.6		#119.5		#123.7	#126.6		#20.4	#80.0	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		558	854		347		336	725		74	460	
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		1.02	0.43		0.96		1.00	0.74		0.49	0.69	

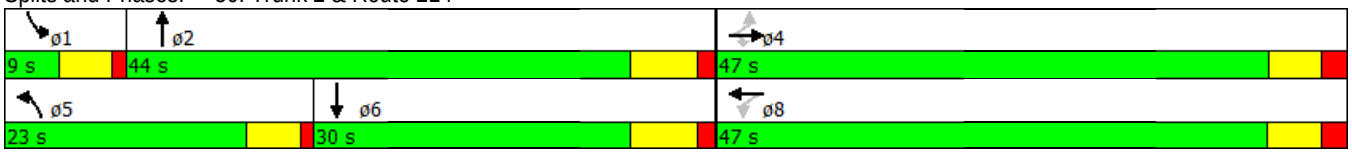
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 96			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 53.5		Intersection LOS: D	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	93.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	410	2	11	8	8	14	7	454	3	2	256	248
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	1000
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	446	2	12	9	9	15	8	493	3	2	278	270

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	805	795	278	800	793	495	278	0	0	497	0	0
Stage 1	283	283	-	510	510	-	-	-	-	-	-	-
Stage 2	522	512	-	290	283	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	# 301	320	761	303	321	575	1285	-	-	1067	-	-
Stage 1	724	677	-	546	538	-	-	-	-	-	-	-
Stage 2	538	536	-	718	677	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	# 284	316	761	294	317	575	1285	-	-	1067	-	-
Mov Capacity-2 Maneuver	# 284	316	-	294	317	-	-	-	-	-	-	-
Stage 1	717	675	-	541	533	-	-	-	-	-	-	-
Stage 2	511	531	-	702	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 313.5	15	0.1	0
HCM LOS	F	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1285	-	-	289	391	1067	-	-
HCM Lane V/C Ratio	0.006	-	-	1.591	0.083	0.002	-	-
HCM Control Delay (s)	7.818	0	-	$ 313.5	15	8.381	0	-
HCM Lane LOS	A	A		F	C	A	A	
HCM 95th %tile Q(veh)	0.018	-	-	27.596	0.271	0.006	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	36	763	105	29	453
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	39	829	114	32	492

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1441	886	0	0	943	0
Stage 1	886	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	146	343	-	-	727	-
Stage 1	403	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	137	343	-	-	727	-
Mov Capacity-2 Maneuver	137	-	-	-	-	-
Stage 1	403	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	72.2	0	0.6
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	168	727	-
HCM Lane V/C Ratio	-	-	0.751	0.043	-
HCM Control Delay (s)	-	-	72.2	10.176	0
HCM Lane LOS			F	B	A
HCM 95th %tile Q(veh)	-	-	4.739	0.136	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	64	0	0	280	48	0	0	476	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	70	0	0	304	52	0	0	517	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	357	0	0	70	0	0	400	427	70
Stage 1	-	-	-	-	-	-	70	70	-
Stage 2	-	-	-	-	-	-	330	357	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1202	-	-	1531	-	-	606	520	993
Stage 1	-	-	-	-	-	-	953	837	-
Stage 2	-	-	-	-	-	-	728	628	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1202	-	-	1531	-	-	606	0	993
Mov Capacity-2 Maneuver	-	-	-	-	-	-	606	0	-
Stage 1	-	-	-	-	-	-	953	0	-
Stage 2	-	-	-	-	-	-	728	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	993	1202	-	-	1531	-	-
HCM Lane V/C Ratio	0.521	-	-	-	-	-	-
HCM Control Delay (s)	12.5	0	-	-	0	-	-
HCM Lane LOS	B	A			A		
HCM 95th %tile Q(veh)	3.102	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	280	0	0	0	64	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	304	0	0	0	70	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		609	0	609	609
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		609	0	609	609
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	81		100	100	80	100
cM capacity (veh/h)	1623		333	1085	349	333

Direction, Lane #	WB 1	SB 1
Volume Total	304	70
Volume Left	304	70
Volume Right	0	0
cSH	1623	349
Volume to Capacity	0.19	0.20
Queue Length 95th (m)	5.2	5.6
Control Delay (s)	7.7	17.9
Lane LOS	A	C
Approach Delay (s)	7.7	17.9
Approach LOS		C

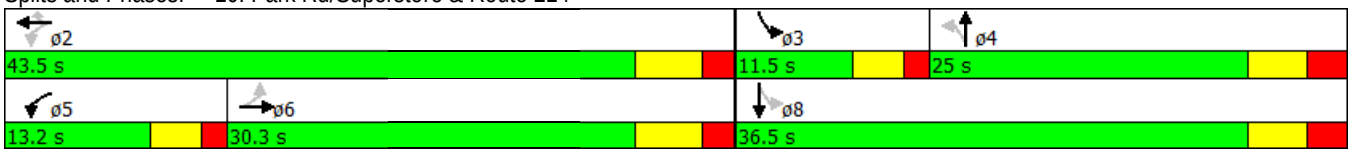
Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	384	36	214	213	94	7	8	92	109	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1624	0	1789	1763	0
Flt Permitted	0.614			0.303			0.744			0.390		
Satd. Flow (perm)	1156	1859	0	571	1883	1601	1401	1624	0	735	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		100			9	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	47	417	39	233	232	102	8	9	100	118	12	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	456	0	233	232	102	8	109	0	118	21	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		13.2	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.5	26.5		41.1	41.2	41.2	7.8	7.8		17.5	16.4	
Actuated g/C Ratio	0.41	0.41		0.64	0.64	0.64	0.12	0.12		0.27	0.25	
v/c Ratio	0.10	0.60		0.45	0.19	0.10	0.05	0.39		0.37	0.05	
Control Delay	16.2	22.0		10.2	8.4	2.3	27.7	12.5		21.7	13.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.2	22.0		10.2	8.4	2.3	27.7	12.5		21.7	13.8	
LOS	B	C		B	A	A	C	B		C	B	
Approach Delay		21.4			8.1			13.6			20.5	
Approach LOS		C			A			B			C	
Queue Length 50th (m)	3.9	47.5		13.0	13.7	0.0	1.0	1.1		11.2	1.1	
Queue Length 95th (m)	10.9	81.8		25.6	26.6	5.9	4.4	13.5		22.4	5.6	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	474	765		529	1197	1055	420	556		315	852	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.60		0.44	0.19	0.10	0.02	0.20		0.37	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	150.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	370	218	333	529	0	0	0	0	133	1	73
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	402	237	362	575	0	0	0	0	145	1	79

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	575	0	0	639	0	0				1820	1938	575
Stage 1	-	-	-	-	-	-				1299	1299	-
Stage 2	-	-	-	-	-	-				521	639	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	998	-	-	945	-	-				# 85	65	518
Stage 1	-	-	-	-	-	-				256	232	-
Stage 2	-	-	-	-	-	-				596	470	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	998	-	-	945	-	-				# 37	# 0	518
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 37	# 0	-
Stage 1	-	-	-	-	-	-				# 112	# 0	-
Stage 2	-	-	-	-	-	-				596	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.3	$ 1183.5
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	998	-	-	945	-	-	43	518
HCM Lane V/C Ratio	-	-	-	0.383	-	-	4.002	0.102
HCM Control Delay (s)	0	-	-	11.155	0	-	$ 1543.4	12.7
HCM Lane LOS	A			B	A		F	B
HCM 95th %tile Q(veh)	0	-	-	1.817	-	-	19.455	0.339

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	447	0	0	756	218	102	1	150	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.058							0.953				
Satd. Flow (perm)	109	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						204			163			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	48	486	0	0	822	237	111	1	163	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	486	0	0	822	237	0	112	163	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	75.0	75.0			50.0	50.0	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	69.0	69.0			44.0	44.0		18.8	18.8			
Actuated g/C Ratio	0.69	0.69			0.44	0.44		0.19	0.19			
v/c Ratio	0.64	0.37			0.99	0.29		0.33	0.38			
Control Delay	52.1	7.4			46.2	2.5		38.2	8.4			
Queue Delay	0.0	0.1			12.0	0.9		0.0	1.1			
Total Delay	52.1	7.5			58.2	3.4		38.2	9.5			
LOS	D	A			E	A		D	A			
Approach Delay		11.5			46.0			21.2				
Approach LOS		B			D			C				
Queue Length 50th (m)	4.5	34.5			156.9	0.5		18.9	0.0			
Queue Length 95th (m)	#26.9	50.5			m#235.6	m5.8		34.5	16.4			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	75	1302			830	820		342	437			
Starvation Cap Reductn	0	0			35	350		0	0			
Spillback Cap Reductn	0	172			0	0		0	122			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.64	0.43			1.03	0.50		0.33	0.52			

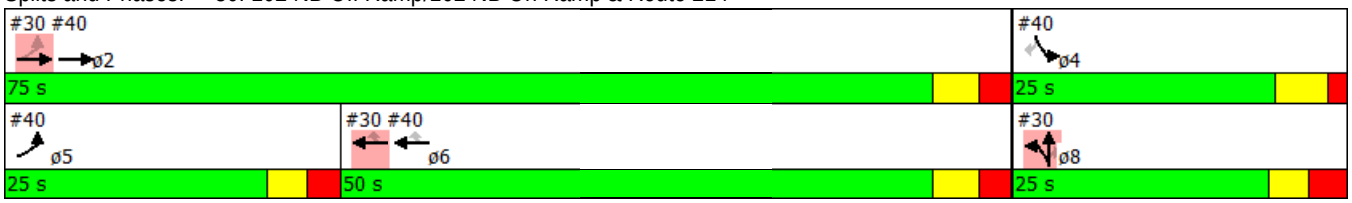
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 55.6%		ICU Level of Service B	

Analysis Period (min) 15

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	308	260	444	700	294	560	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				434		516	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	335	283	483	761	320	609	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	335	283	483	761	320	609	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	25.0	75.0	50.0	50.0	25.0	25.0	25.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	19.5	69.0	44.0	44.0	19.3	19.3	
Actuated g/C Ratio	0.20	0.69	0.44	0.44	0.19	0.19	
v/c Ratio	0.96	0.22	0.58	0.80	0.93	0.84	
Control Delay	75.1	3.3	24.5	17.6	74.3	18.9	
Queue Delay	42.5	0.6	0.3	0.0	0.0	14.1	
Total Delay	117.6	4.0	24.8	17.6	74.3	33.0	
LOS	F	A	C	B	E	C	
Approach Delay		65.6	20.4		47.2		
Approach LOS		E	C		D		
Queue Length 50th (m)	46.6	6.4	68.7	55.5	61.3	15.5	
Queue Length 95th (m)	#113.5	15.3	100.0	112.0	#110.5	#76.6	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	349	1302	830	948	349	728	
Starvation Cap Reductn	73	690	0	0	0	0	
Spillback Cap Reductn	0	0	57	0	0	113	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.21	0.46	0.62	0.80	0.92	0.99	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 39.3		Intersection LOS: D	
Intersection Capacity Utilization 70.9%		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: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	109	234	109	247	32	310	148	58	23	272	409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1838	1601	0	1837	0	1789	1804	0	1789	1714	0
Flt Permitted		0.543			0.674		0.950			0.950		
Satd. Flow (perm)	0	1023	1601	0	1255	0	1789	1804	0	1789	1714	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			254		4			24			73	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	112	118	254	118	268	35	337	161	63	25	296	445
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	230	254	0	421	0	337	224	0	25	741	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	42.0	42.0	42.0	42.0	42.0		26.0	68.0		10.0	52.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		36.0	36.0		35.9		21.0	65.5		5.0	45.5	
Actuated g/C Ratio		0.30	0.30		0.30		0.18	0.55		0.04	0.38	
v/c Ratio		0.75	0.39		1.11		1.08	0.23		0.34	1.07	
Control Delay		54.9	5.6		120.0		119.7	14.0		68.4	86.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		54.9	5.6		120.0		119.7	14.0		68.4	86.3	
LOS		D	A		F		F	B		E	F	
Approach Delay		29.0			120.0			77.5			85.7	
Approach LOS		C			F			E			F	
Queue Length 50th (m)		48.9	0.0		~113.3		~88.4	25.0		5.8	~181.7	
Queue Length 95th (m)		#86.5	18.3		#175.1		#144.8	40.0		15.0	#254.4	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		306	658		378		313	995		74	695	
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		0.75	0.39		1.11		1.08	0.23		0.34	1.07	

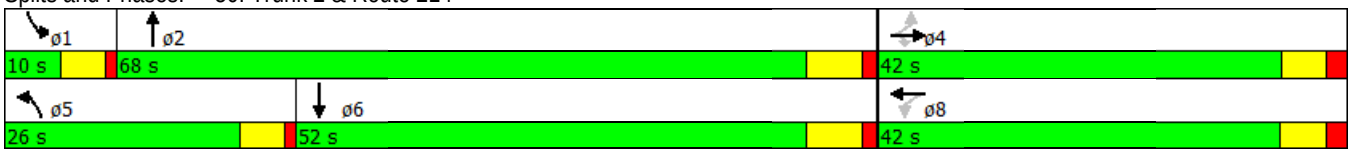
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 77.8		Intersection LOS: E	
Intersection Capacity Utilization 98.9%		ICU Level of Service F	

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	49.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	228	25	9	4	7	7	27	217	18	25	624	685
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	-	-	1000
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	248	27	10	4	8	8	29	236	20	27	678	745

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1045	1047	678	1055	1037	246	678	0	0	255	0	0
Stage 1	733	733	-	304	304	-	-	-	-	-	-	-
Stage 2	312	314	-	751	733	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	# 207	228	452	204	231	793	914	-	-	1310	-	-
Stage 1	412	426	-	705	663	-	-	-	-	-	-	-
Stage 2	699	656	-	403	426	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	# 170	185	452	152	187	793	914	-	-	1310	-	-
Mov Capacity-2 Maneuver	# 170	185	-	152	187	-	-	-	-	-	-	-
Stage 1	399	357	-	683	642	-	-	-	-	-	-	-
Stage 2	662	635	-	305	357	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 353.8	20.8	0.9	0.1
HCM LOS	F	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	914	-	-	175	248	1310	-	-
HCM Lane V/C Ratio	0.032	-	-	1.627	0.079	0.021	-	-
HCM Control Delay (s)	9.069	-	-	$ 353.8	20.8	7.806	0	-
HCM Lane LOS	A			F	C	A	A	
HCM 95th %tile Q(veh)	0.099	-	-	19.266	0.255	0.064	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	23.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	96	34	435	40	24	1185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	37	473	43	26	1288

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1835	495	0	0	516	0
Stage 1	495	-	-	-	-	-
Stage 2	1340	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 83	575	-	-	1050	-
Stage 1	613	-	-	-	-	-
Stage 2	244	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	# 76	575	-	-	1050	-
Mov Capacity-2 Maneuver	# 76	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	223	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 324.8	0	0.2
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	98	1050	-
HCM Lane V/C Ratio	-	-	1.442	0.025	-
HCM Control Delay (s)	-	-	$ 324.8	8.516	0
HCM Lane LOS			F	A	A
HCM 95th %tile Q(veh)	-	-	10.473	0.076	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	36	0	0	795	73	0	0	277	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	39	0	0	864	79	0	0	301	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	864	0	0	39	0	0	903	903	39
Stage 1	-	-	-	-	-	-	39	39	-
Stage 2	-	-	-	-	-	-	864	864	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	779	-	-	1571	-	-	308	277	1033
Stage 1	-	-	-	-	-	-	983	862	-
Stage 2	-	-	-	-	-	-	413	371	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	779	-	-	1571	-	-	308	0	1033
Mov Capacity-2 Maneuver	-	-	-	-	-	-	308	0	-
Stage 1	-	-	-	-	-	-	983	0	-
Stage 2	-	-	-	-	-	-	413	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	1033	779	-	-	1571	-	-
HCM Lane V/C Ratio	0.291	-	-	-	-	-	-
HCM Control Delay (s)	9.9	0	-	-	0	-	-
HCM Lane LOS	A	A			A		
HCM 95th %tile Q(veh)	1.218	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	795	0	0	0	36	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	864	0	0	0	39	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		1728	0	1728	1728
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1728	0	1728	1728
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	47		100	100	3	100
cM capacity (veh/h)	1623		41	1085	40	41

Direction, Lane #	WB 1	SB 1
Volume Total	864	39
Volume Left	864	39
Volume Right	0	0
cSH	1623	40
Volume to Capacity	0.53	0.97
Queue Length 95th (m)	25.1	28.6
Control Delay (s)	9.7	286.1
Lane LOS	A	F
Approach Delay (s)	9.7	286.1
Approach LOS		F

Intersection Summary			
Average Delay	21.7		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	322	9	86	490	297	30	34	231	426	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1876	0	1789	1883	1601	1789	1637	0	1789	1612	0
Flt Permitted	0.419			0.336			0.681			0.282		
Satd. Flow (perm)	789	1876	0	633	1883	1601	1283	1637	0	531	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				306		251			114	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	43	350	10	93	533	323	33	37	251	463	5	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	360	0	93	533	323	33	288	0	463	119	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.5	30.5		11.5	42.0	42.0	25.0	25.0		23.0	48.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	27.0	27.0		37.6	36.1	36.1	9.7	9.7		34.0	32.5	
Actuated g/C Ratio	0.33	0.33		0.47	0.45	0.45	0.12	0.12		0.42	0.40	
v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.21	0.69		0.91	0.17	
Control Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
LOS	C	C		B	C	A	C	B		D	A	
Approach Delay		27.9			15.2			18.0			35.5	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	4.6	44.9		7.3	57.3	1.3	4.7	5.2		53.4	0.4	
Queue Length 95th (m)	14.1	83.4		18.3	107.9	16.7	12.3	26.7		#103.8	9.2	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	264	629		395	843	885	303	578		513	896	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.11	0.50		0.90	0.13	

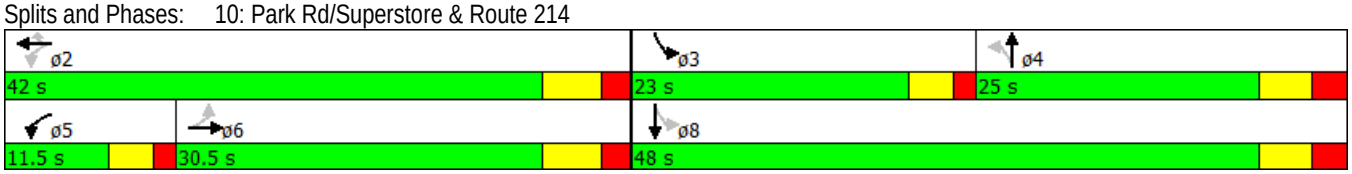
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	578.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	864	207	147	1013	0	0	0	0	152	1	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	939	225	160	1101	0	0	0	0	165	1	136

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	1101	0	0	1164	0	0				2473	2585	1101
Stage 1	-	-	-	-	-	-				1421	1421	-
Stage 2	-	-	-	-	-	-				1052	1164	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	634	-	-	600	-	-				# 33	25	258
Stage 1	-	-	-	-	-	-				223	202	-
Stage 2	-	-	-	-	-	-				336	269	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	634	-	-	600	-	-				# 10	# 0	258
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 10	# 0	-
Stage 1	-	-	-	-	-	-				# 70	# 0	-
Stage 2	-	-	-	-	-	-				336	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.7	$ 5217.5
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	634	-	-	600	-	-	13	258
HCM Lane V/C Ratio	-	-	-	0.266	-	-	16.276	0.351
HCM Control Delay (s)	0	-	-	13.164	0	-	$ 7439.7	26.3
HCM Lane LOS	A			B	A		F	D
HCM 95th %tile Q(veh)	0	-	-	1.068	-	-	27.69	1.514

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	760	0	0	807	277	377	1	517	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1793	1601	0	0	0
Flt Permitted	0.061							0.952				
Satd. Flow (perm)	115	1883	0	0	1883	1601	0	1793	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						184			179			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	152	826	0	0	877	301	410	1	562	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	826	0	0	877	301	0	411	562	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	72.0	72.0			42.0	42.0	38.0	38.0	38.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	66.0	66.0			36.0	36.0		32.0	32.0			
Actuated g/C Ratio	0.60	0.60			0.33	0.33		0.29	0.29			
v/c Ratio	2.20	0.73			1.42	0.47		0.79	0.95			
Control Delay	604.9	20.6			225.4	9.7		48.3	53.3			
Queue Delay	0.0	51.7			0.3	1.9		0.0	81.0			
Total Delay	604.9	72.2			225.7	11.7		48.3	134.3			
LOS	F	E			F	B		D	F			
Approach Delay		155.0			171.0			98.0				
Approach LOS		F			F			F				
Queue Length 50th (m)	~38.3	118.1			~258.6	8.3		81.0	86.3			
Queue Length 95th (m)	#78.8	166.2			#326.7	m24.8		#125.9	#155.4			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	69	1129			616	647		521	592			
Starvation Cap Reductn	0	0			23	209		0	0			
Spillback Cap Reductn	0	496			0	0		0	531			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	2.20	1.30			1.48	0.69		0.79	9.21			

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.20			
Intersection Signal Delay: 143.3		Intersection LOS: F	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	

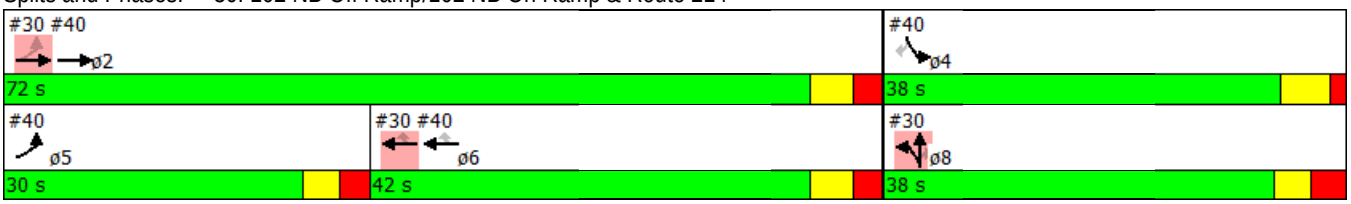
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	641	467	410	518	721	496	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				263		351	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	697	508	446	563	784	539	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	697	508	446	563	784	539	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	30.0	72.0	42.0	42.0	38.0	38.0	38.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	24.5	66.0	36.0	36.0	32.5	32.5	
Actuated g/C Ratio	0.22	0.60	0.33	0.33	0.30	0.30	
v/c Ratio	1.75	0.45	0.72	0.80	1.48	0.75	
Control Delay	371.8	10.4	40.6	27.7	258.9	19.1	
Queue Delay	2.5	5.8	1.2	0.0	0.0	50.1	
Total Delay	374.3	16.2	41.8	27.7	258.9	69.2	
LOS	F	B	D	C	F	E	
Approach Delay		223.3	33.9		181.6		
Approach LOS		F	C		F		
Queue Length 50th (m)	~222.7	42.8	83.8	61.3	~232.7	36.2	
Queue Length 95th (m)	m#273.0	m55.3	120.6	#110.9	#303.5	79.0	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	398	1129	616	700	528	720	
Starvation Cap Reductn	84	552	0	0	0	0	
Spillback Cap Reductn	0	0	52	0	0	227	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	2.22	0.88	0.79	0.80	1.48	1.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.20			
Intersection Signal Delay: 153.7		Intersection LOS: F	
Intersection Capacity Utilization 111.2%		ICU Level of Service H	

Analysis Period (min) 15

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

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	402	349	392	89	210	42	360	396	227	40	215	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1834	1601	0	1827	0	1789	1780	0	1789	1733	0
Flt Permitted		0.619			0.260		0.950			0.950		
Satd. Flow (perm)	0	1166	1601	0	481	0	1789	1780	0	1789	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213		8			22			38	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	437	379	426	97	228	46	391	430	247	43	234	268
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	816	426	0	371	0	391	677	0	43	502	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	79.0	79.0	79.0	79.0	79.0		23.0	52.0		9.0	38.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		73.0	73.0		72.9		18.0	45.5		4.0	31.5	
Actuated g/C Ratio		0.52	0.52		0.52		0.13	0.32		0.03	0.22	
v/c Ratio		1.34	0.46		1.46		1.70	1.14		0.84	1.20	
Control Delay		195.7	11.4		255.9		368.6	123.9		151.8	152.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		195.7	11.4		255.9		368.6	123.9		151.8	152.6	
LOS		F	B		F		F	F		F	F	
Approach Delay		132.5			255.9			213.5			152.6	
Approach LOS		F			F			F			F	
Queue Length 50th (m)		~294.1	33.8		~139.9		~158.5	~214.8		12.1	~159.9	
Queue Length 95th (m)		#370.5	59.0		#202.9		#221.2	#289.4		#35.9	#228.7	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		607	936		254		230	593		51	419	
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		1.34	0.46		1.46		1.70	1.14		0.84	1.20	

Intersection Summary

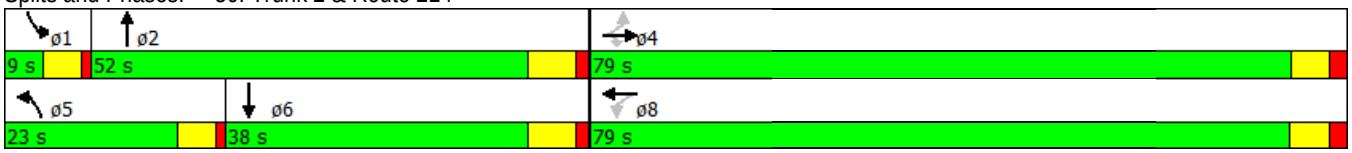
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.70
Intersection Signal Delay: 176.9 Intersection LOS: F
Intersection Capacity Utilization 125.2% ICU Level of Service H

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	757.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	738	2	29	9	10	19	18	690	3	3	394	440
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	-	-	1000
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	802	2	32	10	11	21	20	750	3	3	428	478

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1242	1227	428	1243	1226	752	428	0	0	753	0	0
Stage 1	435	435	-	791	791	-	-	-	-	-	-	-
Stage 2	807	792	-	452	435	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	# 152	178	627	151	179	410	1131	-	-	857	-	-
Stage 1	# 600	580	-	383	401	-	-	-	-	-	-	-
Stage 2	# 375	401	-	587	580	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	# 135	173	627	139	174	410	1131	-	-	857	-	-
Mov Capacity-2 Maneuver	# 135	173	-	139	174	-	-	-	-	-	-	-
Stage 1	# 589	575	-	376	394	-	-	-	-	-	-	-
Stage 2	# 340	394	-	551	575	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2317.6	24.6	0.2	0
HCM LOS	F	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1131	-	-	139	225	857	-	-
HCM Lane V/C Ratio	0.017	-	-	6.013	0.184	0.004	-	-
HCM Control Delay (s)	8.239	-	-	$ 2317.6	24.6	9.217	0	-
HCM Lane LOS	A			F	C	A	A	
HCM 95th %tile Q(veh)	0.053	-	-	90.57	0.656	0.011	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	86.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	93	45	1310	122	38	776
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	49	1424	133	41	843

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2416	1490	0	0	1557	0
Stage 1	1490	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 36	152	-	-	425	-
Stage 1	206	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	# 29	152	-	-	425	-
Mov Capacity-2 Maneuver	# 29	-	-	-	-	-
Stage 1	206	-	-	-	-	-
Stage 2	316	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1492.6	0	0.7
HCM LOS	F		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	39	425	-
HCM Lane V/C Ratio	-	-	3.846	0.097	-
HCM Control Delay (s)	-	-	$ 1492.6	14.38	0
HCM Lane LOS			F	B	A
HCM 95th %tile Q(veh)	-	-	17.154	0.321	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	23.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	80	0	0	503	59	0	0	859	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	87	0	0	547	64	0	0	934	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	547	0	0	87	0	0	634	634	87
Stage 1	-	-	-	-	-	-	87	87	-
Stage 2	-	-	-	-	-	-	547	547	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1022	-	-	1509	-	-	443	397	971
Stage 1	-	-	-	-	-	-	936	823	-
Stage 2	-	-	-	-	-	-	580	517	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1022	-	-	1509	-	-	443	0	971
Mov Capacity-2 Maneuver	-	-	-	-	-	-	443	0	-
Stage 1	-	-	-	-	-	-	936	0	-
Stage 2	-	-	-	-	-	-	580	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	41
HCM LOS			E

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	971	1022	-	-	1509	-	-
HCM Lane V/C Ratio	0.962	-	-	-	-	-	-
HCM Control Delay (s)	41	0	-	-	0	-	-
HCM Lane LOS	E	A			A		
HCM 95th %tile Q(veh)	16.525	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	503	0	0	0	80	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	547	0	0	0	87	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		1093	0	1093	1093
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1093	0	1093	1093
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	66		100	100	39	100
cM capacity (veh/h)	1623		142	1085	142	142

Direction, Lane #	WB 1	SB 1
Volume Total	547	87
Volume Left	547	87
Volume Right	0	0
cSH	1623	142
Volume to Capacity	0.34	0.61
Queue Length 95th (m)	11.5	24.6
Control Delay (s)	8.3	64.4
Lane LOS	A	F
Approach Delay (s)	8.3	64.4
Approach LOS		F

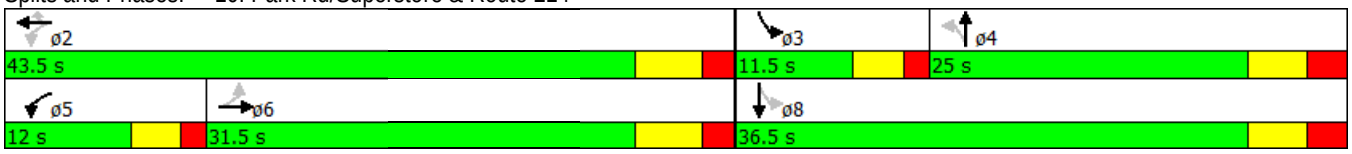
Intersection Summary			
Average Delay	16.0		
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	324	31	175	159	67	6	7	75	89	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1625	0	1789	1757	0
Flt Permitted	0.648			0.386			0.746			0.396		
Satd. Flow (perm)	1220	1859	0	727	1883	1601	1405	1625	0	746	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		82			8	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	40	352	34	190	173	73	7	8	82	97	10	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	386	0	190	173	73	7	90	0	97	18	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	31.5	31.5		12.0	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	29.1	29.1		42.6	42.4	42.4	7.5	7.5		17.6	16.4	
Actuated g/C Ratio	0.44	0.44		0.64	0.64	0.64	0.11	0.11		0.26	0.25	
v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.04	0.35		0.32	0.04	
Control Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
LOS	B	B		A	A	A	C	B		C	B	
Approach Delay		18.0			7.1			14.1			19.7	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	3.2	36.8		10.3	9.8	0.0	0.8	0.9		9.1	0.9	
Queue Length 95th (m)	9.3	64.3		20.7	19.9	3.2	4.1	12.4		19.1	5.0	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	533	816		584	1199	1057	402	524		307	812	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.02	0.17		0.32	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	57.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	304	188	319	411	0	0	0	0	114	1	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	330	204	347	447	0	0	0	0	124	1	107

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	447	0	0	535	0	0				1573	1675	447
Stage 1	-	-	-	-	-	-				1140	1140	-
Stage 2	-	-	-	-	-	-				433	535	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	1113	-	-	1033	-	-				# 121	95	612
Stage 1	-	-	-	-	-	-				305	276	-
Stage 2	-	-	-	-	-	-				654	524	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1113	-	-	1033	-	-				# 67	# 0	612
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 67	# 0	-
Stage 1	-	-	-	-	-	-				169	# 0	-
Stage 2	-	-	-	-	-	-				654	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.5	$ 373.5
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1113	-	-	1033	-	-	84	612
HCM Lane V/C Ratio	-	-	-	0.336	-	-	1.911	0.116
HCM Control Delay (s)	0	-	-	10.236	0	-	$ 533.6	11.7
HCM Lane LOS	A			B	A		F	B
HCM 95th %tile Q(veh)	0	-	-	1.49	-	-	13.895	0.392

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	377	0	0	640	190	88	1	163	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.087							0.953				
Satd. Flow (perm)	164	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						207			177			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	53	410	0	0	696	207	96	1	177	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	410	0	0	696	207	0	97	177	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	65.0	65.0			43.0	43.0	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	59.1	59.1			37.6	37.6		15.2	15.2			
Actuated g/C Ratio	0.68	0.68			0.44	0.44		0.18	0.18			
v/c Ratio	0.47	0.32			0.85	0.25		0.31	0.42			
Control Delay	25.4	6.8			23.7	1.2		33.3	8.1			
Queue Delay	0.0	0.0			1.9	0.5		0.0	0.6			
Total Delay	25.4	6.8			25.6	1.7		33.3	8.8			
LOS	C	A			C	A		C	A			
Approach Delay		8.9			20.1			17.4				
Approach LOS		A			C			B				
Queue Length 50th (m)	3.6	24.1			40.1	0.0		14.1	0.0			
Queue Length 95th (m)	#22.6	42.0			#174.7	2.5		27.3	15.7			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	112	1290			820	814		395	491			
Starvation Cap Reductn	0	0			44	317		0	0			
Spillback Cap Reductn	0	66			0	0		0	112			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.47	0.33			0.90	0.42		0.25	0.47			

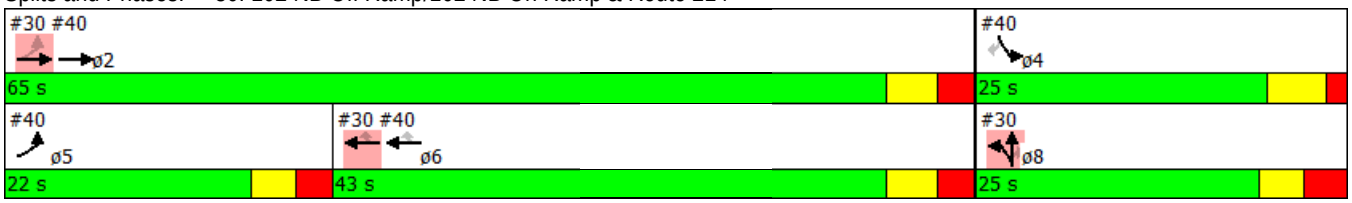
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 56.6%		ICU Level of Service B	

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	266	279	458	441	212	377	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				280		410	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	289	303	498	479	230	410	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	289	303	498	479	230	410	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	22.0	65.0	43.0	43.0	25.0	25.0	25.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	16.0	59.1	37.6	37.6	15.7	15.7	
Actuated g/C Ratio	0.19	0.68	0.44	0.44	0.18	0.18	
v/c Ratio	0.87	0.23	0.61	0.56	0.71	0.65	
Control Delay	58.2	3.7	23.5	10.5	45.7	8.8	
Queue Delay	23.1	0.6	0.3	0.0	0.0	0.3	
Total Delay	81.3	4.3	23.8	10.5	45.7	9.1	
LOS	F	A	C	B	D	A	
Approach Delay		41.9	17.3		22.2		
Approach LOS		D	B		C		
Queue Length 50th (m)	34.0	7.1	62.5	21.2	36.0	0.0	
Queue Length 95th (m)	#88.6	18.1	100.2	52.8	59.1	23.2	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	342	1290	820	855	404	679	
Starvation Cap Reductn	55	636	0	0	0	0	
Spillback Cap Reductn	0	0	55	0	0	38	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.01	0.46	0.65	0.56	0.57	0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	105	202	98	240	26	267	112	52	18	186	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1846	1601	0	1840	0	1789	1793	0	1789	1712	0
Flt Permitted		0.614			0.806		0.950			0.950		
Satd. Flow (perm)	0	1156	1601	0	1503	0	1789	1793	0	1789	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220		5			37			101	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	82	114	220	107	261	28	290	122	57	20	202	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	220	0	396	0	290	179	0	20	516	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	30.0	30.0	30.0	30.0	30.0		19.0	41.0		9.0	31.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		22.4	22.4		22.3		14.0	38.0		4.0	22.4	
Actuated g/C Ratio		0.29	0.29		0.29		0.18	0.50		0.05	0.29	
v/c Ratio		0.58	0.35		0.90		0.88	0.20		0.21	0.90	
Control Delay		31.5	5.1		51.8		62.0	10.5		42.1	42.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		31.5	5.1		51.8		62.0	10.5		42.1	42.2	
LOS		C	A		D		E	B		D	D	
Approach Delay		17.5			51.8			42.3			42.2	
Approach LOS		B			D			D			D	
Queue Length 50th (m)		24.9	0.0		56.1		43.9	10.0		3.0	60.2	
Queue Length 95th (m)		45.7	14.5		#105.5		#87.8	25.1		9.5	#115.1	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		365	657		477		330	910		94	621	
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		0.54	0.33		0.83		0.88	0.20		0.21	0.83	

Intersection Summary

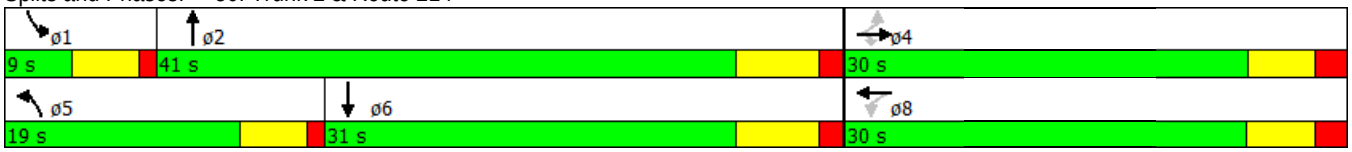
Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 76.4
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 38.7 Intersection LOS: D
Intersection Capacity Utilization 83.3% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	9	147	29	27	438
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	10	160	32	29	476

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	711	176	0	0	191	0
Stage 1	176	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	400	867	-	-	1383	-
Stage 1	855	-	-	-	-	-
Stage 2	587	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	388	867	-	-	1383	-
Mov Capacity-2 Maneuver	388	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.4
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	580	1383	-
HCM Lane V/C Ratio	-	-	0.028	0.021	-
HCM Control Delay (s)	-	-	11.4	7.659	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.087	0.065	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	55	37	127	21	23	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	40	138	23	25	311

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	510	149	0	0	161	0
Stage 1	149	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	523	898	-	-	1418	-
Stage 1	879	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	512	898	-	-	1418	-
Mov Capacity-2 Maneuver	512	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.6
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	619	1418	-
HCM Lane V/C Ratio	-	-	0.162	0.018	-
HCM Control Delay (s)	-	-	11.9	7.584	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.573	0.054	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	52	77	75	84	180	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	-
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	57	84	82	91	196	137

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	518	264	333	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	518	775	1226	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	483	775	1226	-	-	-
Mov Capacity-2 Maneuver	483	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	3.8	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1226	-	623	-	-
HCM Lane V/C Ratio	0.066	-	0.225	-	-
HCM Control Delay (s)	8.145	-	12.4	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.213	-	0.859	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	55	0	0	388	87	0	0	151	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	60	0	0	422	95	0	0	164	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	422	0	0	60	0	0	482	482	60
Stage 1	-	-	-	-	-	-	60	60	-
Stage 2	-	-	-	-	-	-	422	422	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1137	-	-	1544	-	-	543	484	1005
Stage 1	-	-	-	-	-	-	963	845	-
Stage 2	-	-	-	-	-	-	662	588	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1137	-	-	1544	-	-	543	0	1005
Mov Capacity-2 Maneuver	-	-	-	-	-	-	543	0	-
Stage 1	-	-	-	-	-	-	963	0	-
Stage 2	-	-	-	-	-	-	662	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	1005	1137	-	-	1544	-	-
HCM Lane V/C Ratio	0.163	-	-	-	-	-	-
HCM Control Delay (s)	9.3	0	-	-	0	-	-
HCM Lane LOS	A	A			A		
HCM 95th %tile Q(veh)	0.582	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	388	0	0	0	55	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	422	0	0	0	60	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		843	0	843	843
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		843	0	843	843
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	74		100	100	74	100
cM capacity (veh/h)	1623		222	1085	226	222

Direction, Lane #	WB 1	SB 1
Volume Total	422	60
Volume Left	422	60
Volume Right	0	0
cSH	1623	226
Volume to Capacity	0.26	0.26
Queue Length 95th (m)	7.9	7.8
Control Delay (s)	8.0	26.5
Lane LOS	A	D
Approach Delay (s)	8.0	26.5
Approach LOS		D

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	253	8	69	407	247	26	29	189	352	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1874	0	1789	1883	1601	1789	1639	0	1789	1614	0
Flt Permitted	0.507			0.459			0.690			0.301		
Satd. Flow (perm)	955	1874	0	864	1883	1601	1300	1639	0	567	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				268		205			99	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	38	275	9	75	442	268	28	32	205	383	5	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	284	0	75	442	268	28	237	0	383	104	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		11.5	41.8	41.8	25.0	25.0		13.2	38.2	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.7	26.7		37.3	35.8	35.8	8.8	8.8		23.5	22.0	
Actuated g/C Ratio	0.38	0.38		0.53	0.51	0.51	0.13	0.13		0.34	0.32	
v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.17	0.62		1.12	0.18	
Control Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.5	19.4		9.2	13.2	2.4	29.3	14.2		108.5	5.3	
LOS	B	B		A	B	A	C	B		F	A	
Approach Delay		19.2			9.1			15.8			86.5	
Approach LOS		B			A			B			F	
Queue Length 50th (m)	3.2	26.4		4.1	32.0	0.0	3.3	3.8		~42.7	0.5	
Queue Length 95th (m)	10.1	51.7		11.4	63.3	10.8	9.8	21.8		#109.3	9.3	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	365	717		555	966	951	354	595		343	798	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.40		0.14	0.46	0.28	0.08	0.40		1.12	0.13	

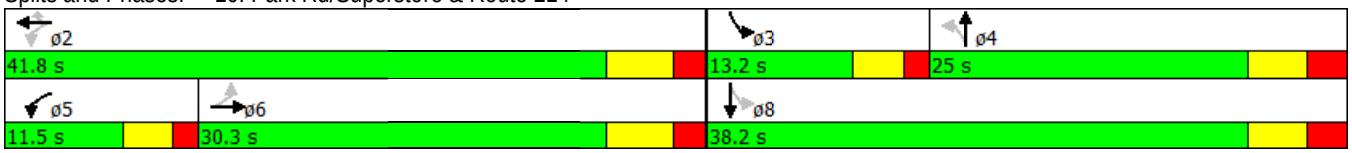
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	176.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	699	179	156	847	0	0	0	0	133	1	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	760	195	170	921	0	0	0	0	145	1	141

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	921	0	0	954	0	0				2117	2214	921
Stage 1	-	-	-	-	-	-				1260	1260	-
Stage 2	-	-	-	-	-	-				857	954	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	741	-	-	720	-	-				# 56	44	328
Stage 1	-	-	-	-	-	-				267	242	-
Stage 2	-	-	-	-	-	-				416	337	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	741	-	-	720	-	-				# 29	# 0	328
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 29	# 0	-
Stage 1	-	-	-	-	-	-				# 138	# 0	-
Stage 2	-	-	-	-	-	-				416	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.8	$ 1424.1
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	741	-	-	720	-	-	37	328
HCM Lane V/C Ratio	-	-	-	0.236	-	-	5.21	0.287
HCM Control Delay (s)	0	-	-	11.533	0	-	$ 2110.2	20.3
HCM Lane LOS	A			B	A		F	C
HCM 95th %tile Q(veh)	0	-	-	0.912	-	-	22.659	1.163

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	638	0	0	700	238	325	1	444	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.071							0.953				
Satd. Flow (perm)	134	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						236			256			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	172	693	0	0	761	259	353	1	483	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	693	0	0	761	259	0	354	483	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	62.0	62.0			39.0	39.0	28.0	28.0	28.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	56.0	56.0			33.0	33.0		22.0	22.0			
Actuated g/C Ratio	0.62	0.62			0.37	0.37		0.24	0.24			
v/c Ratio	2.07	0.59			1.10	0.35		0.81	0.83			
Control Delay	540.5	12.8			86.3	2.2		48.1	28.6			
Queue Delay	0.0	1.6			0.1	0.7		0.0	70.6			
Total Delay	540.5	14.3			86.4	3.0		48.1	99.2			
LOS	F	B			F	A		D	F			
Approach Delay		119.0			65.2			77.6				
Approach LOS		F			E			E				
Queue Length 50th (m)	~33.4	64.9			~151.6	0.3		57.7	38.0			
Queue Length 95th (m)	#72.4	95.8			#214.8	3.5		#100.2	#90.4			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	83	1171			690	736		438	584			
Starvation Cap Reductn	0	0			15	231		0	0			
Spillback Cap Reductn	0	291			0	0		0	464			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	2.07	0.79			1.13	0.51		0.81	4.03			

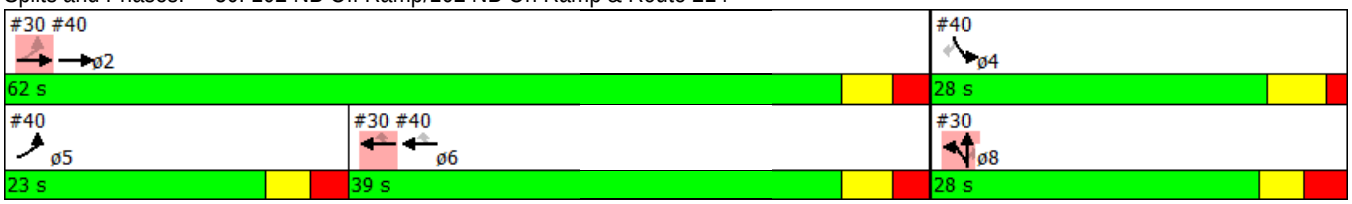
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.07			
Intersection Signal Delay: 86.1		Intersection LOS: F	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	470	525	397	348	468	386	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				237		420	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	511	571	432	378	509	420	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	511	571	432	378	509	420	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	23.0	62.0	39.0	39.0	28.0	28.0	28.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	17.5	56.0	33.0	33.0	22.5	22.5	
Actuated g/C Ratio	0.19	0.62	0.37	0.37	0.25	0.25	
v/c Ratio	1.47	0.49	0.63	0.51	1.14	0.59	
Control Delay	252.9	8.1	28.3	10.8	119.6	6.7	
Queue Delay	1.8	1.7	0.6	0.0	0.0	0.7	
Total Delay	254.7	9.8	28.9	10.8	119.6	7.5	
LOS	F	A	C	B	F	A	
Approach Delay		125.5	20.4		68.9		
Approach LOS		F	C		E		
Queue Length 50th (m)	~120.3	34.5	60.3	16.7	~103.7	0.0	
Queue Length 95th (m)	m#173.3	m49.7	90.9	41.1	#162.2	22.0	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	347	1171	690	737	447	715	
Starvation Cap Reductn	51	414	0	0	0	0	
Spillback Cap Reductn	0	0	63	0	0	96	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.73	0.75	0.69	0.51	1.14	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.07			
Intersection Signal Delay: 76.7		Intersection LOS: E	
Intersection Capacity Utilization 87.0%		ICU Level of Service E	

Analysis Period (min) 15

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

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	281	338	338	82	204	35	310	290	203	33	156	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1842	1601	0	1831	0	1789	1767	0	1789	1737	0
Flt Permitted		0.666			0.422		0.950			0.950		
Satd. Flow (perm)	0	1254	1601	0	783	0	1789	1767	0	1789	1737	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			233		7			29			36	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	305	367	367	89	222	38	337	315	221	36	170	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	672	367	0	349	0	337	536	0	36	353	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	72.0	72.0	72.0	72.0	72.0		28.0	49.0		9.0	30.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		66.0	66.0		65.9		23.0	44.3		4.0	23.5	
Actuated g/C Ratio		0.51	0.51		0.51		0.18	0.34		0.03	0.18	
v/c Ratio		1.06	0.40		0.87		1.07	0.86		0.65	1.03	
Control Delay		83.5	8.0		51.7		119.7	53.8		109.8	102.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		83.5	8.0		51.7		119.7	53.8		109.8	102.8	
LOS		F	A		D		F	D		F	F	
Approach Delay		56.8			51.7			79.2			103.5	
Approach LOS		E			D			E			F	
Queue Length 50th (m)		~188.2	17.9		75.6		~95.1	124.7		9.3	~88.5	
Queue Length 95th (m)		#259.6	39.0		#137.8		#153.1	#188.6		#27.4	#148.5	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		636	927		400		316	621		55	343	
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		1.06	0.40		0.87		1.07	0.86		0.65	1.03	

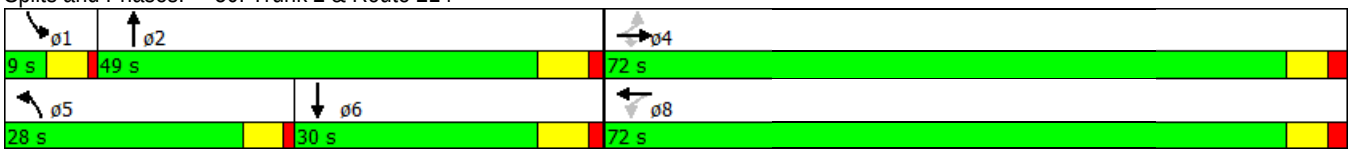
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 70.4		Intersection LOS: E	
Intersection Capacity Utilization 106.1%		ICU Level of Service G	

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	12	17	494	4	2	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	18	537	4	2	293

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	837	539	0	0	541	0
Stage 1	539	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	337	542	-	-	1028	-
Stage 1	585	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	336	542	-	-	1028	-
Mov Capacity-2 Maneuver	336	-	-	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.1
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	432	1028	-
HCM Lane V/C Ratio	-	-	0.073	0.002	-
HCM Control Delay (s)	-	-	14	8.509	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.235	0.006	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	48	53	339	68	42	201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	58	368	74	46	218

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	715	405	0	0	442	0
Stage 1	405	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	397	646	-	-	1118	-
Stage 1	673	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	378	646	-	-	1118	-
Mov Capacity-2 Maneuver	378	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	1.4
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	483	1118	-
HCM Lane V/C Ratio	-	-	0.227	0.041	-
HCM Control Delay (s)	-	-	14.6	8.357	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.866	0.128	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	153	90	115	227	136	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	-
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	166	98	125	247	148	98

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	694	197	246	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	409	844	1320	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	370	844	1320	-	-	-
Mov Capacity-2 Maneuver	370	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	553	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.3	2.7	0
HCM LOS	C		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1320	-	467	-	-
HCM Lane V/C Ratio	0.095	-	0.566	-	-
HCM Control Delay (s)	8.012	-	22.3	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0.313	-	3.439	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	99	0	0	281	88	0	0	430	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	108	0	0	305	96	0	0	467	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	305	0	0	108	0	0	413	413	108
Stage 1	-	-	-	-	-	-	108	108	-
Stage 2	-	-	-	-	-	-	305	305	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1256	-	-	1483	-	-	595	529	946
Stage 1	-	-	-	-	-	-	916	806	-
Stage 2	-	-	-	-	-	-	748	662	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1256	-	-	1483	-	-	595	0	946
Mov Capacity-2 Maneuver	-	-	-	-	-	-	595	0	-
Stage 1	-	-	-	-	-	-	916	0	-
Stage 2	-	-	-	-	-	-	748	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	946	1256	-	-	1483	-	-
HCM Lane V/C Ratio	0.494	-	-	-	-	-	-
HCM Control Delay (s)	12.5	0	-	-	0	-	-
HCM Lane LOS	B	A			A		
HCM 95th %tile Q(veh)	2.799	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	388	0	0	0	55	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	422	0	0	0	60	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		843	0	843	843
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		843	0	843	843
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	74		100	100	74	100
cM capacity (veh/h)	1623		222	1085	226	222

Direction, Lane #	WB 1	SB 1
Volume Total	422	60
Volume Left	422	60
Volume Right	0	0
cSH	1623	226
Volume to Capacity	0.26	0.26
Queue Length 95th (m)	7.9	7.8
Control Delay (s)	8.0	26.5
Lane LOS	A	D
Approach Delay (s)	8.0	26.5
Approach LOS		D

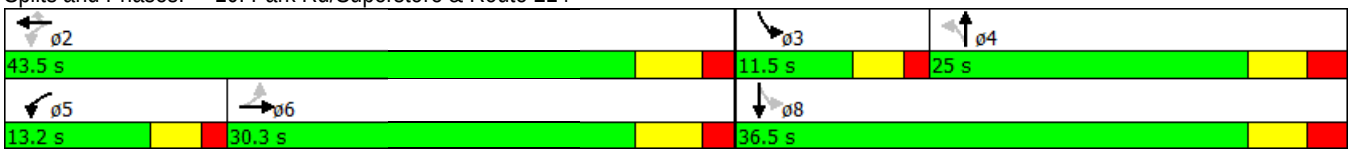
Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	384	36	214	213	94	7	8	92	108	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1624	0	1789	1763	0
Flt Permitted	0.614			0.303			0.744			0.390		
Satd. Flow (perm)	1156	1859	0	571	1883	1601	1401	1624	0	735	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		100			9	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	47	417	39	233	232	102	8	9	100	117	12	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	456	0	233	232	102	8	109	0	117	21	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		13.2	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.5	26.5		41.1	41.2	41.2	7.7	7.7		17.5	16.4	
Actuated g/C Ratio	0.41	0.41		0.64	0.64	0.64	0.12	0.12		0.27	0.25	
v/c Ratio	0.10	0.60		0.45	0.19	0.10	0.05	0.39		0.37	0.05	
Control Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
LOS	B	C		B	A	A	C	B		C	B	
Approach Delay		21.4			8.1			13.6			20.4	
Approach LOS		C			A			B			C	
Queue Length 50th (m)	3.9	47.5		13.0	13.7	0.0	1.0	1.1		11.1	1.1	
Queue Length 95th (m)	10.9	81.8		25.6	26.6	5.9	4.4	13.5		22.3	5.6	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	474	766		529	1197	1055	419	556		315	852	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.60		0.44	0.19	0.10	0.02	0.20		0.37	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 60.6%		ICU Level of Service B	

Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	230.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	370	218	374	529	0	0	0	0	139	1	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	402	237	407	575	0	0	0	0	151	1	108

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	575	0	0	639	0	0				1909	2027	575
Stage 1	-	-	-	-	-	-				1388	1388	-
Stage 2	-	-	-	-	-	-				521	639	-
Follow-up Headway	2.218	-	-	2.218	-	-				3.518	4.018	3.318
Pot Capacity-1 Maneuver	998	-	-	945	-	-				# 75	58	518
Stage 1	-	-	-	-	-	-				231	210	-
Stage 2	-	-	-	-	-	-				596	470	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	998	-	-	945	-	-				# 28	# 0	518
Mov Capacity-2 Maneuver	-	-	-	-	-	-				# 28	# 0	-
Stage 1	-	-	-	-	-	-				# 85	# 0	-
Stage 2	-	-	-	-	-	-				596	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.8	$ 1648
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	998	-	-	945	-	-	34	518
HCM Lane V/C Ratio	-	-	-	0.43	-	-	5.531	0.138
HCM Control Delay (s)	0	-	-	11.654	0	-	$ 2271.7	13.1
HCM Lane LOS	A			B	A		F	B
HCM 95th %tile Q(veh)	0	-	-	2.193	-	-	22.403	0.478

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	453	0	0	797	247	102	1	202	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.051							0.953				
Satd. Flow (perm)	96	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						202			220			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	58	492	0	0	866	268	111	1	220	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	492	0	0	866	268	0	112	220	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	85.0	85.0			55.4	55.4	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	79.0	79.0			49.4	49.4		19.0	19.0			
Actuated g/C Ratio	0.72	0.72			0.45	0.45		0.17	0.17			
v/c Ratio	0.85	0.36			1.02	0.32		0.36	0.48			
Control Delay	95.3	6.8			54.5	3.1		44.0	9.2			
Queue Delay	0.0	0.2			24.1	1.3		0.0	72.7			
Total Delay	95.3	7.0			78.6	4.3		44.0	81.9			
LOS	F	A			E	A		D	F			
Approach Delay		16.3			61.0			69.1				
Approach LOS		B			E			E				
Queue Length 50th (m)	7.7	35.2			~200.0	2.0		21.4	0.0			
Queue Length 95th (m)	#22.1	50.2			m#259.9	m6.9		38.4	20.0			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	68	1352			845	830		310	458			
Starvation Cap Reductn	0	0			51	365		0	0			
Spillback Cap Reductn	0	276			0	0		0	332			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.85	0.46			1.09	0.58		0.36	1.75			

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 50.2 Intersection LOS: D
Intersection Capacity Utilization 59.9% ICU Level of Service B

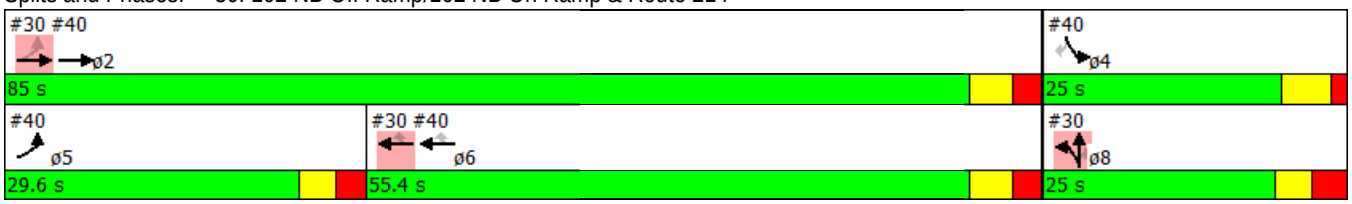
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	366	289	506	643	279	575	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				324		505	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	398	314	550	699	303	625	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	398	314	550	699	303	625	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	29.6	85.0	55.4	55.4	25.0	25.0	25.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	24.1	79.0	49.4	49.4	19.5	19.5	
Actuated g/C Ratio	0.22	0.72	0.45	0.45	0.18	0.18	
v/c Ratio	1.02	0.23	0.65	0.78	0.96	0.89	
Control Delay	87.9	3.4	28.1	20.3	86.3	26.1	
Queue Delay	30.7	0.7	0.3	0.0	0.0	48.0	
Total Delay	118.6	4.1	28.4	20.3	86.3	74.1	
LOS	F	A	C	C	F	E	
Approach Delay		68.1	23.9		78.1		
Approach LOS		E	C		E		
Queue Length 50th (m)	~88.4	8.0	89.7	69.5	65.1	24.7	
Queue Length 95th (m)	#147.8	19.3	126.8	122.0	#117.1	#94.2	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	391	1352	845	897	317	699	
Starvation Cap Reductn	98	721	0	0	0	0	
Spillback Cap Reductn	0	0	52	0	0	134	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.36	0.50	0.69	0.78	0.96	1.11	

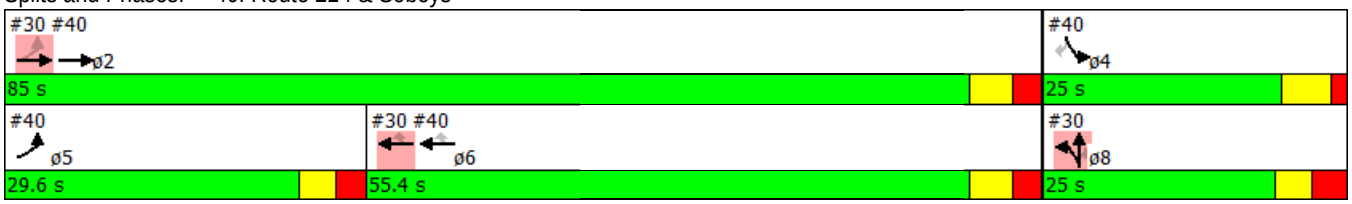
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 52.2		Intersection LOS: D	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	

Analysis Period (min) 15

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

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

Splits and Phases: 40: Route 214 & Sobeys



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	119	234	109	267	32	310	148	58	23	272	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1836	1601	0	1839	0	1789	1804	0	1789	1706	0
Flt Permitted		0.524			0.630		0.950			0.950		
Satd. Flow (perm)	0	987	1601	0	1174	0	1789	1804	0	1789	1706	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			254		3			21			71	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	133	129	254	118	290	35	337	161	63	25	296	491
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	254	0	443	0	337	224	0	25	787	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	51.0	51.0	51.0	51.0	51.0		27.0	78.0		11.0	62.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		45.0	45.0		44.9		22.0	75.9		5.9	55.5	
Actuated g/C Ratio		0.32	0.32		0.32		0.16	0.54		0.04	0.40	
v/c Ratio		0.83	0.37		1.17		1.20	0.23		0.33	1.09	
Control Delay		66.2	5.5		143.7		167.9	16.6		77.3	98.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		66.2	5.5		143.7		167.9	16.6		77.3	98.7	
LOS		E	A		F		F	B		E	F	
Approach Delay		36.3			143.7			107.5			98.1	
Approach LOS		D			F			F			F	
Queue Length 50th (m)		67.1	0.0		~145.7		~112.8	30.3		6.9	~233.4	
Queue Length 95th (m)		#114.0	18.8		#212.1		#172.6	46.5		16.8	#310.3	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		317	686		378		281	987		76	719	
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		0.83	0.37		1.17		1.20	0.23		0.33	1.09	

Intersection Summary

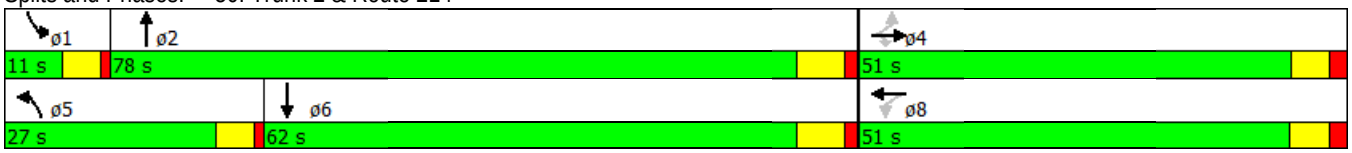
Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 95.3 Intersection LOS: F
Intersection Capacity Utilization 102.6% ICU Level of Service G

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	11	207	33	35	594
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	12	225	36	38	646

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	965	243	0	0	261	0
Stage 1	243	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	283	796	-	-	1303	-
Stage 1	797	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	270	796	-	-	1303	-
Mov Capacity-2 Maneuver	270	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.4
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	1303	-
HCM Lane V/C Ratio	-	-	0.039	0.029	-
HCM Control Delay (s)	-	-	12.9	7.846	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.122	0.09	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	64	46	184	24	30	418
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	50	200	26	33	454

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	733	213	0	0	226	0
Stage 1	213	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	388	827	-	-	1342	-
Stage 1	823	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	375	827	-	-	1342	-
Mov Capacity-2 Maneuver	375	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	577	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.5
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	486	1342	-
HCM Lane V/C Ratio	-	-	0.246	0.024	-
HCM Control Delay (s)	-	-	14.8	7.749	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.959	0.075	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	98	103	133	89	220	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	1000
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	107	112	145	97	239	293

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	625	239	239	0	-	0
Stage 1	239	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	449	800	1328	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	400	800	1328	-	-	-
Mov Capacity-2 Maneuver	400	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	4.8	0
HCM LOS	C		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1328	-	538	-	-
HCM Lane V/C Ratio	0.109	-	0.406	-	-
HCM Control Delay (s)	8.042	-	16.2	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0.366	-	1.956	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	78	0	0	779	147	0	0	268	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	85	0	0	847	160	0	0	291	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	847	0	0	85	0	0	932	932	85
Stage 1	-	-	-	-	-	-	85	85	-
Stage 2	-	-	-	-	-	-	847	847	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	790	-	-	1512	-	-	296	266	974
Stage 1	-	-	-	-	-	-	938	824	-
Stage 2	-	-	-	-	-	-	420	378	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	790	-	-	1512	-	-	296	0	974
Mov Capacity-2 Maneuver	-	-	-	-	-	-	296	0	-
Stage 1	-	-	-	-	-	-	938	0	-
Stage 2	-	-	-	-	-	-	420	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	974	790	-	-	1512	-	-
HCM Lane V/C Ratio	0.299	-	-	-	-	-	-
HCM Control Delay (s)	10.3	0	-	-	0	-	-
HCM Lane LOS	B	A			A		
HCM 95th %tile Q(veh)	1.261	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	779	0	0	0	78	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	847	0	0	0	85	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		1693	0	1693	1693
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1693	0	1693	1693
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	48		100	100	0	100
cM capacity (veh/h)	1623		44	1085	43	44

Direction, Lane #	WB 1	SB 1
Volume Total	847	85
Volume Left	847	85
Volume Right	0	0
cSH	1623	43
Volume to Capacity	0.52	1.96
Queue Length 95th (m)	24.1	66.9
Control Delay (s)	9.6	651.0
Lane LOS	A	F
Approach Delay (s)	9.6	651.0
Approach LOS		F

Intersection Summary			
Average Delay	68.0		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	322	9	86	490	297	30	34	231	426	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1876	0	1789	1883	1601	1789	1637	0	1789	1612	0
Flt Permitted	0.419			0.336			0.681			0.282		
Satd. Flow (perm)	789	1876	0	633	1883	1601	1283	1637	0	531	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				306		251			114	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	43	350	10	93	533	323	33	37	251	463	5	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	360	0	93	533	323	33	288	0	463	119	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.5	30.5		11.5	42.0	42.0	25.0	25.0		23.0	48.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	27.0	27.0		37.6	36.1	36.1	9.7	9.7		34.0	32.5	
Actuated g/C Ratio	0.33	0.33		0.47	0.45	0.45	0.12	0.12		0.42	0.40	
v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.21	0.69		0.91	0.17	
Control Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
LOS	C	C		B	C	A	C	B		D	A	
Approach Delay		27.9			15.2			18.0			35.5	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	4.6	44.9		7.3	57.3	1.3	4.7	5.2		53.4	0.4	
Queue Length 95th (m)	14.1	83.4		18.3	107.9	16.7	12.3	26.7		#103.8	9.2	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	264	629		395	843	885	303	578		513	896	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.11	0.50		0.90	0.13	

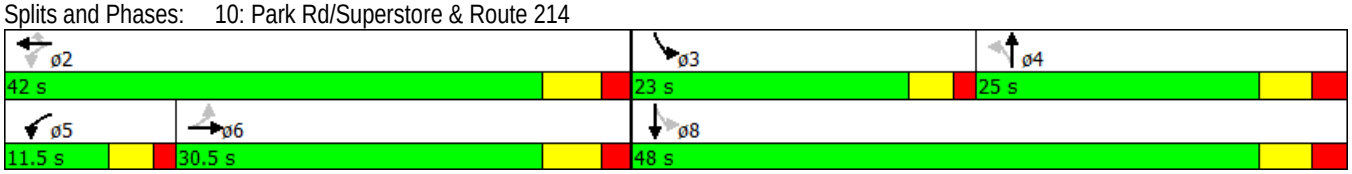
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Park Rd/Superstore & Route 214



Intersection	
Intersection Delay, s/veh	3461.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	864	207	199	1013	0	0	0	0	181	1	142
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	939	225	216	1101	0	0	0	0	197	1	154

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1101	0	0	1164	0	0			2586	2698	1101
Stage 1	-	-	-	-	-	-			1534	1534	-
Stage 2	-	-	-	-	-	-			1052	1164	-
Follow-up Headway	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Capacity-1 Maneuver	634	-	-	600	-	-			# 28	21	258
Stage 1	-	-	-	-	-	-			# 196	178	-
Stage 2	-	-	-	-	-	-			336	269	-
Time blocked-Platoon, %		-	-		-	-					
Mov Capacity-1 Maneuver	634	-	-	600	-	-			# 2	# 0	258
Mov Capacity-2 Maneuver	-	-	-	-	-	-			# 2	# 0	-
Stage 1	-	-	-	-	-	-			# 14	# 0	-
Stage 2	-	-	-	-	-	-			336	# 0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.4	$ 27842
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	634	-	-	600	-	-	3	258
HCM Lane V/C Ratio	-	-	-	0.361	-	-	83.092	0.399
HCM Control Delay (s)	0	-	-	14.344	0	-	$ 39323.4	27.9
HCM Lane LOS	A			B	A		F	D
HCM 95th %tile Q(veh)	0	-	-	1.635	-	-	33.569	1.82

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	790	0	0	859	291	377	1	582	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1793	1601	0	0	0
Flt Permitted	0.053							0.952				
Satd. Flow (perm)	100	1883	0	0	1883	1601	0	1793	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						170			180			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	184	859	0	0	934	316	410	1	633	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	859	0	0	934	316	0	411	633	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	81.0	81.0			47.0	47.0	39.0	39.0	39.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	75.0	75.0			41.0	41.0		33.0	33.0			
Actuated g/C Ratio	0.62	0.62			0.34	0.34		0.28	0.28			
v/c Ratio	2.97	0.73			1.45	0.48		0.83	1.11			
Control Delay	943.2	20.2			238.0	11.8		56.9	101.4			
Queue Delay	0.0	51.6			0.3	2.7		0.0	38.2			
Total Delay	943.2	71.8			238.2	14.5		56.9	139.6			
LOS	F	E			F	B		E	F			
Approach Delay		225.5			181.7			107.0				
Approach LOS		F			F			F				
Queue Length 50th (m)	~60.9	130.1			~304.3	12.2		91.2	~137.8			
Queue Length 95th (m)	#106.2	180.0			#374.8	m27.3		#141.4	#208.1			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	62	1176			643	658		493	570			
Starvation Cap Reductn	0	0			23	230		0	0			
Spillback Cap Reductn	0	528			0	0		0	508			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	2.97	1.33			1.51	0.74		0.83	10.21			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.97			
Intersection Signal Delay: 172.0		Intersection LOS: F	
Intersection Capacity Utilization 90.5%		ICU Level of Service E	

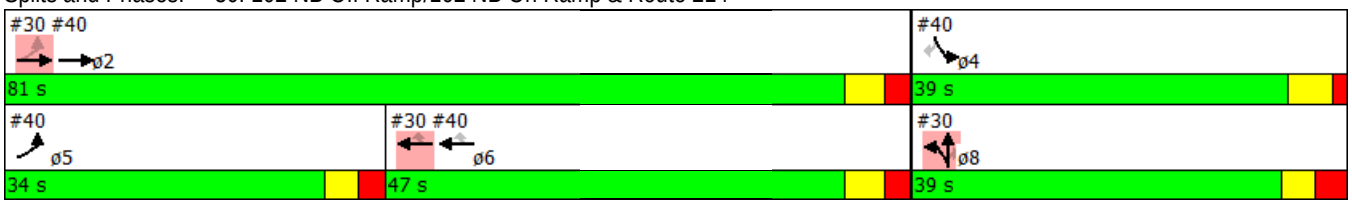
Analysis Period (min) 15

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

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	677	544	449	482	666	551	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				210		379	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	736	591	488	524	724	599	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	736	591	488	524	724	599	
Turn Type	Prot	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	34.0	81.0	47.0	47.0	39.0	39.0	39.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	28.5	75.0	41.0	41.0	33.5	33.5	
Actuated g/C Ratio	0.24	0.62	0.34	0.34	0.28	0.28	
v/c Ratio	1.74	0.50	0.76	0.76	1.45	0.83	
Control Delay	364.0	11.6	44.1	29.0	247.3	25.8	
Queue Delay	2.9	11.4	1.3	0.0	0.0	51.4	
Total Delay	366.9	23.0	45.4	29.0	247.3	77.2	
LOS	F	C	D	C	F	E	
Approach Delay		213.7	36.9		170.3		
Approach LOS		F	D		F		
Queue Length 50th (m)	~257.2	64.3	101.5	68.0	~232.4	52.1	
Queue Length 95th (m)	m#285.4	m71.4	141.8	112.4	#303.4	#116.1	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	424	1176	643	685	499	720	
Starvation Cap Reductn	104	558	0	0	0	0	
Spillback Cap Reductn	0	0	47	0	0	228	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	2.30	0.96	0.82	0.76	1.45	1.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.97			
Intersection Signal Delay: 149.2		Intersection LOS: F	
Intersection Capacity Utilization 112.2%		ICU Level of Service H	

Analysis Period (min) 15

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

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	376	392	89	227	42	360	396	227	40	215	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1833	1601	0	1831	0	1789	1780	0	1789	1727	0
Flt Permitted		0.607			0.205		0.950			0.950		
Satd. Flow (perm)	0	1143	1601	0	380	0	1789	1780	0	1789	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			190		7			20			39	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	490	409	426	97	247	46	391	430	247	43	234	292
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	899	426	0	390	0	391	677	0	43	526	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	88.0	88.0	88.0	88.0	88.0		22.0	53.0		9.0	40.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		82.0	82.0		81.9		17.0	46.5		4.0	33.5	
Actuated g/C Ratio		0.55	0.55		0.55		0.11	0.31		0.03	0.22	
v/c Ratio		1.44	0.44		1.86		1.94	1.20		0.91	1.27	
Control Delay		236.4	12.1		427.9		471.4	148.4		177.7	180.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		236.4	12.1		427.9		471.4	148.4		177.7	180.9	
LOS		F	B		F		F	F		F	F	
Approach Delay		164.3			427.9			266.6			180.7	
Approach LOS		F			F			F			F	
Queue Length 50th (m)		~361.7	38.9		~113.5		~178.6	~239.7		13.0	~187.4	
Queue Length 95th (m)		#440.7	63.7		#178.5		#242.8	#315.3		#38.3	#258.7	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		624	961		210		202	565		47	415	
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		1.44	0.44		1.86		1.94	1.20		0.91	1.27	

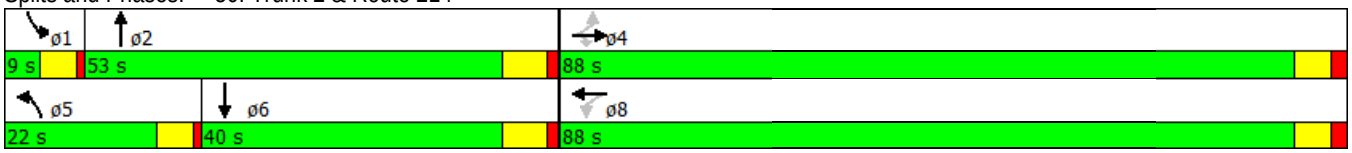
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.94			
Intersection Signal Delay: 230.4		Intersection LOS: F	
Intersection Capacity Utilization 131.6%		ICU Level of Service H	

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214



Intersection	
Intersection Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	23	664	5	3	372
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	25	722	5	3	404

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1135	724	0	0	727	0
Stage 1	724	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	224	426	-	-	876	-
Stage 1	480	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	223	426	-	-	876	-
Mov Capacity-2 Maneuver	223	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18	0	0.1
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	317	876	-
HCM Lane V/C Ratio	-	-	0.127	0.004	-
HCM Control Delay (s)	-	-	18	9.125	0
HCM Lane LOS			C	A	A
HCM 95th %tile Q(veh)	-	-	0.431	0.011	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	56	65	483	79	53	293
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	71	525	86	58	318

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1002	568	0	0	611	0
Stage 1	568	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	269	522	-	-	968	-
Stage 1	567	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	249	522	-	-	968	-
Mov Capacity-2 Maneuver	249	-	-	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	1.4
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	346	968	-
HCM Lane V/C Ratio	-	-	0.38	0.06	-
HCM Control Delay (s)	-	-	21.6	8.954	0
HCM Lane LOS			C	A	A
HCM 95th %tile Q(veh)	-	-	1.728	0.19	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	71.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	316	157	162	266	149	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	1000
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	343	171	176	289	162	198

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	803	162	162	0	-	0
Stage 1	162	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	353	883	1417	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	# 309	883	1417	-	-	-
Mov Capacity-2 Maneuver	# 309	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	183.1	3	0
HCM LOS	F		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1417	-	394	-	-
HCM Lane V/C Ratio	0.124	-	1.305	-	-
HCM Control Delay (s)	7.901	-	183.1	-	-
HCM Lane LOS	A		F		
HCM 95th %tile Q(veh)	0.425	-	23.293	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	32.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	163	0	0	509	130	0	0	829	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	200	-	-	-	-	-	-
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	177	0	0	553	141	0	0	901	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	553	0	0	177	0	0	730	730	177
Stage 1	-	-	-	-	-	-	177	177	-
Stage 2	-	-	-	-	-	-	553	553	-
Follow-up Headway	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Capacity-1 Maneuver	1017	-	-	1399	-	-	389	349	# 866
Stage 1	-	-	-	-	-	-	854	753	-
Stage 2	-	-	-	-	-	-	576	514	-
Time blocked-Platoon, %		-	-		-	-			
Mov Capacity-1 Maneuver	1017	-	-	1399	-	-	389	0	# 866
Mov Capacity-2 Maneuver	-	-	-	-	-	-	389	0	-
Stage 1	-	-	-	-	-	-	854	0	-
Stage 2	-	-	-	-	-	-	576	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	63.3
HCM LOS			F

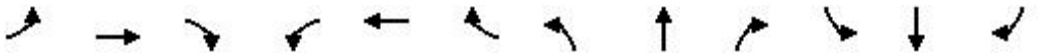
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	866	1017	-	-	1399	-	-
HCM Lane V/C Ratio	1.041	-	-	-	-	-	-
HCM Control Delay (s)	63.3	0	-	-	0	-	-
HCM Lane LOS	F	A			A		
HCM 95th %tile Q(veh)	20.706	0	-	-	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	509	0	0	0	163	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	553	0	0	0	177	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		1107	0	1107	1107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1107	0	1107	1107
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	66		100	100	0	100
cM capacity (veh/h)	1623		139	1085	138	139

Direction, Lane #	WB 1	SB 1
Volume Total	553	177
Volume Left	553	177
Volume Right	0	0
cSH	1623	138
Volume to Capacity	0.34	1.28
Queue Length 95th (m)	11.7	83.3
Control Delay (s)	8.4	233.2
Lane LOS	A	F
Approach Delay (s)	8.4	233.2
Approach LOS		F

Intersection Summary			
Average Delay	62.9		
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

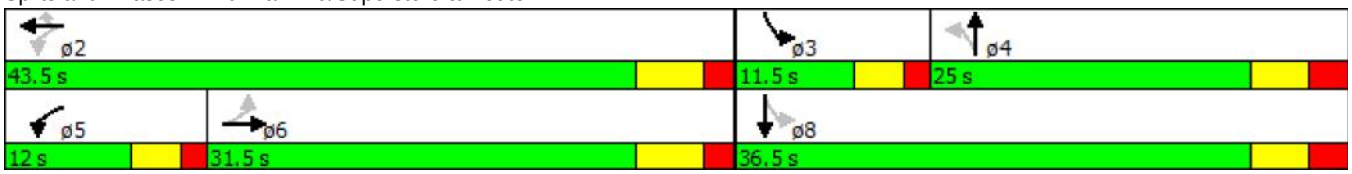


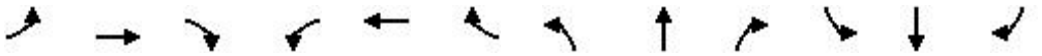
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	324	31	175	159	67	6	7	75	89	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1625	0	1789	1757	0
Flt Permitted	0.648			0.386			0.746			0.396		
Satd. Flow (perm)	1220	1859	0	727	1883	1601	1405	1625	0	746	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		82			8	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	40	352	34	190	173	73	7	8	82	97	10	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	386	0	190	173	73	7	90	0	97	18	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	31.5	31.5		12.0	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	29.1	29.1		42.6	42.4	42.4	7.5	7.5		17.6	16.4	
Actuated g/C Ratio	0.44	0.44		0.64	0.64	0.64	0.11	0.11		0.26	0.25	
v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.04	0.35		0.32	0.04	
Control Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.9	18.3		8.6	8.0	1.3	27.8	13.0		20.8	14.0	
LOS	B	B		A	A	A	C	B		C	B	
Approach Delay		18.0			7.1			14.1			19.7	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	3.2	36.8		10.3	9.8	0.0	0.8	0.9		9.1	0.9	
Queue Length 95th (m)	9.3	64.3		20.7	19.9	3.2	4.1	12.4		19.1	5.0	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	533	816		584	1199	1057	402	524		307	812	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.47		0.33	0.14	0.07	0.02	0.17		0.32	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 13.4		Intersection LOS: B	

Intersection Capacity Utilization 54.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	304	188	319	411	0	0	0	0	114	1	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		20.0
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1786	0	0	1844	0	0	0	0	0	1795	1601
Flt Permitted					0.606						0.953	
Satd. Flow (perm)	0	1786	0	0	1141	0	0	0	0	0	1795	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148										107
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		241.7			236.2			270.9			280.1	
Travel Time (s)		17.4			17.0			12.2			12.6	
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
Adj. Flow (vph)	0	330	204	347	447	0	0	0	0	124	1	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	534	0	0	794	0	0	0	0	0	125	107
Turn Type		NA		Perm	NA					Split	NA	Perm
Protected Phases		2			6					7	7	
Permitted Phases				6								7
Total Split (s)		50.0		50.0	50.0					10.0	10.0	10.0
Total Lost Time (s)		5.0			5.0						5.0	5.0
Act Effct Green (s)		46.8			46.8						5.0	5.0
Actuated g/C Ratio		0.76			0.76						0.08	0.08
v/c Ratio		0.39			0.92						0.86	0.47
Control Delay		2.7			26.2						78.4	14.0
Queue Delay		0.0			0.0						0.0	0.0
Total Delay		2.7			26.2						78.4	14.0
LOS		A			C						E	B
Approach Delay		2.7			26.2						48.7	
Approach LOS		A			C						D	
Queue Length 50th (m)		9.4			49.7						14.1	0.0
Queue Length 95th (m)		17.1			#144.4						#39.1	12.0
Internal Link Dist (m)		217.7			212.2			246.9			256.1	
Turn Bay Length (m)												20.0
Base Capacity (vph)		1387			863						145	228
Starvation Cap Reductn		0			0						0	0
Spillback Cap Reductn		0			0						0	0
Storage Cap Reductn		0			0						0	0
Reduced v/c Ratio		0.39			0.92						0.86	0.47

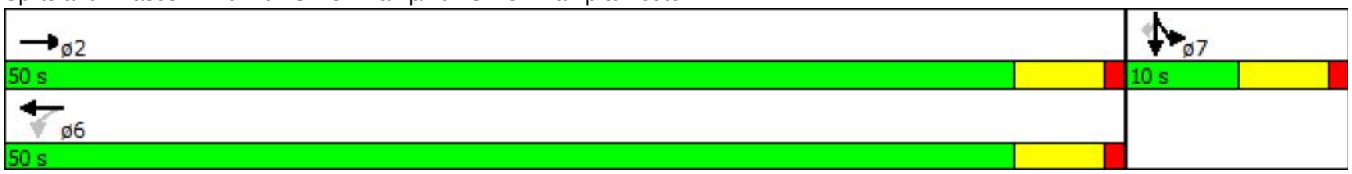
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 61.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 21.5		Intersection LOS: C	

Intersection Capacity Utilization 85.6% ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 20: 102 SB On Ramp/102 SB Off Ramp & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	377	0	0	640	190	88	1	163	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.128							0.953				
Satd. Flow (perm)	241	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						207			177			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	53	410	0	0	696	207	96	1	177	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	410	0	0	696	207	0	97	177	0	0	0
Turn Type	Perm	NA			NA	Perm	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	55.0	55.0			41.0	41.0	25.0	25.0	25.0			
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	49.1	49.1			35.1	35.1		14.2	14.2			
Actuated g/C Ratio	0.65	0.65			0.47	0.47		0.19	0.19			
v/c Ratio	0.34	0.33			0.79	0.24		0.29	0.40			
Control Delay	14.6	7.4			18.2	1.1		28.0	7.3			
Queue Delay	0.0	0.1			0.9	0.4		0.0	0.6			
Total Delay	14.6	7.4			19.1	1.6		28.0	7.9			
LOS	B	A			B	A		C	A			
Approach Delay		8.2			15.1			15.0				
Approach LOS		A			B			B				
Queue Length 50th (m)	2.9	22.4			32.5	0.0		11.9	0.0			
Queue Length 95th (m)	12.6	43.1			#154.0	2.1		24.0	14.4			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	157	1227			877	856		453	537			
Starvation Cap Reductn	0	0			46	324		0	0			
Spillback Cap Reductn	0	108			0	0		0	145			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.34	0.37			0.84	0.39		0.21	0.45			

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 75.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 13.1 Intersection LOS: B

Lane Group	ø4	ø5
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	5
Permitted Phases		
Total Split (s)	25.0	14.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

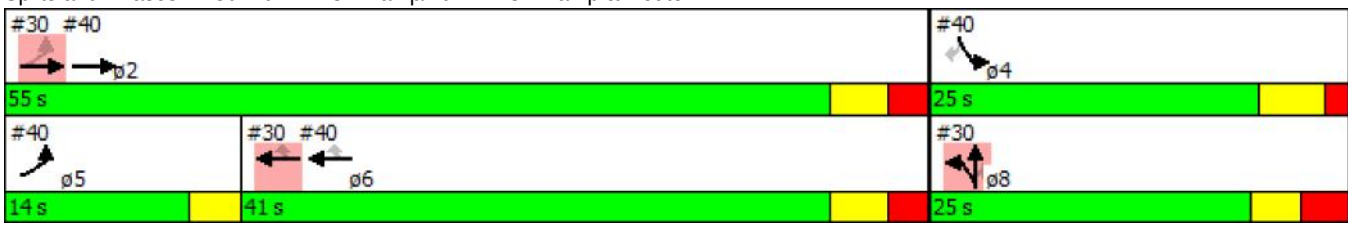
Intersection Capacity Utilization 56.6% ICU Level of Service B

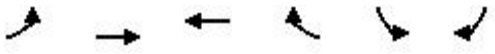
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	266	279	458	441	212	377	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	1			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	1789	1883	1883	1601	1789	1601	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1789	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				330		410	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	289	303	498	479	230	410	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	289	303	498	479	230	410	
Turn Type	Prot	NA	NA	Perm	Prot	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases				6		4	
Total Split (s)	14.0	55.0	41.0	41.0	25.0	25.0	25.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	11.0	49.1	35.1	35.1	14.7	14.7	
Actuated g/C Ratio	0.15	0.65	0.47	0.47	0.20	0.20	
v/c Ratio	1.11	0.25	0.57	0.52	0.66	0.64	
Control Delay	121.4	4.0	18.6	7.0	37.5	8.0	
Queue Delay	0.0	0.5	0.2	0.0	0.0	0.1	
Total Delay	121.4	4.5	18.8	7.0	37.5	8.1	
LOS	F	A	B	A	D	A	
Approach Delay		61.6	13.0		18.7		
Approach LOS		E	B		B		
Queue Length 50th (m)	~37.8	6.8	49.0	11.9	30.4	0.0	
Queue Length 95th (m)	#95.0	17.6	85.7	37.2	51.3	20.5	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	261	1227	877	922	464	719	
Starvation Cap Reductn	0	559	0	0	0	0	
Spillback Cap Reductn	0	0	48	0	0	27	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.11	0.45	0.60	0.52	0.50	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 27.7		Intersection LOS: C	

Intersection Capacity Utilization 63.5% ICU Level of Service B

Analysis Period (min) 15

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

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

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	105	202	98	240	26	267	112	52	18	186	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1846	1601	0	1840	0	1789	1793	0	1789	1712	0
Flt Permitted		0.614			0.806		0.950			0.950		
Satd. Flow (perm)	0	1156	1601	0	1503	0	1789	1793	0	1789	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220		5			37			99	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	82	114	220	107	261	28	290	122	57	20	202	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	220	0	396	0	290	179	0	20	516	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Total Split (s)	30.0	30.0	30.0	30.0	30.0		20.0	41.0		9.0	30.0	
Total Lost Time (s)		6.0	6.0		6.1		5.0	6.5		5.0	6.5	
Act Effct Green (s)		22.5	22.5		22.4		14.4	38.1		4.0	22.0	
Actuated g/C Ratio		0.29	0.29		0.29		0.19	0.50		0.05	0.29	
v/c Ratio		0.58	0.35		0.90		0.86	0.20		0.21	0.92	
Control Delay		31.6	5.1		51.7		57.1	10.5		42.1	45.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		31.6	5.1		51.7		57.1	10.5		42.1	45.7	
LOS		C	A		D		E	B		D	D	
Approach Delay		17.6			51.7			39.3			45.6	
Approach LOS		B			D			D			D	
Queue Length 50th (m)		24.9	0.0		56.1		43.1	10.0		3.0	61.8	
Queue Length 95th (m)		45.7	14.5		#105.5		#84.2	25.1		9.5	#118.8	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)		364	656		476		353	913		94	597	
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		0.54	0.34		0.83		0.82	0.20		0.21	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 76.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 38.9		Intersection LOS: D	

Intersection Capacity Utilization 83.3% ICU Level of Service E

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	6	0	9	0	147	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	10	0	160	32

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	715	726	476	711	711	176	476	0	0
Stage 1	535	535	-	176	176	-	-	-	-
Stage 2	180	191	-	535	535	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	346	351	589	348	358	867	1086	-	-
Stage 1	529	524	-	826	753	-	-	-	-
Stage 2	822	742	-	529	524	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	335	341	589	340	348	867	1086	-	-
Mov Cap-2 Maneuver	429	417	-	427	423	-	-	-	-
Stage 1	529	509	-	826	753	-	-	-	-
Stage 2	813	742	-	514	509	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	11	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1086	-	-	-	614	1383	-	-
HCM Lane V/C Ratio	-	-	-	-	0.027	0.021	-	-
HCM Control Delay (s)	0	-	-	0	11	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	438	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	1000
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	29	476	0

Major/Minor	Major2		
Conflicting Flow All	191	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1383	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1383	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.4
HCM LOS	

Minor Lane/Major Mvmt

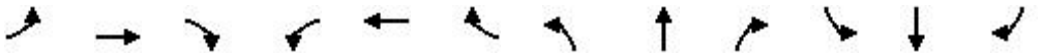
Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	55	37	127	21	23	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	40	138	23	25	311

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	510	149	0	0	161	0
Stage 1	149	-	-	-	-	-
Stage 2	361	-	-	-	-	-
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	523	898	-	-	1418	-
Stage 1	879	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	512	898	-	-	1418	-
Mov Cap-2 Maneuver	512	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	619	1418	-
HCM Lane V/C Ratio	-	-	0.162	0.018	-
HCM Control Delay (s)	-	-	11.9	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	253	8	69	407	247	26	29	189	352	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1874	0	1789	1883	1601	1789	1639	0	1789	1614	0
Flt Permitted	0.507			0.433			0.690			0.296		
Satd. Flow (perm)	955	1874	0	816	1883	1601	1300	1639	0	557	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				268		205			99	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	38	275	9	75	442	268	28	32	205	383	5	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	284	0	75	442	268	28	237	0	383	104	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.5	30.5		11.5	42.0	42.0	25.0	25.0		23.0	48.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	27.1	27.1		37.7	36.2	36.2	9.0	9.0		31.5	30.0	
Actuated g/C Ratio	0.35	0.35		0.48	0.46	0.46	0.12	0.12		0.40	0.38	
v/c Ratio	0.11	0.44		0.16	0.51	0.30	0.19	0.64		0.79	0.15	
Control Delay	22.3	24.6		13.3	18.4	3.1	34.5	16.1		30.8	4.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	22.3	24.6		13.3	18.4	3.1	34.5	16.1		30.8	4.3	
LOS	C	C		B	B	A	C	B		C	A	
Approach Delay		24.3			12.7			18.1			25.1	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	4.0	33.1		5.7	43.5	0.0	3.9	4.5		41.7	0.5	
Queue Length 95th (m)	12.1	62.2		14.5	80.6	13.1	11.1	24.1		#66.5	8.8	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	331	651		480	870	884	316	554		516	916	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.44		0.16	0.51	0.30	0.09	0.43		0.74	0.11	

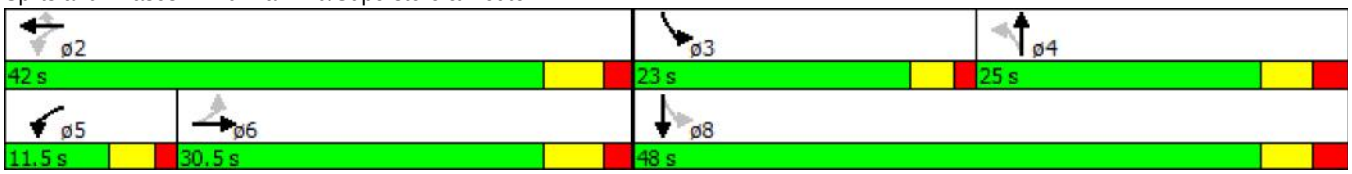
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.2			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.7		Intersection LOS: B	

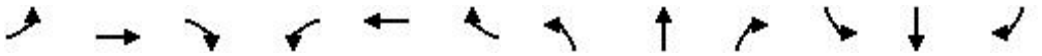
Intersection Capacity Utilization 78.7% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 10: Park Rd/Superstore & Route 214





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	699	179	156	847	0	0	0	0	133	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		20.0
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1831	0	1789	1883	0	0	0	0	0	1795	1601
Flt Permitted				0.182							0.953	
Satd. Flow (perm)	0	1831	0	343	1883	0	0	0	0	0	1795	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54										141
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		241.7			236.2			270.9			280.1	
Travel Time (s)		17.4			17.0			12.2			12.6	
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
Adj. Flow (vph)	0	760	195	170	921	0	0	0	0	145	1	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	955	0	170	921	0	0	0	0	0	146	141
Turn Type		NA		Perm	NA					Split	NA	Perm
Protected Phases		2			6					7	7	
Permitted Phases				6								7
Total Split (s)		48.0		48.0	48.0					12.0	12.0	12.0
Total Lost Time (s)		5.0		5.0	5.0						5.0	5.0
Act Effct Green (s)		33.9		33.9	33.9						7.0	7.0
Actuated g/C Ratio		0.66		0.66	0.66						0.14	0.14
v/c Ratio		0.77		0.75	0.74						0.59	0.41
Control Delay		10.6		30.4	9.8						35.5	9.7
Queue Delay		0.0		0.0	0.0						0.0	0.0
Total Delay		10.6		30.4	9.8						35.5	9.7
LOS		B		C	A						D	A
Approach Delay		10.6			13.0						22.8	
Approach LOS		B			B						C	
Queue Length 50th (m)		42.5		7.9	42.1						11.2	0.0
Queue Length 95th (m)		78.2		#42.4	73.2						#39.1	13.1
Internal Link Dist (m)		217.7			212.2			246.9			256.1	
Turn Bay Length (m)				50.0								20.0
Base Capacity (vph)		1571		292	1607						249	343
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		0.61		0.58	0.57						0.59	0.41

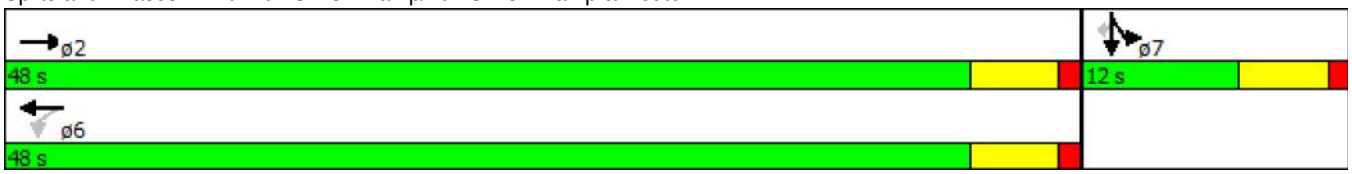
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 51			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 13.2		Intersection LOS: B	

Intersection Capacity Utilization 78.2% 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: 20: 102 SB On Ramp/102 SB Off Ramp & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	638	0	0	700	238	325	1	444	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.093							0.953				
Satd. Flow (perm)	175	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						256			213			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	172	693	0	0	761	259	353	1	483	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	693	0	0	761	259	0	354	483	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	12.6	56.0			43.4	43.4	34.0	34.0	34.0			
Total Lost Time (s)	5.5	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	50.5	50.0			37.4	37.4		26.8	26.8			
Actuated g/C Ratio	0.57	0.56			0.42	0.42		0.30	0.30			
v/c Ratio	0.75	0.65			0.96	0.32		0.65	0.77			
Control Delay	36.5	17.4			42.5	1.7		33.6	24.5			
Queue Delay	0.0	0.4			4.4	0.6		0.0	1.0			
Total Delay	36.5	17.8			46.9	2.2		33.6	25.5			
LOS	D	B			D	A		C	C			
Approach Delay		21.5			35.5			28.9				
Approach LOS		C			D			C				
Queue Length 50th (m)	13.5	78.8			125.8	0.2		52.1	41.8			
Queue Length 95th (m)	#44.1	116.2			#202.8	2.8		80.8	79.9			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	228	1060			793	822		566	650			
Starvation Cap Reductn	0	0			21	274		0	0			
Spillback Cap Reductn	0	82			0	0		0	43			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.75	0.71			0.99	0.47		0.63	0.80			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 29.0		Intersection LOS: C	

Lane Group	ø4
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Total Split (s)	34.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

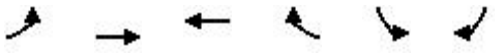
Intersection Capacity Utilization 78.2% ICU Level of Service D

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	470	525	397	348	468	386	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	2			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	3471	1883	1883	1601	1789	1601	
Flt Permitted	0.324				0.950		
Satd. Flow (perm)	1184	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				257		411	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	511	571	432	378	509	420	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	511	571	432	378	509	420	
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases	2			6		4	
Total Split (s)	12.6	56.0	43.4	43.4	34.0	34.0	34.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	50.5	50.0	37.4	37.4	27.3	27.3	
Actuated g/C Ratio	0.57	0.56	0.42	0.42	0.31	0.31	
v/c Ratio	0.60	0.54	0.54	0.46	0.93	0.54	
Control Delay	9.7	10.6	22.8	8.0	55.2	5.7	
Queue Delay	0.6	2.9	0.3	0.0	0.0	0.4	
Total Delay	10.3	13.5	23.1	8.0	55.2	6.1	
LOS	B	B	C	A	E	A	
Approach Delay		12.0	16.1		33.0		
Approach LOS		B	B		C		
Queue Length 50th (m)	16.8	38.3	55.1	12.9	83.5	1.1	
Queue Length 95th (m)	24.1	62.5	83.1	33.9	#140.5	20.8	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	856	1060	793	823	574	792	
Starvation Cap Reductn	111	367	0	0	0	0	
Spillback Cap Reductn	0	0	63	0	0	96	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.69	0.82	0.59	0.46	0.89	0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 20.1		Intersection LOS: C	

Intersection Capacity Utilization 74.4% 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: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	281	338	338	82	204	35	310	290	203	33	156	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	1601	1789	1842	0	1789	1767	0	1789	1737	0
Flt Permitted	0.454			0.365			0.305			0.254		
Satd. Flow (perm)	855	1883	1601	687	1842	0	574	1767	0	478	1737	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			367		11			47			70	
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	305	367	367	89	222	38	337	315	221	36	170	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	305	367	367	89	260	0	337	536	0	36	353	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	9.0	30.0	30.0	9.0	30.0		11.0	32.0		9.0	30.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.5		4.0	5.5	
Act Effct Green (s)	25.8	21.0	21.0	24.6	18.4		30.3	25.1		25.1	18.3	
Actuated g/C Ratio	0.38	0.31	0.31	0.36	0.27		0.44	0.37		0.37	0.27	
v/c Ratio	0.78	0.64	0.49	0.27	0.52		0.88	0.79		0.13	0.69	
Control Delay	33.9	28.3	5.1	15.5	24.9		43.5	30.8		12.8	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.9	28.3	5.1	15.5	24.9		43.5	30.8		12.8	25.7	
LOS	C	C	A	B	C		D	C		B	C	
Approach Delay		21.8			22.5			35.7			24.6	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	30.3	47.2	0.0	7.7	29.8		29.4	64.2		2.6	33.4	
Queue Length 95th (m)	#60.6	74.3	17.5	15.9	50.3		#77.9	#125.1		7.6	62.7	
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)			50.0				35.0			35.0		
Base Capacity (vph)	392	717	836	331	708		383	741		275	692	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.78	0.51	0.44	0.27	0.37		0.88	0.72		0.13	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 68.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 26.9		Intersection LOS: C	

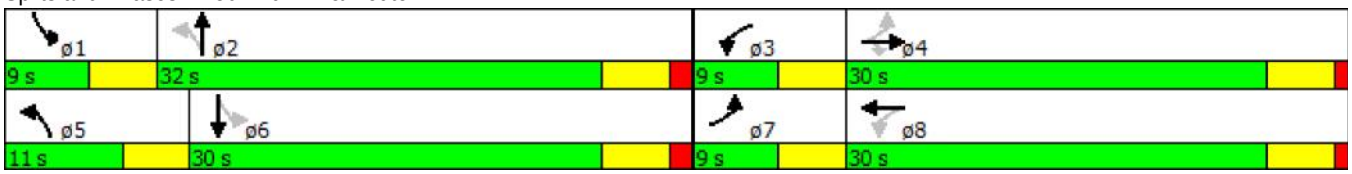
Intersection Capacity Utilization 79.5% ICU Level of Service D

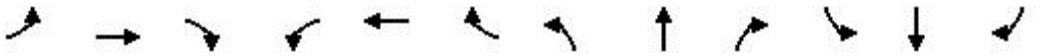
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214



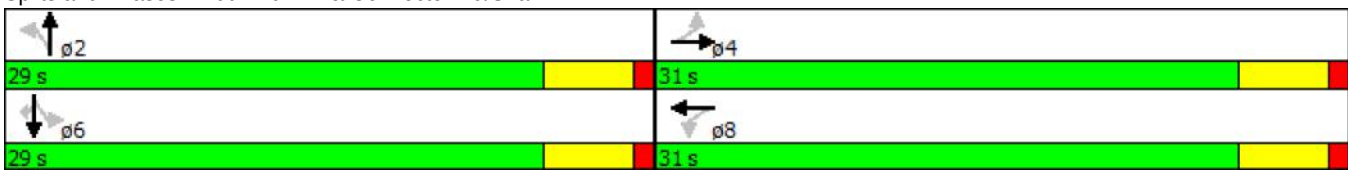


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	12	0	17	0	494	4	2	270	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	0.0		0.0	0.0		0.0	0.0		100.0
Storage Lanes	1		0	0		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1883	1883	0	0	1700	0	0	1882	0	0	1789	1789
Flt Permitted											0.996	
Satd. Flow (perm)	1883	1883	0	0	1737	0	0	1882	0	0	1782	1789
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36			1				
Link Speed (k/h)		48			50			60			48	
Link Distance (m)		972.7			291.4			2458.0			380.1	
Travel Time (s)		73.0			21.0			147.5			28.5	
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
Adj. Flow (vph)	0	0	0	13	0	18	0	537	4	2	293	0
Shared Lane Traffic (%)												0%
Lane Group Flow (vph)	0	0	0	0	31	0	0	541	0	0	295	0
Turn Type	Perm			Perm	NA			NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	29.0
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Act Effct Green (s)					6.6			17.1			17.1	
Actuated g/C Ratio					0.35			0.91			0.91	
v/c Ratio					0.05			0.32			0.18	
Control Delay					4.8			2.5			2.0	
Queue Delay					0.0			0.0			0.0	
Total Delay					4.8			2.5			2.0	
LOS					A			A			A	
Approach Delay					4.8			2.5			2.0	
Approach LOS					A			A			A	
Queue Length 50th (m)					0.0			0.0			0.0	
Queue Length 95th (m)					3.8			32.2			16.7	
Internal Link Dist (m)		948.7			267.4			2434.0			356.1	
Turn Bay Length (m)												
Base Capacity (vph)					1634			1748			1655	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.02			0.31			0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 18.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 2.4		Intersection LOS: A	

Intersection Capacity Utilization 37.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 60: Trunk 2 & Connector Rd/Shaw Dr



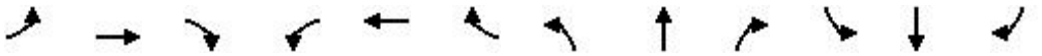
Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	48	53	339	68	42	201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	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	52	58	368	74	46	218

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	715	405	0	0	442	0
Stage 1	405	-	-	-	-	-
Stage 2	310	-	-	-	-	-
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	397	646	-	-	1118	-
Stage 1	673	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	378	646	-	-	1118	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.4	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	378	646	1118	-
HCM Lane V/C Ratio	-	-	0.138	0.089	0.041	-
HCM Control Delay (s)	-	-	16	11.1	8.4	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.3	0.1	-

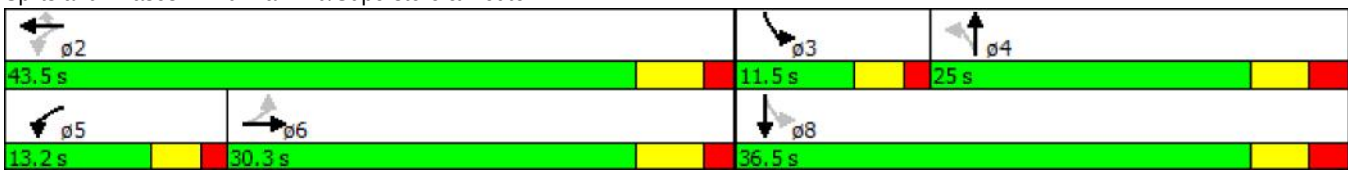


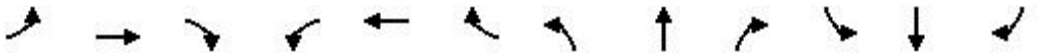
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	384	36	214	213	94	7	8	92	108	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1859	0	1789	1883	1601	1789	1624	0	1789	1763	0
Flt Permitted	0.614			0.303			0.744			0.390		
Satd. Flow (perm)	1156	1859	0	571	1883	1601	1401	1624	0	735	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				102		100			9	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	47	417	39	233	232	102	8	9	100	117	12	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	456	0	233	232	102	8	109	0	117	21	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.3	30.3		13.2	43.5	43.5	25.0	25.0		11.5	36.5	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	26.5	26.5		41.1	41.2	41.2	7.7	7.7		17.5	16.4	
Actuated g/C Ratio	0.41	0.41		0.64	0.64	0.64	0.12	0.12		0.27	0.25	
v/c Ratio	0.10	0.60		0.45	0.19	0.10	0.05	0.39		0.37	0.05	
Control Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.2	21.9		10.2	8.4	2.3	27.7	12.6		21.6	13.8	
LOS	B	C		B	A	A	C	B		C	B	
Approach Delay		21.4			8.1			13.6			20.4	
Approach LOS		C			A			B			C	
Queue Length 50th (m)	3.9	47.5		13.0	13.7	0.0	1.0	1.1		11.1	1.1	
Queue Length 95th (m)	10.9	81.8		25.6	26.6	5.9	4.4	13.5		22.3	5.6	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	474	766		529	1197	1055	419	556		315	852	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.10	0.60		0.44	0.19	0.10	0.02	0.20		0.37	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.9		Intersection LOS: B	

Intersection Capacity Utilization 60.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 10: Park Rd/Superstore & Route 214



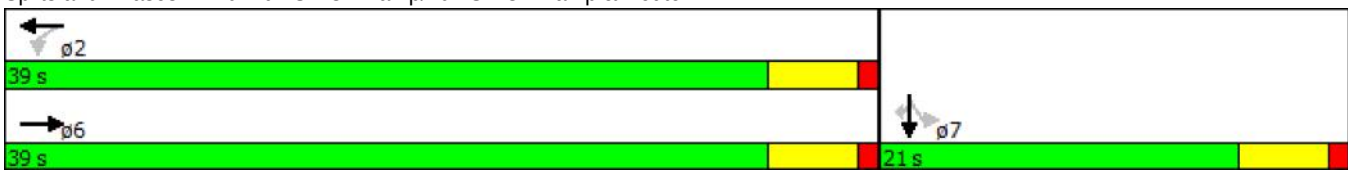


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	370	218	374	529	0	0	0	0	139	1	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		20.0
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1789	0	1789	1883	0	0	0	0	0	1795	1601
Flt Permitted				0.349							0.953	
Satd. Flow (perm)	0	1789	0	657	1883	0	0	0	0	0	1795	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82										108
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		241.7			236.2			270.9			280.1	
Travel Time (s)		17.4			17.0			12.2			12.6	
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
Adj. Flow (vph)	0	402	237	407	575	0	0	0	0	151	1	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	639	0	407	575	0	0	0	0	0	152	108
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		6			2						7	
Permitted Phases				2						7		7
Total Split (s)		39.0		39.0	39.0					21.0	21.0	21.0
Total Lost Time (s)		5.0		5.0	5.0						5.0	5.0
Act Effct Green (s)		34.1		34.1	34.1						9.8	9.8
Actuated g/C Ratio		0.63		0.63	0.63						0.18	0.18
v/c Ratio		0.55		0.98	0.48						0.47	0.29
Control Delay		7.5		56.6	7.5						24.5	6.9
Queue Delay		0.0		0.0	0.0						0.0	0.0
Total Delay		7.5		56.6	7.5						24.5	6.9
LOS		A		E	A						C	A
Approach Delay		7.5			27.9						17.2	
Approach LOS		A			C						B	
Queue Length 50th (m)		23.6		31.3	24.2						13.3	0.0
Queue Length 95th (m)		55.9		#93.0	52.1						26.7	9.6
Internal Link Dist (m)		217.7			212.2			246.9			256.1	
Turn Bay Length (m)				50.0								20.0
Base Capacity (vph)		1161		415	1191						534	552
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		0.55		0.98	0.48						0.28	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 53.9			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 19.5		Intersection LOS: B	

Intersection Capacity Utilization 73.7% 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: 20: 102 SB On Ramp/102 SB Off Ramp & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	453	0	0	797	247	102	1	202	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1795	1601	0	0	0
Flt Permitted	0.078							0.953				
Satd. Flow (perm)	147	1883	0	0	1883	1601	0	1795	1601	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						268			220			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	58	492	0	0	866	268	111	1	220	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	492	0	0	866	268	0	112	220	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases	2					6			8			
Total Split (s)	12.5	64.0			51.5	51.5	26.0	26.0	26.0			
Total Lost Time (s)	5.5	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	58.5	58.0			45.5	45.5		19.1	19.1			
Actuated g/C Ratio	0.66	0.65			0.51	0.51		0.21	0.21			
v/c Ratio	0.26	0.40			0.90	0.28		0.29	0.43			
Control Delay	8.5	8.7			27.5	2.1		31.6	7.1			
Queue Delay	0.0	0.0			11.6	0.8		0.0	0.0			
Total Delay	8.5	8.7			39.0	2.9		31.6	7.1			
LOS	A	A			D	A		C	A			
Approach Delay		8.7			30.5			15.4				
Approach LOS		A			C			B				
Queue Length 50th (m)	3.2	36.6			142.0	2.6		16.1	0.0			
Queue Length 95th (m)	7.1	54.8			m#184.7	m5.7		30.4	17.1			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0											
Base Capacity (vph)	225	1226			961	948		402	529			
Starvation Cap Reductn	0	0			93	415		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.26	0.40			1.00	0.50		0.28	0.42			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.1			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 22.1		Intersection LOS: C	

Lane Group	ø4
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Total Split (s)	26.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

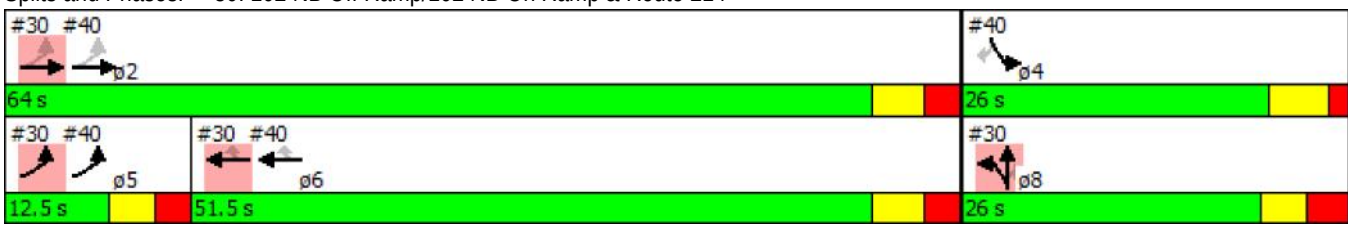
Intersection Capacity Utilization 59.9% ICU Level of Service B

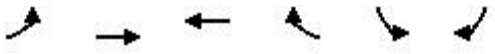
Analysis Period (min) 15

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	366	289	506	643	279	575	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	2			1	1	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	3471	1883	1883	1601	1789	1601	
Flt Permitted	0.291				0.950		
Satd. Flow (perm)	1063	1883	1883	1601	1789	1601	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				441		375	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	398	314	550	699	303	625	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	398	314	550	699	303	625	
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm	
Protected Phases	5	2	6		4		8
Permitted Phases	2			6		4	
Total Split (s)	12.5	64.0	51.5	51.5	26.0	26.0	26.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	58.5	58.0	45.5	45.5	19.6	19.6	
Actuated g/C Ratio	0.66	0.65	0.51	0.51	0.22	0.22	
v/c Ratio	0.45	0.26	0.57	0.68	0.77	0.97	
Control Delay	5.2	4.2	18.2	9.4	47.3	44.3	
Queue Delay	0.1	0.6	0.2	0.0	0.0	43.4	
Total Delay	5.2	4.8	18.4	9.4	47.3	87.8	
LOS	A	A	B	A	D	F	
Approach Delay		5.0	13.4		74.6		
Approach LOS		A	B		E		
Queue Length 50th (m)	5.0	8.2	63.2	27.4	48.9	47.3	
Queue Length 95th (m)	11.0	18.5	93.8	66.2	#84.4	#116.9	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	887	1226	961	1033	411	657	
Starvation Cap Reductn	51	575	0	0	0	0	
Spillback Cap Reductn	0	0	63	0	0	120	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.48	0.48	0.61	0.68	0.74	1.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.1			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 31.0		Intersection LOS: C	

Intersection Capacity Utilization 71.8% ICU Level of Service C

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	119	234	109	267	32	310	148	58	23	272	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		50.0	50.0		0.0	35.0		0.0	35.0		50.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	1601	1789	1853	0	1789	1804	0	1789	1883	1601
Flt Permitted	0.381			0.674			0.395			0.619		
Satd. Flow (perm)	718	1883	1601	1269	1853	0	744	1804	0	1166	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			254		8			26				386
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	133	129	254	118	290	35	337	161	63	25	296	491
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	129	254	118	325	0	337	224	0	25	296	491
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	9.0	30.0	30.0	9.0	30.0		11.0	32.0		9.0	30.0	30.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.1		5.0	6.5		5.0	6.5	6.5
Act Effct Green (s)	20.6	16.6	16.6	20.6	16.5		28.8	25.2		22.5	16.7	16.7
Actuated g/C Ratio	0.32	0.26	0.26	0.32	0.26		0.45	0.39		0.35	0.26	0.26
v/c Ratio	0.45	0.27	0.42	0.27	0.68		0.78	0.31		0.06	0.61	0.70
Control Delay	20.1	22.4	5.6	16.1	30.4		31.3	16.7		12.2	28.3	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.1	22.4	5.6	16.1	30.4		31.3	16.7		12.2	28.3	11.8
LOS	C	C	A	B	C		C	B		B	C	B
Approach Delay		13.6			26.6			25.5			17.8	
Approach LOS		B			C			C			B	
Queue Length 50th (m)	10.2	12.8	0.0	9.0	35.5		26.9	15.1		1.6	32.0	10.3
Queue Length 95th (m)	22.8	27.5	15.3	20.5	65.8		#73.8	40.8		6.0	60.7	42.0
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)	75.0		50.0	50.0			35.0			35.0		50.0
Base Capacity (vph)	298	733	778	438	723		433	776		445	717	849
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.45	0.18	0.33	0.27	0.45		0.78	0.29		0.06	0.41	0.58

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 64.7
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 20.4 Intersection LOS: C

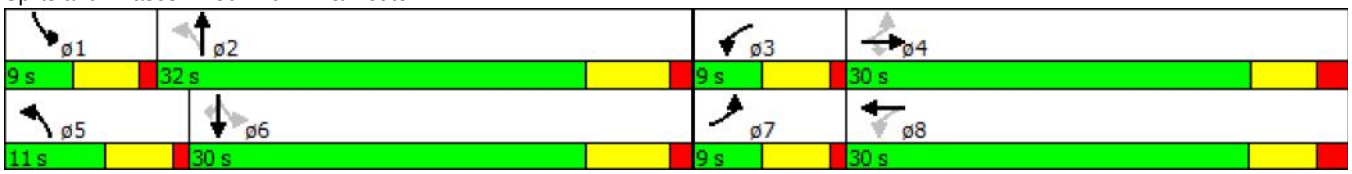
Intersection Capacity Utilization 75.8% ICU Level of Service D

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 50: Trunk 2 & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	6	0	11	0	207	33	35	594	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		100.0
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1883	1883	0	0	1692	0	1883	1844	0	0	1878	1883
Flt Permitted											0.972	
Satd. Flow (perm)	1883	1883	0	0	1723	0	1883	1844	0	0	1831	1883
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36			22				
Link Speed (k/h)		48			50			60			48	
Link Distance (m)		972.7			291.4			2458.0			380.1	
Travel Time (s)		73.0			21.0			147.5			28.5	
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
Adj. Flow (vph)	0	0	0	7	0	12	0	225	36	38	646	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	261	0	0	684	0
Turn Type	Perm			Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Total Split (s)	21.0	21.0		21.0	21.0		39.0	39.0		39.0	39.0	39.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Act Effct Green (s)					6.7			20.7			20.7	
Actuated g/C Ratio					0.30			0.93			0.93	
v/c Ratio					0.03			0.15			0.40	
Control Delay					4.8			1.4			2.5	
Queue Delay					0.0			0.0			0.0	
Total Delay					4.8			1.4			2.5	
LOS					A			A			A	
Approach Delay					4.8			1.4			2.5	
Approach LOS					A			A			A	
Queue Length 50th (m)					0.0			0.0			0.0	
Queue Length 95th (m)					2.8			12.0			43.7	
Internal Link Dist (m)		948.7			267.4			2434.0			356.1	
Turn Bay Length (m)												
Base Capacity (vph)					1409			1752			1738	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.01			0.15			0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 22.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 2.3		Intersection LOS: A	

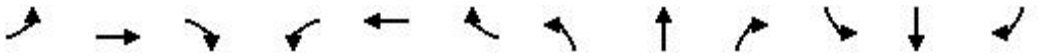
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 60: Trunk 2 & Connector Rd/Shaw Dr

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	64	46	184	24	30	418
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1789	1601	1853	0	0	1878
Flt Permitted	0.950					0.972
Satd. Flow (perm)	1789	1601	1853	0	0	1831
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		50	18			
Link Speed (k/h)	50		60			60
Link Distance (m)	317.5		380.1			1555.9
Travel Time (s)	22.9		22.8			93.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	50	200	26	33	454
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	50	226	0	0	487
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Total Split (s)	21.0	21.0	69.0		69.0	69.0
Total Lost Time (s)	5.0	5.0	5.0			5.0
Act Effct Green (s)	7.1	7.1	25.0			25.0
Actuated g/C Ratio	0.19	0.19	0.66			0.66
v/c Ratio	0.21	0.15	0.18			0.41
Control Delay	15.3	6.4	4.5			6.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	15.3	6.4	4.5			6.3
LOS	B	A	A			A
Approach Delay	11.6		4.5			6.3
Approach LOS	B		A			A
Queue Length 50th (m)	4.4	0.0	5.5			15.6
Queue Length 95th (m)	10.7	5.3	13.4			33.4
Internal Link Dist (m)	293.5		356.1			1531.9
Turn Bay Length (m)						
Base Capacity (vph)	773	721	1853			1831
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.09	0.07	0.12			0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 38			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 70: Trunk 2 & Route 277



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	322	9	86	490	297	30	34	231	426	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		50.0	30.0		0.0	25.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1876	0	1789	1883	1601	1789	1637	0	1789	1612	0
Flt Permitted	0.419			0.336			0.681			0.282		
Satd. Flow (perm)	789	1876	0	633	1883	1601	1283	1637	0	531	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				306		251			114	
Link Speed (k/h)		50			50			48			48	
Link Distance (m)		372.4			241.7			315.6			114.0	
Travel Time (s)		26.8			17.4			23.7			8.6	
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
Adj. Flow (vph)	43	350	10	93	533	323	33	37	251	463	5	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	360	0	93	533	323	33	288	0	463	119	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		6		5	2			4		3	8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	30.5	30.5		11.5	42.0	42.0	25.0	25.0		23.0	48.0	
Total Lost Time (s)	6.0	6.0		4.5	6.0	6.0	6.0	6.0		4.5	6.0	
Act Effct Green (s)	27.0	27.0		37.6	36.1	36.1	9.7	9.7		34.0	32.5	
Actuated g/C Ratio	0.33	0.33		0.47	0.45	0.45	0.12	0.12		0.42	0.40	
v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.21	0.69		0.91	0.17	
Control Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	24.3	28.4		14.8	22.2	3.8	34.7	16.1		43.6	3.9	
LOS	C	C		B	C	A	C	B		D	A	
Approach Delay		27.9			15.2			18.0			35.5	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	4.6	44.9		7.3	57.3	1.3	4.7	5.2		53.4	0.4	
Queue Length 95th (m)	14.1	83.4		18.3	107.9	16.7	12.3	26.7		#103.8	9.2	
Internal Link Dist (m)		348.4			217.7			291.6			90.0	
Turn Bay Length (m)	50.0			60.0		50.0	30.0			25.0		
Base Capacity (vph)	264	629		395	843	885	303	578		513	896	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.57		0.24	0.63	0.36	0.11	0.50		0.90	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.6			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 23.1		Intersection LOS: C	

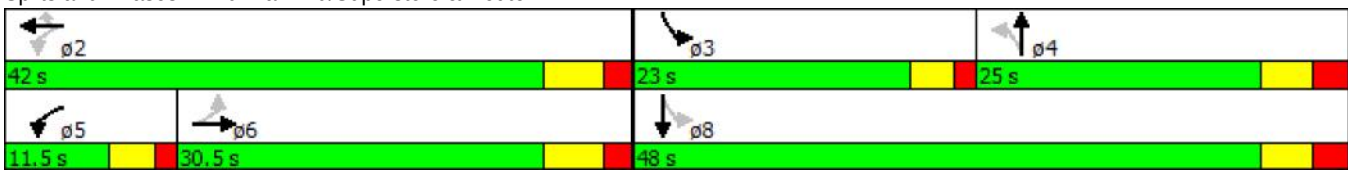
Intersection Capacity Utilization 90.0% ICU Level of Service E

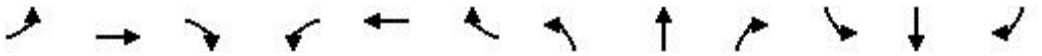
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Park Rd/Superstore & Route 214





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	864	207	199	1013	0	0	0	0	181	1	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		20.0
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	0	1883	1601	1789	1883	0	0	0	0	0	1795	1601
Flt Permitted				0.186							0.953	
Satd. Flow (perm)	0	1883	1601	350	1883	0	0	0	0	0	1795	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			225									107
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		241.7			236.2			270.9			280.1	
Travel Time (s)		17.4			17.0			12.2			12.6	
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
Adj. Flow (vph)	0	939	225	216	1101	0	0	0	0	197	1	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	939	225	216	1101	0	0	0	0	0	198	154
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		2			6						7	
Permitted Phases			2	6						7		7
Total Split (s)		49.0	49.0	49.0	49.0					21.0	21.0	21.0
Total Lost Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Act Effct Green (s)		46.5	46.5	46.5	46.5						12.4	12.4
Actuated g/C Ratio		0.67	0.67	0.67	0.67						0.18	0.18
v/c Ratio		0.74	0.20	0.92	0.87						0.61	0.41
Control Delay		12.9	1.3	58.6	19.9						33.8	12.3
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		12.9	1.3	58.6	19.9						33.8	12.3
LOS		B	A	E	B						C	B
Approach Delay		10.7			26.2						24.4	
Approach LOS		B			C						C	
Queue Length 50th (m)		65.3	0.0	19.7	92.6						22.6	4.9
Queue Length 95th (m)		130.6	6.3	#38.4	#209.5						40.7	18.4
Internal Link Dist (m)		217.7			212.2			246.9			256.1	
Turn Bay Length (m)				50.0								20.0
Base Capacity (vph)		1269	1152	236	1269						417	455
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		0.74	0.20	0.92	0.87						0.47	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 68.9			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 19.6		Intersection LOS: B	

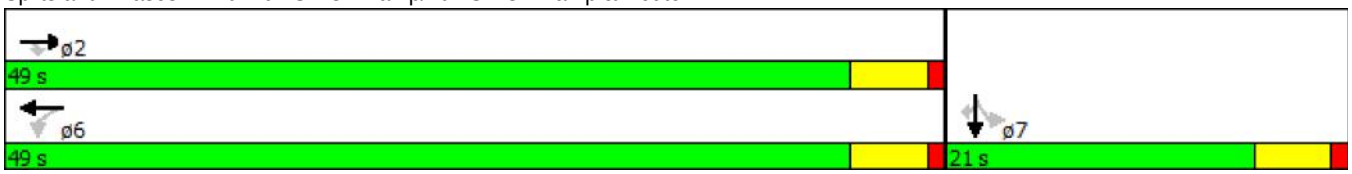
Intersection Capacity Utilization 90.1% ICU Level of Service E

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: 102 SB On Ramp/102 SB Off Ramp & Route 214



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	790	0	0	859	291	377	1	582	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	0.0		0.0	0.0		75.0	0.0		0.0
Storage Lanes	1		0	0		1	0		2	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	0	0	1883	1601	0	1793	2818	0	0	0
Flt Permitted	0.082							0.952				
Satd. Flow (perm)	154	1883	0	0	1883	1601	0	1793	2818	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						288			314			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		236.2			75.4			166.6			248.0	
Travel Time (s)		17.0			5.4			7.5			11.2	
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
Adj. Flow (vph)	184	859	0	0	934	316	410	1	633	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	859	0	0	934	316	0	411	633	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Split	NA	Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases	2					6						
Total Split (s)	12.6	62.0			49.4	49.4	28.0	28.0	28.0			
Total Lost Time (s)	5.5	6.0			6.0	6.0		6.0	6.0			
Act Effct Green (s)	56.5	56.0			43.4	43.4		22.0	22.0			
Actuated g/C Ratio	0.63	0.62			0.48	0.48		0.24	0.24			
v/c Ratio	0.82	0.73			1.03	0.34		0.94	0.68			
Control Delay	44.7	16.6			57.3	2.3		65.2	19.4			
Queue Delay	0.0	0.4			8.0	0.7		0.0	0.6			
Total Delay	44.7	17.0			65.3	3.0		65.2	20.0			
LOS	D	B			E	A		E	C			
Approach Delay		21.9			49.6			37.8				
Approach LOS		C			D			D				
Queue Length 50th (m)	15.4	93.5			~175.6	0.1		69.8	27.7			
Queue Length 95th (m)	#50.0	139.9			#248.1	2.8		#123.8	48.1			
Internal Link Dist (m)		212.2			51.4			142.6			224.0	
Turn Bay Length (m)	50.0								75.0			
Base Capacity (vph)	225	1171			908	921		438	926			
Starvation Cap Reductn	0	47			20	325		0	0			
Spillback Cap Reductn	0	69			0	0		0	83			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.82	0.78			1.05	0.53		0.94	0.75			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 37.2		Intersection LOS: D	

Lane Group	ø4
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Total Split (s)	28.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

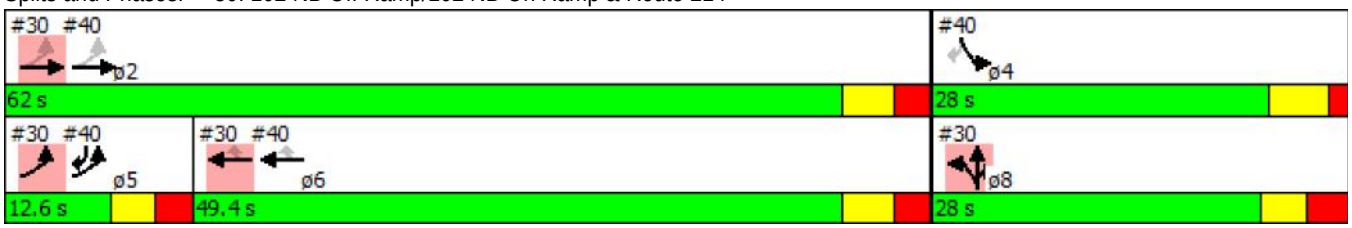
Intersection Capacity Utilization 90.1% ICU Level of Service E

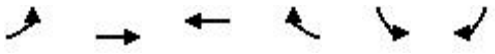
Analysis Period (min) 15

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

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

Splits and Phases: 30: 102 NB Off Ramp/102 NB On Ramp & Route 214





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø8
Lane Configurations							
Volume (vph)	677	544	449	482	666	551	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	60.0			25.0	50.0	50.0	
Storage Lanes	2			1	2	0	
Taper Length (m)	2.5				2.5		
Satd. Flow (prot)	3471	1883	1883	1601	3471	2818	
Flt Permitted	0.318				0.950		
Satd. Flow (perm)	1162	1883	1883	1601	3471	2818	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				356		516	
Link Speed (k/h)		50	50		40		
Link Distance (m)		75.4	981.7		192.3		
Travel Time (s)		5.4	70.7		17.3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	736	591	488	524	724	599	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	736	591	488	524	724	599	
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov	
Protected Phases	5	2	6		4	5	8
Permitted Phases	2			6		4	
Total Split (s)	12.6	62.0	49.4	49.4	28.0	12.6	28.0
Total Lost Time (s)	5.5	6.0	6.0	6.0	5.5	5.5	
Act Effct Green (s)	56.5	56.0	43.4	43.4	22.5	35.1	
Actuated g/C Ratio	0.63	0.62	0.48	0.48	0.25	0.39	
v/c Ratio	0.81	0.50	0.54	0.55	0.84	0.42	
Control Delay	13.5	8.9	19.0	7.3	42.0	4.2	
Queue Delay	0.7	4.6	0.2	0.0	0.0	0.4	
Total Delay	14.2	13.6	19.2	7.3	42.0	4.6	
LOS	B	B	B	A	D	A	
Approach Delay		13.9	13.0		25.1		
Approach LOS		B	B		C		
Queue Length 50th (m)	23.3	37.8	56.5	16.1	61.2	5.0	
Queue Length 95th (m)	#32.8	60.5	84.4	41.8	#88.0	16.3	
Internal Link Dist (m)		51.4	957.7		168.3		
Turn Bay Length (m)	60.0			25.0	50.0	50.0	
Base Capacity (vph)	911	1171	908	956	867	1413	
Starvation Cap Reductn	36	495	0	0	0	0	
Spillback Cap Reductn	0	0	63	0	0	358	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.87	0.58	0.55	0.84	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 17.7		Intersection LOS: B	

Intersection Capacity Utilization 76.1% 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: 40: Route 214 & Sobeys

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	376	392	89	227	42	360	396	227	40	215	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	50.0		0.0	35.0		0.0	35.0		50.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1789	1883	1601	1789	1838	0	1789	1780	0	1789	1883	1601
Flt Permitted	0.262			0.513			0.416			0.157		
Satd. Flow (perm)	493	1883	1601	966	1838	0	784	1780	0	296	1883	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			424		9			33				292
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		981.7			210.3			338.2			2458.0	
Travel Time (s)		70.7			15.1			24.4			147.5	
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
Adj. Flow (vph)	490	409	426	97	247	46	391	430	247	43	234	292
Shared Lane Traffic (%)												
Lane Group Flow (vph)	490	409	426	97	293	0	391	677	0	43	234	292
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	21.0	39.0	39.0	10.0	28.0		19.0	42.0		9.0	32.0	32.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	5.0		4.0	5.0	5.0
Act Effct Green (s)	41.5	31.7	31.7	26.4	18.3		43.2	37.2		29.6	23.6	23.6
Actuated g/C Ratio	0.45	0.34	0.34	0.28	0.20		0.47	0.40		0.32	0.25	0.25
v/c Ratio	1.07	0.64	0.52	0.30	0.79		0.75	0.92		0.25	0.49	0.47
Control Delay	84.6	32.5	5.1	19.5	51.2		28.2	47.4		19.0	34.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	84.6	32.5	5.1	19.5	51.2		28.2	47.4		19.0	34.0	6.2
LOS	F	C	A	B	D		C	D		B	C	A
Approach Delay		42.9			43.3			40.4			18.6	
Approach LOS		D			D			D			B	
Queue Length 50th (m)	~79.8	67.3	0.3	10.6	51.3		48.1	121.1		4.2	37.0	0.0
Queue Length 95th (m)	#141.2	99.7	20.3	20.1	#81.1		#76.3	#200.3		10.2	60.2	18.9
Internal Link Dist (m)		957.7			186.3			314.2			2434.0	
Turn Bay Length (m)	50.0		50.0	50.0			35.0			35.0		50.0
Base Capacity (vph)	460	675	846	328	446		529	735		175	552	676
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	1.07	0.61	0.50	0.30	0.66		0.74	0.92		0.25	0.42	0.43

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.8			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 38.0		Intersection LOS: D	

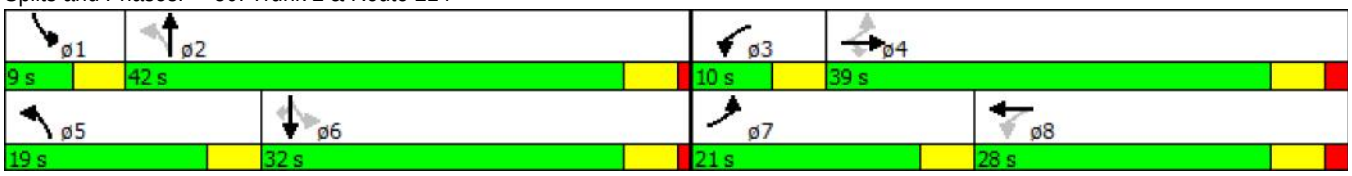
Intersection Capacity Utilization 93.3% ICU Level of Service F

Analysis Period (min) 15

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

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

Splits and Phases: 50: Trunk 2 & Route 214

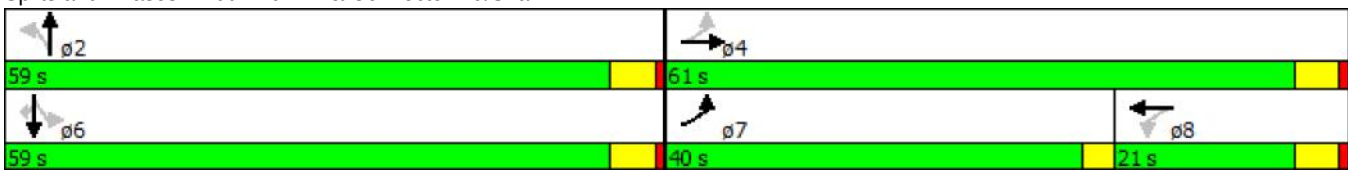


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	14	0	23	0	664	5	3	372	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	0.0		0.0	50.0		0.0	0.0		100.0
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Satd. Flow (prot)	1883	1883	0	0	1694	0	1883	1882	0	0	1883	1883
Flt Permitted					0.948						0.995	
Satd. Flow (perm)	1883	1883	0	0	1636	0	1883	1882	0	0	1874	1883
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					45							
Link Speed (k/h)		48			50			60			48	
Link Distance (m)		972.7			291.4			2458.0			380.1	
Travel Time (s)		73.0			21.0			147.5			28.5	
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
Adj. Flow (vph)	0	0	0	15	0	25	0	722	5	3	404	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	40	0	0	727	0	0	407	0
Turn Type	pm+pt			Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Total Split (s)	40.0	61.0		21.0	21.0		59.0	59.0		59.0	59.0	59.0
Total Lost Time (s)	3.0	5.0			5.0		5.0	5.0			5.0	5.0
Act Effct Green (s)					6.9			23.5			23.5	
Actuated g/C Ratio					0.22			0.76			0.76	
v/c Ratio					0.10			0.51			0.29	
Control Delay					6.9			5.9			4.0	
Queue Delay					0.0			0.0			0.0	
Total Delay					6.9			5.9			4.0	
LOS					A			A			A	
Approach Delay					6.9			5.9			4.0	
Approach LOS					A			A			A	
Queue Length 50th (m)					0.0			23.9			10.4	
Queue Length 95th (m)					5.3			51.7			22.7	
Internal Link Dist (m)		948.7			267.4			2434.0			356.1	
Turn Bay Length (m)												
Base Capacity (vph)					1027			1882			1874	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.04			0.39			0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 31			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 5.3		Intersection LOS: A	

Intersection Capacity Utilization 46.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 60: Trunk 2 & Connector Rd/Shaw Dr



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	56	65	483	79	53	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	0.0		50.0	50.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	2.5				2.5	
Satd. Flow (prot)	1789	1601	1883	1601	1789	1883
Flt Permitted	0.950				0.444	
Satd. Flow (perm)	1789	1601	1883	1601	836	1883
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		71		86		
Link Speed (k/h)	50		60			60
Link Distance (m)	317.5		380.1			1555.9
Travel Time (s)	22.9		22.8			93.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	71	525	86	58	318
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	71	525	86	58	318
Turn Type	Prot	Prot	NA	Perm	Perm	NA
Protected Phases	8	8	2			6
Permitted Phases				2	6	
Total Split (s)	21.0	21.0	79.0	79.0	79.0	79.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	6.9	6.9	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.18	0.18	0.66	0.66	0.66	0.66
v/c Ratio	0.19	0.20	0.42	0.08	0.10	0.25
Control Delay	15.4	6.4	6.2	1.6	4.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	6.4	6.2	1.6	4.8	5.0
LOS	B	A	A	A	A	A
Approach Delay	10.6		5.6			5.0
Approach LOS	B		A			A
Queue Length 50th (m)	3.8	0.0	16.6	0.0	1.4	8.8
Queue Length 95th (m)	10.0	6.6	35.1	3.4	5.0	19.2
Internal Link Dist (m)	293.5		356.1			1531.9
Turn Bay Length (m)	50.0			50.0	50.0	
Base Capacity (vph)	771	730	1883	1601	836	1883
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	0.08	0.10	0.28	0.05	0.07	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 38.1			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 5.9		Intersection LOS: A	

Intersection Capacity Utilization 44.6%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 70: Trunk 2 & Route 277

APPENDIX C

Traffic Signal Warrant Analyses

2013 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 27, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

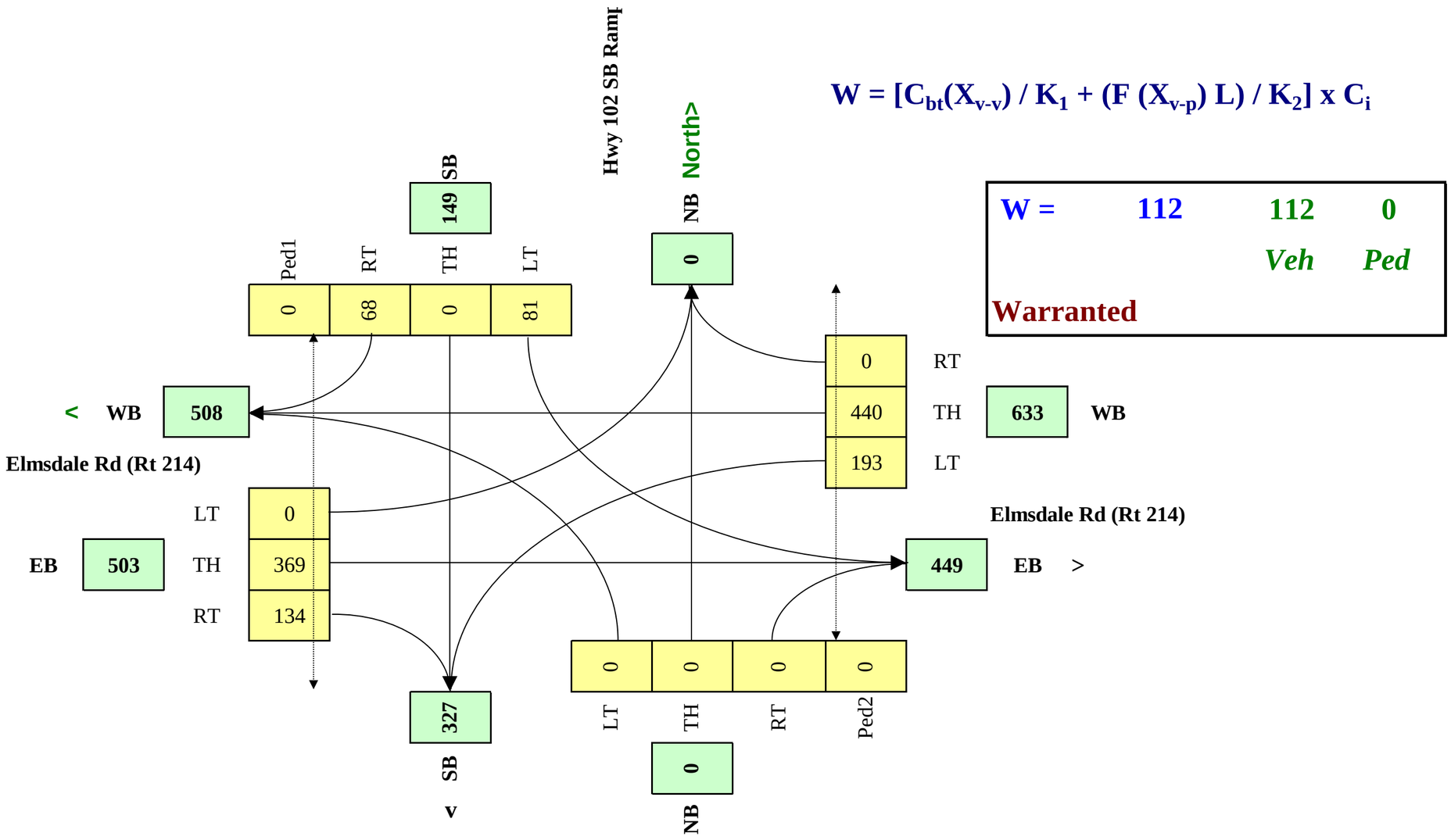
Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**NS**	**NS**	**EW**	**EW**
													W Side	**E Side**	**N Side**	**S side**
7:00 - 8:00				74		50	331	201			216	185				
8:00 - 9:00				87		45	215	293			244	104				
11:00 - 12:00				87		57	145	404			383	107				
12:00 - 13:00				71		60	156	435			400	109				
16:00 - 17:00				82		94	141	662			515	159				
17:00 - 18:00				83		102	168	647			454	140				
Total (6-hour peak)	**0**	**0**	**0**	**484**	**0**	**408**	**1,156**	**2,642**	**0**	**0**	**2,212**	**804**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**81**	**0**	**68**	**193**	**440**	**0**	**0**	**369**	**134**	**0**	**0**	**0**	**0**

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 = 112 (*Veh*) 112 (*Ped*) 0

Warranted



2023 S1 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

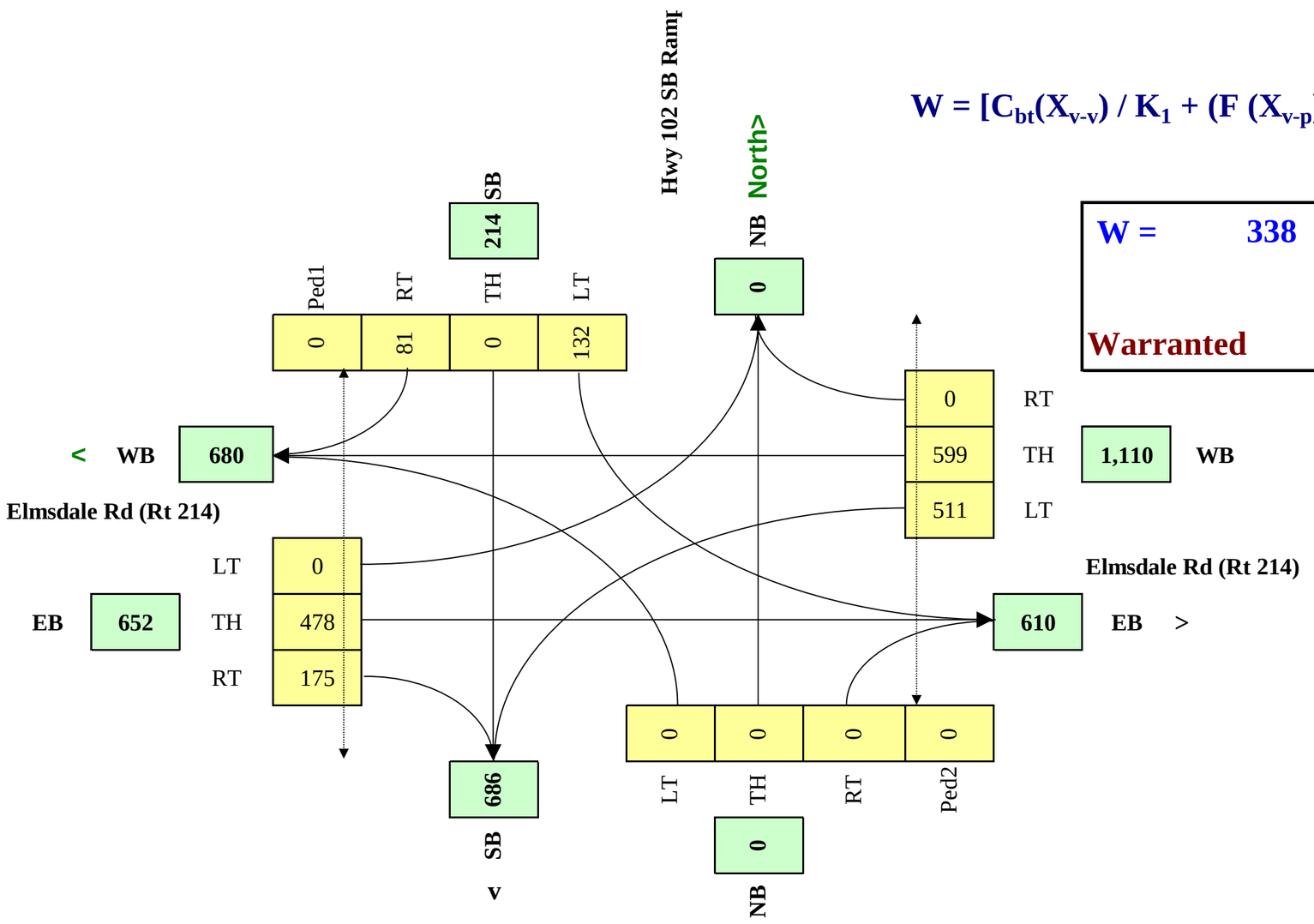
Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**NS**	**NS**	**EW**	**EW**
													W Side	**E Side**	**N Side**	**S side**
7:00 - 8:00				123		63	687	411			304	188				
8:00 - 9:00				103		64	399	467			373	136				
11:00 - 12:00				119		73	460	539			430	157				
12:00 - 13:00				127		78	491	575			459	168				
16:00 - 17:00				155		108	387	847			699	179				
17:00 - 18:00				167		103	644	755			602	220				
Total (6-hour peak)	**0**	**0**	**0**	**794**	**0**	**489**	**3,069**	**3,594**	**0**	**0**	**2,866**	**1,049**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**132**	**0**	**81**	**511**	**599**	**0**	**0**	**478**	**175**	**0**	**0**	**0**	**0**

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 =	338	338	0
		Veh	*Ped*

Warranted



2033 S1 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

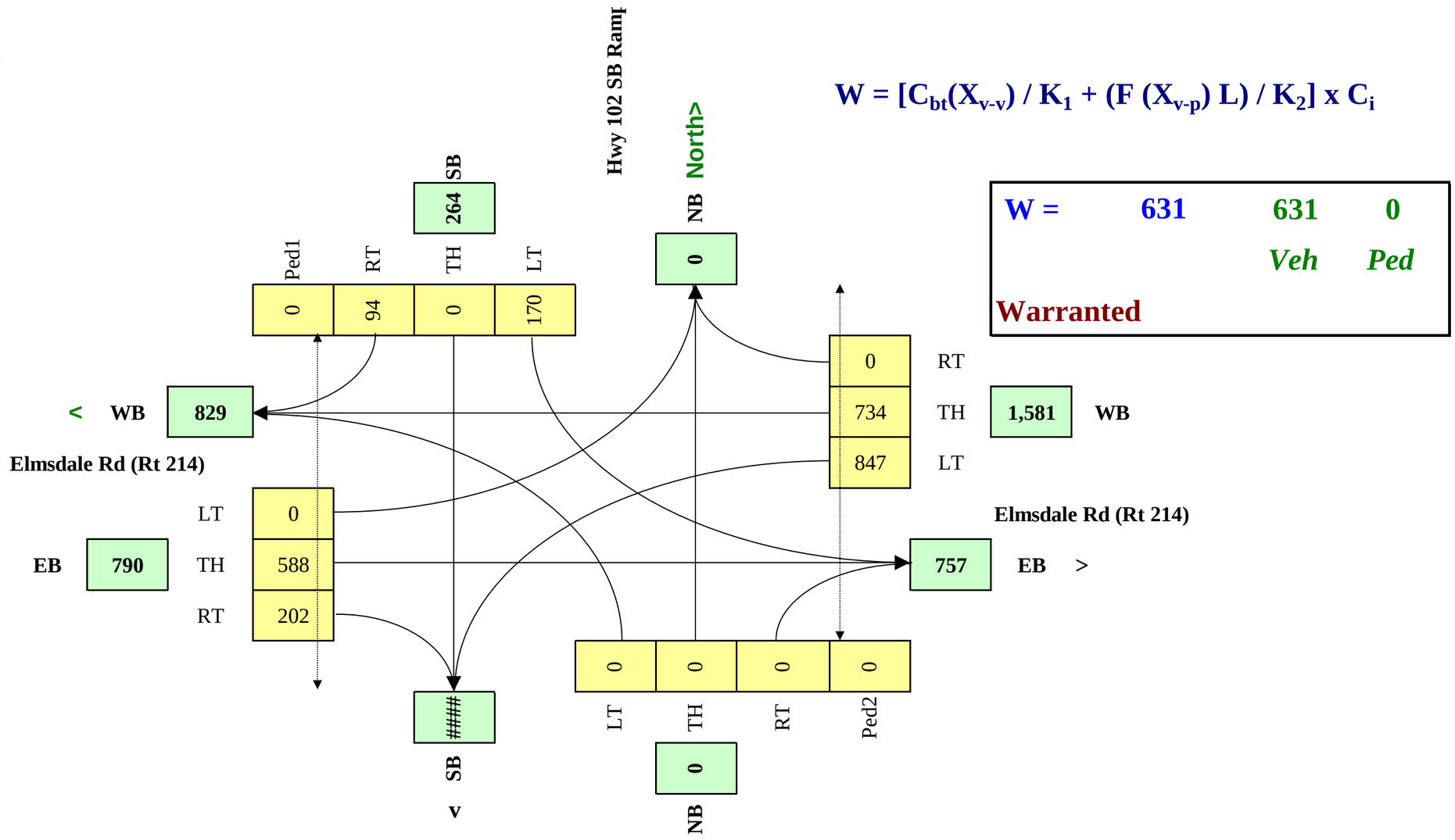
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				150		73	1129	529			370	218				
8:00 - 9:00				132		74	661	573			458	158				
11:00 - 12:00				153		85	762	661			529	182				
12:00 - 13:00				163		91	813	705			564	194				
16:00 - 17:00				206		125	650	1013			864	207				
17:00 - 18:00				214		119	1067	925			740	255				
Total (6-hour peak)	**0**	**0**	**0**	**1,017**	**0**	**566**	**5,083**	**4,406**	**0**	**0**	**3,526**	**1,214**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**170**	**0**	**94**	**847**	**734**	**0**	**0**	**588**	**202**	**0**	**0**	**0**	**0**

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 =	**631**	**631**	**0**
		Veh	***Ped***

Warranted

2023 S2 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

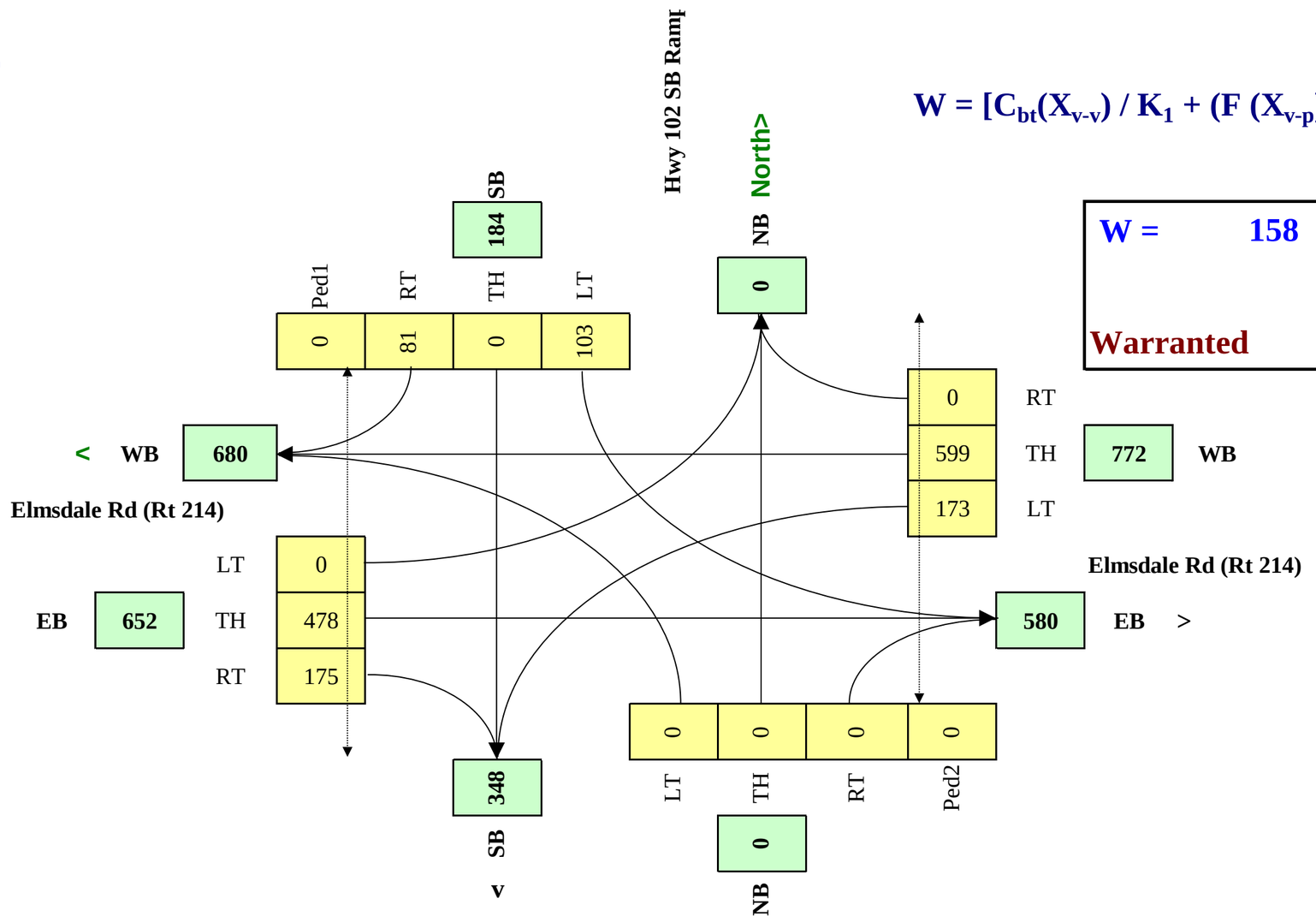
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				108		63	257	411			304	188				
8:00 - 9:00				80		64	135	467			373	136				
11:00 - 12:00				93		73	156	539			430	157				
12:00 - 13:00				99		78	166	575			459	168				
16:00 - 17:00				108		108	107	847			699	179				
17:00 - 18:00				130		103	218	755			602	220				
Total (6-hour peak)	**0**	**0**	**0**	**617**	**0**	**489**	**1,040**	**3,594**	**0**	**0**	**2,866**	**1,049**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**103**	**0**	**81**	**173**	**599**	**0**	**0**	**478**	**175**	**0**	**0**	**0**	**0**

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 = 158 158 0

Veh Ped

Warranted

2033 S2 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				133		73	333	529			370	218				
8:00 - 9:00				106		74	178	573			458	158				
11:00 - 12:00				122		85	206	661			529	182				
12:00 - 13:00				130		91	219	705			564	194				
16:00 - 17:00				152		125	147	1013			864	207				
17:00 - 18:00				171		119	288	925			740	255				
Total (6-hour peak)	**0**	**0**	**0**	**814**	**0**	**566**	**1,371**	**4,406**	**0**	**0**	**3,526**	**1,214**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**136**	**0**	**94**	**229**	**734**	**0**	**0**	**588**	**202**	**0**	**0**	**0**	**0**

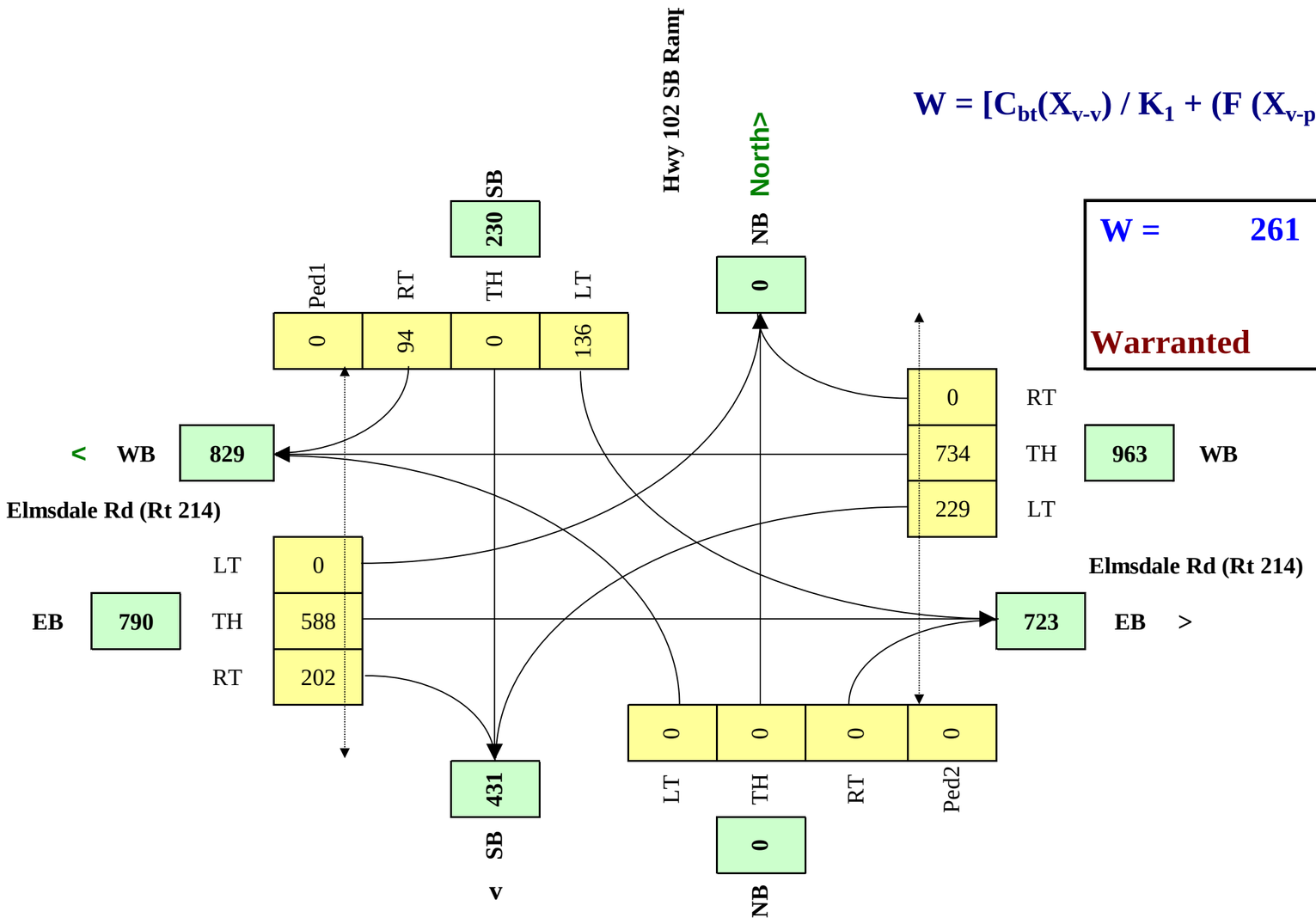
Average 6-hour Peak Turning Movements

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

W = 261 261 0

Veh Ped

Warranted



2023 S3 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

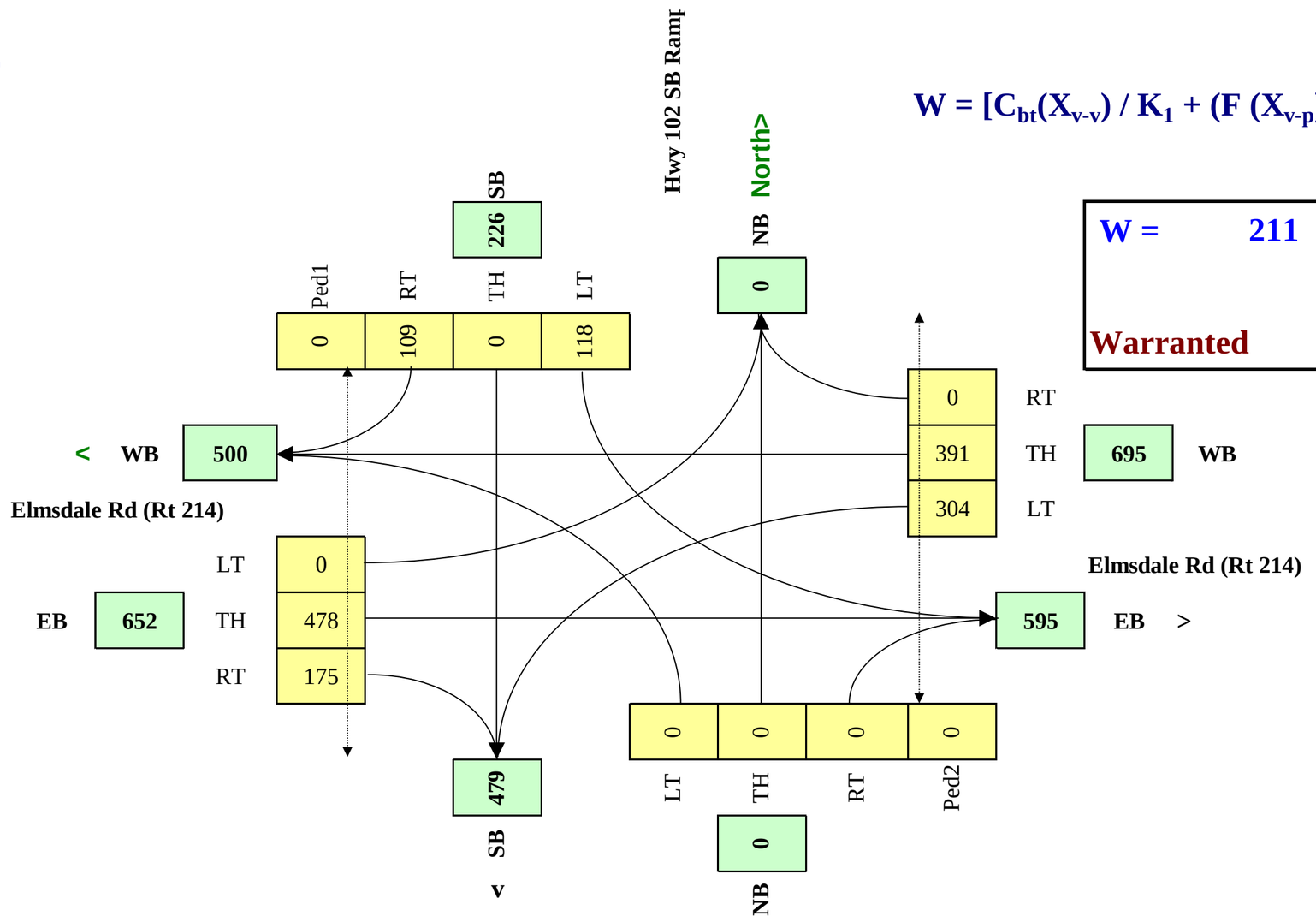
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				114		98	319	411			304	188				
8:00 - 9:00				92		85	237	305			373	136				
11:00 - 12:00				106		98	273	352			430	157				
12:00 - 13:00				113		104	292	376			459	168				
16:00 - 17:00				133		130	319	411			699	179				
17:00 - 18:00				148		137	383	493			602	220				
Total (6-hour peak)	**0**	**0**	**0**	**706**	**0**	**651**	**1,823**	**2,349**	**0**	**0**	**2,866**	**1,049**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**118**	**0**	**109**	**304**	**391**	**0**	**0**	**478**	**175**	**0**	**0**	**0**	**0**

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 =	**211**	**211**	**0**
		Veh	***Ped***

Warranted

2033 S3 Signal Warrant - Route 214 & Hwy 102 SB Ramps

Main Street (name)	**Elmsdale Rd (Rt 214)**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Elmsdale Rd (Rt 214)	WB		1				225	1	
Elmsdale Rd (Rt 214)	EB				1		240	1	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB			1					

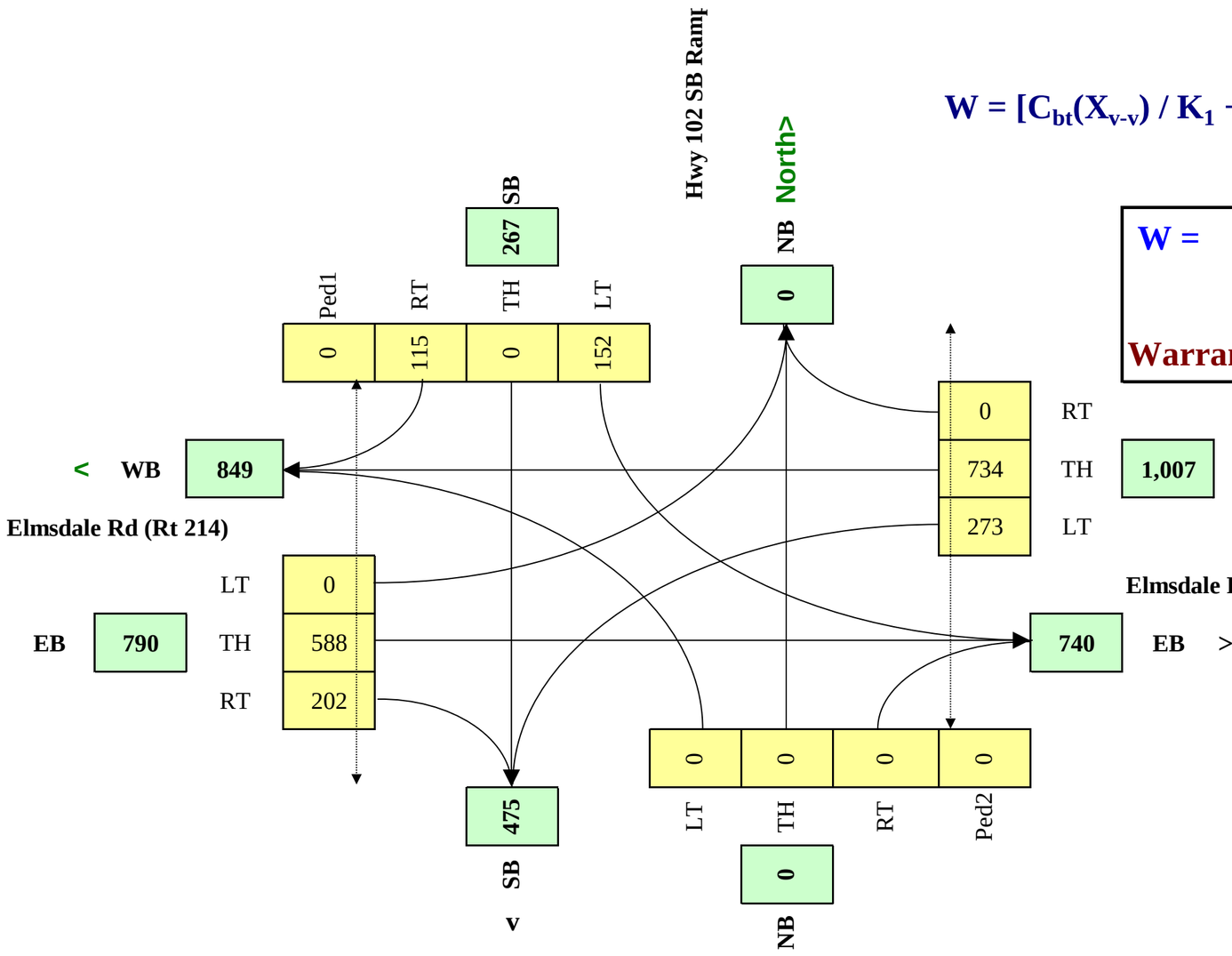
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Elmsdale Rd (Rt 214)	EW	50	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				139		99	374	529			370	218				
8:00 - 9:00				119		90	213	573			458	158				
11:00 - 12:00				137		103	246	661			529	182				
12:00 - 13:00				146		110	262	705			564	194				
16:00 - 17:00				181		142	199	1013			864	207				
17:00 - 18:00				192		145	344	925			740	255				
Total (6-hour peak)	**0**	**0**	**0**	**914**	**0**	**689**	**1,637**	**4,406**	**0**	**0**	**3,526**	**1,214**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**152**	**0**	**115**	**273**	**734**	**0**	**0**	**588**	**202**	**0**	**0**	**0**	**0**

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 =	**310**	**310**	**0**
		Veh	***Ped***

Warranted

2013 Signal Warrant - Trunk 2 & Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Shaw Driveway**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Shaw Driveway	WB			1					
Shaw Driveway	EB								

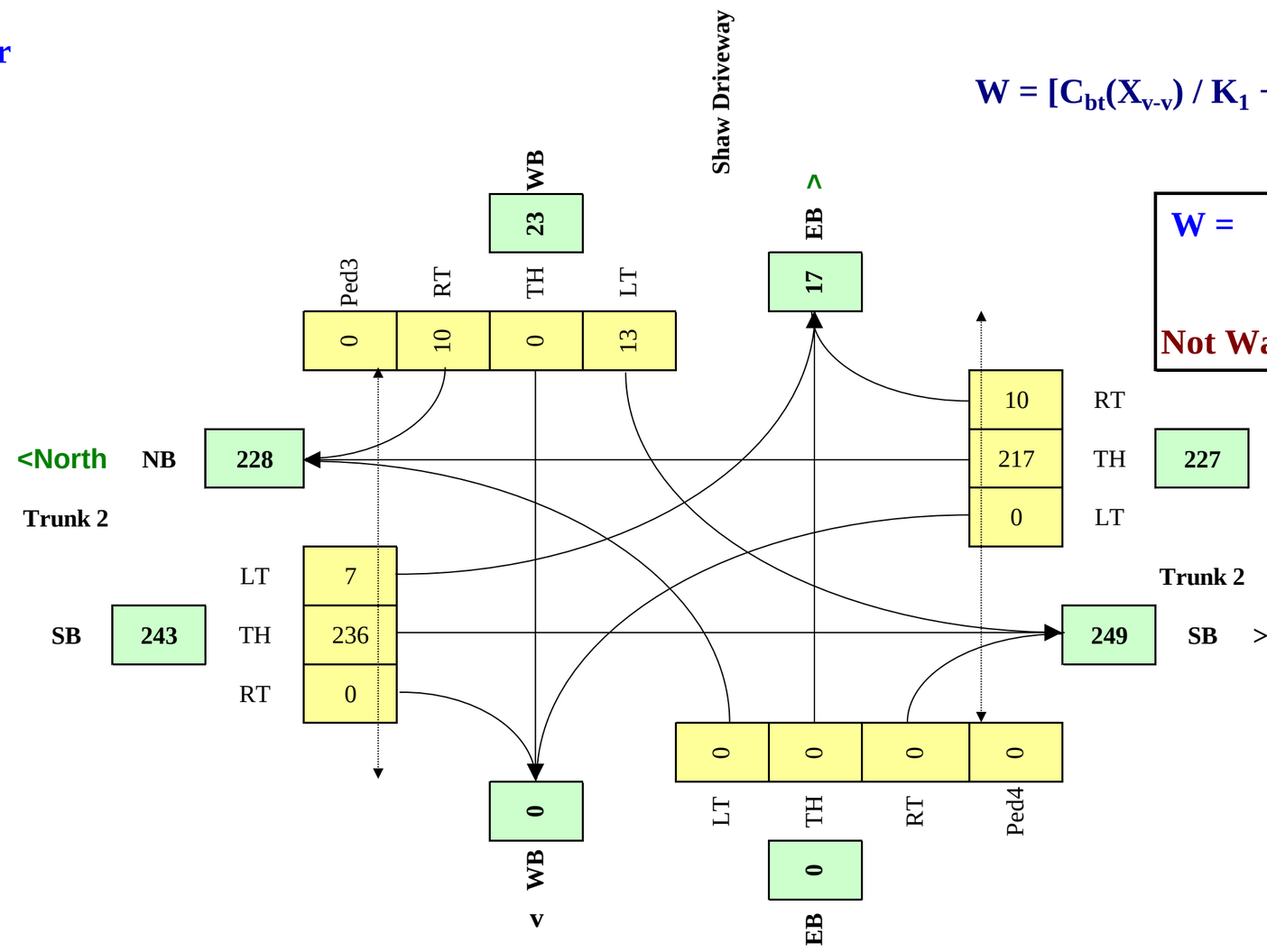
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Shaw Driveway	EW		6.0%	n	

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		112	19	16	355		6		6							
8:00 - 9:00		127	14	6	218		12		10							
11:00 - 12:00		142	7	5	162		13		7							
12:00 - 13:00		176	12	11	233		18		22							
16:00 - 17:00		352	5	2	219		22		11							
17:00 - 18:00		395	1	3	230		4		5							
Total (6-hour peak)	**0**	**1,304**	**58**	**43**	**1,417**	**0**	**75**	**0**	**61**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**217**	**10**	**7**	**236**	**0**	**13**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	5	5	0
		Veh	*Ped*

Not Warranted - Vs<75

2023 S1 Signal Warrant - Trunk 2 & Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Shaw Driveway**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
Shaw Driveway	WB			1					
Shaw Driveway	EB								

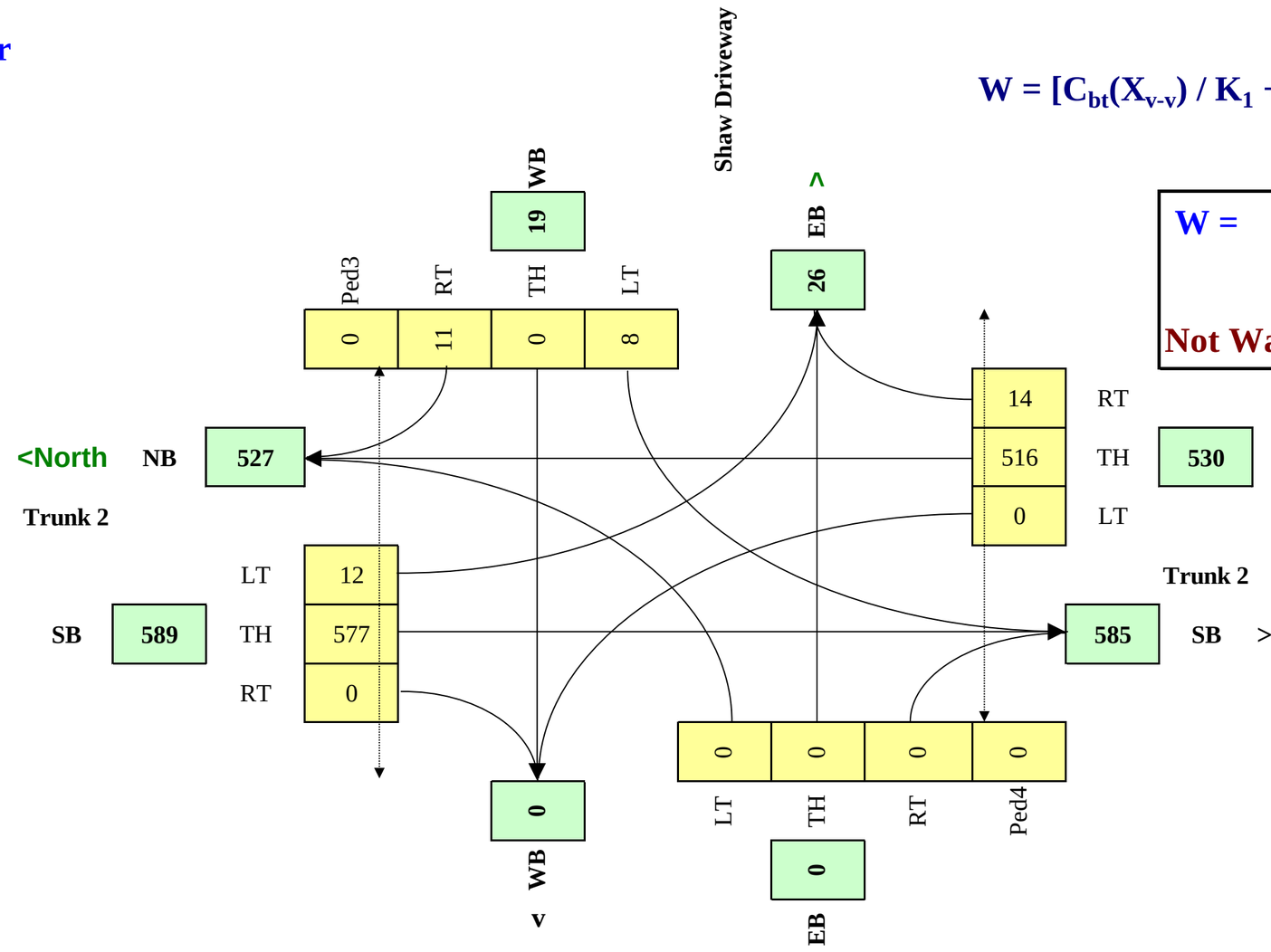
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Shaw Driveway	EW		6.0%	n	

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		284	29	27	824		6		9							
8:00 - 9:00		403	11	10	450		6		9							
11:00 - 12:00		341	9	8	381		5		7							
12:00 - 13:00		496	14	12	554		7		11							
16:00 - 17:00		650	18	16	727		10		14							
17:00 - 18:00		924	4	2	526		12		17							
Total (6-hour peak)	**0**	**3,097**	**85**	**74**	**3,462**	**0**	**46**	**0**	**67**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**516**	**14**	**12**	**577**	**0**	**8**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	**12**	**12**	**0**
		Veh	***Ped***

Not Warranted - Vs<75

2033 S1 Signal Warrant - Trunk 2 & Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Shaw Driveway**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
Shaw Driveway	WB			1					
Shaw Driveway	EB								

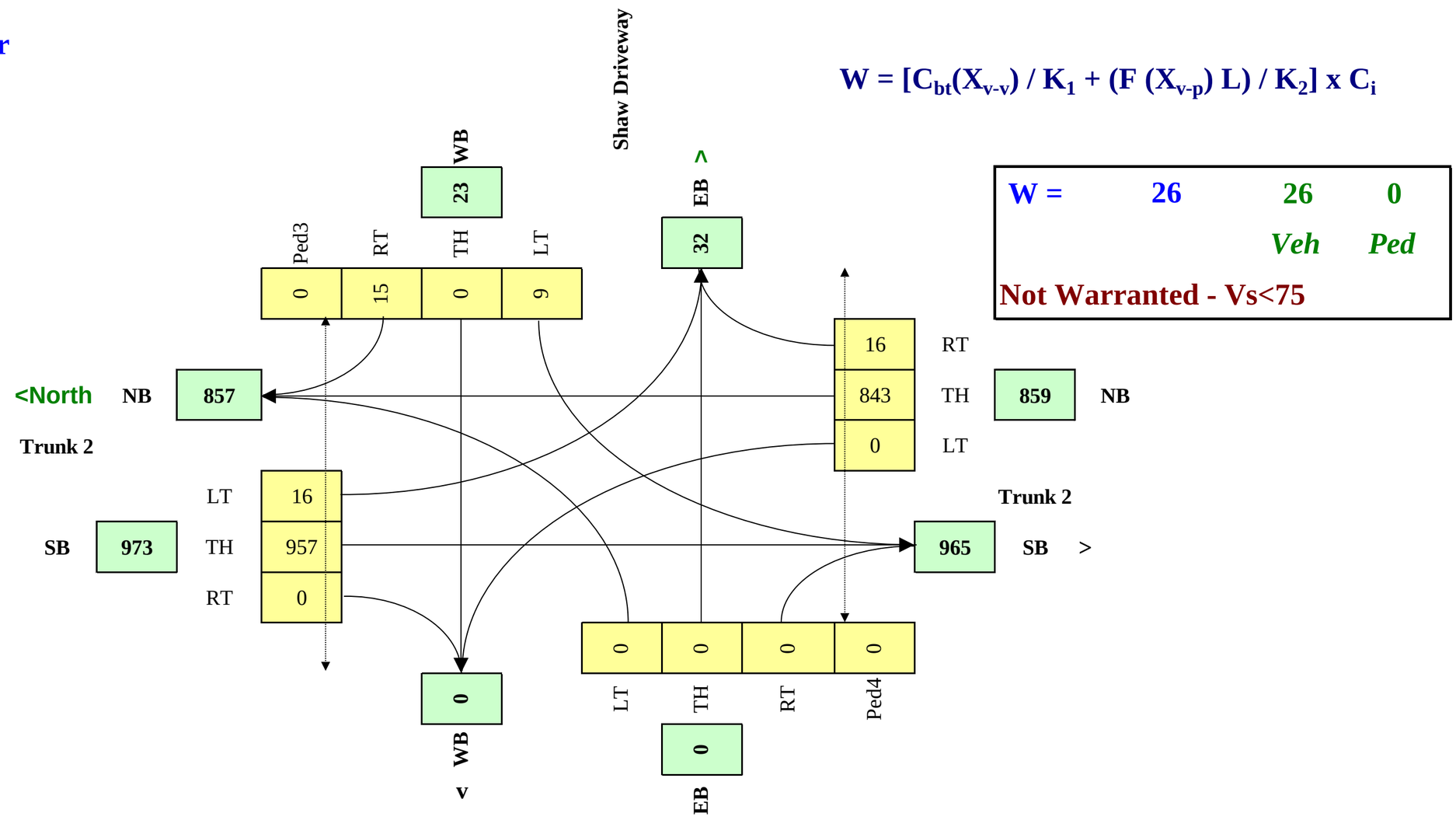
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Shaw Driveway	EW		6.0%	n	

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		471	33	35	1374		6		11							
8:00 - 9:00		657	13	13	746		7		11							
11:00 - 12:00		556	11	11	632		6		10							
12:00 - 13:00		809	16	16	919		8		14							
16:00 - 17:00		1062	20	20	1206		11		18							
17:00 - 18:00		1501	5	3	865		14		23							
Total (6-hour peak)	**0**	**5,056**	**97**	**97**	**5,741**	**0**	**51**	**0**	**87**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**843**	**16**	**16**	**957**	**0**	**9**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	**26**	**26**	**0**
		Veh	***Ped***

Not Warranted - Vs<75

2023 S2 Signal Warrant - Trunk 2 & South Connector/Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**South Connector/Shaw**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
South Connector/Shaw	WB			1					
South Connector/Shaw	EB			1					

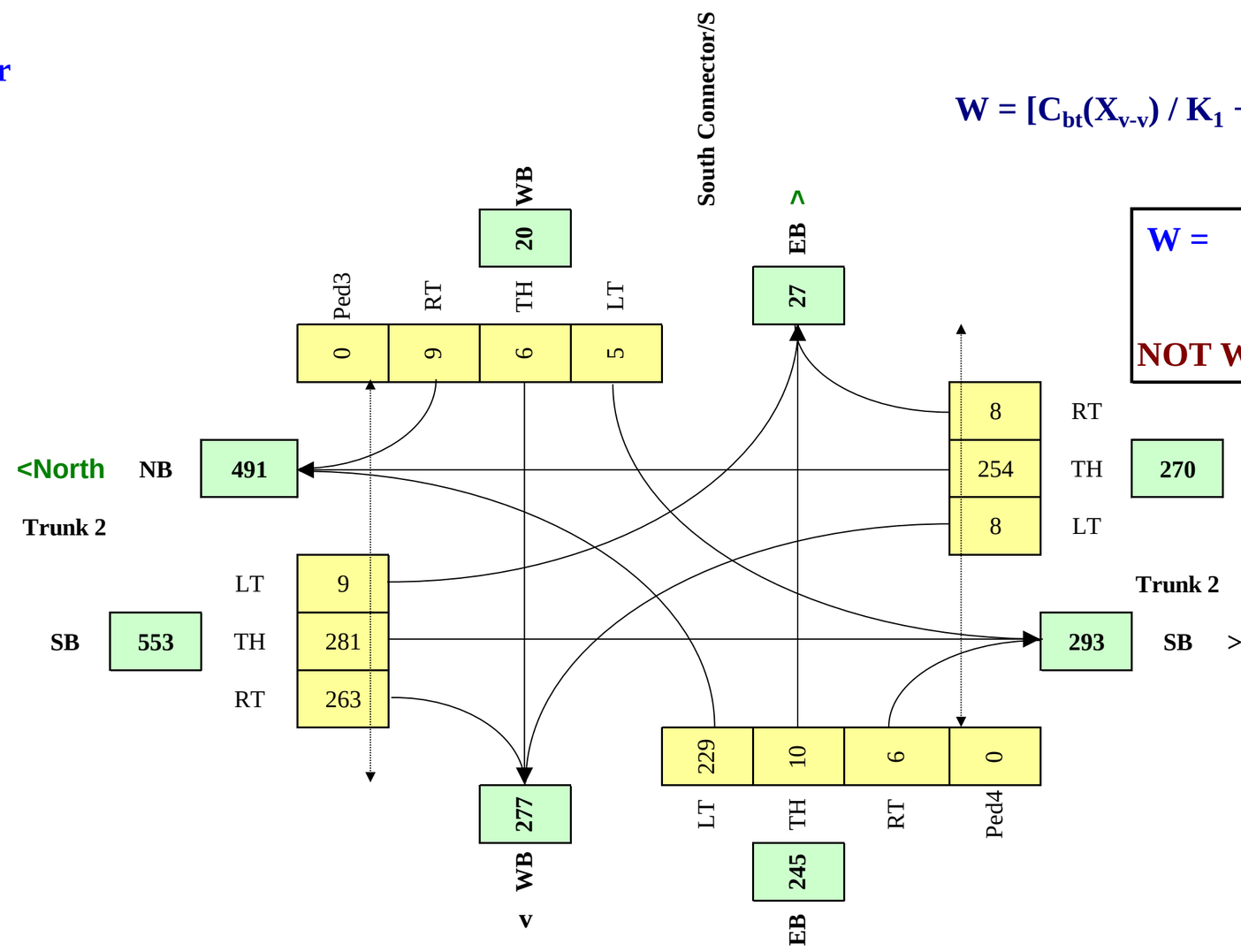
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
South Connector/Shaw	EW		5.0%	n	

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	11	140	16	19	402	368	4	6	6	125	22	4				
8:00 - 9:00	6	198	6	7	219	205	4	5	7	178	8	5				
11:00 - 12:00	5	168	5	6	186	174	3	4	6	151	7	4				
12:00 - 13:00	7	244	8	9	270	253	5	6	8	219	10	6				
16:00 - 17:00	10	320	10	11	354	332	6	8	11	288	13	8				
17:00 - 18:00	7	454	3	2	256	248	8	8	14	410	2	11				
Total (6-hour peak)	**46**	**1,523**	**49**	**54**	**1,687**	**1,579**	**31**	**36**	**51**	**1,372**	**62**	**38**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**8**	**254**	**8**	**9**	**281**	**263**	**5**	**6**	**9**	**229**	**10**	**6**	**0**	**0**	**0**	**0**

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 =	**99**	**99**	**0**
		Veh	***Ped***

NOT Warranted

2033 S2 Signal Warrant - Trunk 2 & South Connector/Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**South Connector/Shaw**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1		1		1	
South Connector/Shaw	WB			1					
South Connector/Shaw	EB	1		1					

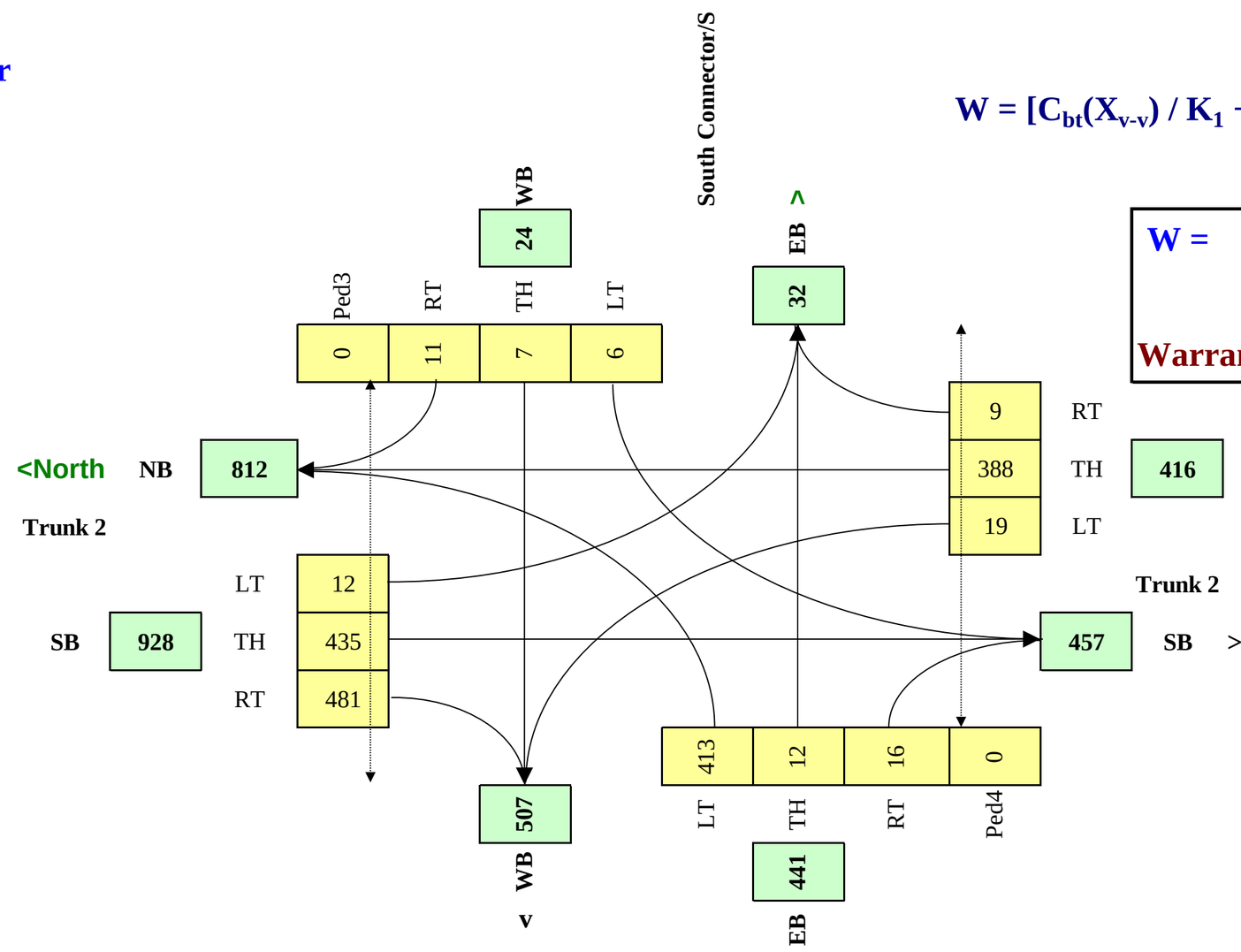
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
South Connector/Shaw	EW		5.0%	n	

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
													NS	**NS**	**EW**	**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	27	217	18	25	624	685	4	7	7	228	25	9				
8:00 - 9:00	15	302	7	9	339	375	4	6	9	322	9	13				
11:00 - 12:00	13	256	6	8	287	317	4	5	7	272	8	11				
12:00 - 13:00	18	372	9	11	418	462	5	7	11	396	11	16				
16:00 - 17:00	24	488	11	15	548	606	7	9	14	520	15	20				
17:00 - 18:00	18	690	3	3	394	440	9	10	19	738	2	29				
Total (6-hour peak)	**115**	**2,326**	**54**	**72**	**2,610**	**2,885**	**33**	**44**	**67**	**2,477**	**69**	**97**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**19**	**388**	**9**	**12**	**435**	**481**	**6**	**7**	**11**	**413**	**12**	**16**	**0**	**0**	**0**	**0**

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 =	**270**	**270**	**0**
		Veh	***Ped***

Warranted

2023 S3 Signal Warrant - Trunk 2 & Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Shaw Driveway**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
Shaw Driveway	WB			1					
Shaw Driveway	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Shaw Driveway	EW		6.0%	n	

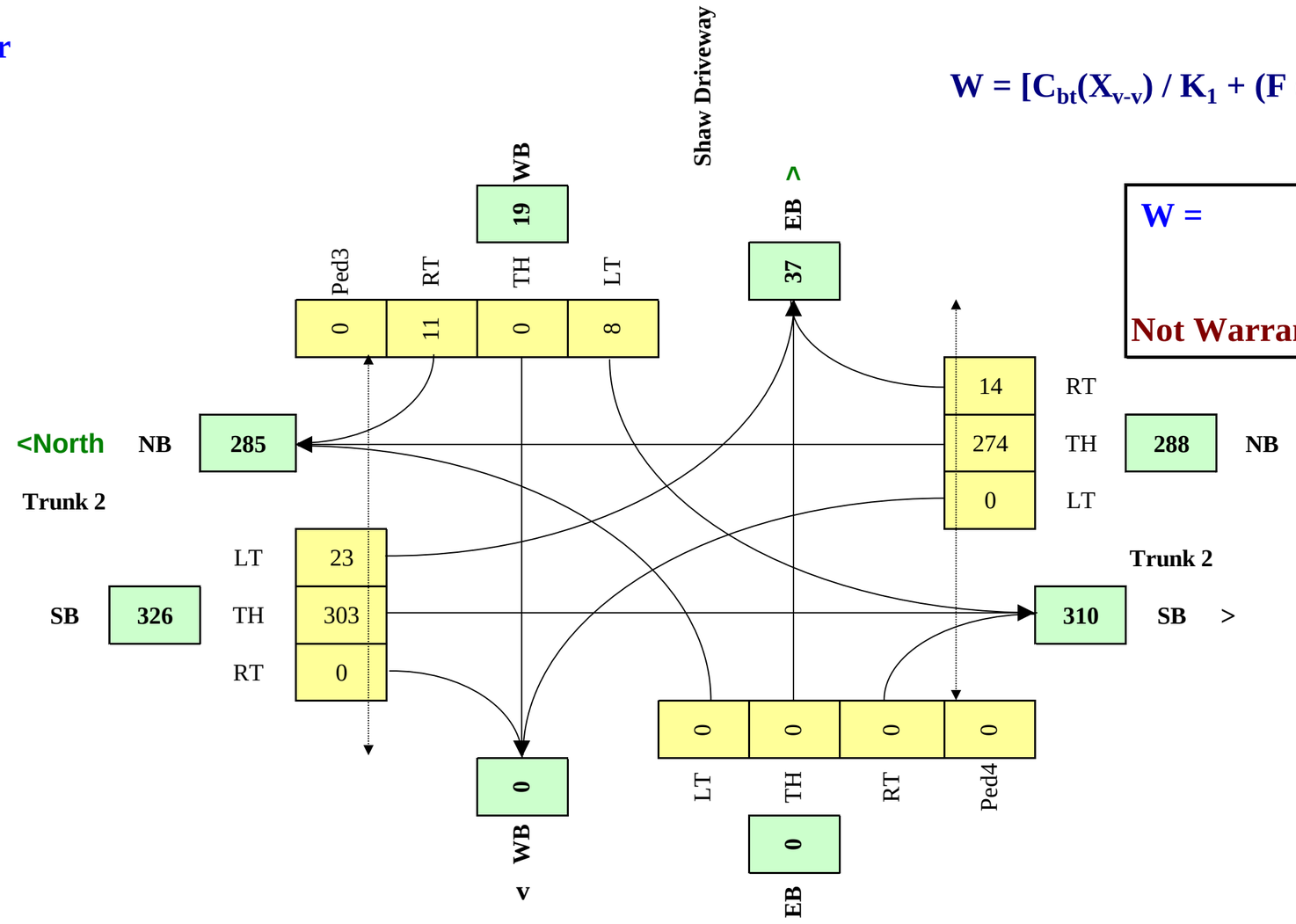
Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**NS**	**NS**	**EW**	**EW**
													W Side	**E Side**	**N Side**	**S side**
7:00 - 8:00		147	29	27	438		6		9							
8:00 - 9:00		214	11	18	236		6		9							
11:00 - 12:00		181	9	15	200		5		7							
12:00 - 13:00		263	14	22	290		7		11							
16:00 - 17:00		345	18	29	381		10		14							
17:00 - 18:00		494	4	27	270		12		17							
Total (6-hour peak)	**0**	**1,644**	**85**	**138**	**1,815**	**0**	**46**	**0**	**67**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**274**	**14**	**23**	**303**	**0**	**8**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	8	8	0
		Veh	*Ped*

Not Warranted - Vs<75



2033 S3 Signal Warrant - Trunk 2 & Shaw Driveway

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Shaw Driveway**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
Shaw Driveway	WB			1					
Shaw Driveway	EB								

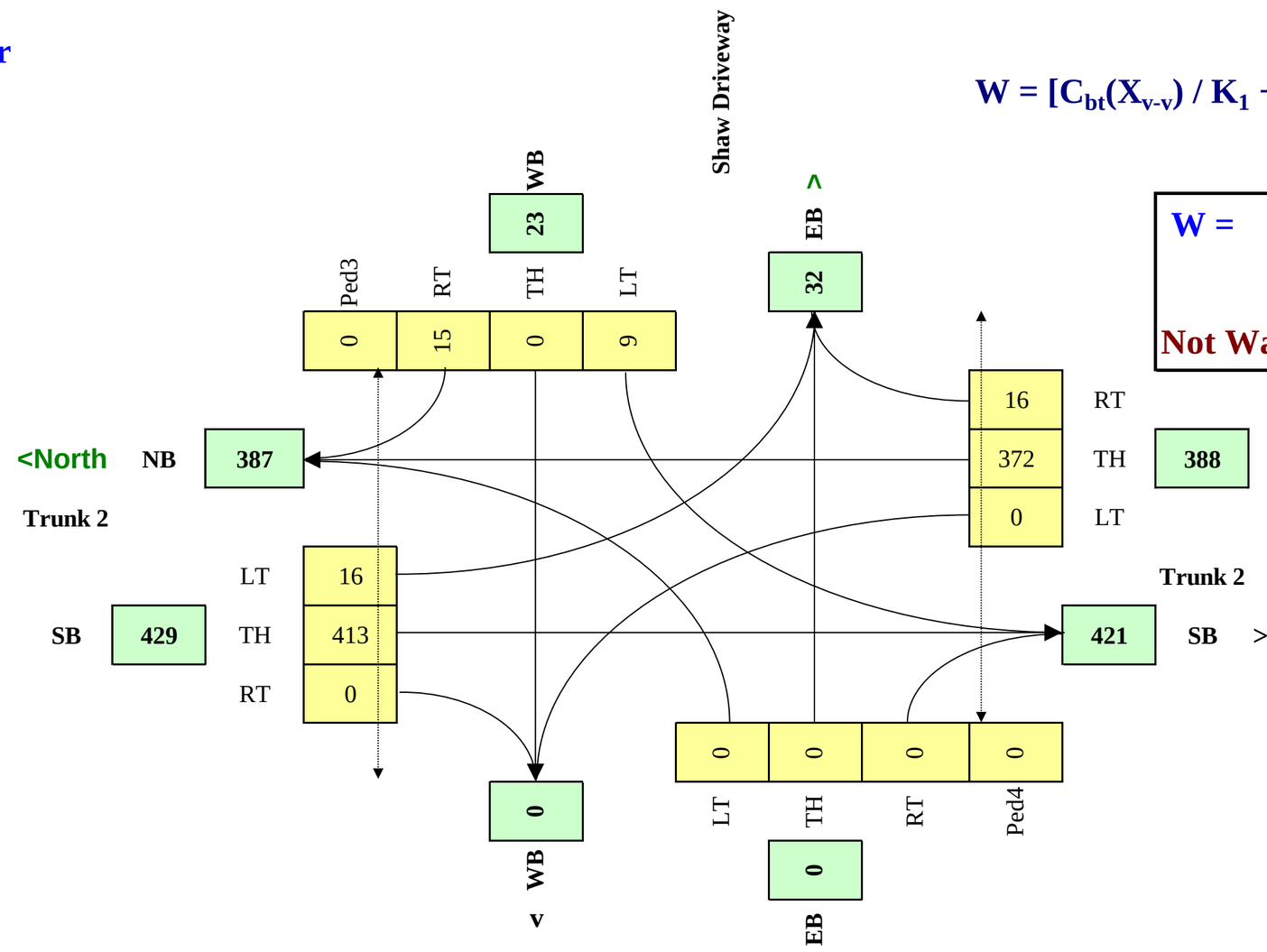
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Shaw Driveway	EW		6.0%	n	

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		207	33	35	594		6		11							
8:00 - 9:00		290	13	13	322		7		11							
11:00 - 12:00		246	11	11	272		6		10							
12:00 - 13:00		357	16	16	396		8		14							
16:00 - 17:00		469	20	20	520		11		18							
17:00 - 18:00		664	5	3	372		14		23							
Total (6-hour peak)	**0**	**2,233**	**97**	**97**	**2,477**	**0**	**51**	**0**	**87**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**372**	**16**	**16**	**413**	**0**	**9**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	10	10	0
		Veh	*Ped*

Not Warranted - Vs<75

2013 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

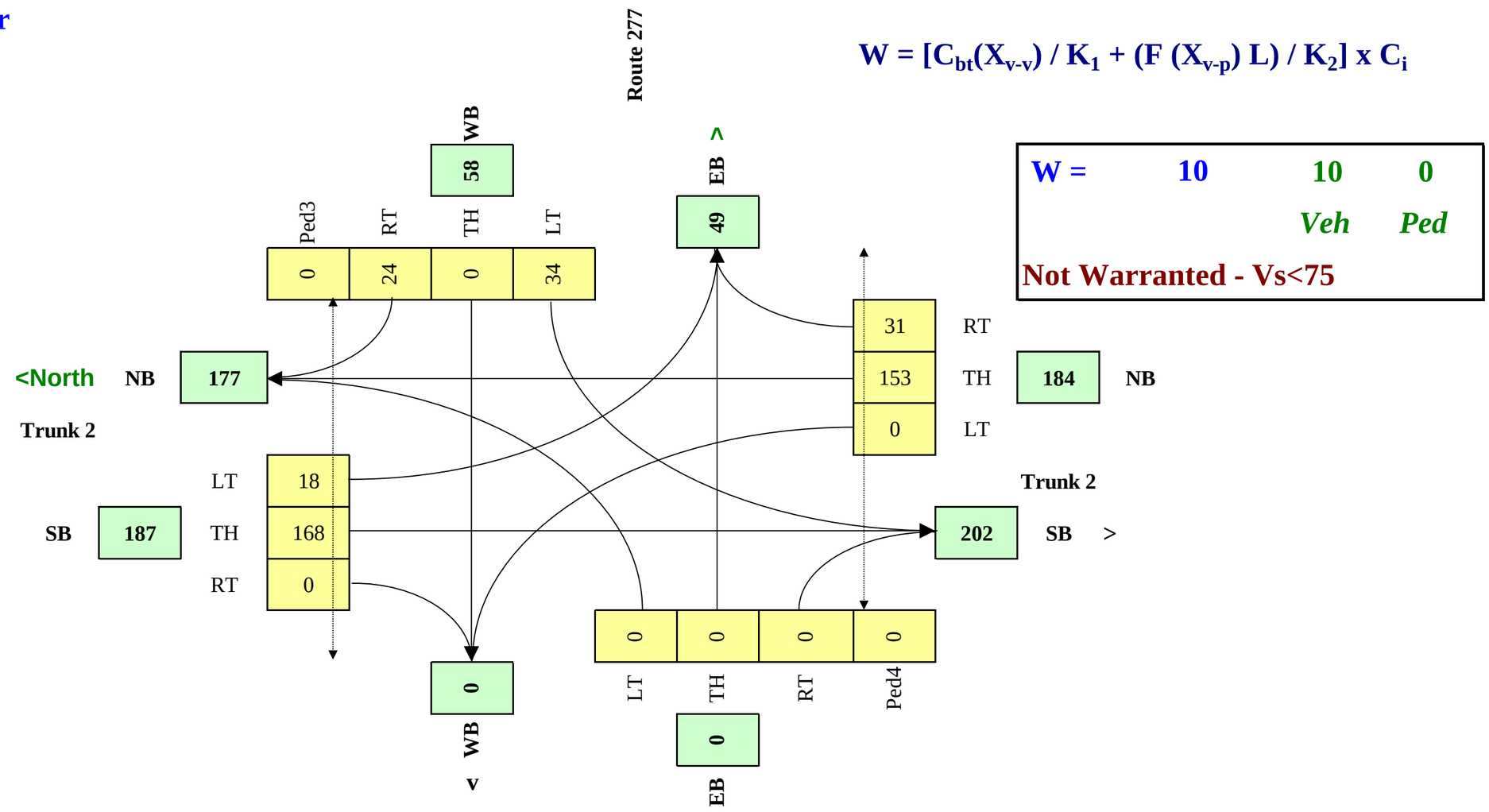
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		94	14	8	234		50		18							
8:00 - 9:00		108	16	9	161		27		18							
11:00 - 12:00		95	30	15	135		21		14							
12:00 - 13:00		131	23	23	157		37		26							
16:00 - 17:00		231	53	22	163		27		24							
17:00 - 18:00		260	48	33	159		43		43							
Total (6-hour peak)	**0**	**919**	**184**	**110**	**1,009**	**0**	**205**	**0**	**143**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**153**	**31**	**18**	**168**	**0**	**34**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	**10**	**10**	**0**
		Veh	***Ped***

Not Warranted - Vs<75

2023 S1 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

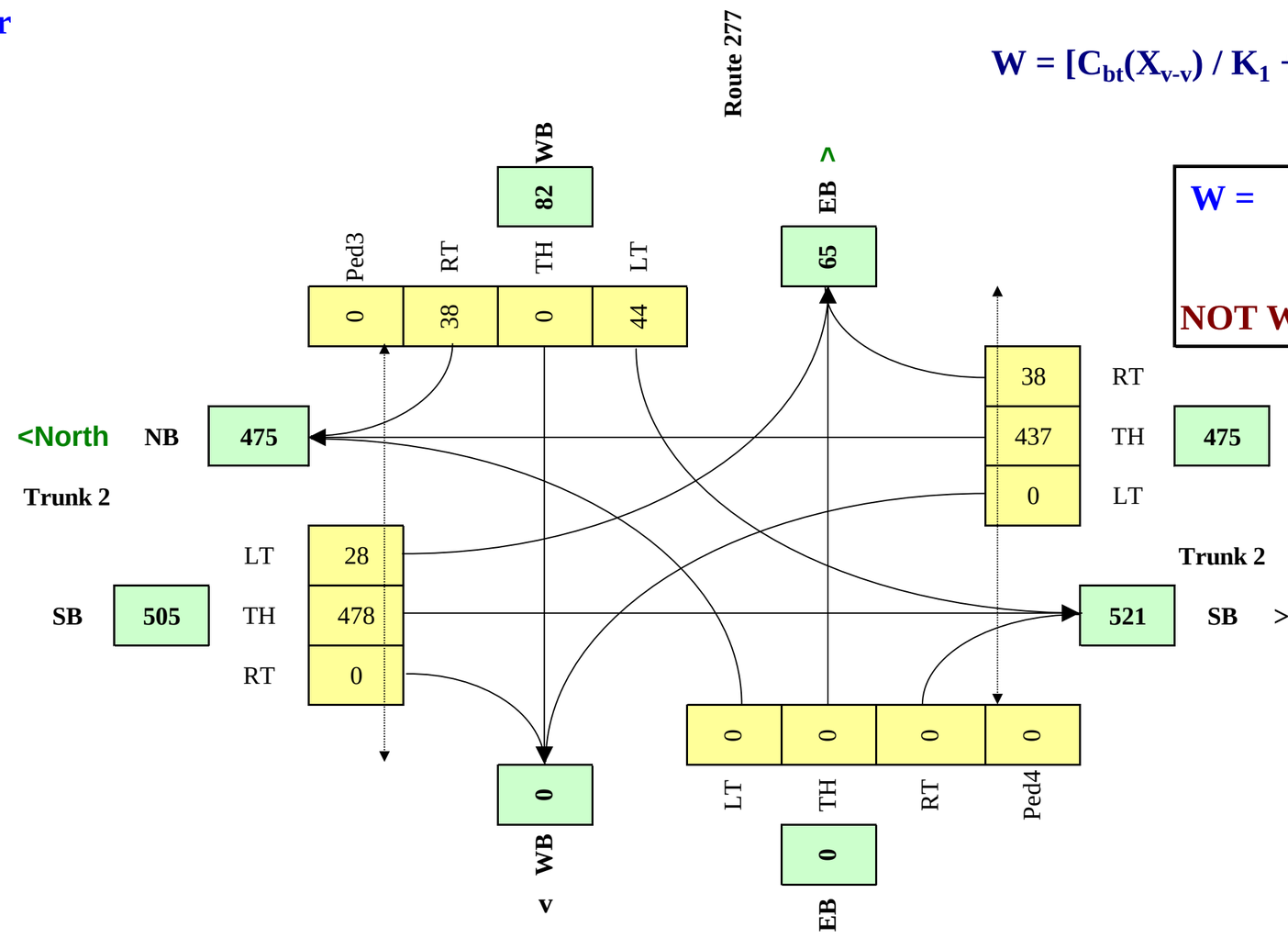
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		264	21	23	672		55		37							
8:00 - 9:00		344	30	22	376		34		30							
11:00 - 12:00		318	27	20	347		32		28							
12:00 - 13:00		397	34	25	434		40		35							
16:00 - 17:00		530	46	33	579		53		46							
17:00 - 18:00		769	68	42	457		48		53							
Total (6-hour peak)	**0**	**2,622**	**226**	**165**	**2,866**	**0**	**261**	**0**	**228**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**437**	**38**	**28**	**478**	**0**	**44**	**0**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 = 40 40 0

Veh Ped

NOT Warranted

2033 S1 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

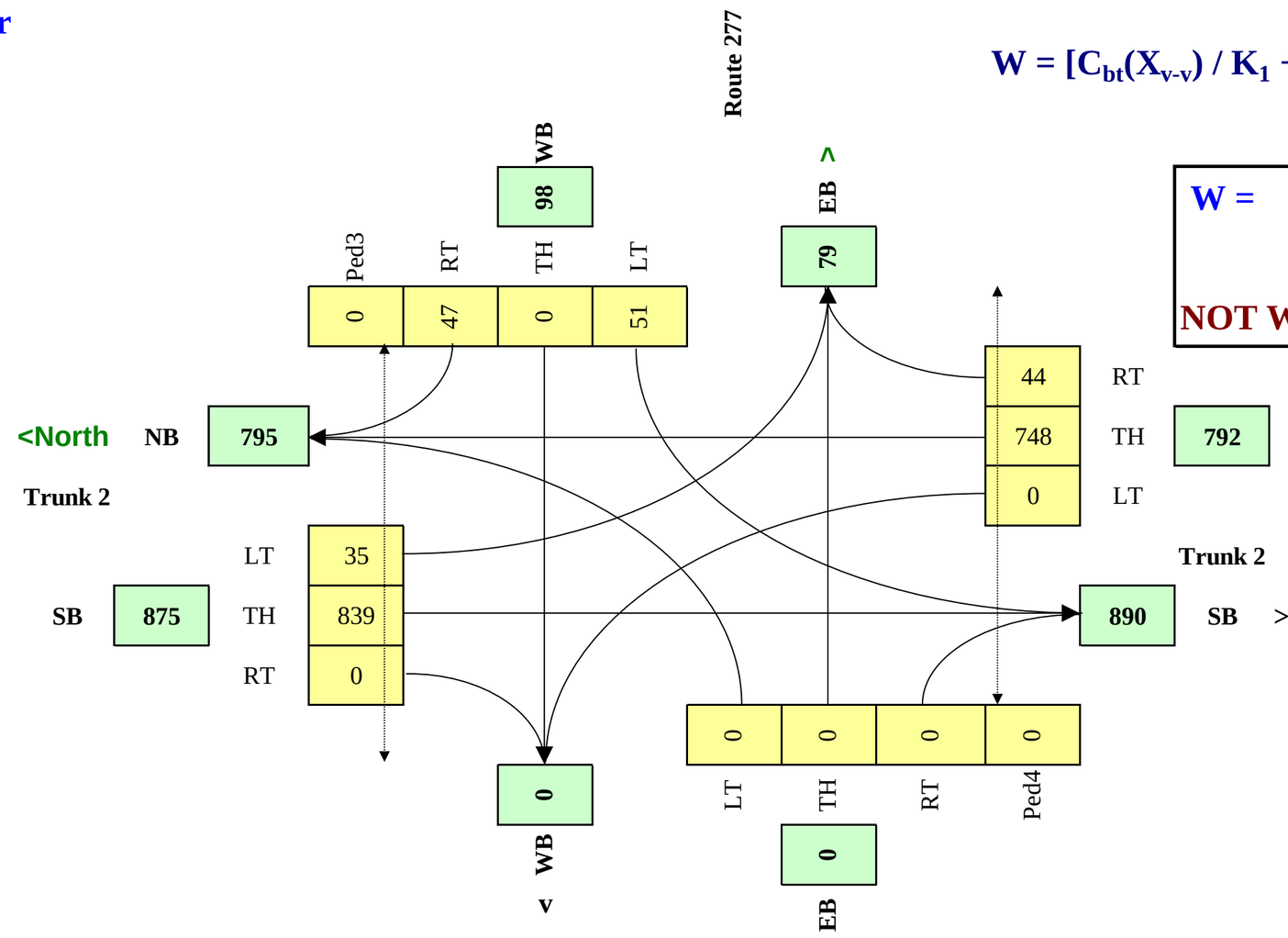
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		448	24	30	1198		64		46							
8:00 - 9:00		589	34	28	661		40		37							
11:00 - 12:00		544	32	26	610		37		34							
12:00 - 13:00		680	40	32	763		46		43							
16:00 - 17:00		907	53	43	1017		62		57							
17:00 - 18:00		1320	79	53	786		56		65							
Total (6-hour peak)	**0**	**4,488**	**261**	**211**	**5,036**	**0**	**305**	**0**	**282**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**748**	**44**	**35**	**839**	**0**	**51**	**0**	**47**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	89	89	0
		Veh	*Ped*

NOT Warranted

2023 S2 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

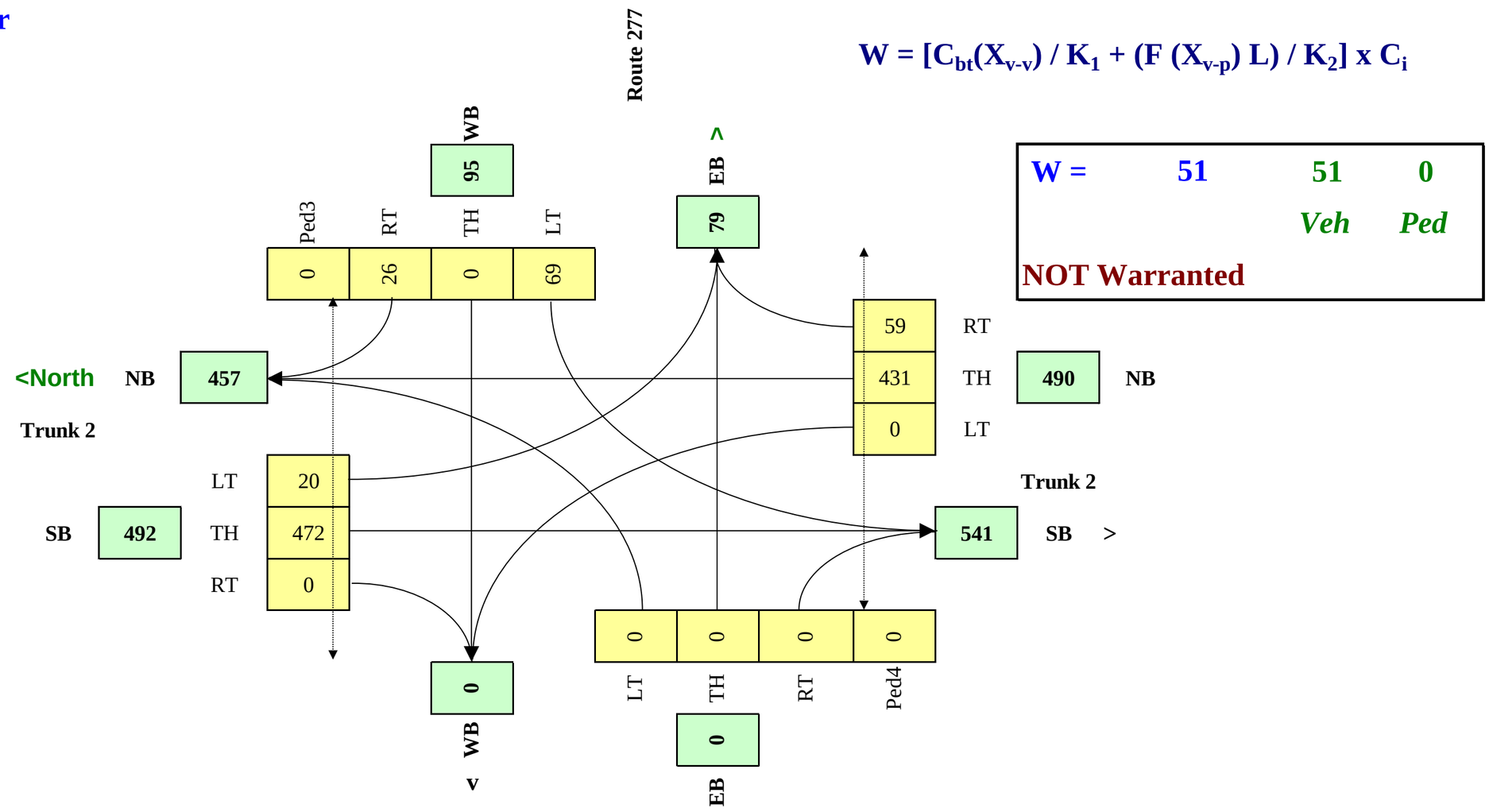
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		256	35	18	663		83		26							
8:00 - 9:00		340	47	16	372		54		21							
11:00 - 12:00		314	43	14	343		50		19							
12:00 - 13:00		392	54	18	429		63		24							
16:00 - 17:00		523	72	24	572		84		32							
17:00 - 18:00		763	105	29	453		80		36							
Total (6-hour peak)	**0**	**2,587**	**355**	**119**	**2,833**	**0**	**414**	**0**	**157**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**431**	**59**	**20**	**472**	**0**	**69**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	51	51	0
		Veh	*Ped*

NOT Warranted

2033 S2 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

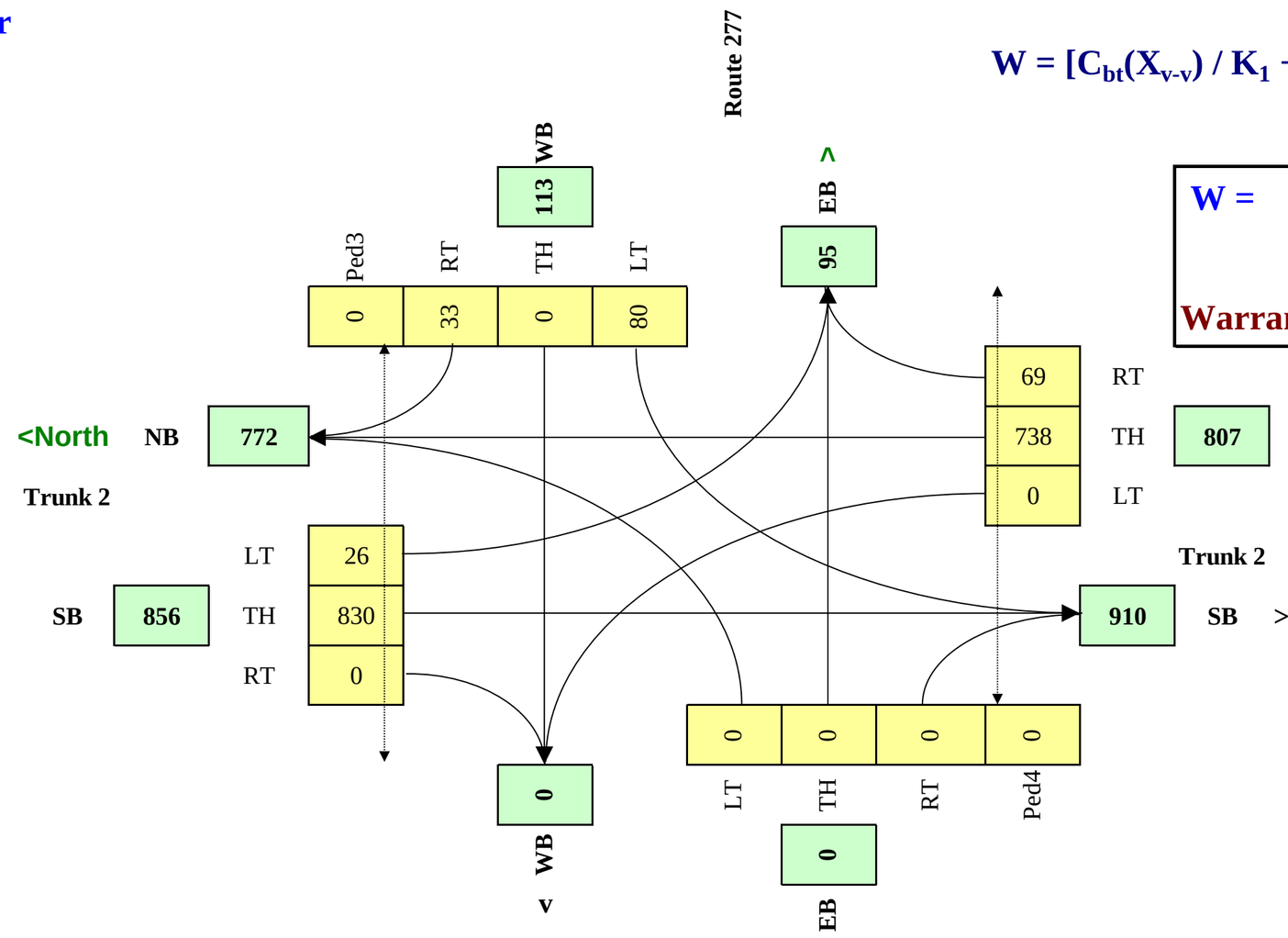
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		435	40	24	1185		96		34							
8:00 - 9:00		582	54	21	654		63		26							
11:00 - 12:00		537	50	19	603		58		24							
12:00 - 13:00		671	62	24	754		73		30							
16:00 - 17:00		895	83	32	1006		97		41							
17:00 - 18:00		1310	122	38	776		93		45							
Total (6-hour peak)	**0**	**4,430**	**411**	**157**	**4,978**	**0**	**480**	**0**	**201**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**738**	**69**	**26**	**830**	**0**	**80**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	**109**	**109**	**0**
		Veh	***Ped***

Warranted

2023 S3 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

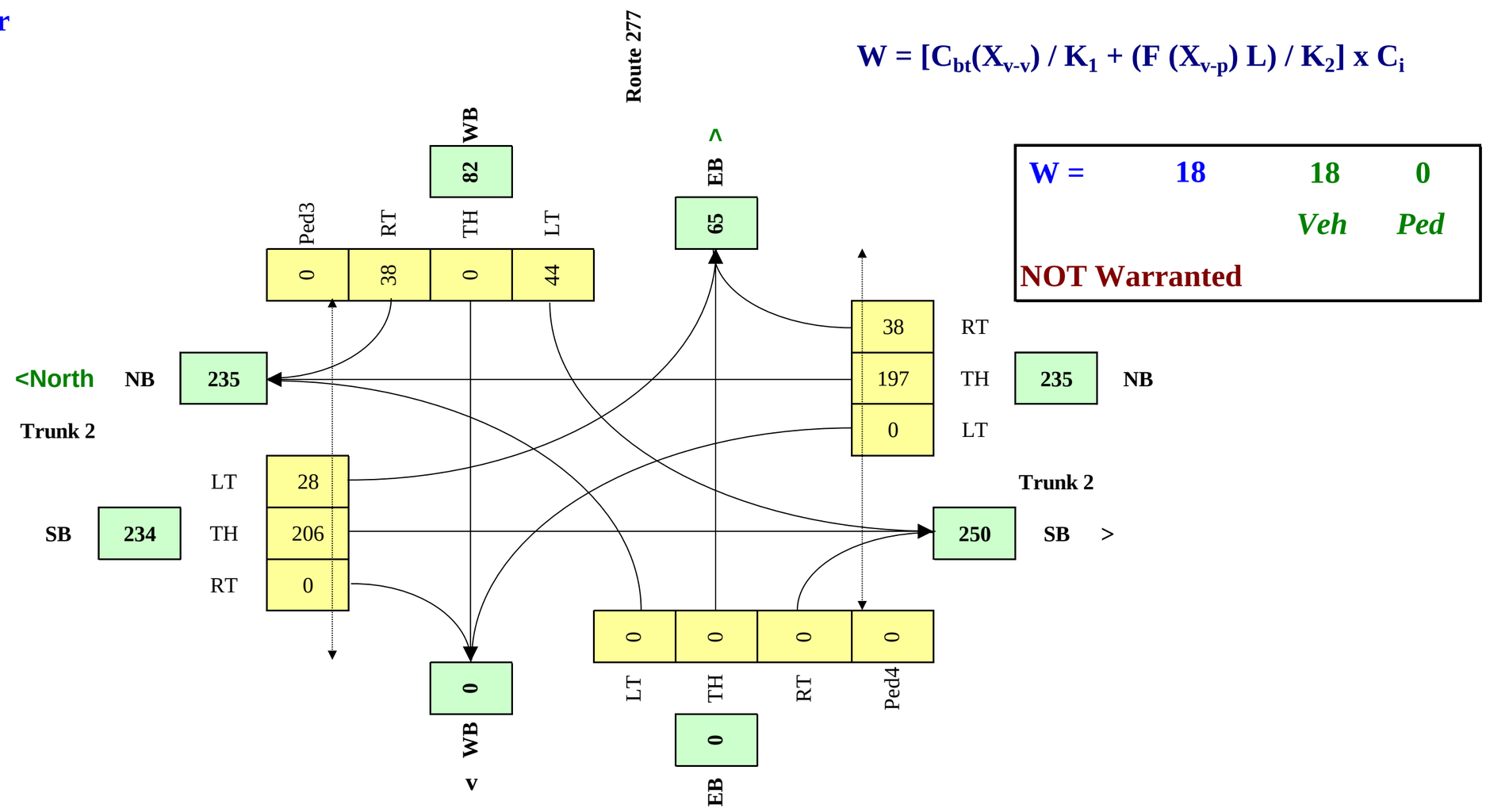
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		127	21	23	286		55		37							
8:00 - 9:00		155	30	22	162		34		30							
11:00 - 12:00		143	27	20	150		32		28							
12:00 - 13:00		179	34	25	187		40		35							
16:00 - 17:00		239	46	33	250		53		46							
17:00 - 18:00		339	68	42	201		48		53							
Total (6-hour peak)	**0**	**1,183**	**226**	**165**	**1,236**	**0**	**261**	**0**	**228**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**197**	**38**	**28**	**206**	**0**	**44**	**0**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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	18	0
		Veh	*Ped*

NOT Warranted

2033 S3 Signal Warrant - Trunk 2 & Route 277

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Route 277**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

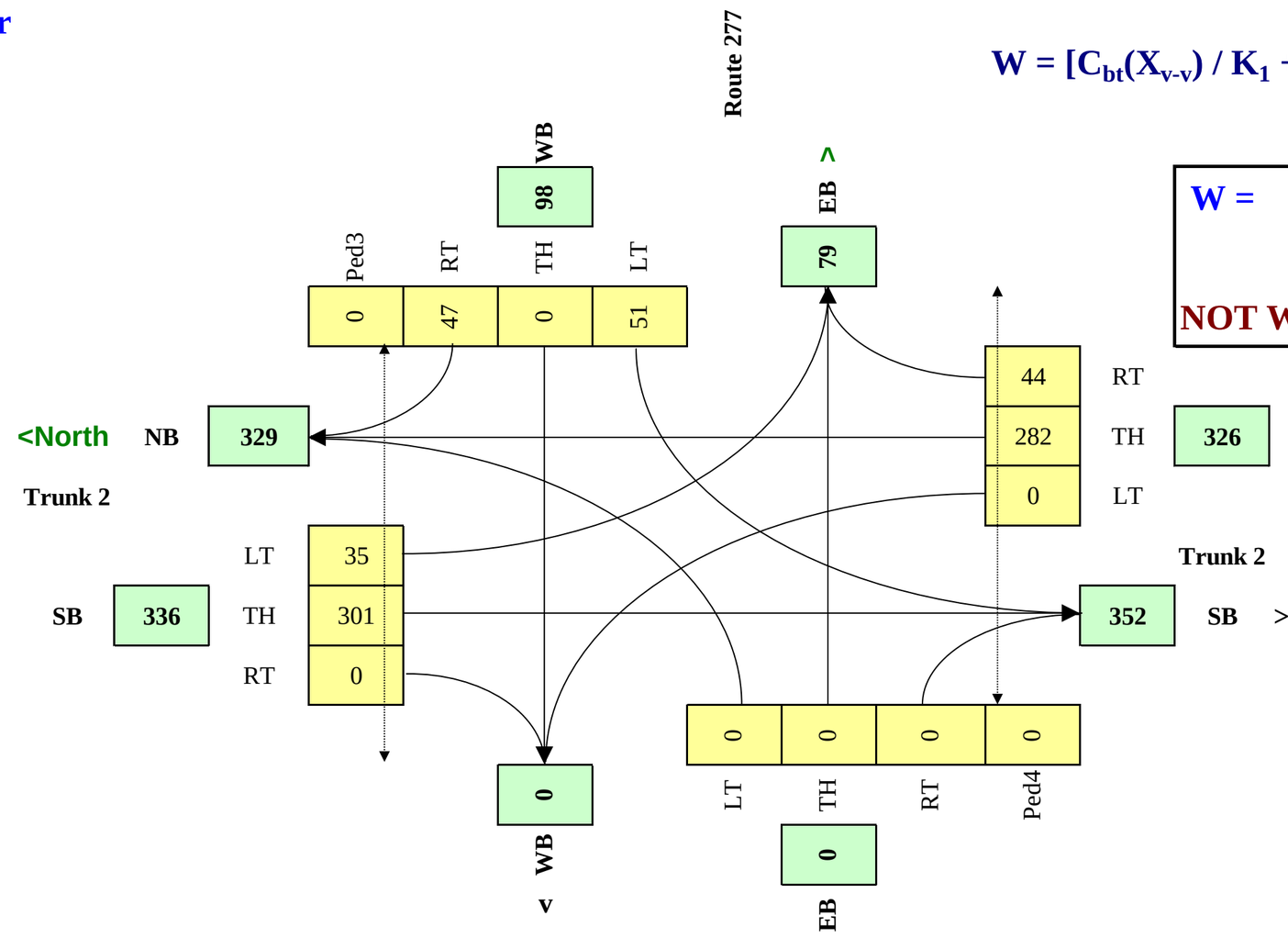
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB				1		2,475	1	
Trunk 2	SB		1					1	
Route 277	WB			1					
Route 277	EB								

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
Route 277	EW		6.0%	n	

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		184	24	30	418		64		46							
8:00 - 9:00		222	34	28	237		40		37							
11:00 - 12:00		205	32	26	219		37		34							
12:00 - 13:00		257	40	32	273		46		43							
16:00 - 17:00		342	53	43	365		62		57							
17:00 - 18:00		483	79	53	293		56		65							
Total (6-hour peak)	**0**	**1,693**	**261**	**211**	**1,805**	**0**	**305**	**0**	**282**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**282**	**44**	**35**	**301**	**0**	**51**	**0**	**47**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	31	31	0
		Veh	*Ped*

NOT Warranted

2023 S2 Signal Warrant - South Connector Rd & Hwy 102 NB Ramps

Main Street (name)	**South Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 NB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
South Lantz Connector	WB				1			1	
South Lantz Connector	EB		1					1	
Hwy 102 NB Ramps	NB			1					
Hwy 102 NB Ramps	SB								

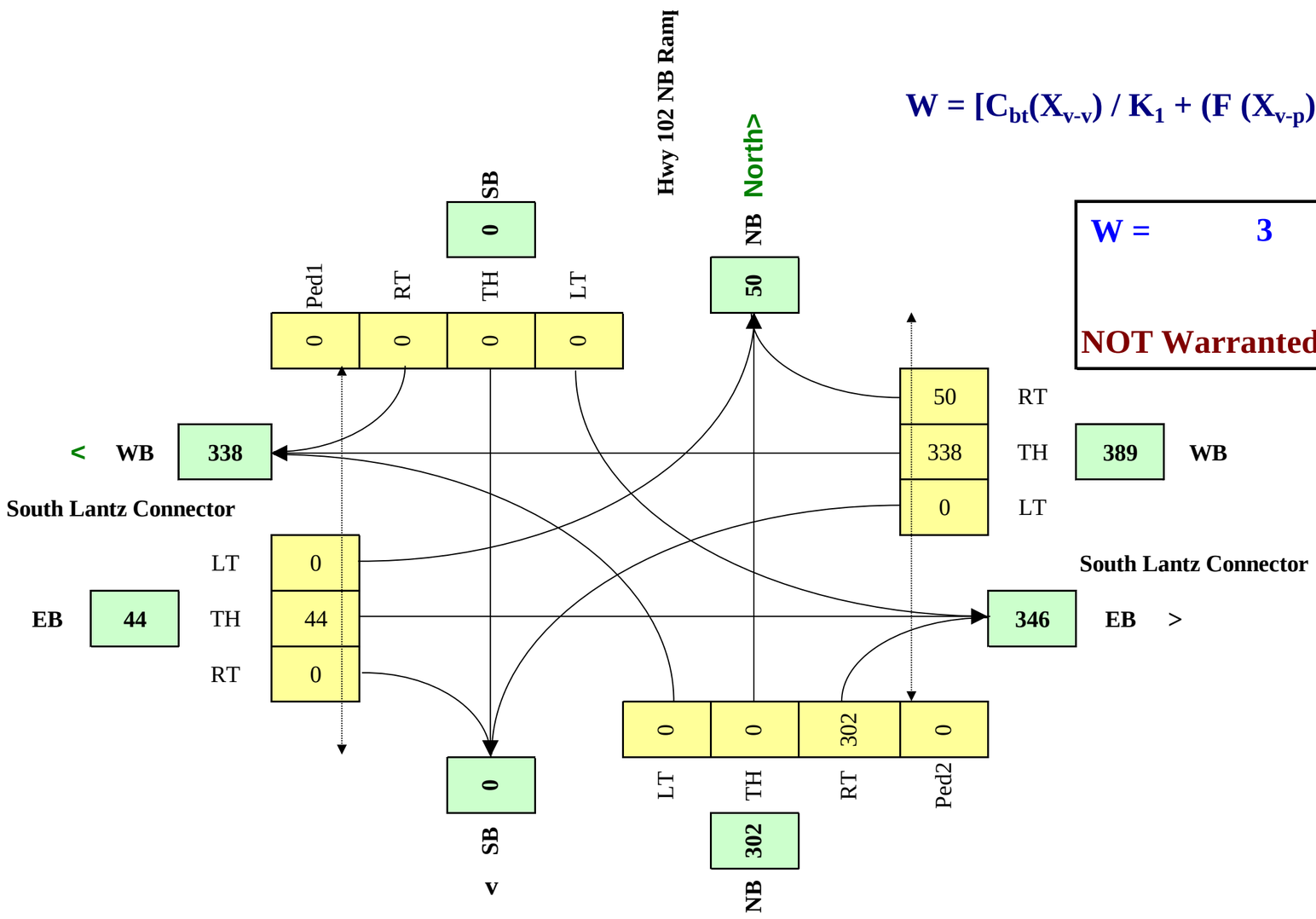
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
South Lantz Connector	EW	70	3.0%	n	
Hwy 102 NB Ramps	NS		3.0%	n	

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			158	0		0	0	430	58		29	0				
8:00 - 9:00			235	0		0	0	264	39		35	0				
11:00 - 12:00			272	0		0	0	304	45		40	0				
12:00 - 13:00			290	0		0	0	325	48		43	0				
16:00 - 17:00			476	0		0	0	280	48		64	0				
17:00 - 18:00			380	0		0	0	426	64		56	0				
Total (6-hour peak)	**0**	**0**	**1,811**	**0**	**0**	**0**	**0**	**2,029**	**303**	**0**	**266**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**302**	**0**	**0**	**0**	**0**	**338**	**50**	**0**	**44**	**0**	**0**	**0**	**0**	**0**

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 3 0

Veh Ped

NOT Warranted

2033 S2 Signal Warrant - South Connector Rd & Hwy 102 NB Ramps

Main Street (name)	**South Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 NB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
South Lantz Connector	WB				1			1	
South Lantz Connector	EB		1					1	
Hwy 102 NB Ramps	NB			1					
Hwy 102 NB Ramps	SB								

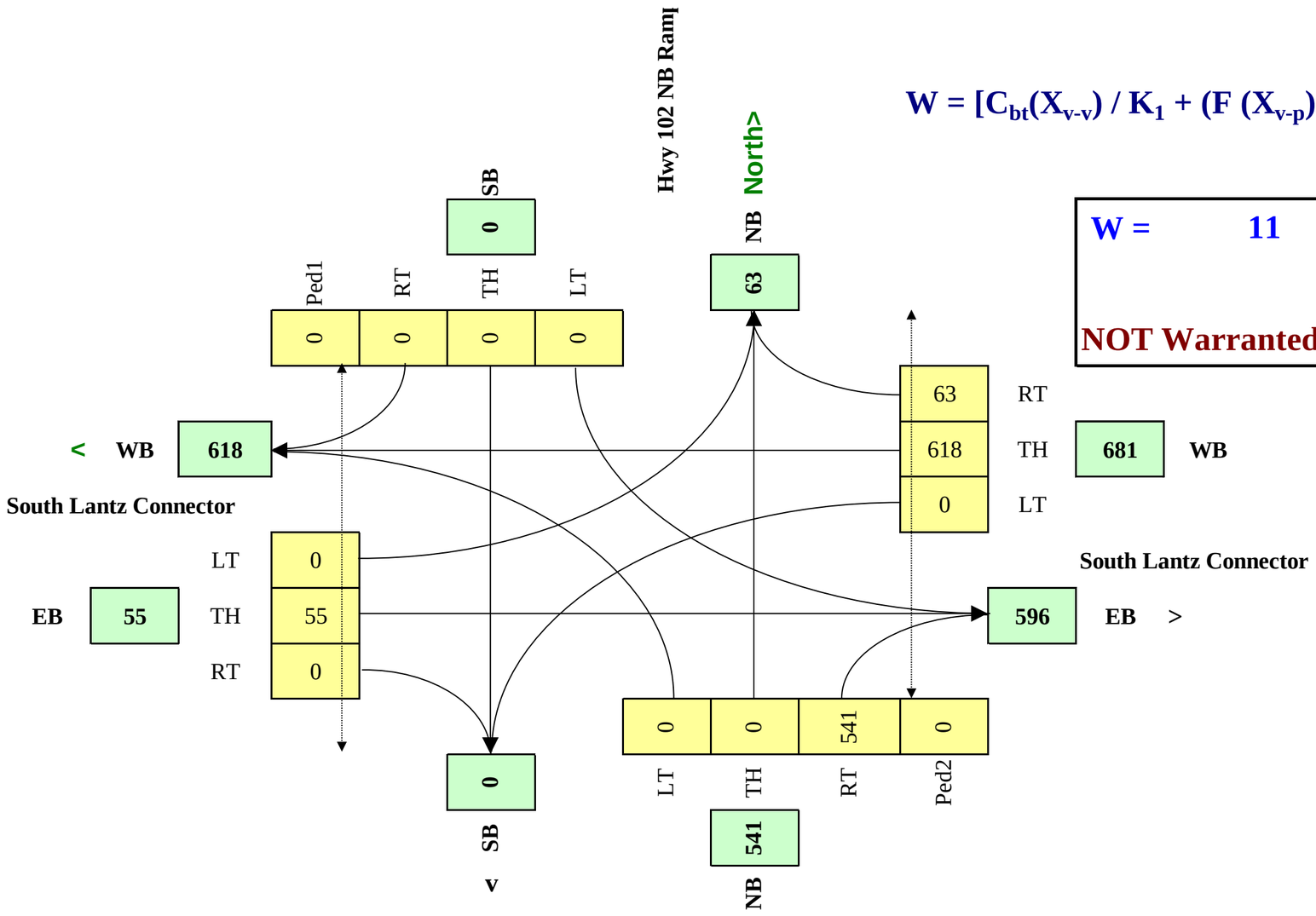
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
South Lantz Connector	EW	70	3.0%	n	
Hwy 102 NB Ramps	NS		3.0%	n	

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			277	0		0	0	795	73		36	0				
8:00 - 9:00			422	0		0	0	482	49		43	0				
11:00 - 12:00			487	0		0	0	556	57		50	0				
12:00 - 13:00			519	0		0	0	593	60		53	0				
16:00 - 17:00			859	0		0	0	503	59		80	0				
17:00 - 18:00			682	0		0	0	779	79		70	0				
Total (6-hour peak)	**0**	**0**	**3,246**	**0**	**0**	**0**	**0**	**3,709**	**377**	**0**	**331**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**541**	**0**	**0**	**0**	**0**	**618**	**63**	**0**	**55**	**0**	**0**	**0**	**0**	**0**

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 =	**11**	**11**	**0**
		Veh	***Ped***

NOT Warranted

2023 S2 Signal Warrant - South Connector Rd & Hwy 102 SB Ramps

Main Street (name)	**South Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
South Lantz Connector	WB		1					1	
South Lantz Connector	EB							0	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB		1						

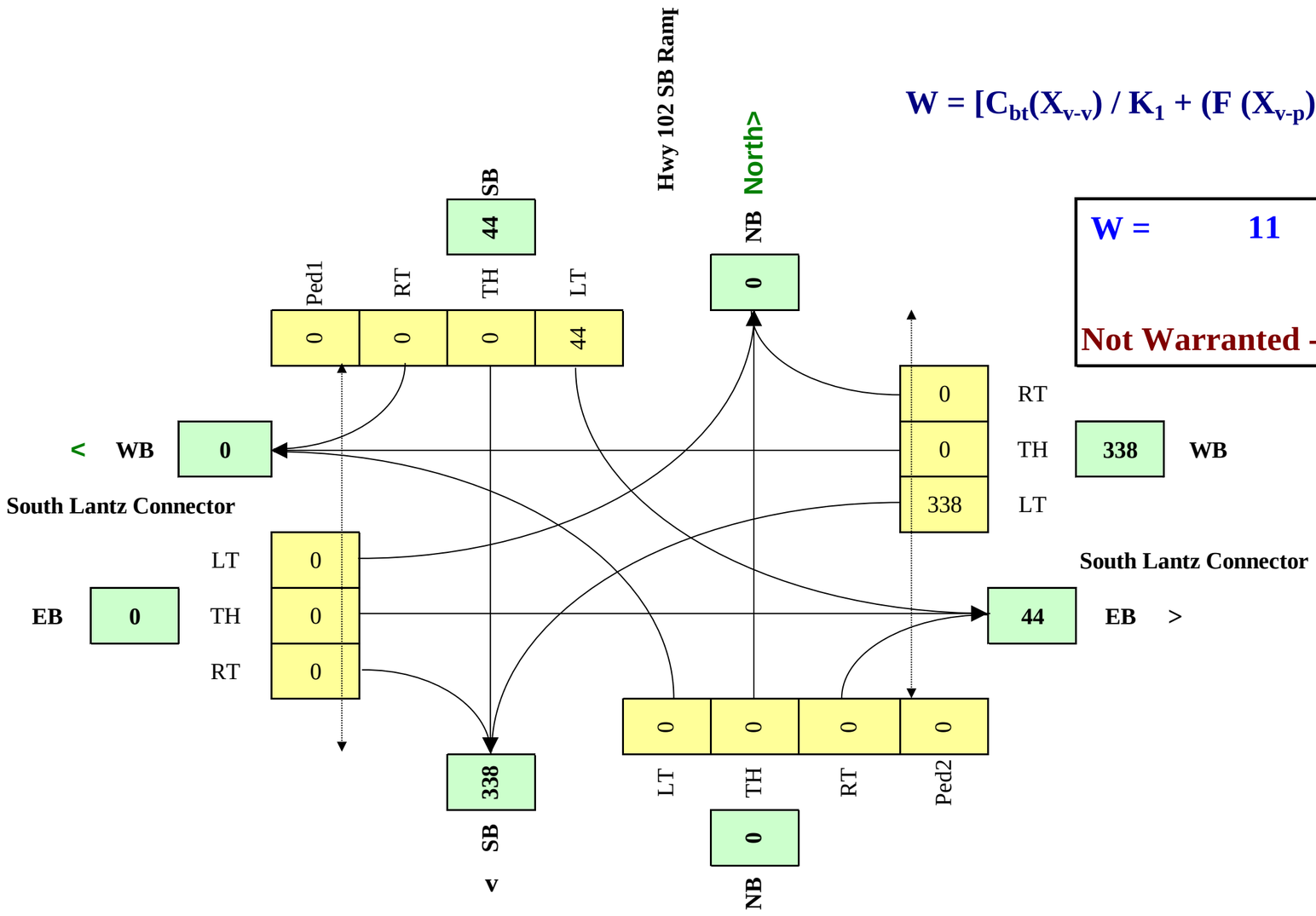
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
South Lantz Connector	EW	70	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				29		0	430	0			0	0				
8:00 - 9:00				35		0	264	0			0	0				
11:00 - 12:00				40		0	304	0			0	0				
12:00 - 13:00				43		0	325	0			0	0				
16:00 - 17:00				64		0	280	0			0	0				
17:00 - 18:00				56		0	426	0			0	0				
Total (6-hour peak)	**0**	**0**	**0**	**266**	**0**	**0**	**2,029**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**44**	**0**	**0**	**338**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 = 11 11 0

Veh Ped

Not Warranted - Vs<75

2033 S2 Signal Warrant - South Connector Rd & Hwy 102 SB Ramps

Main Street (name)	**South Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

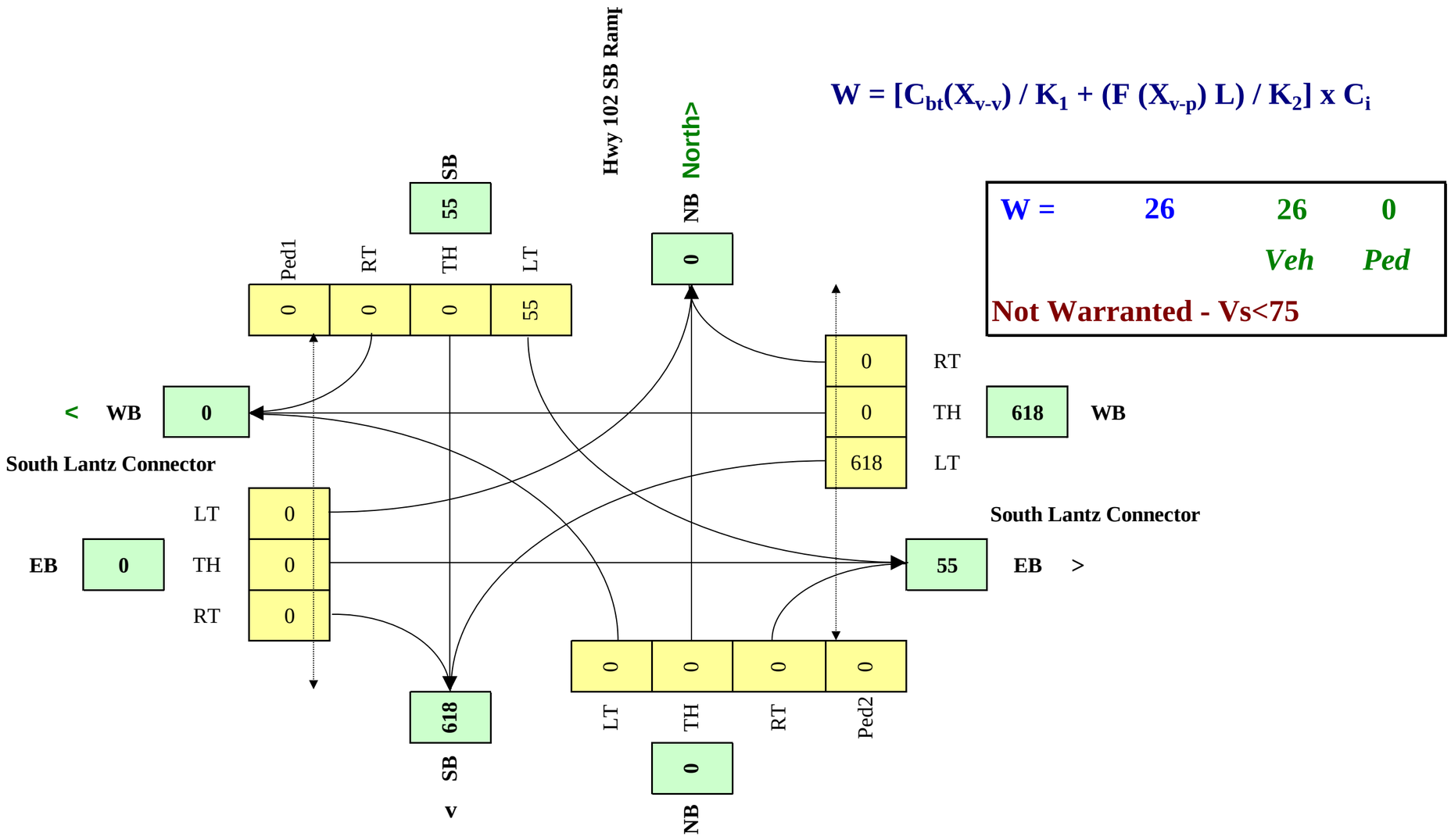
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
South Lantz Connector	WB		1					1	
South Lantz Connector	EB							0	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB		1						

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
South Lantz Connector	EW	70	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				36		0	795	0			0	0				
8:00 - 9:00				43		0	482	0			0	0				
11:00 - 12:00				50		0	556	0			0	0				
12:00 - 13:00				53		0	593	0			0	0				
16:00 - 17:00				80		0	503	0			0	0				
17:00 - 18:00				70		0	779	0			0	0				
Total (6-hour peak)	**0**	**0**	**0**	**331**	**0**	**0**	**3,709**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**55**	**0**	**0**	**618**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 =	26	26	0
		Veh	*Ped*

Not Warranted - Vs<75

2023 S3 Signal Warrant - Trunk 2 & North Connector

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**North Connector**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
North Connector	WB								
North Connector	EB			1					

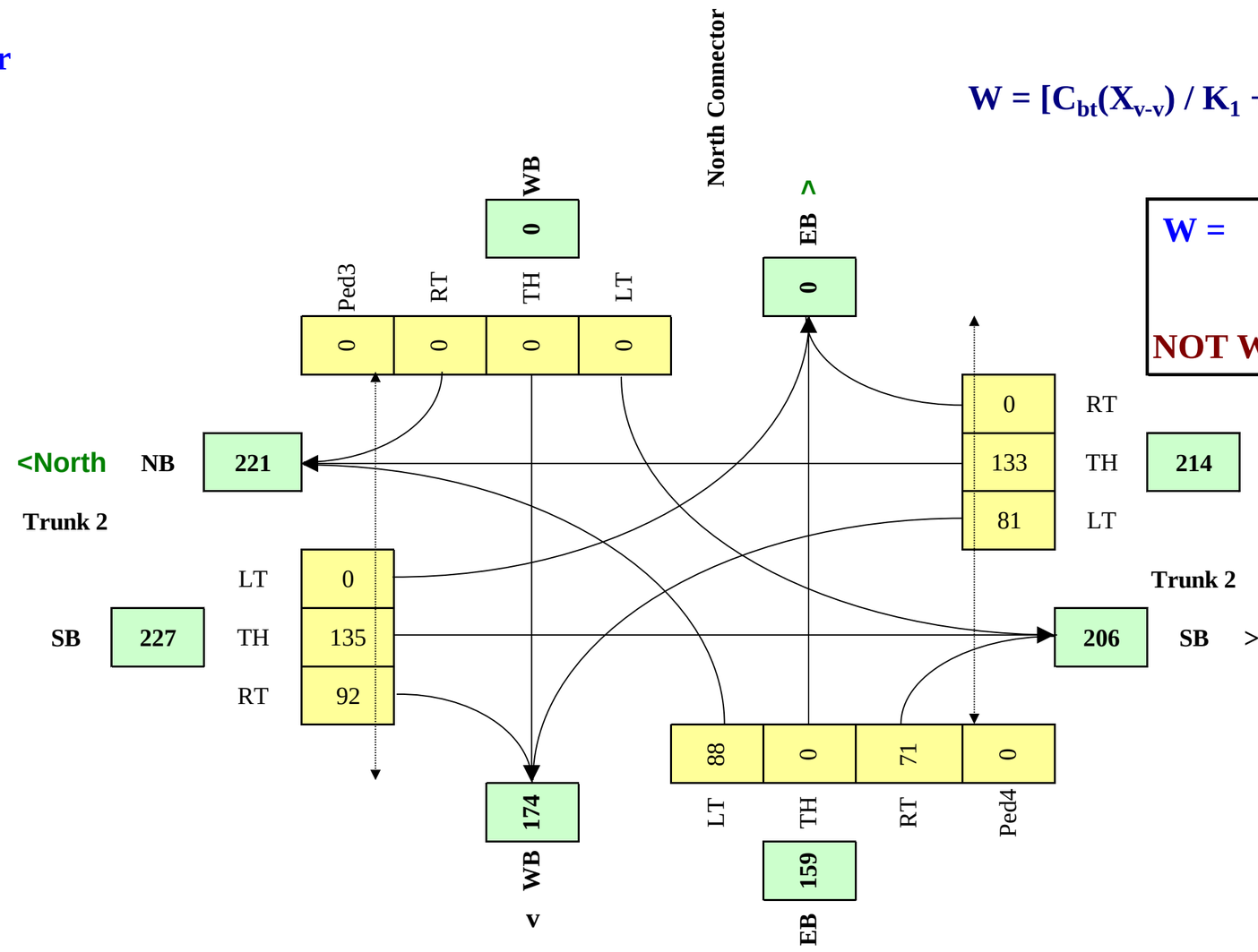
Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
North Connector	EW		5.0%	n	

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
	NS			**NS**			**EW**			**EW**			**NS**	**NS**	**EW**	**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	75	84			180	126				52		77				
8:00 - 9:00	63	104			105	72				68		56				
11:00 - 12:00	54	88			89	61				58		47				
12:00 - 13:00	78	128			130	89				84		69				
16:00 - 17:00	102	167			170	116				110		90				
17:00 - 18:00	115	227			136	90				153		90				
Total (6-hour peak)	**487**	**797**	**0**	**0**	**810**	**554**	**0**	**0**	**0**	**526**	**0**	**428**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**81**	**133**	**0**	**0**	**135**	**92**	**0**	**0**	**0**	**88**	**0**	**71**	**0**	**0**	**0**	**0**

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 =	33	33	0
		Veh	*Ped*

NOT Warranted

2033 S3 Signal Warrant - Trunk 2 & North Connector

Main Street (name)	**Trunk 2**	**Direction (EW or NS)**	**NS**	**Date:**	**Aug 28, 2013**
Side Street (name)	**North Connector**	**Direction (EW or NS)**	**EW**	**City:**	**Lantz, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Trunk 2	NB			1			2,475	1	
Trunk 2	SB			1				1	
North Connector	WB								
North Connector	EB			1					

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Trunk 2	NS	60	3.0%	n	
North Connector	EW		5.0%	n	

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
													NS	**NS**	**EW**	**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	133	89			220	270				98		103				
8:00 - 9:00	98	118			123	151				138		87				
11:00 - 12:00	83	100			104	127				117		73				
12:00 - 13:00	121	146			151	185				170		107				
16:00 - 17:00	159	191			199	243				223		140				
17:00 - 18:00	162	266			149	182				316		157				
Total (6-hour peak)	**756**	**910**	**0**	**0**	**946**	**1,159**	**0**	**0**	**0**	**1,062**	**0**	**667**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**126**	**152**	**0**	**0**	**158**	**193**	**0**	**0**	**0**	**177**	**0**	**111**	**0**	**0**	**0**	**0**

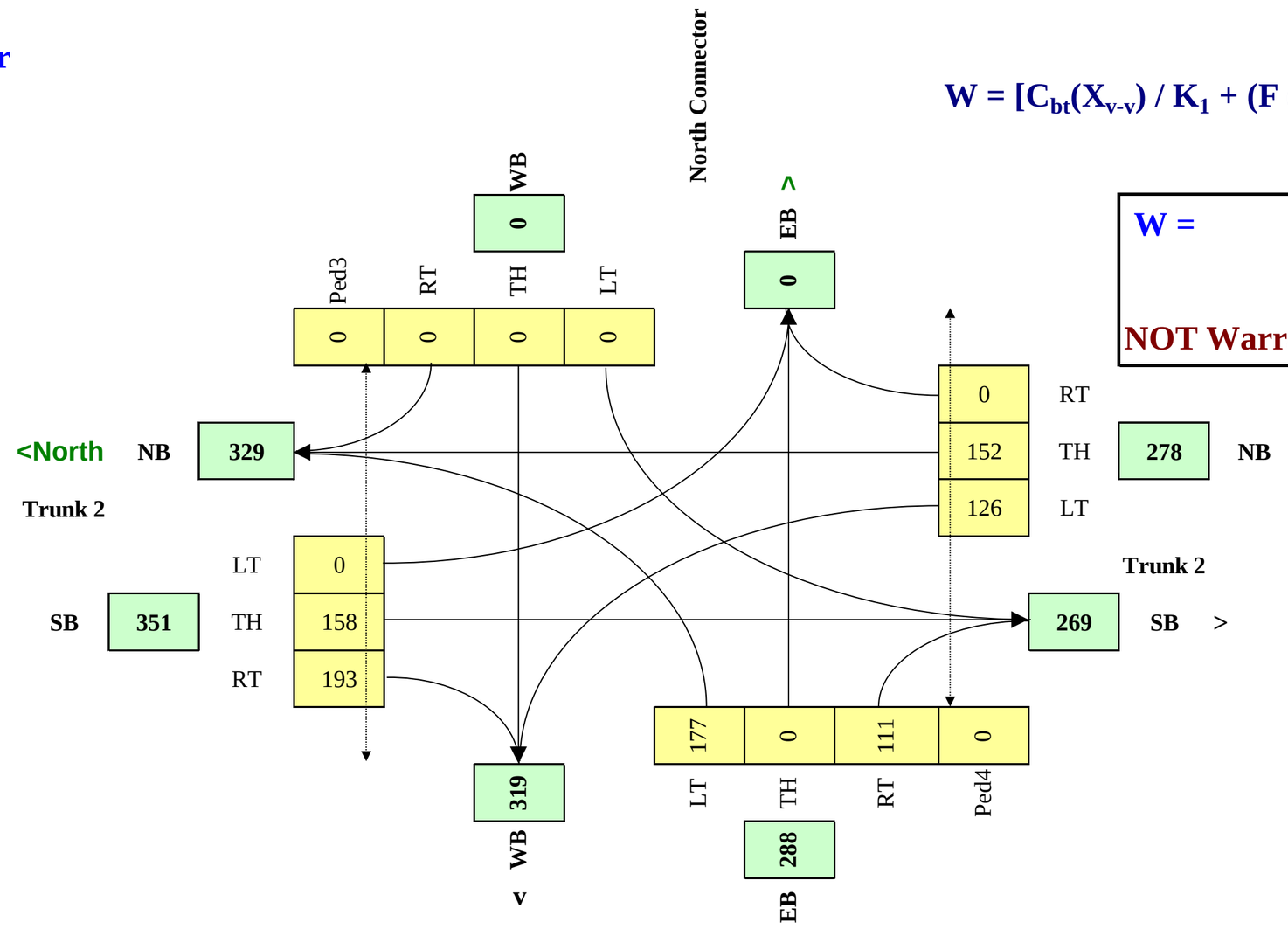
Average 6-hour Peak Turning Movements

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

W = **82** **82** **0**

Veh ***Ped***

NOT Warranted



2023 S3 Signal Warrant - North Connector Rd & Hwy 102 NB Ramps

Main Street (name)	**North Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 NB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
North Lantz Connector	WB				1			1	
North Lantz Connector	EB		1					1	
Hwy 102 NB Ramps	NB			1					
Hwy 102 NB Ramps	SB								

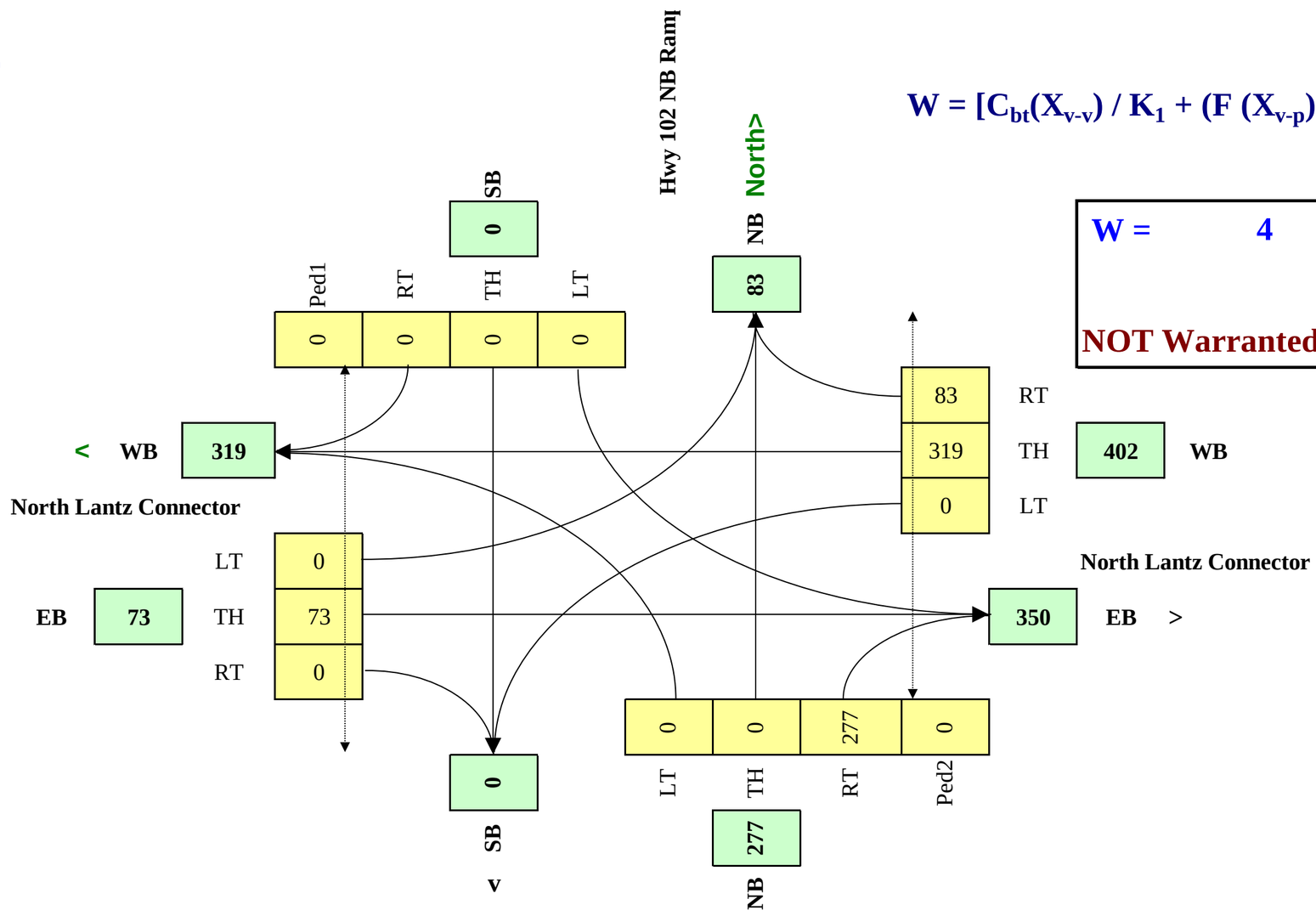
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
North Lantz Connector	EW	70	3.0%	n	
Hwy 102 NB Ramps	NS		3.0%	n	

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			151	0		0	0	388	87		55	0				
8:00 - 9:00			216	0		0	0	248	65		57	0				
11:00 - 12:00			249	0		0	0	287	75		66	0				
12:00 - 13:00			266	0		0	0	306	80		70	0				
16:00 - 17:00			430	0		0	0	281	88		99	0				
17:00 - 18:00			349	0		0	0	401	105		92	0				
Total (6-hour peak)	**0**	**0**	**1,660**	**0**	**0**	**0**	**0**	**1,911**	**500**	**0**	**440**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**277**	**0**	**0**	**0**	**0**	**319**	**83**	**0**	**73**	**0**	**0**	**0**	**0**	**0**

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 = 4 4 0

Veh Ped

NOT Warranted

2033 S3 Signal Warrant - North Connector Rd & Hwy 102 NB Ramps

Main Street (name)	**North Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 NB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
North Lantz Connector	WB				1			1	
North Lantz Connector	EB		1					1	
Hwy 102 NB Ramps	NB			1					
Hwy 102 NB Ramps	SB								

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
North Lantz Connector	EW	70	3.0%	n	
Hwy 102 NB Ramps	NS		3.0%	n	

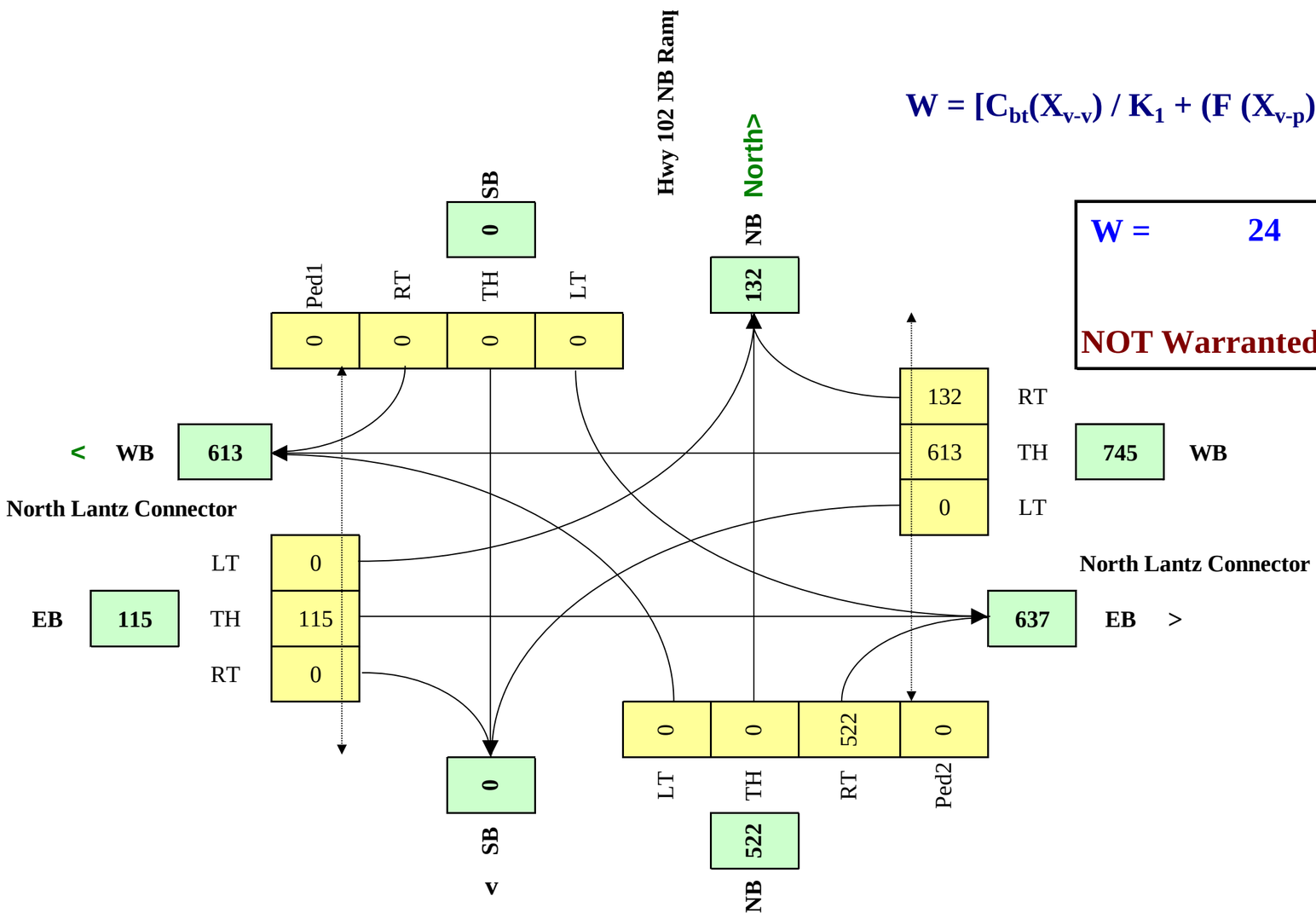
Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1**	**Ped2**	**Ped3**	**Ped4**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**NS**	**NS**	**EW**	**EW**
													W Side	**E Side**	**N Side**	**S side**
7:00 - 8:00			268	0		0	0	779	147		78	0				
8:00 - 9:00			407	0		0	0	478	103		90	0				
11:00 - 12:00			470	0		0	0	552	119		103	0				
12:00 - 13:00			501	0		0	0	589	127		110	0				
16:00 - 17:00			829	0		0	0	509	130		163	0				
17:00 - 18:00			658	0		0	0	773	166		145	0				
Total (6-hour peak)	**0**	**0**	**3,134**	**0**	**0**	**0**	**0**	**3,680**	**791**	**0**	**689**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**522**	**0**	**0**	**0**	**0**	**613**	**132**	**0**	**115**	**0**	**0**	**0**	**0**	**0**

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 =	24	24	0
		Veh	*Ped*

NOT Warranted



2023 S3 Signal Warrant - North Connector Rd & Hwy 102 SB Ramps

Main Street (name)	**North Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
North Lantz Connector	WB		1					1	
North Lantz Connector	EB							0	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB		1						

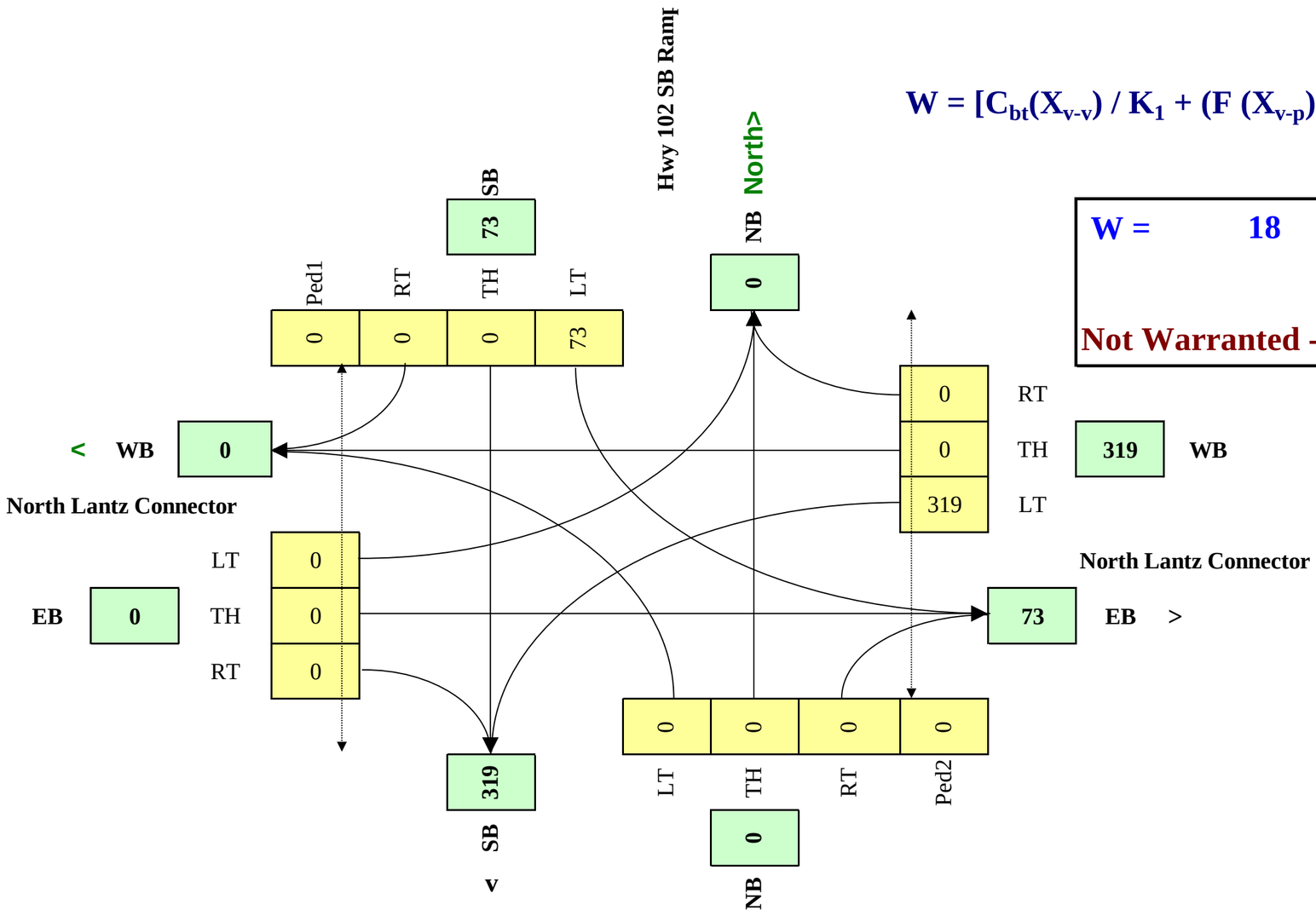
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
North Lantz Connector	EW	70	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				55		0	388	0			0	0				
8:00 - 9:00				57		0	248	0			0	0				
11:00 - 12:00				66		0	287	0			0	0				
12:00 - 13:00				70		0	306	0			0	0				
16:00 - 17:00				99		0	281	0			0	0				
17:00 - 18:00				92		0	401	0			0	0				
Total (6-hour peak)	**0**	**0**	**0**	**440**	**0**	**0**	**1,911**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**73**	**0**	**0**	**319**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 (Veh) 18 (Ped) 0

Not Warranted - Vs<75

2033 S3 Signal Warrant - North Connector Rd & Hwy 102 SB Ramps

Main Street (name)	**North Lantz Connector**	**Direction (EW or NS)**	**EW**	**Date:**	**Aug 28, 2013**
Side Street (name)	**Hwy 102 SB Ramps**	**Direction (EW or NS)**	**NS**	**City:**	**Elmsdale, NS**
Quadrant (if appl)					

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
North Lantz Connector	WB		1					1	
North Lantz Connector	EB							0	
Hwy 102 SB Ramps	NB								
Hwy 102 SB Ramps	SB		1						

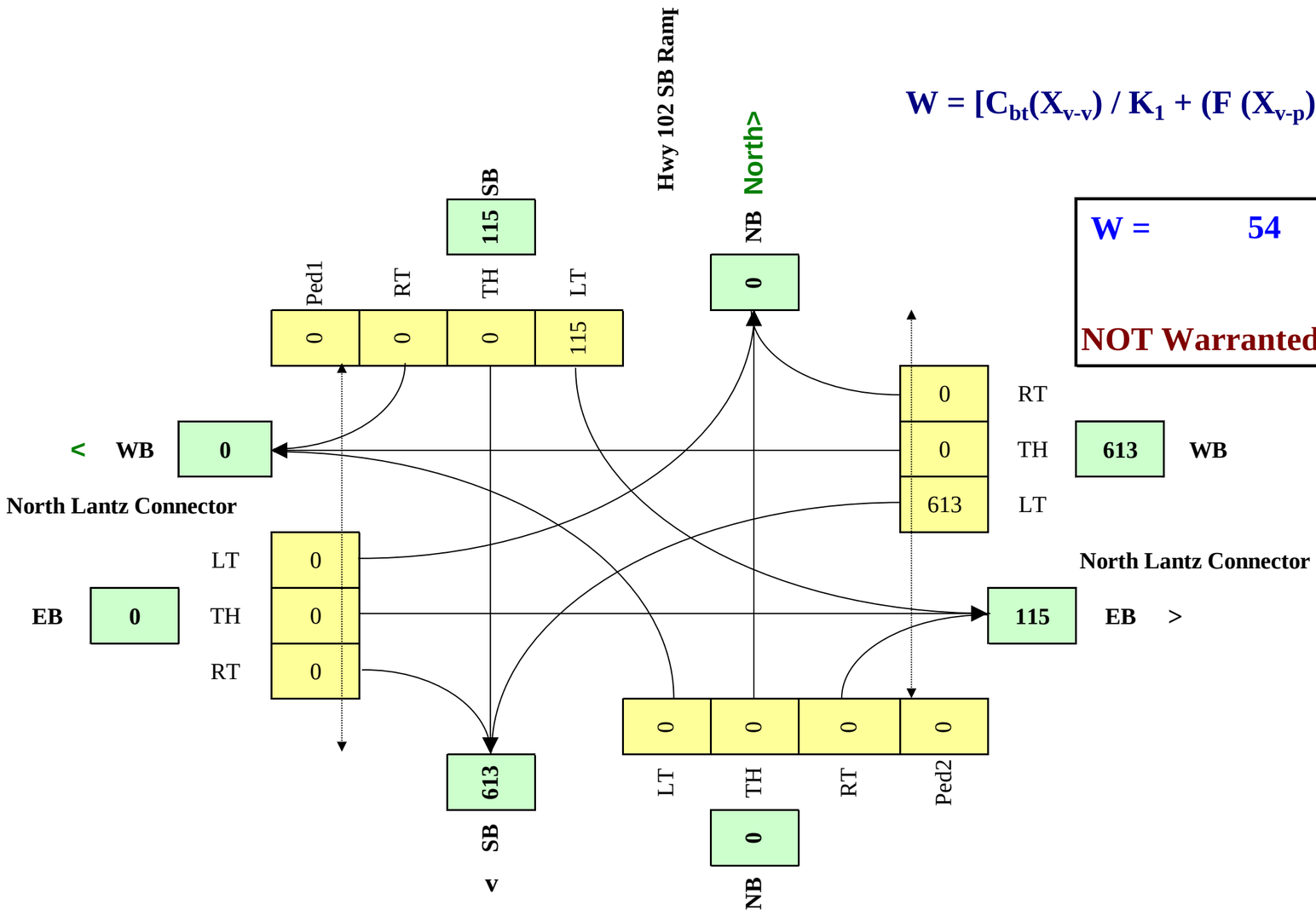
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	25000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
North Lantz Connector	EW	70	3.0%	n	
Hwy 102 SB Ramps	NS		3.0%	n	

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				78		0	779	0			0	0				
8:00 - 9:00				90		0	478	0			0	0				
11:00 - 12:00				103		0	552	0			0	0				
12:00 - 13:00				110		0	589	0			0	0				
16:00 - 17:00				163		0	509	0			0	0				
17:00 - 18:00				145		0	773	0			0	0				
Total (6-hour peak)	**0**	**0**	**0**	**689**	**0**	**0**	**3,680**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Average (6-hour peak)	**0**	**0**	**0**	**115**	**0**	**0**	**613**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 = 54 (Veh) 54 (Ped) 0

NOT Warranted

APPENDIX D

Results of ARCADY Roundabout Analyses

Summary									
Scenario	Year	Intersection	Peak	ID (s)	ILOS	IRC (%)	Configuration	Staging Potential	Page
South Lantz Interchange	2033	Trunk 2 / Route 277	AM	≤ 10	A	28 - 43	Partial Multilane	High	2 - 3
			PM	≤ 10	A	9 - 23			
		Trunk 2 / Shaw Brick	AM	≤ 10	A	> 35	Partial Multilane with SB RTBP	High	4 - 5
			PM	≤ 10	A	21 - 35			
		Hwy 102 / Elmsdale	AM	≤ 10	A	> 35	Partial Multilane	Moderate	6 - 7
			PM	≤ 10	A	11 - 24			
	2023	Trunk 2 / Route 277	AM	≤ 10	A	> 35	Single-lane	High	8 - 9
			PM	8 - 12	A - B	13 - 27			
		Trunk 2 / Shaw Brick	AM	≤ 10	A	23 - 38	Single-lane	High	10 - 11
			PM	≤ 10	A	> 35			
		Hwy 102 / Elmsdale	AM	≤ 10	A	> 35	Partial Multilane	Moderate	12 - 13
			PM	≤ 10	A	> 35			
North Lantz Interchange	2033	Hwy 102 / Elmsdale	AM	≤ 10	A	> 35	Partial Multilane	Moderate	14 - 15
			PM	7 - 11	A - B	3 - 15			
	2023	Hwy 102 / Elmsdale	AM	≤ 10	A	> 35	Partial Multilane	Moderate	16 - 17
			PM	≤ 10	A	25 - 40			
Existing	2013	Hwy 102 / Elmsdale	AM	≤ 10	A	> 35	Single-lane	Moderate	18-19
			PM	8 - 12	A - B	20 - 35			

Analysis Notes and Assumptions	
1	The ARCADY output shown above is an aggregate output for each entry. It assumes that entering traffic is distributed evenly across the available lanes regardless of actual demand and lane configuration. If there are exclusive left-turn or right-turn lanes then actual delays and queues may be higher and capacity will need to be evaluated on a lane-by-lane basis.
2	Values shown are the maximum values over all 15-minute time segments. Delay is the maximum value of average delay per arriving vehicle over all 15-minute time segments.
3	Queue lengths are 95th percentile values and are based on an average vehicle length of 7 metres.
4	Residual Capacity is defined as the percent traffic growth required to achieve Level-of-service (LOS) E as defined in Exhibit 17-2 of the Highway Capacity Manual (2010).
5	ARCADY was run with a y-intercept adjustment for each leg as a design check.
6	A Peak Hour Factor (PHF) of 0.89 was assumed, along with 2% truck volume.
7	All queue lengths incorporate storage effects of flared entry storage, assuming equal lane utilization.
8	All geometric parameters measured to face-of-curb, or, if no curb present, to edge-of-pavement

Abbreviations & Definitions	
V	Approach road half width
E	Effective entry width
l'	Effective flare length
R	Entry radius
D	Inscribed circle diameter (ICD)
Phi	Entry angle
RTBP	Right-turn bypass
y-int	y-intercept (of capacity model)
Q95	95th percentile queue length
D	Delay
V/C	Volume-to-capacity ratio
LOS	Level of Service
ID	Intersection delay (weighted by approach volume)
ILOS	Intersection Level of Service (weighted by approach volume)
IRC	Intersection residual capacity (% increase in network traffic volume until first leg reaches LOS 'E')

Analyst: CBR
Reviewed by: PAW

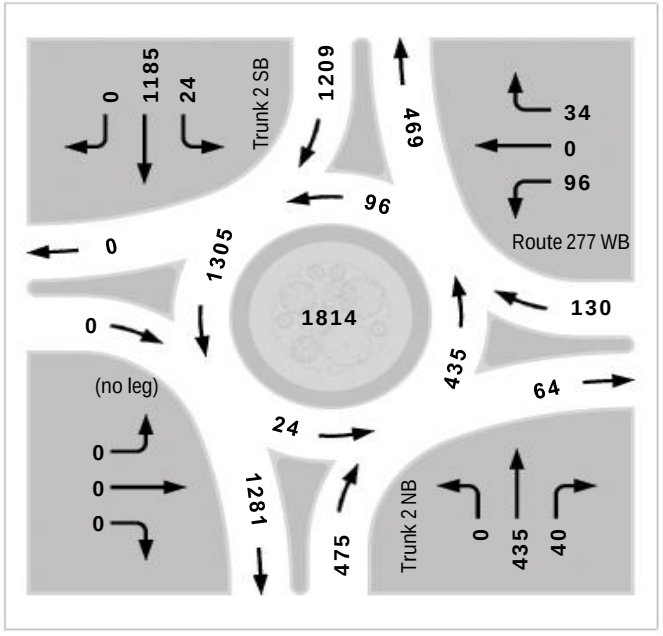
2033 Horizon Year
Trunk 2 / Route 277

Roundabout Geometry

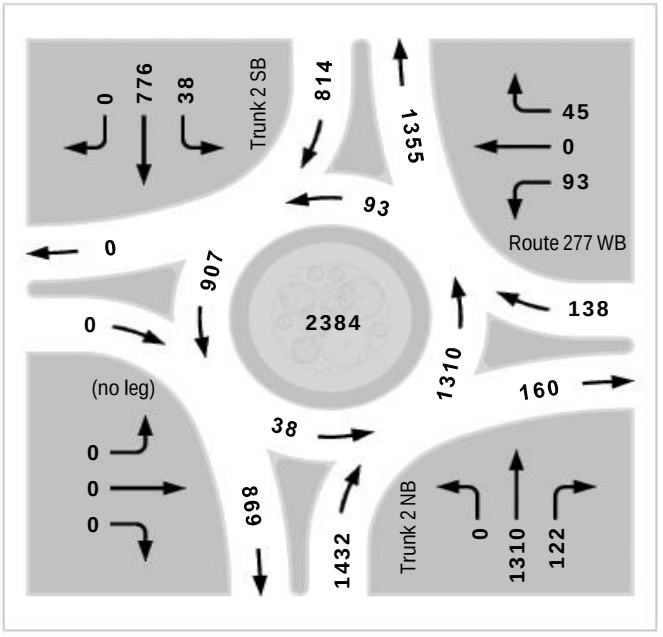
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
Trunk 2 SB	1	4.25	8.00	25	20	20	40	20	-	-	-	90
(no leg)	-	-	-	-	-	-	-	-	-	-	-	-
Trunk 2 NB	1	4.25	8.00	30	20	25	40	18	-	-	-	90
Route 277 WB	1	4.25	4.25	0	0	25	40	18	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	Trunk 2 SB	<25	5	0.66	A	<5	A	43% [SB]	<25	3	0.45	A	6	A	23% [WB]
	(no leg)	-	-	-	-				-	-	-	-			
	Trunk 2 NB	<25	2	0.24	A				28	6	0.74	A			
	Route 277 WB	<25	4	0.14	A				<25	11	0.32	B			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	Trunk 2 SB	28	8	0.74	A	6	A	28% [SB]	<25	4	0.50	A	9	A	9% [WB]
	(no leg)	-	-	-	-				-	-	-	-			
	Trunk 2 NB	<25	3	0.27	A				91	11	0.82	B			
	Route 277 WB	<25	5	0.16	A				<25	18	0.44	C			

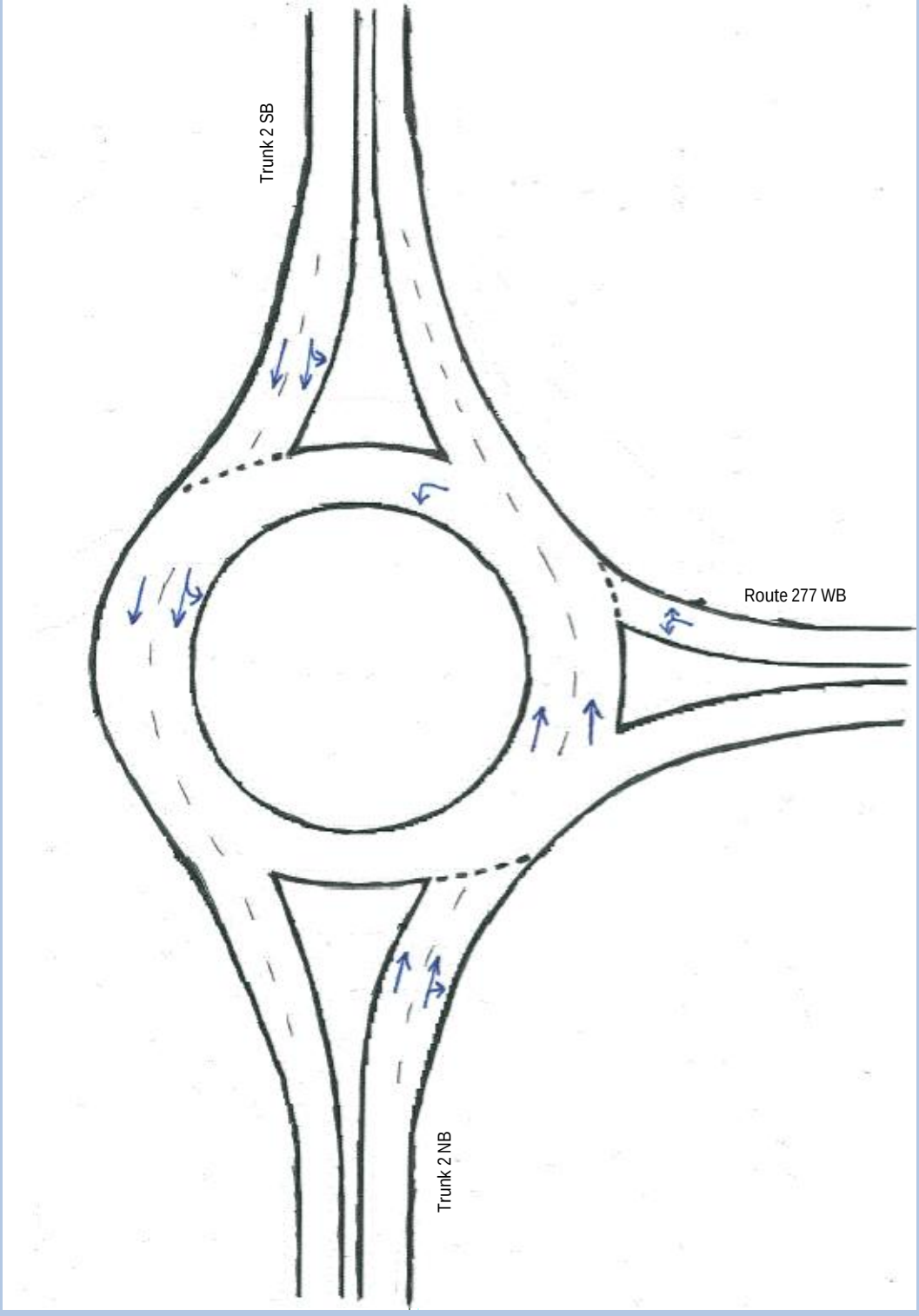
Comments

Low queues and delays predicted.

2033 Horizon Year

Trunk 2 / Route 277

Lane Configuration Sketch



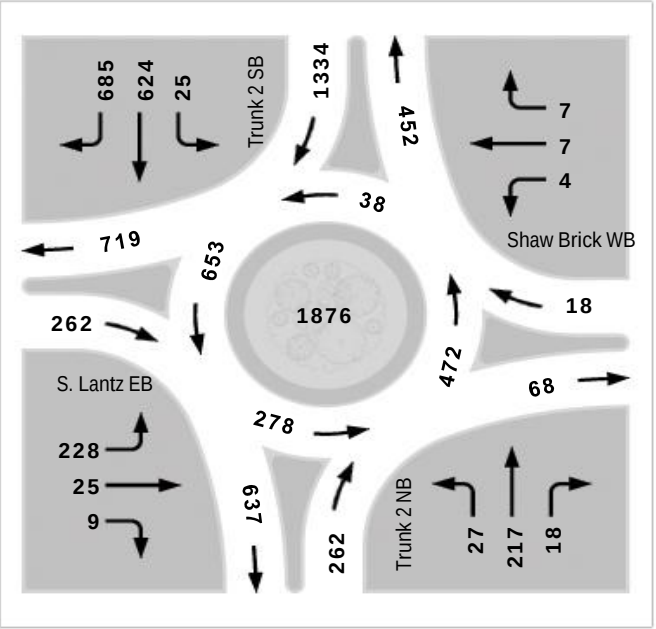
2033 Horizon Year
Trunk 2 / Shaw Brick

Roundabout Geometry

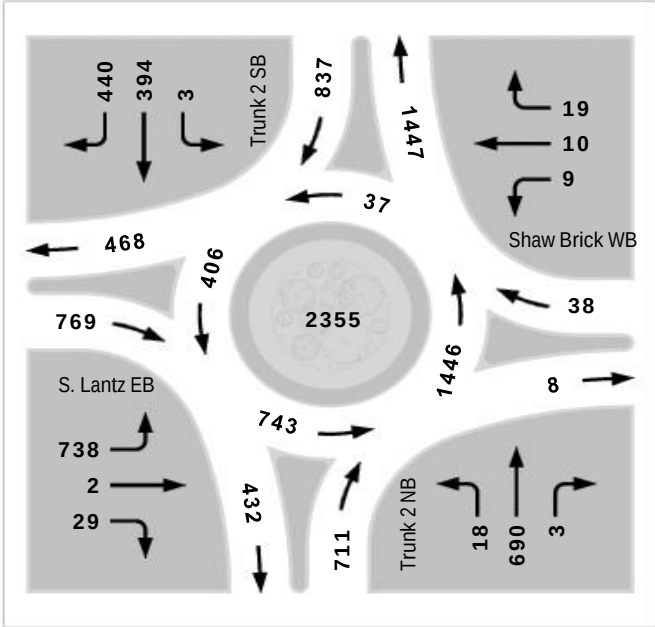
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
Trunk 2 SB	1	4.25	4.25	0	0	20	50	20	-	-	T	90
S. Lantz EB	1	4.25	8.00	10	0	20	50	20	-	-	-	90
Trunk 2 NB	1	4.25	8.00	10	0	20	56	20	-	-	-	90
Shaw Brick WB	1	4.25	4.25	0	0	20	56	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	Trunk 2 SB	<25	6	0.56	A	5	A	65% [SB]	<25	4	0.34	A	5	A	35% [NB]
	S. Lantz EB	<25	3	0.21	A				<25	5	0.55	A			
	Trunk 2 NB	<25	3	0.18	A				<25	7	0.59	A			
	Shaw Brick WB	<25	4	0.02	A				<25	8	0.09	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	Trunk 2 SB	<25	8	0.62	A	7	A	47% [SB]	<25	5	0.38	A	7	A	21% [NB]
	S. Lantz EB	<25	4	0.24	A				<25	7	0.62	A			
	Trunk 2 NB	<25	3	0.20	A				<25	10	0.69	B			
	Shaw Brick WB	<25	4	0.02	A				<25	12	0.12	B			

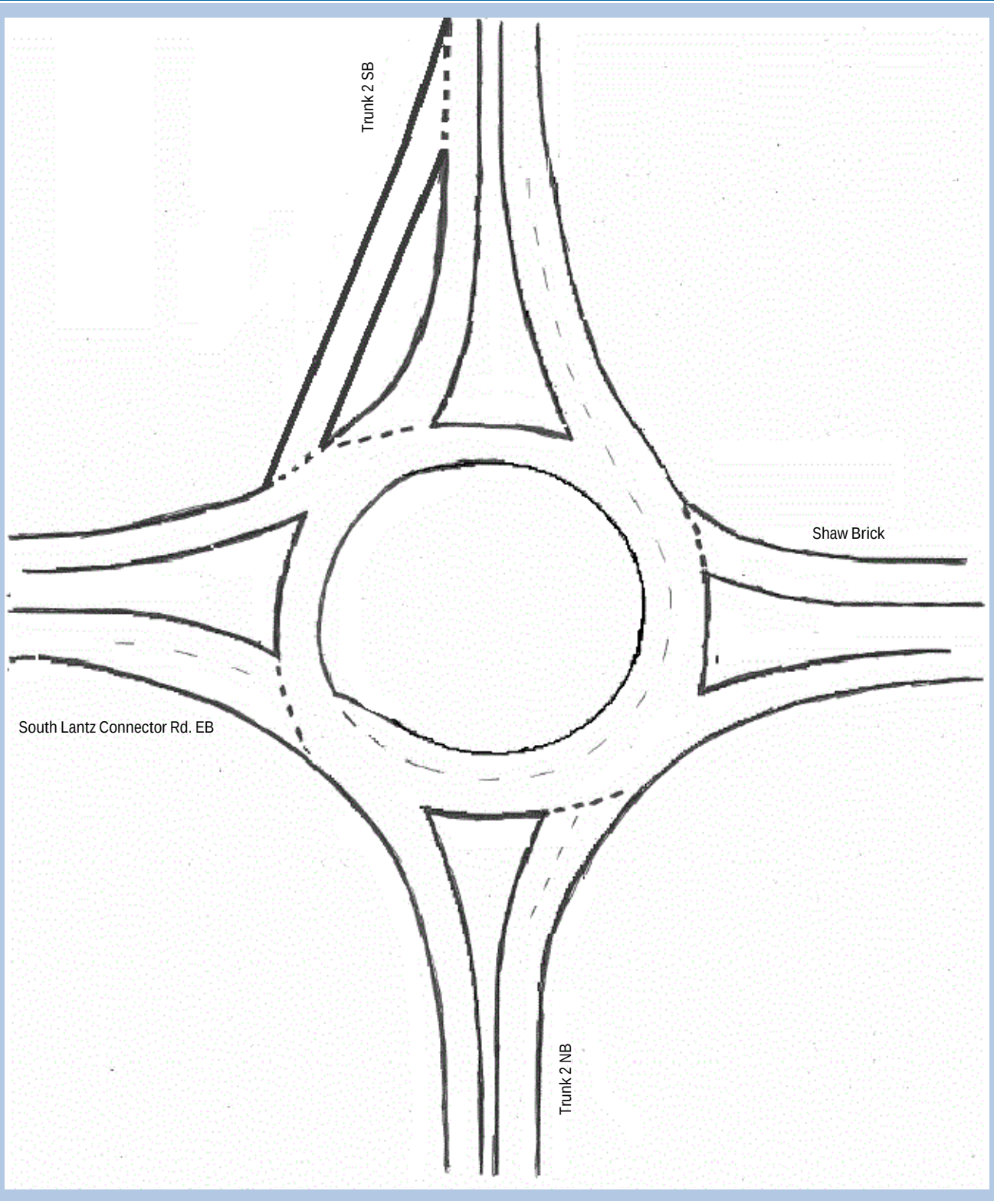
Comments

Low queues and delays predicted.

2033 Horizon Year

Trunk 2 / Shaw Brick

Lane Configuration Sketch



2033 Horizon Year

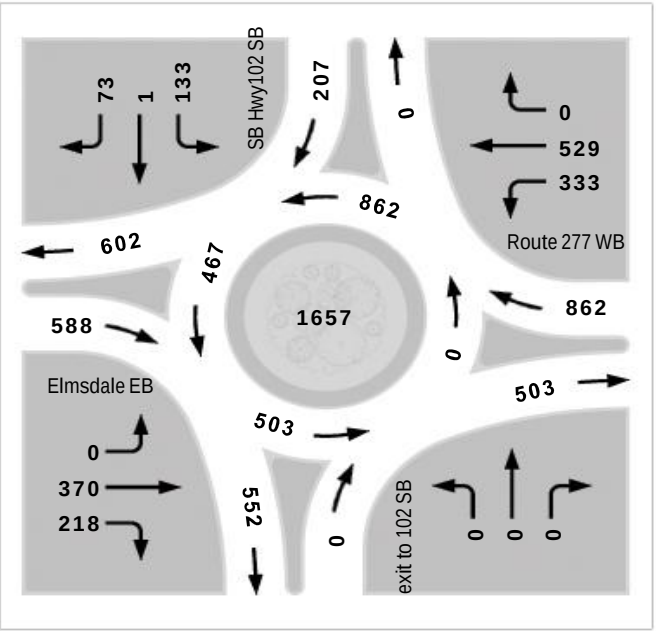
Highway 102 SB Ramp Terminals / Elmsdale Road

Roundabout Geometry

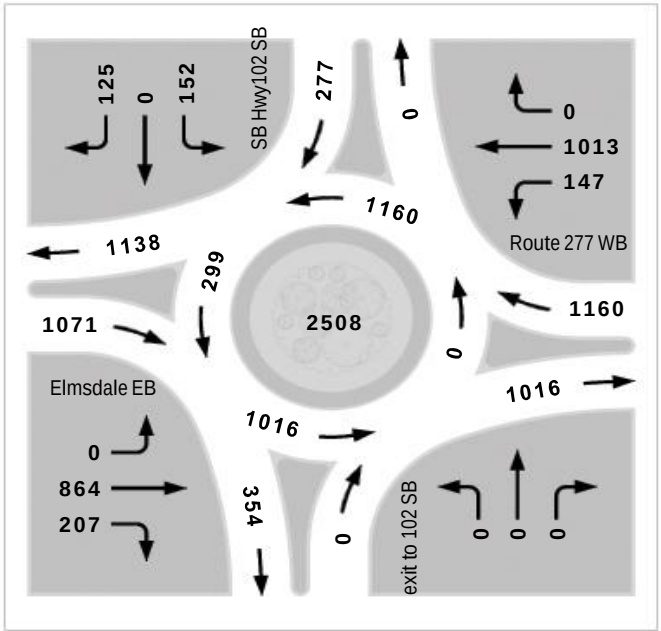
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
SB Hwy102 SE	1	4.25	4.25	0	0	20	56	20	-	-	-	90
Elmsdale EB	1	4.25	8.00	20	10	20	50	20	-	-	-	90
exit to 102 SB	-	-	-	-	-	-	-	-	T	-	-	-
Route 277 WB	1	4.25	8.00	20	10	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	SB Hwy102 SE	<25	6	0.28	A	<5	A	67% [SB]	<25	11	0.48	B	6	A	24% [SB]
	Elmsdale EB	<25	4	0.39	A				<25	6	0.66	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	3	0.47	A				<25	5	0.63	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	SB Hwy102 SE	<25	8	0.34	A	<5	A	49% [SB]	<25	18	0.60	C	9	A	11% [SB]
	Elmsdale EB	<25	4	0.44	A				28	9	0.74	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	4	0.52	A				28	7	0.70	A			

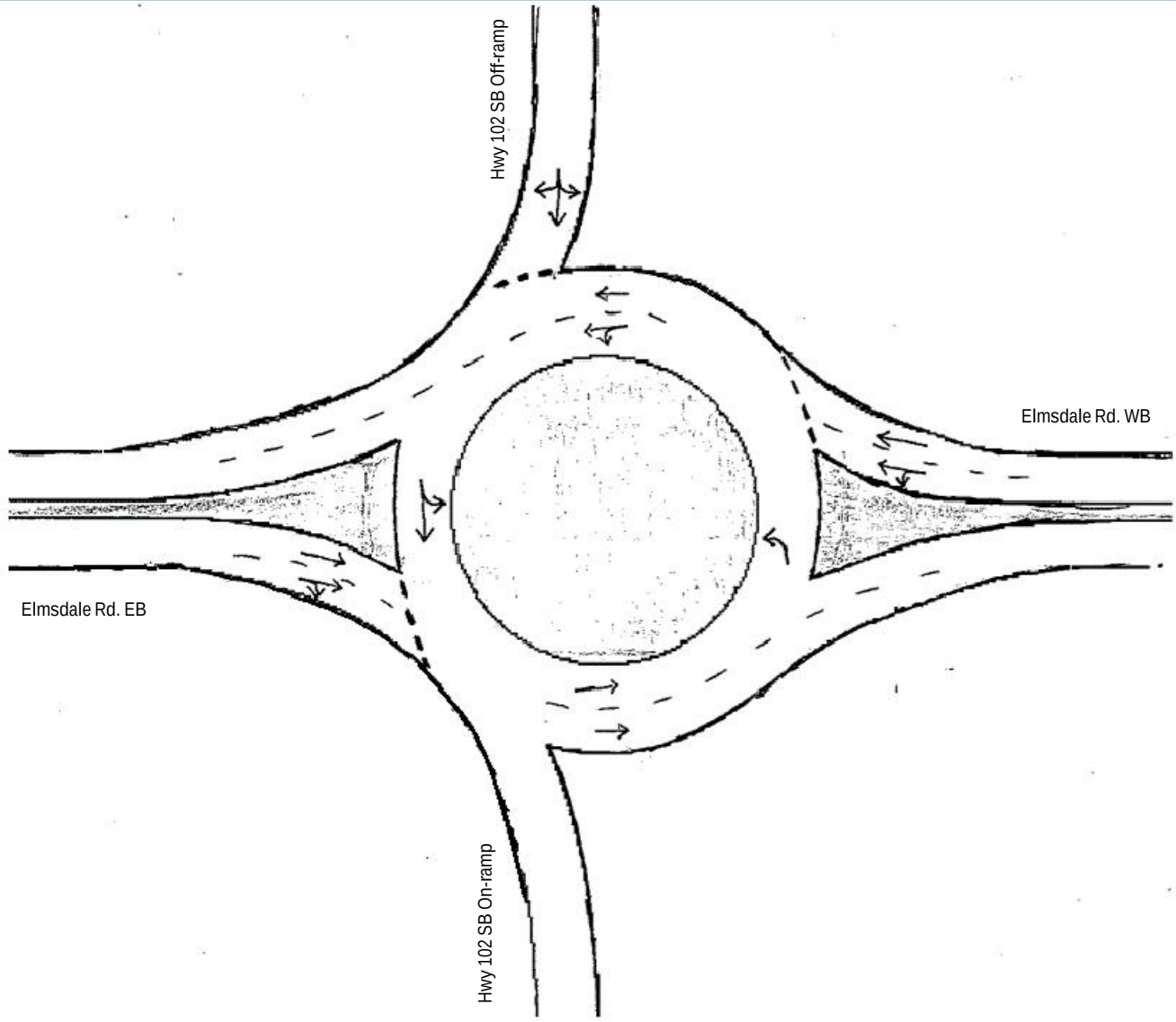
Comments

Low queues and delays predicted.

2033 Horizon Year

Highway 102 SB Ramp Terminals / Elmsdale Road

Lane Configuration Sketch



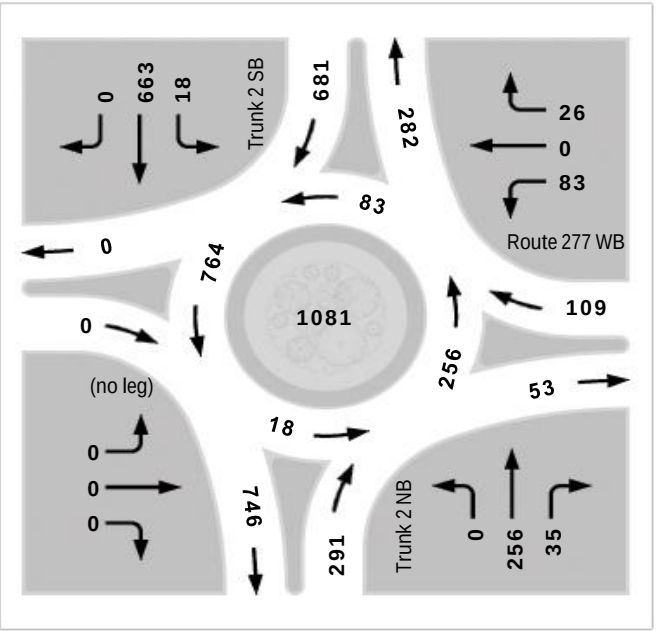
2023 Horizon Year
Trunk 2 / Route 277

Roundabout Geometry

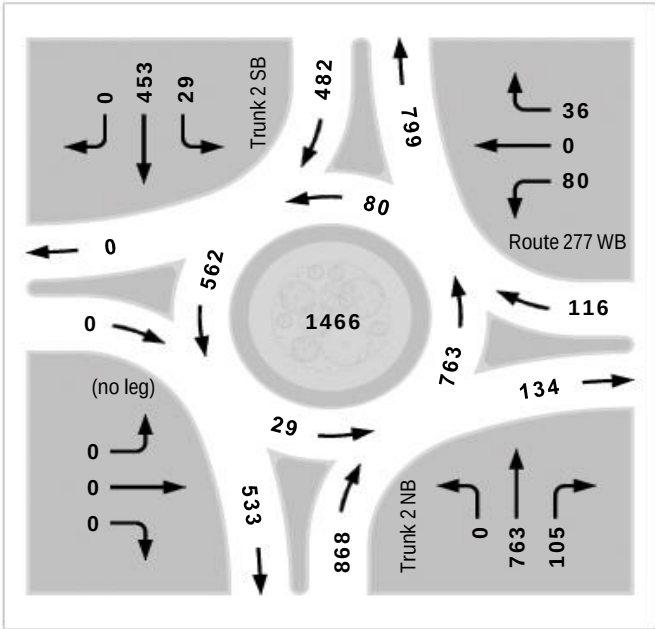
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
Trunk 2 SB	1	4.25	4.25	0	0	20	40	20	-	-	-	90
(no leg)	-	-	-	-	-	-	-	-	-	-	-	-
Trunk 2 NB	1	4.25	4.25	0	0	25	40	18	-	-	-	90
Route 277 WB	1	4.25	4.25	0	0	25	40	18	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	Trunk 2 SB	<25	7	0.60	A	6	A	52% [SB]	<25	5	0.42	A	8	A	27% [NB]
	(no leg)	-	-	-	-				-	-	-	-			
	Trunk 2 NB	<25	4	0.24	A				35	10	0.73	B			
	Route 277 WB	<25	3	0.10	A				<25	5	0.15	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	Trunk 2 SB	<25	10	0.67	A	8	A	35% [SB]	35	6	0.47	A	12	B	13% [NB]
	(no leg)	-	-	-	-				-	-	-	-			
	Trunk 2 NB	<25	4	0.27	A				91	16	0.81	C			
	Route 277 WB	<25	4	0.12	A				<25	6	0.18	A			

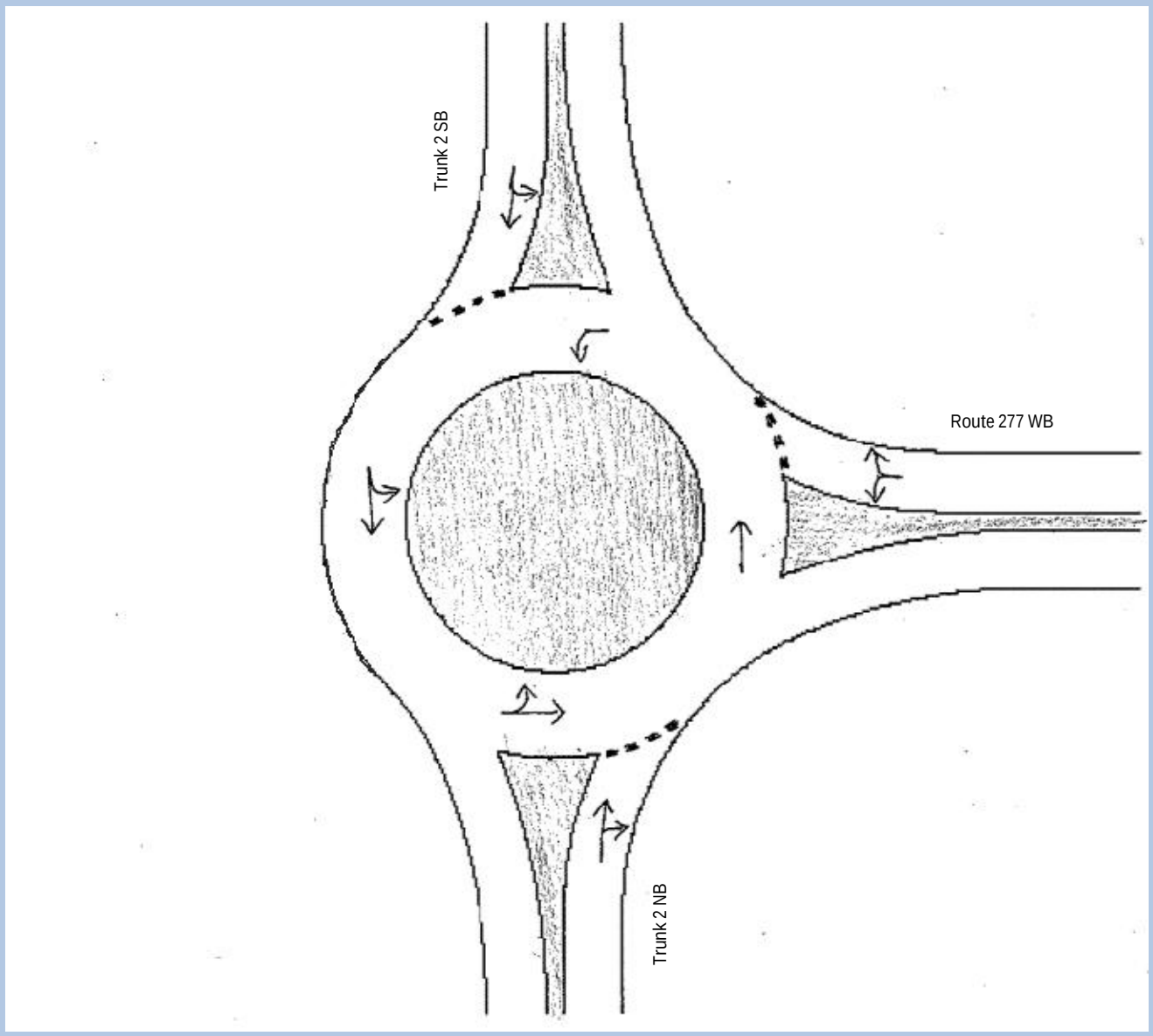
Comments

Occasional moderate queue possible nortbound during PM peak hour.

2023 Horizon Year

Trunk 2 / Route 277

Lane Configuration Sketch



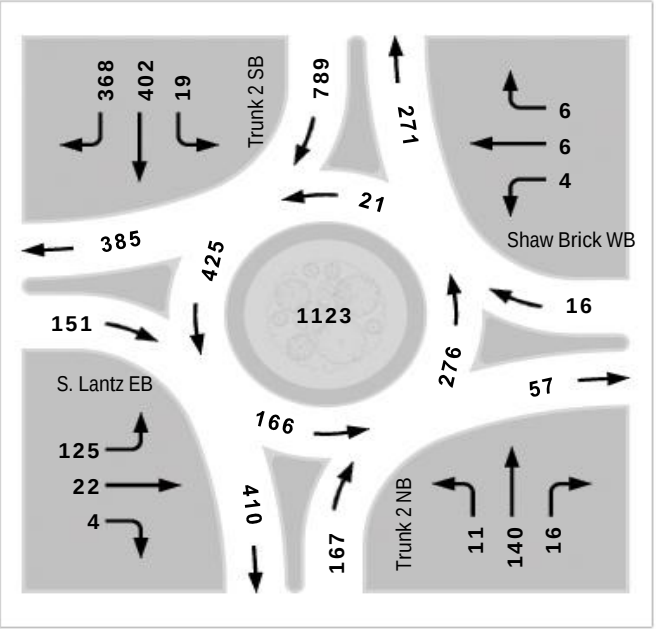
2023 Horizon Year
Trunk 2 / Shaw Brick

Roundabout Geometry

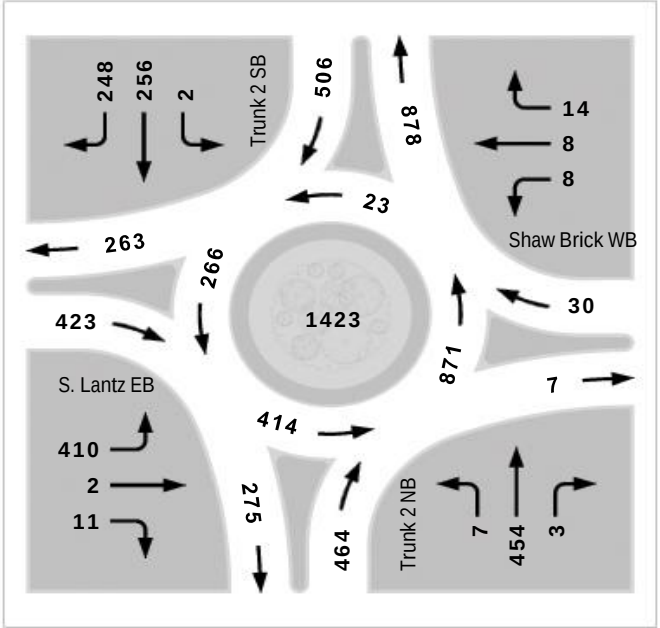
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
Trunk 2 SB	1	4.25	4.25	0	0	20	50	20	-	-	-	90
S. Lantz EB	1	4.25	4.25	0	0	20	50	20	-	-	-	90
Trunk 2 NB	1	4.25	4.25	0	0	20	50	20	-	-	-	90
Shaw Brick WB	1	4.25	4.25	0	0	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	Trunk 2 SB	<25	8	0.67	A	7	A	38% [SB]	<25	5	0.43	A	6	A	59% [NB]
	S. Lantz EB	<25	4	0.16	A				<25	5	0.41	A			
	Trunk 2 NB	<25	4	0.15	A				<25	7	0.48	A			
	Shaw Brick WB	<25	3	0.02	A				<25	5	0.04	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	Trunk 2 SB	49	12	0.75	B	10	A	23% [SB]	<25	6	0.48	A	7	A	42% [NB]
	S. Lantz EB	<25	5	0.18	A				<25	7	0.46	A			
	Trunk 2 NB	<25	4	0.17	A				<25	9	0.55	A			
	Shaw Brick WB	<25	4	0.02	A				<25	6	0.05	A			

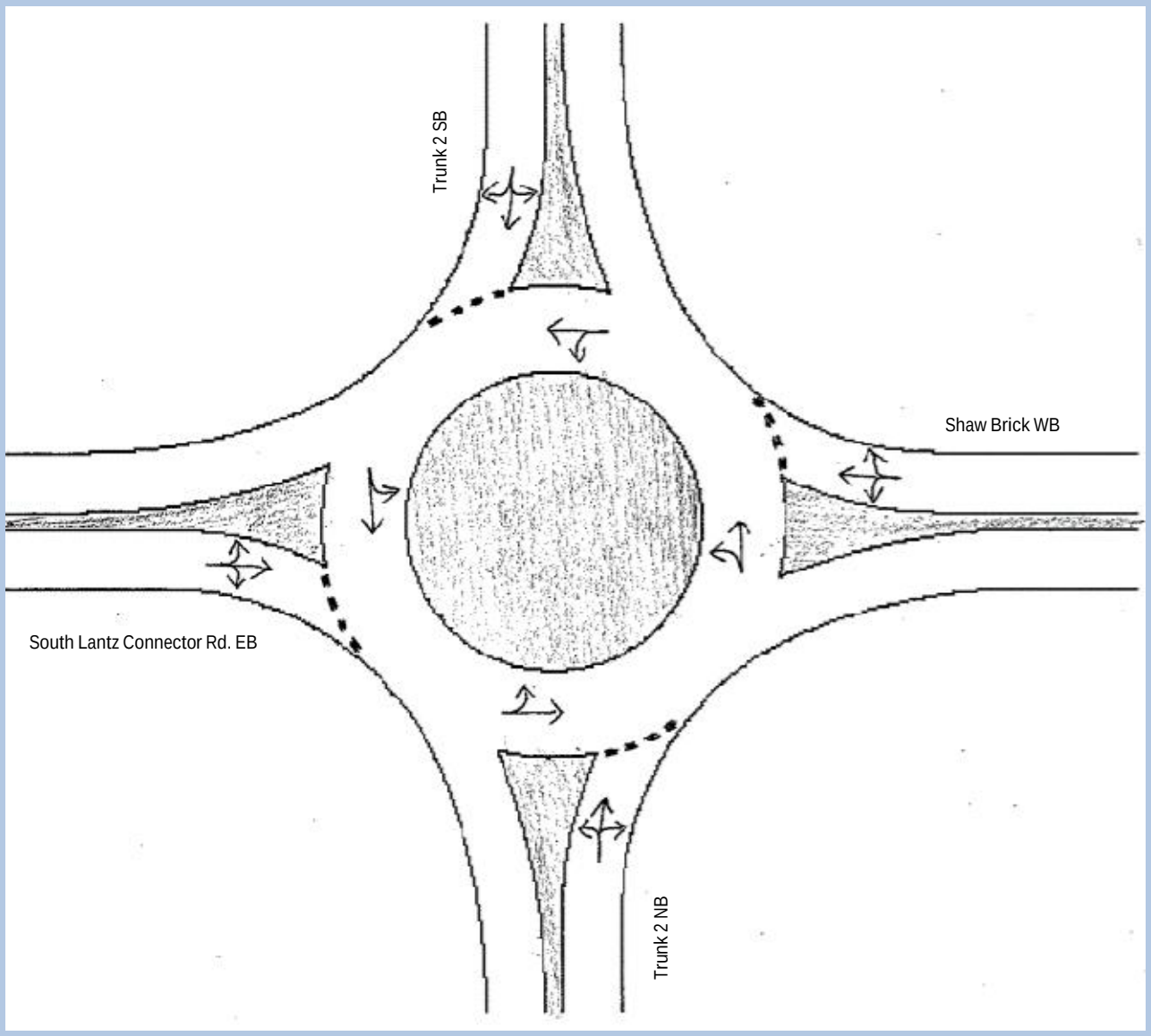
Comments

Low queues and delays predicted.

2023 Horizon Year

Trunk 2 / Shaw Brick

Lane Configuration Sketch



2023 Horizon Year

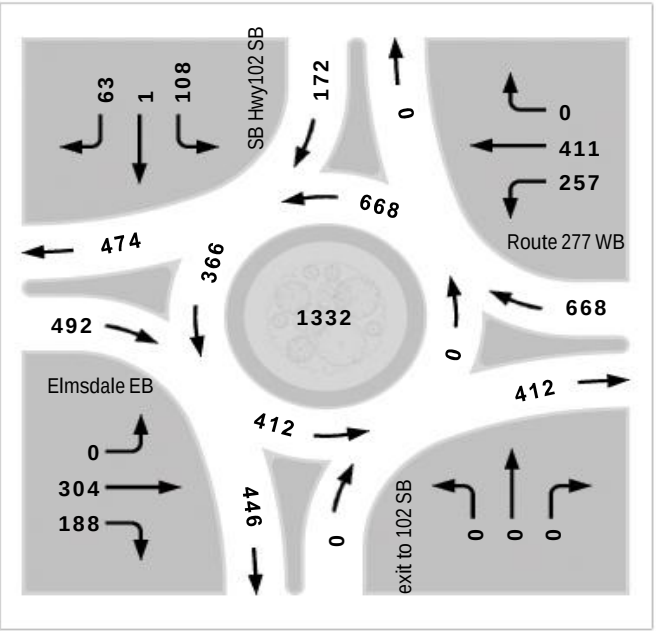
Highway 102 SB Ramp Terminals / Elmsdale Road

Roundabout Geometry

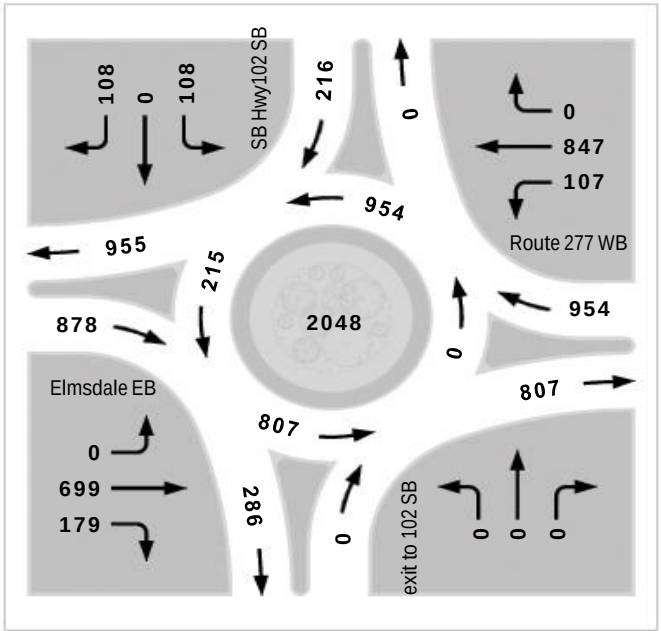
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
SB Hwy102 SE	1	4.25	4.25	0	0	20	56	20	-	-	-	90
Elmsdale EB	1	4.25	8.00	20	10	20	50	20	-	-	-	90
exit to 102 SB	-	-	-	-	-	-	-	-	T	-	-	-
Route 277 WB	1	4.25	8.00	20	10	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	SB Hwy102 SE	<25	5	0.21	A	<5	A	111% [SB]	<25	7	0.31	A	<5	A	53% [SB]
	Elmsdale EB	<25	3	0.31	A				<25	4	0.52	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	3	0.36	A				<25	4	0.52	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	SB Hwy102 SE	<25	6	0.24	A	<5	A	88% [SB]	<25	9	0.38	A	5	A	37% [SB]
	Elmsdale EB	<25	4	0.35	A				<25	5	0.58	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	3	0.40	A				<25	5	0.58	A			

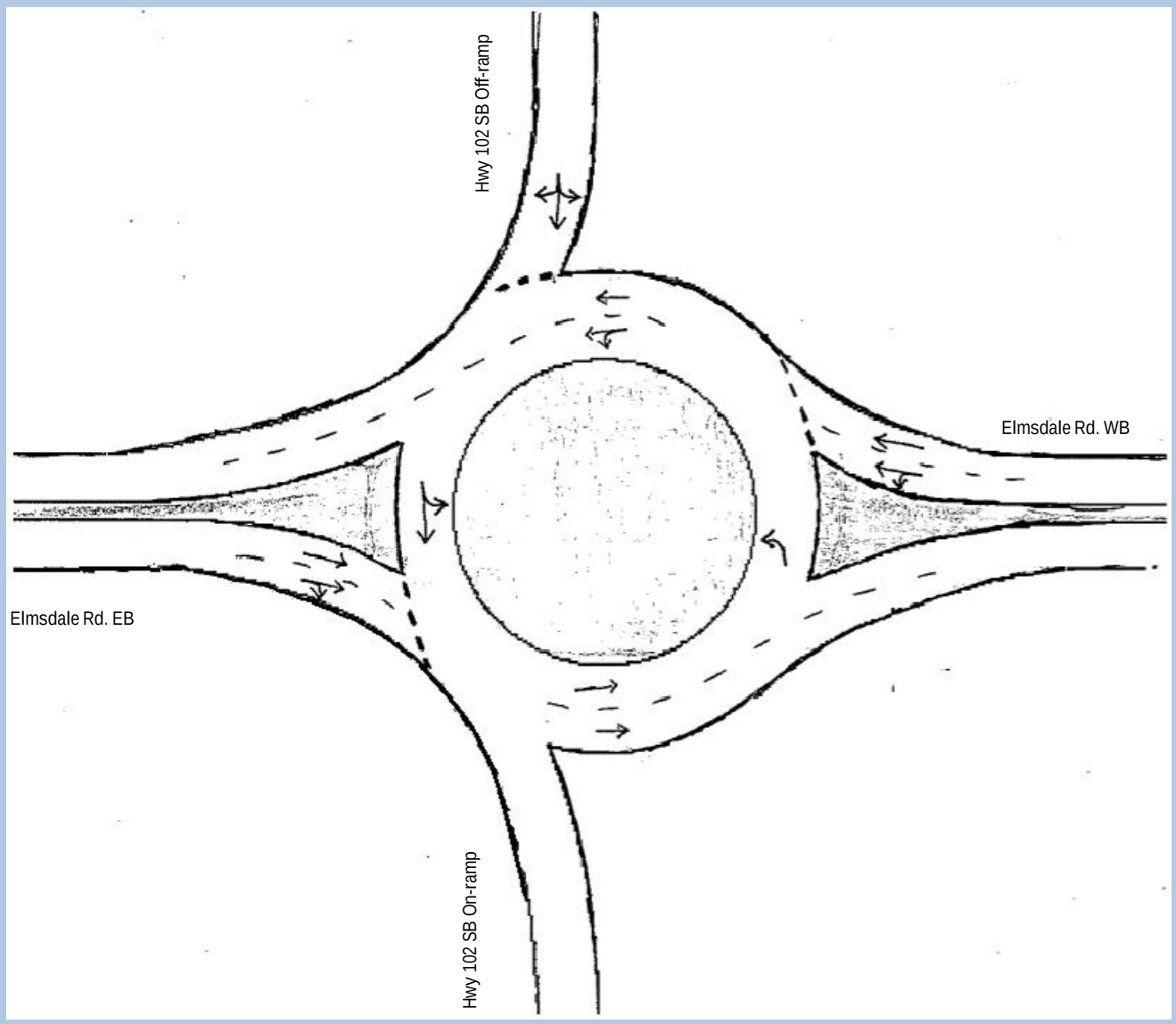
Comments

Low queues and delays predicted.

2023 Horizon Year

Highway 102 SB Ramp Terminals / Elmsdale Road

Lane Configuration Sketch



2033 Horizon Year

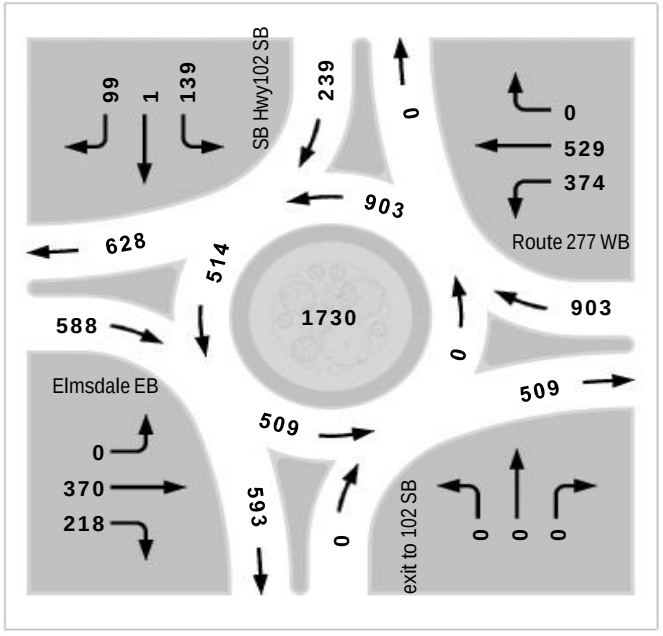
Highway 102 SB Ramp Terminals / Elmsdale Road

Roundabout Geometry

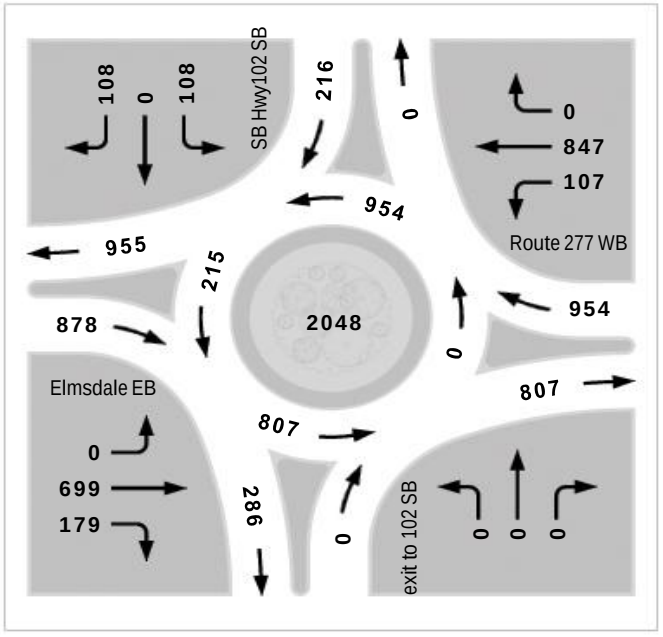
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
SB Hwy102 SE	1	4.25	4.25	0	0	20	56	20	-	-	-	90
Elmsdale EB	1	4.25	8.00	20	10	20	50	20	-	-	-	90
exit to 102 SB	-	-	-	-	-	-	-	-	T	-	-	-
Route 277 WB	1	4.25	8.00	20	10	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	SB Hwy102 SE	<25	7	0.33	A	<5	A	55% [SB]	<25	14	0.57	B	7	A	15% [SB]
	Elmsdale EB	<25	4	0.40	A				<25	6	0.68	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	3	0.49	A				<25	5	0.66	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	SB Hwy102 SE	<25	9	0.39	A	5	A	38% [SB]	56	27	0.73	D	11	B	3% [SB]
	Elmsdale EB	<25	5	0.45	A				49	10	0.77	B			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	4	0.55	A				28	7	0.73	A			

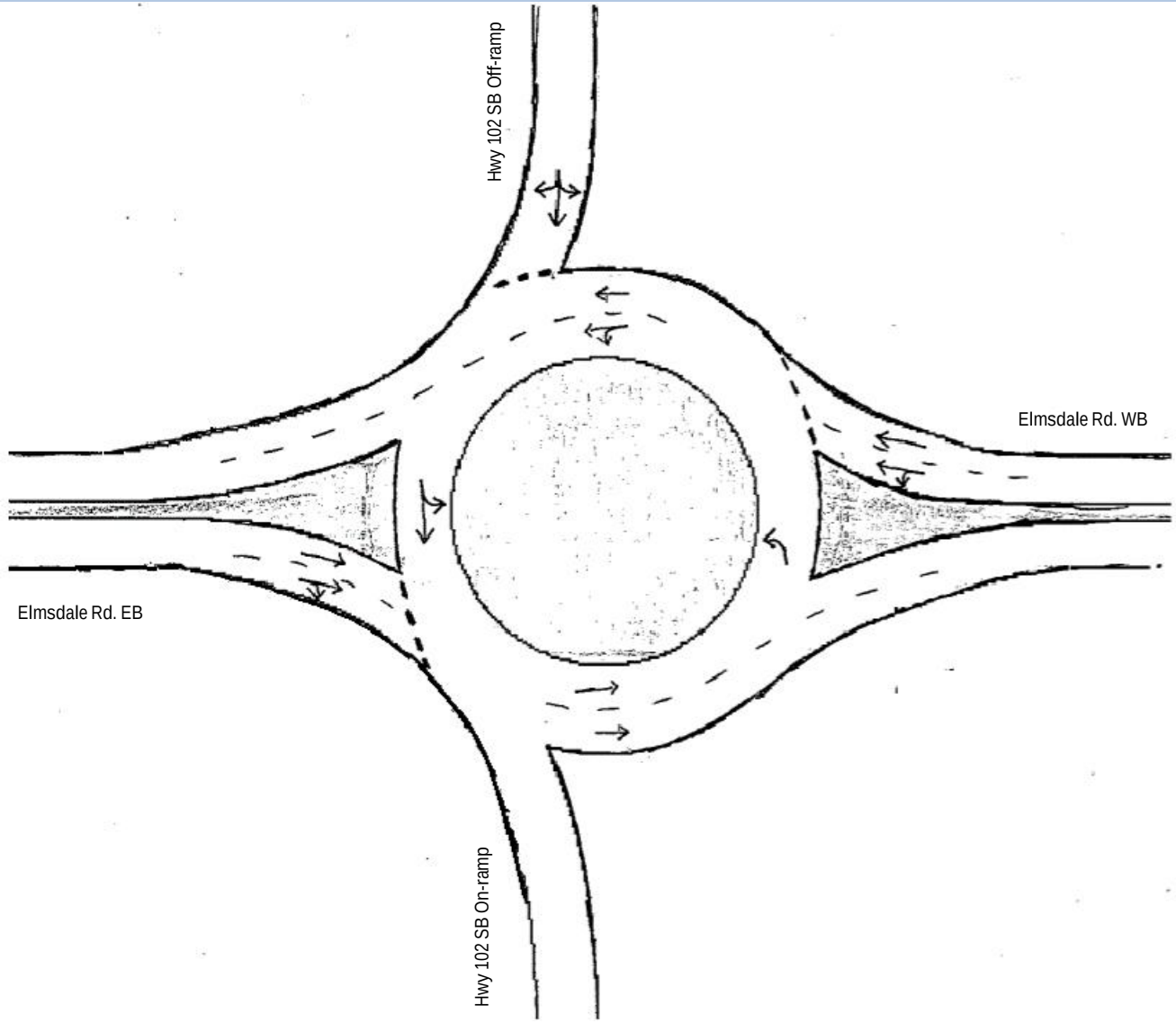
Comments

Occasional moderate queue and delay possible southbound during PM peak hour.

2033 Horizon Year

Highway 102 SB Ramp Terminals / Elmsdale Road

Lane Configuration Sketch



2023 Horizon Year

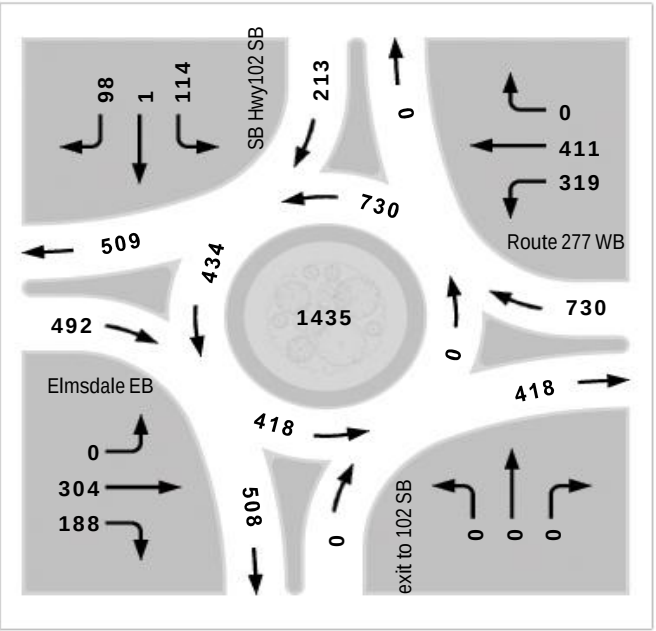
Highway 102 SB Ramp Terminals / Elmsdale Road

Roundabout Geometry

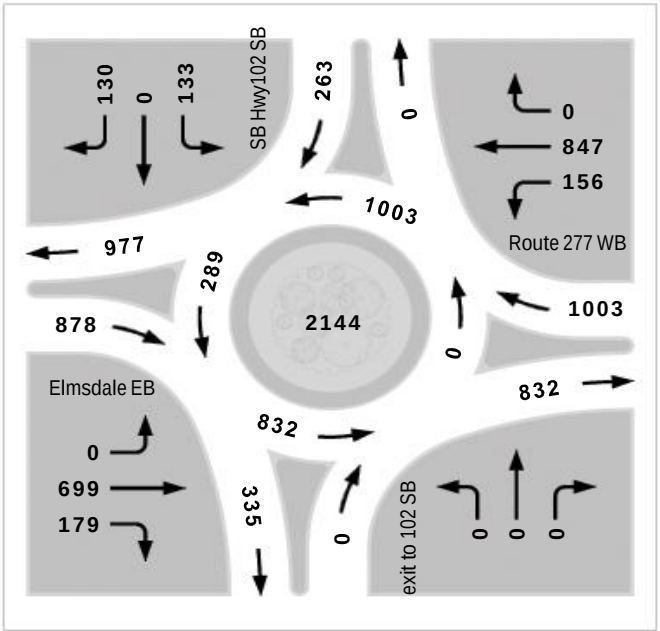
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
SB Hwy102 SE	1	4.25	4.25	0	0	20	56	20	-	-	-	90
Elmsdale EB	1	4.25	8.00	20	10	20	50	20	-	-	-	90
exit to 102 SB	-	-	-	-	-	-	-	-	T	-	-	-
Route 277 WB	1	4.25	8.00	20	10	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	SB Hwy102 SE	<25	5	0.26	A	<5	A	86% [SB]	<25	8	0.39	A	<5	A	40% [SB]
	Elmsdale EB	<25	3	0.32	A				<25	4	0.53	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	3	0.40	A				<25	4	0.54	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	SB Hwy102 SE	<25	7	0.31	A	<5	A	66% [SB]	<25	11	0.48	B	6	A	25% [SB]
	Elmsdale EB	<25	4	0.36	A				<25	6	0.60	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	4	0.44	A				<25	5	0.61	A			

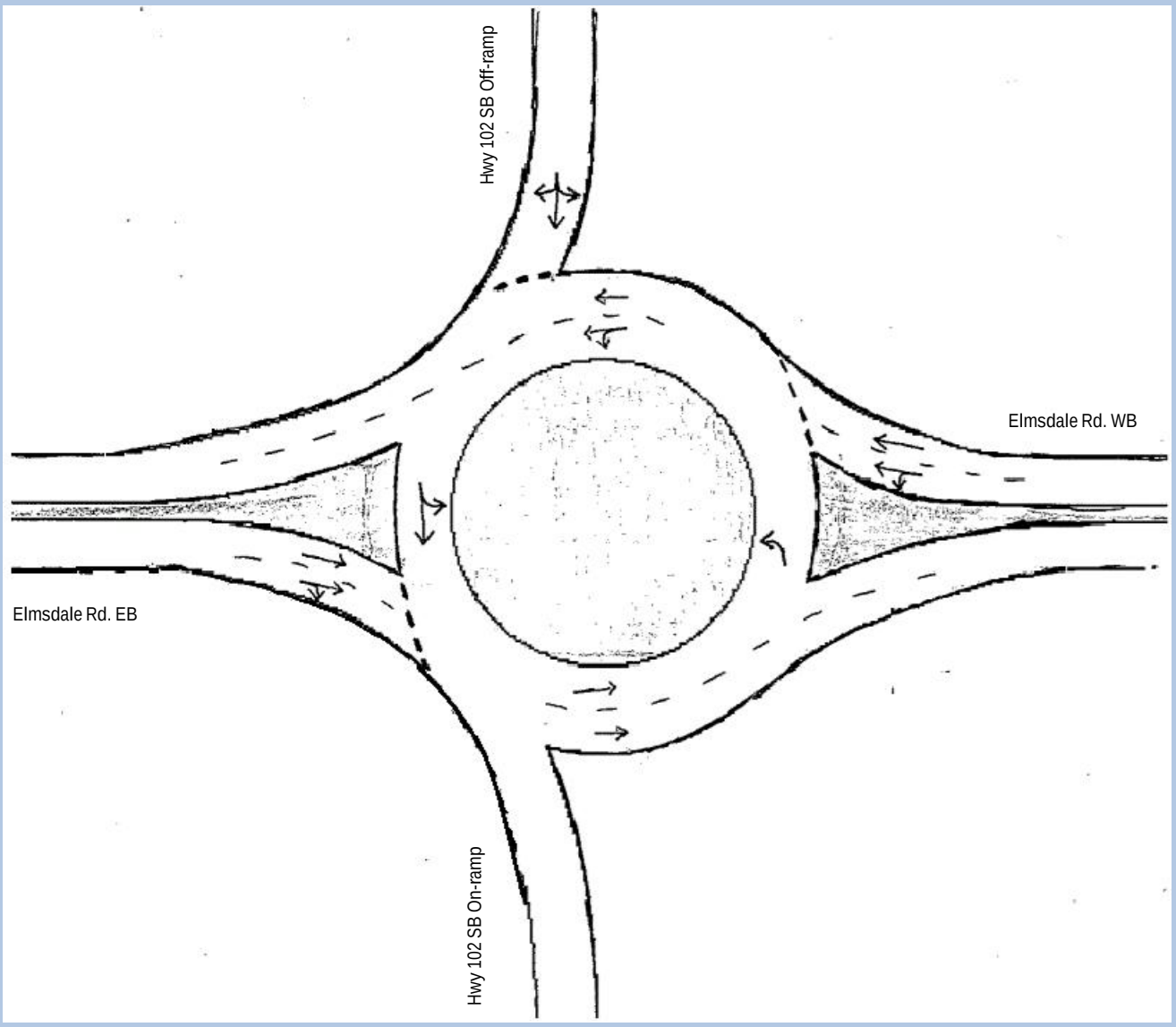
Comments

Low queues and delays predicted.

2023 Horizon Year

Highway 102 SB Ramp Terminals / Elmsdale Road

Lane Configuration Sketch



Opening Day

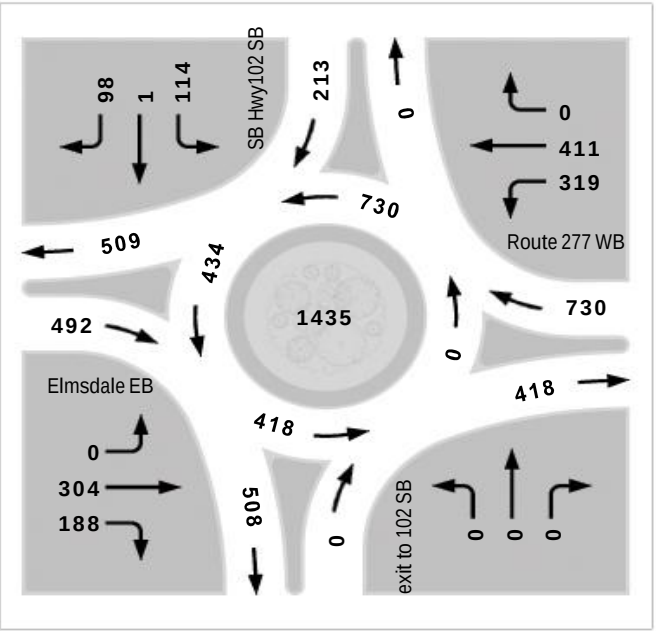
Highway 102 SB Ramp Terminals / Elmsdale Road

Roundabout Geometry

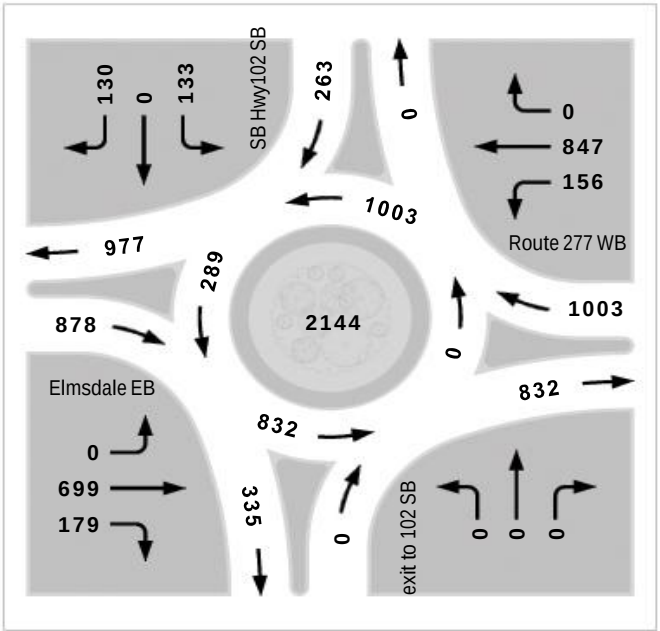
Leg	V		E	l'	Storage	R	D	Phi	Exit Only	Entry Only	RTBP	y-intercept
	(lanes)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	(T/F)	(T/F)	(T/F)	(%)
SB Hwy102 SE	1	4.25	4.25	0	0	20	56	20	-	-	-	90
Elmsdale EB	1	4.25	4.25	0	0	20	50	20	-	-	-	90
exit to 102 SB	-	-	-	-	-	-	-	-	T	-	-	-
Route 277 WB	1	4.25	4.25	0	0	20	50	20	-	-	-	90

Peak Hour Turning Movement Forecasts

AM Peak



PM Peak



Source of forecast: "131021 Vols for ARCADY Analysis.pdf" received Sept. 3, 2013, in email from CBCL (Mark MacDonald)

Roundabout Capacity Analysis Results

		AM Peak							PM Peak						
	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
Model Results	SB Hwy102 SE	<25	4	0.16	A	5	A	79% [EB]	<25	6	0.25	A	8	A	35% [WB]
	Elmsdale EB	<25	6	0.41	A				<25	9	0.64	A			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	5	0.49	A				<25	9	0.69	A			
Design Check	Leg	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)	Q95 (m)	D (s)	V/C	LOS	ID (s)	ILOS	IRC (%)
	SB Hwy102 SE	<25	5	0.19	A	7	A	60% [EB]	<25	7	0.29	A	12	B	20% [WB]
	Elmsdale EB	<25	7	0.47	A				42	13	0.72	B			
	exit to 102 SB	-	-	-	-				-	-	-	-			
	Route 277 WB	<25	7	0.54	A				63	13	0.77	B			

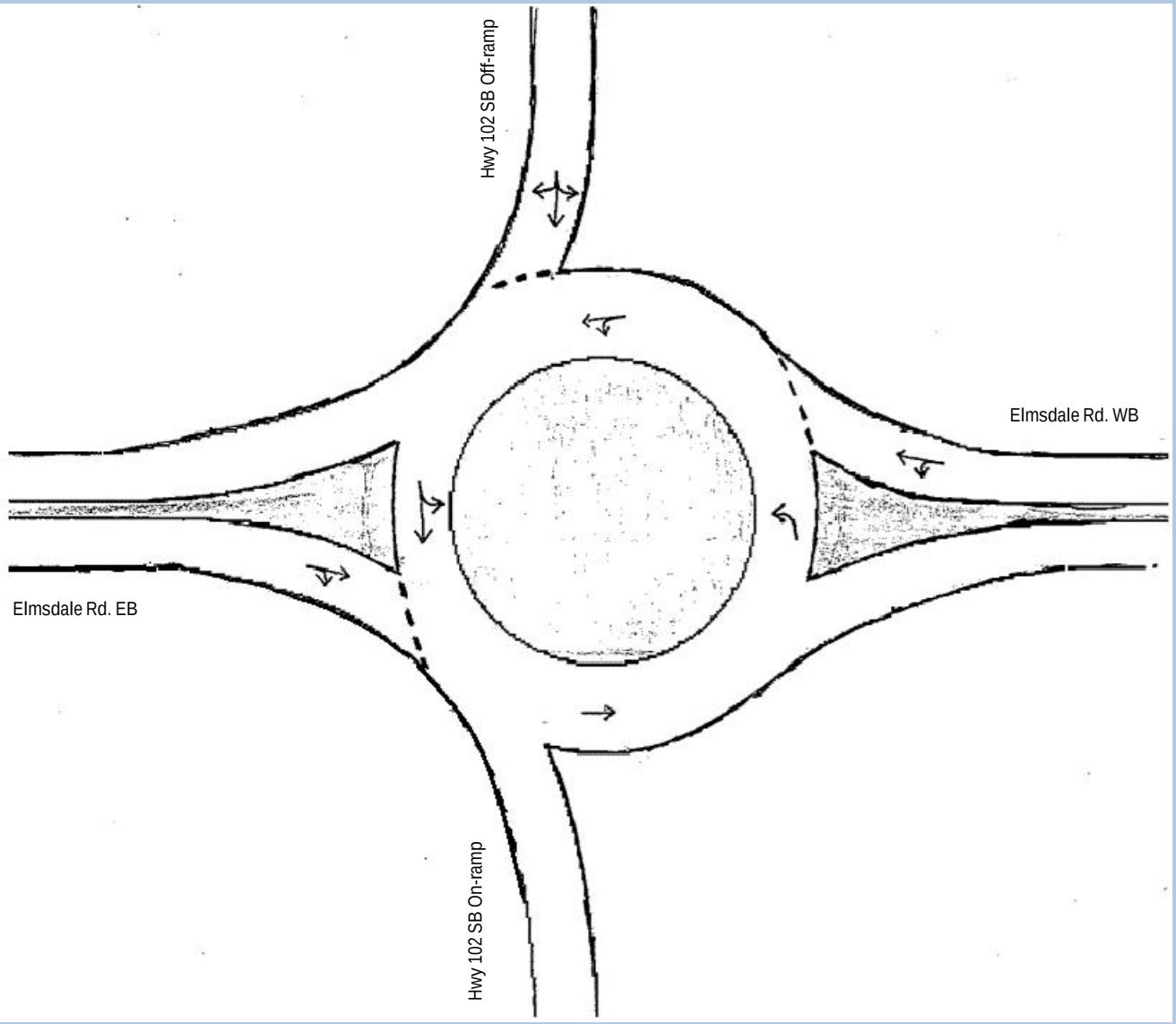
Comments

Low queues and delays predicted.

Existing (2013)

Highway 102 SB Ramp Terminals / Elmsdale Road

Lane Configuration Sketch



APPENDIX E

Results of Highway 102 Weaving Analyses

Facility-Level Summary	Build January 4th, 2013			
	Title Highway 102 NB			
Number of ValidTime Intervals	2			
Period Duration (min)	30			SECTION AND PERIOD TOTALS
SEGMENT NUMBER :	1	2	3	units
SEGMENT LABEL :	S01	S02	S03	
Input or estimated segment type (B,W,ONR,OFR)	B	W	B	
Segment length (ft)	1500	4265	1500	1.38 miles
Number of lanes	2	3	2	
Free flow speed (mi/hr)	75	75	75	
Maximum d/c ratio**	0.15	0.12	0.12	Globally Undersaturated
Time interval queueing begins				
Travel time per vehicle (min)	0.23	0.69	0.23	1.1 min
VMTD Veh-miles (Demand)	68.0	227.8	59.9	356 VMT
VMTV Veh-miles (Volume)	68.0	227.8	59.9	356 VMT
VHT travel (hrs)	0.9	3.2	0.8	4.9 VHT
VHD delay (hrs)	0.0	0.2	0.0	0.2 VHD
Space mean speed = VMTV / VHT (mph)	75.00	70.55	74.96	72.1 mph
Average density (vpmpl)	3.2	2.7	2.8	2.8 veh/mi/ln
Average density (pcpmpl)	3.4	2.9	3.0	3.0 pc/mi/ln

All entry vehicles have cleared within the analysis period.

Input Worksheet - Directional Freeway Facility — **Build January 4th, 2013**

FREEWAY SYSTEM TITLE: Highway 102 NB

STEP 1

STEP 2

	1	2	3		
SEGMENT NUMBER :					
SECTION NUMBER :	1	2	3		
SEGMENT LABEL :	S01	S02	S03		
Input or estimated segment type (B,W, ONR,OFR,R)	B	W	B		
Segment Length (ft)	1,500	4,265	1,500	1.38	miles
Number of lanes	2	3	2		
Free flow speed (mph)	75.0	75.0	75.0		
Space mean speed (mph)	75.0	71.7	75.0		
Segment density (veh/mi/lane)	2.0	1.7	2.0	1.8	veh/mi/ln
Segment capacity (vph)	4,465	6,201	4,465		
Segment demand (vph)	304	370	301		
Segment volume served (vph)	304	370	301		
d/c ratio	0.07	0.06	0.07		
On-Ramp demand (vph)	0	66	0		
On-Ramp capacity (vph)		2,100			
Off- Ramp demand (vph)	0	69	0		
Off-Ramp capacity (vph)		2,100			
Ramp-to-Ramp demand (vph)		12			
Travel time per vehicle (min)	0.23	0.68	0.23	1.13	min
Free-flow travel time (min)	0.23	0.65	0.23	1.10	min
Freeway mainline delay (min)	0.00	0.03	0.00	0.03	min
System delay-- includes on-ramps (min)	0.00	0.03	0.00	0.03	min
VMTD Veh-miles / interval (Demand)	21.6	74.7	21.4	118	veh-mi
VMTV Veh-miles / interval (Volume served)	21.6	74.7	21.4	118	veh-mi
VHT travel / interval (hrs)	0.29	1.04	0.29	1.62	hrs
VHD delay /interval (hrs)	0.00	0.05	0.00	0.05	hrs
Space mean speed = VMTV / VHT (mph)	75.0	71.7	75.0	72.8	mph
Segment density (pc/mi/lane)*	2.2	1.8	2.2	1.9	pc/mi/ln
Density-based LOS on segment	A	A	A	A	
Demand-based LOS on segment					

* For Merge and Diverge Segments this Density is only for Ramp Influence Area!

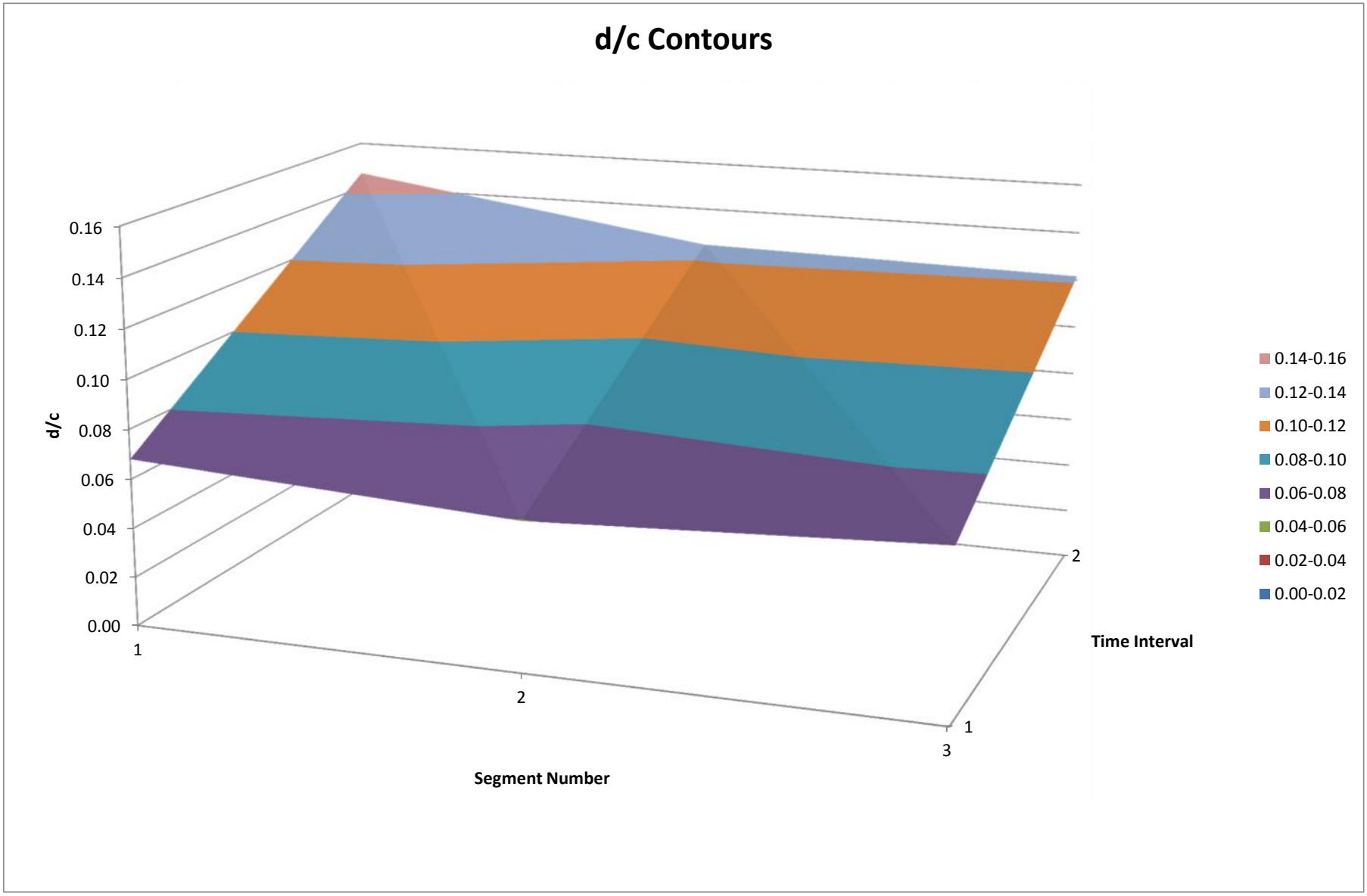
Input Worksheet - Directional Freeway Facility — **Build January 4th, 2013**

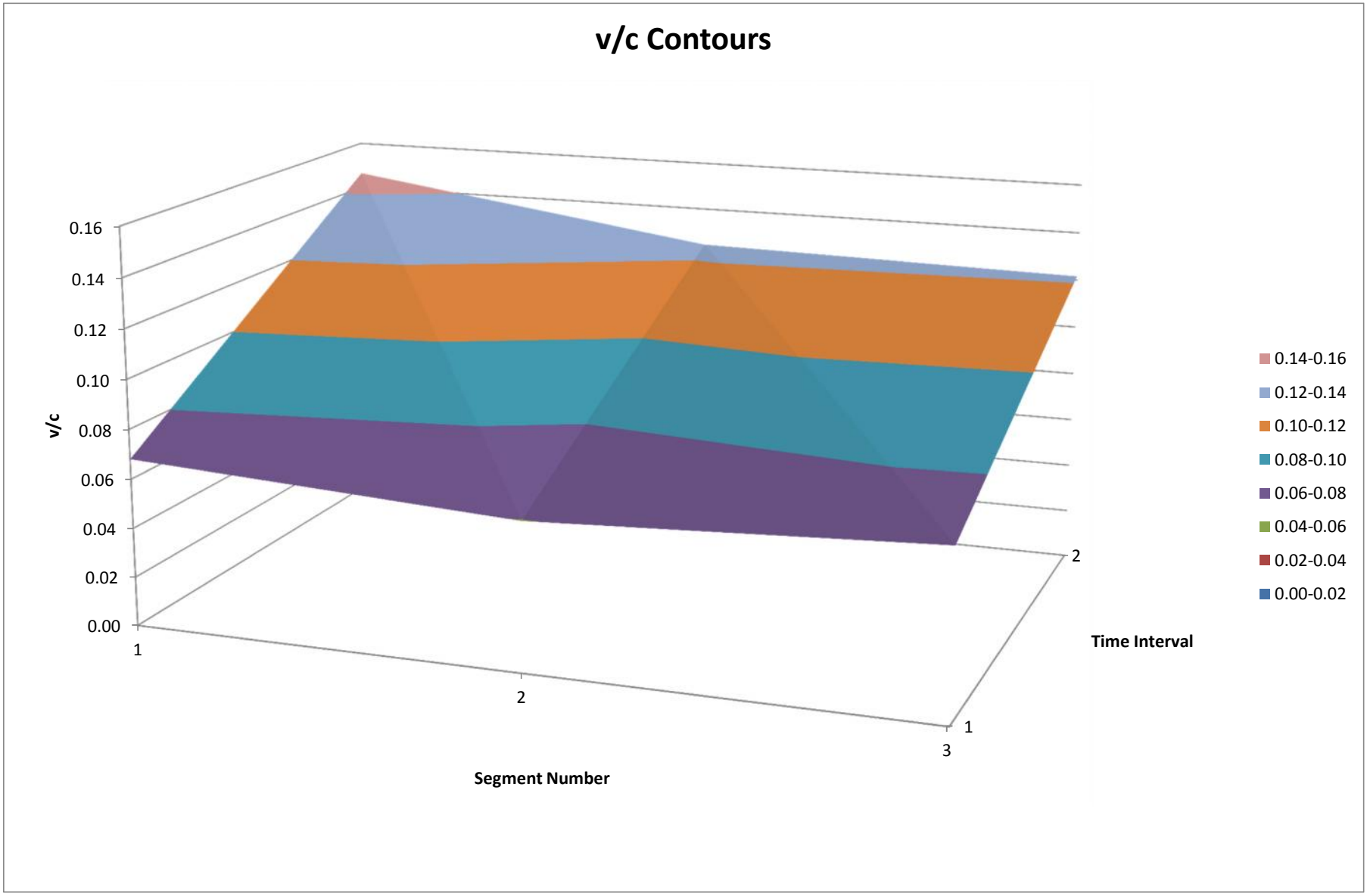
FREEWAY SYSTEM TITLE: Highway 102 NB

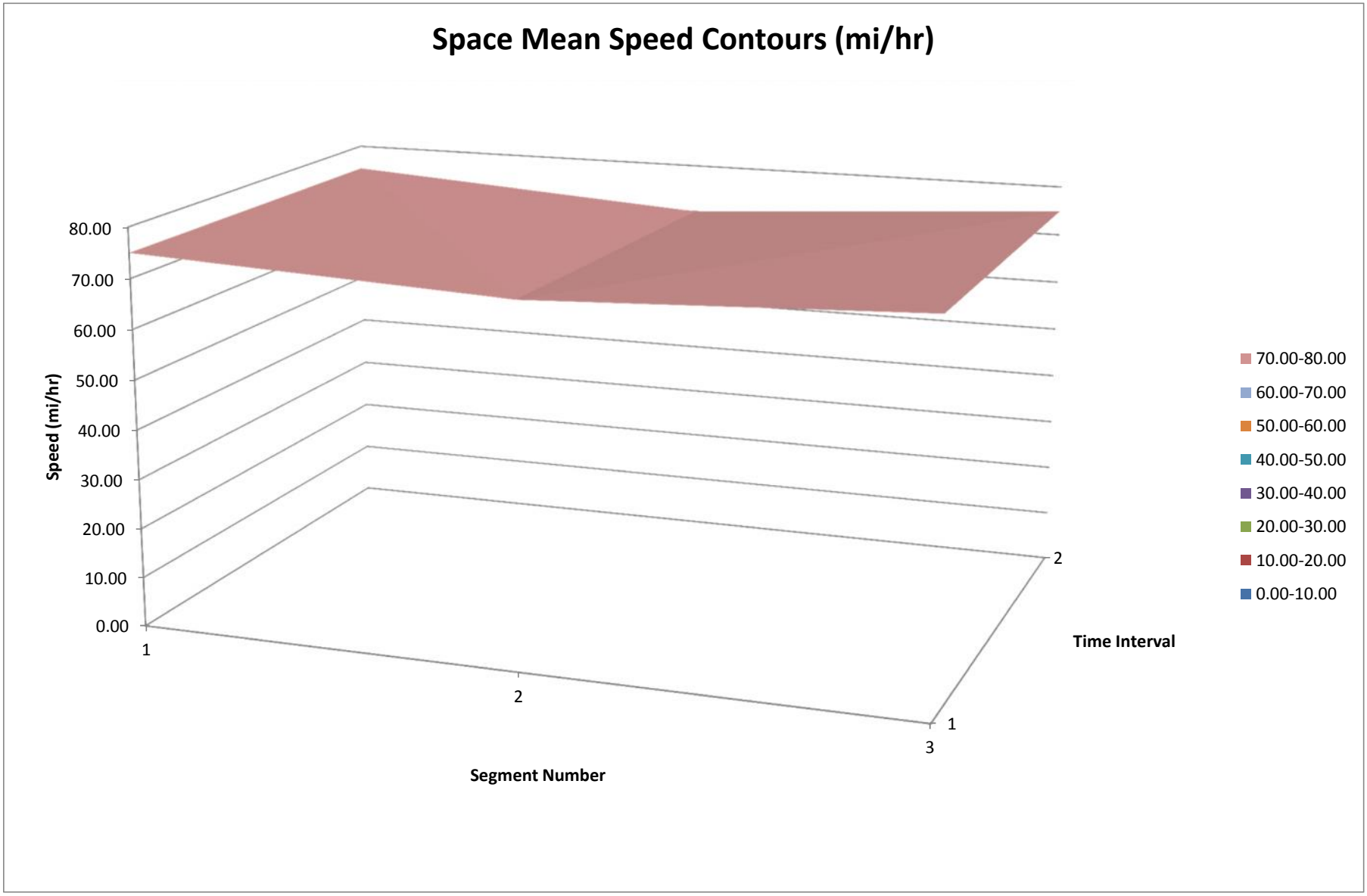
STEP 2

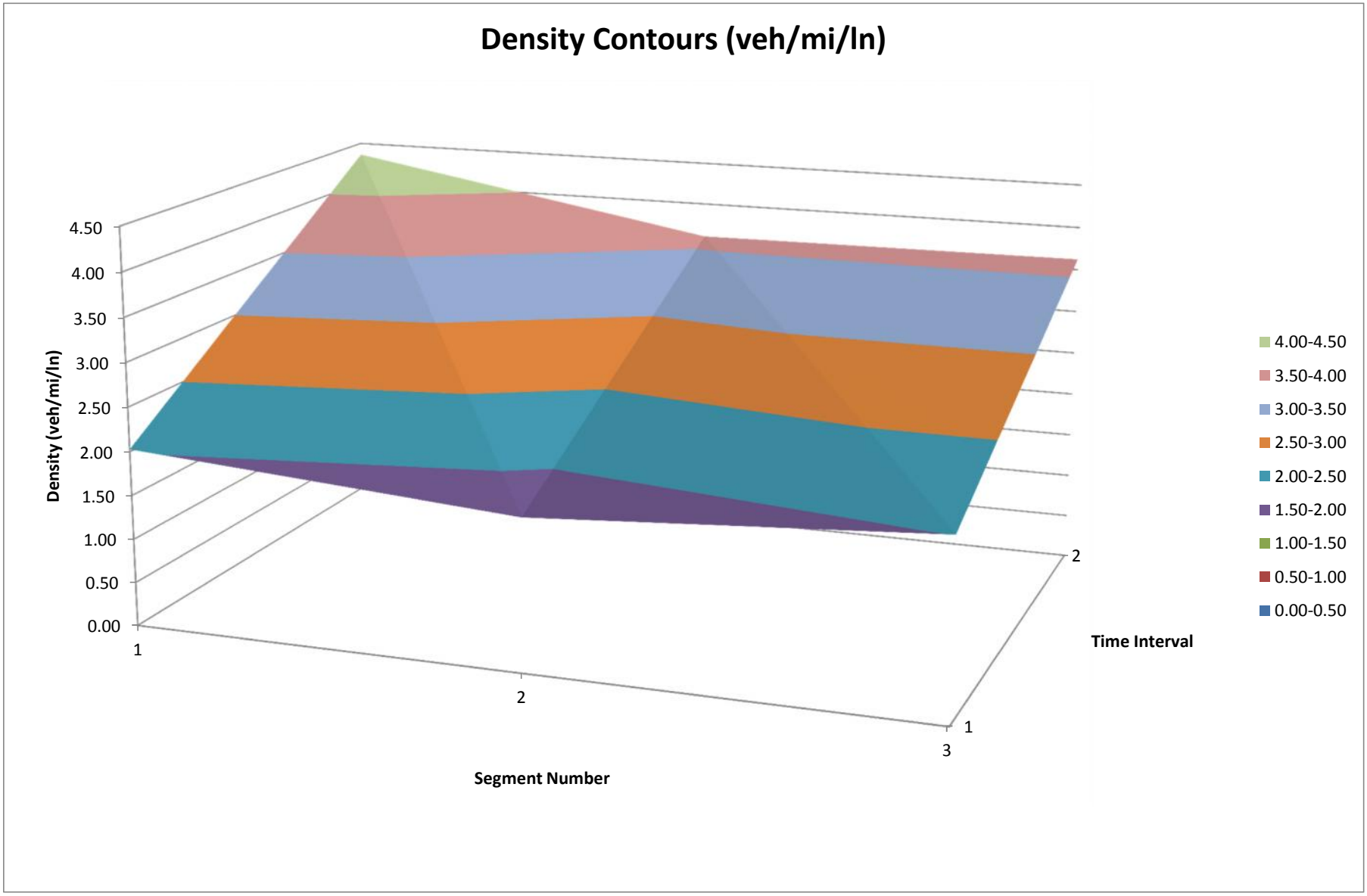
	SEGMENT NUMBER :	**1**	**2**	**3**		
	SECTION NUMBER :	1	2	3		
	SEGMENT LABEL :	S01	S02	S03		
Input or estimated segment type (B,W, ONR,OFR,R)		B	W	B		
Segment Length (ft)		1,500	4,265	1,500	1.38	miles
Number of lanes		2	3	2		
Free flow speed (mph)		75.0	75.0	75.0		
Space mean speed (mph)		75.0	70.0	75.0		
Segment density (veh/mi/lane)		4.4	3.6	3.6	3.7	veh/mi/ln
Segment capacity (vph)		4,465	6,098	4,465		
Segment demand (vph)		654	758	543		
Segment volume served (vph)		654	758	543		
d/c ratio		0.15	0.12	0.12		
On-Ramp demand (vph)		0	104	0		
On-Ramp capacity (vph)			2,100			
Off- Ramp demand (vph)		0	215	0		
Off-Ramp capacity (vph)			2,100			
Ramp-to-Ramp demand (vph)			29			
Travel time per vehicle (min)		0.23	0.69	0.23	1.15	min
Free-flow travel time (min)		0.23	0.65	0.23	1.10	min
Freeway mainline delay (min)		0.00	0.05	0.00	0.05	min
System delay-- includes on-ramps (min)		0.00	0.05	0.00	0.05	min
VMTD Veh-miles / interval (Demand)		46.4	153.1	38.6	238	veh-mi
VMTV Veh-miles / interval (Volume served)		46.4	153.1	38.6	238	veh-mi
VHT travel / interval (hrs)		0.62	2.19	0.51	3.32	hrs
VHD delay /interval (hrs)		0.00	0.15	0.00	0.15	hrs
Space mean speed = VMTV / VHT (mph)		75.0	70.0	75.0	71.7	mph
Segment density (pc/mi/lane)*		4.7	3.9	3.9	4.0	pc/mi/ln
Density-based LOS on segment		A	A	A	A	
Demand-based LOS on segment						

* For Merge and Diverge Segments this Density is only for Ramp Influence Area!


d/c Contours
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
d/c
1
2
Segment Number
1
2
3
Time Interval
0.14-0.16
0.12-0.14
0.10-0.12
0.08-0.10
0.06-0.08
0.04-0.06
0.02-0.04
0.00-0.02


v/c Contours
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
v/c
1
2
Segment Number
1
2
3
Time Interval
0.14-0.16
0.12-0.14
0.10-0.12
0.08-0.10
0.06-0.08
0.04-0.06
0.02-0.04
0.00-0.02


Space Mean Speed Contours (mi/hr)
Speed (mi/hr)
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
1
2
3
Segment Number
1
2
Time Interval
70.00-80.00
60.00-70.00
50.00-60.00
40.00-50.00
30.00-40.00
20.00-30.00
10.00-20.00
0.00-10.00


Density Contours (veh/mi/ln)
Density (veh/mi/ln)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1
2
Segment Number
1
2
3
Time Interval
4.00-4.50
3.50-4.00
3.00-3.50
2.50-3.00
2.00-2.50
1.50-2.00
1.00-1.50
0.50-1.00
0.00-0.50

DENSITY BASED Level Of Service

	Segment			FACILITY
Time	1	2	3	LOS
1	A	A	A	A
2	A	A	A	A

LEGEND
A
B
C
D
E
F

DEMAND BASED Level Of Service

	Segment		
Time	1	2	3
1			
2			

***IF ALL CELLS BLANK, D/C<1.0 ACROSS ALL SEGMENTS AND TIME PERIODS.**

Facility-Level Summary	Build January 4th, 2013			
	Title **Highway 102 SB**			
Number of ValidTime Intervals	2			
Period Duration (min)	30			**SECTION AND PERIOD TOTALS**
SEGMENT NUMBER :	**1**	**2**	**3**	**units**
SEGMENT LABEL :	S01	S02	S03	
Input or estimated segment type (B,W,ONR,OFR)	B	W	B	
Segment length (ft)	1500	3400	1500	1.21 miles
Number of lanes	2	3	2	
Free flow speed (mi/hr)	75	75	75	
Maximum d/c ratio**	0.09	0.09	0.11	**Globally Undersaturated**
Time interval queueing begins				
Travel time per vehicle (min)	0.23	0.55	0.23	1.0 min
VMTD Veh-miles (Demand)	51.5	169.0	66.0	287 VMT
VMTV Veh-miles (Volume)	51.5	169.0	66.0	287 VMT
VHT travel (hrs)	0.7	2.4	0.9	4.0 VHT
VHD delay (hrs)	0.0	0.1	0.0	0.1 VHD
Space mean speed = VMTV / VHT (mph)	75.00	70.73	74.92	72.4 mph
Average density (vpmpl)	2.4	2.5	3.1	2.6 veh/mi/ln
Average density (pcpmpl)	2.6	2.7	3.3	2.8 pc/mi/ln

All entry vehicles have cleared within the analysis period.

Input Worksheet - Directional Freeway Facility — **Build January 4th, 2013**

FREEWAY SYSTEM TITLE: Highway 102 SB

STEP 1

STEP 2

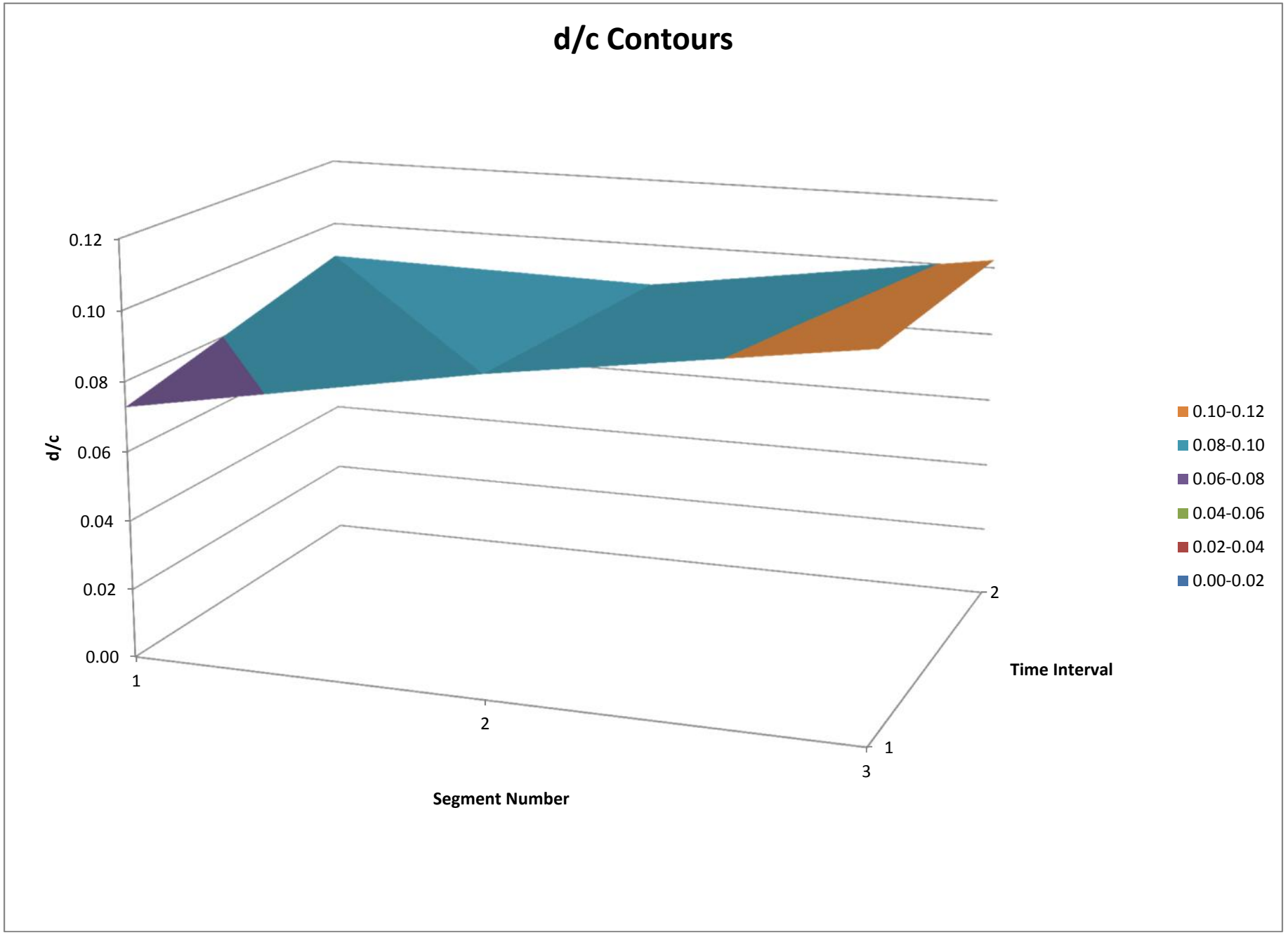
	1	2	3		
SEGMENT NUMBER :					
SECTION NUMBER :	1	2	3		
SEGMENT LABEL :	S01	S02	S03		
Input or estimated segment type (B,W, ONR,OFR,R)	B	W	B		
Segment Length (ft)	1,500	3,400	1,500	1.21	miles
Number of lanes	2	3	2		
Free flow speed (mph)	75.0	75.0	75.0		
Space mean speed (mph)	75.0	70.3	74.9		
Segment density (veh/mi/lane)	2.2	2.5	3.2	2.5	veh/mi/ln
Segment capacity (vph)	4,465	5,775	4,465		
Segment demand (vph)	325	524	472		
Segment volume served (vph)	325	524	472		
d/c ratio	0.07	0.09	0.11		
On-Ramp demand (vph)	0	199	0		
On-Ramp capacity (vph)		2,100			
Off- Ramp demand (vph)	0	52	0		
Off-Ramp capacity (vph)		2,100			
Ramp-to-Ramp demand (vph)		20			
Travel time per vehicle (min)	0.23	0.55	0.23	1.00	min
Free-flow travel time (min)	0.23	0.52	0.23	0.97	min
Freeway mainline delay (min)	0.00	0.03	0.00	0.03	min
System delay-- includes on-ramps (min)	0.00	0.03	0.00	0.03	min
VMTD Veh-miles / interval (Demand)	23.1	84.4	33.5	141	veh-mi
VMTV Veh-miles / interval (Volume served)	23.1	84.4	33.5	141	veh-mi
VHT travel / interval (hrs)	0.31	1.20	0.45	1.95	hrs
VHD delay /interval (hrs)	0.00	0.07	0.00	0.08	hrs
Space mean speed = VMTV / VHT (mph)	75.0	70.3	74.9	72.1	mph
Segment density (pc/mi/lane)*	2.3	2.7	3.4	2.7	pc/mi/ln
Density-based LOS on segment	A	A	A	A	
Demand-based LOS on segment					

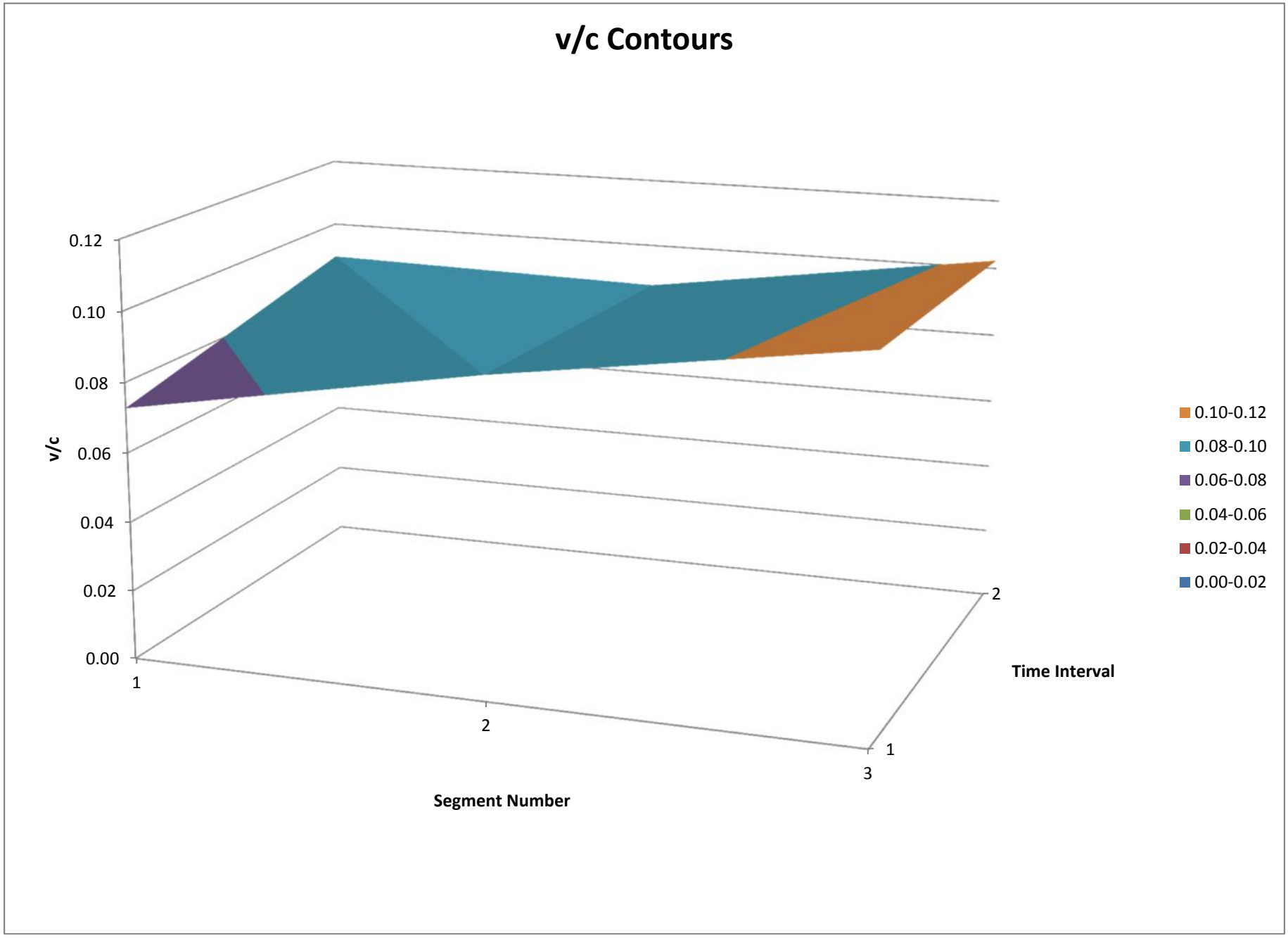
* For Merge and Diverge Segments this Density is only for Ramp Influence Area!

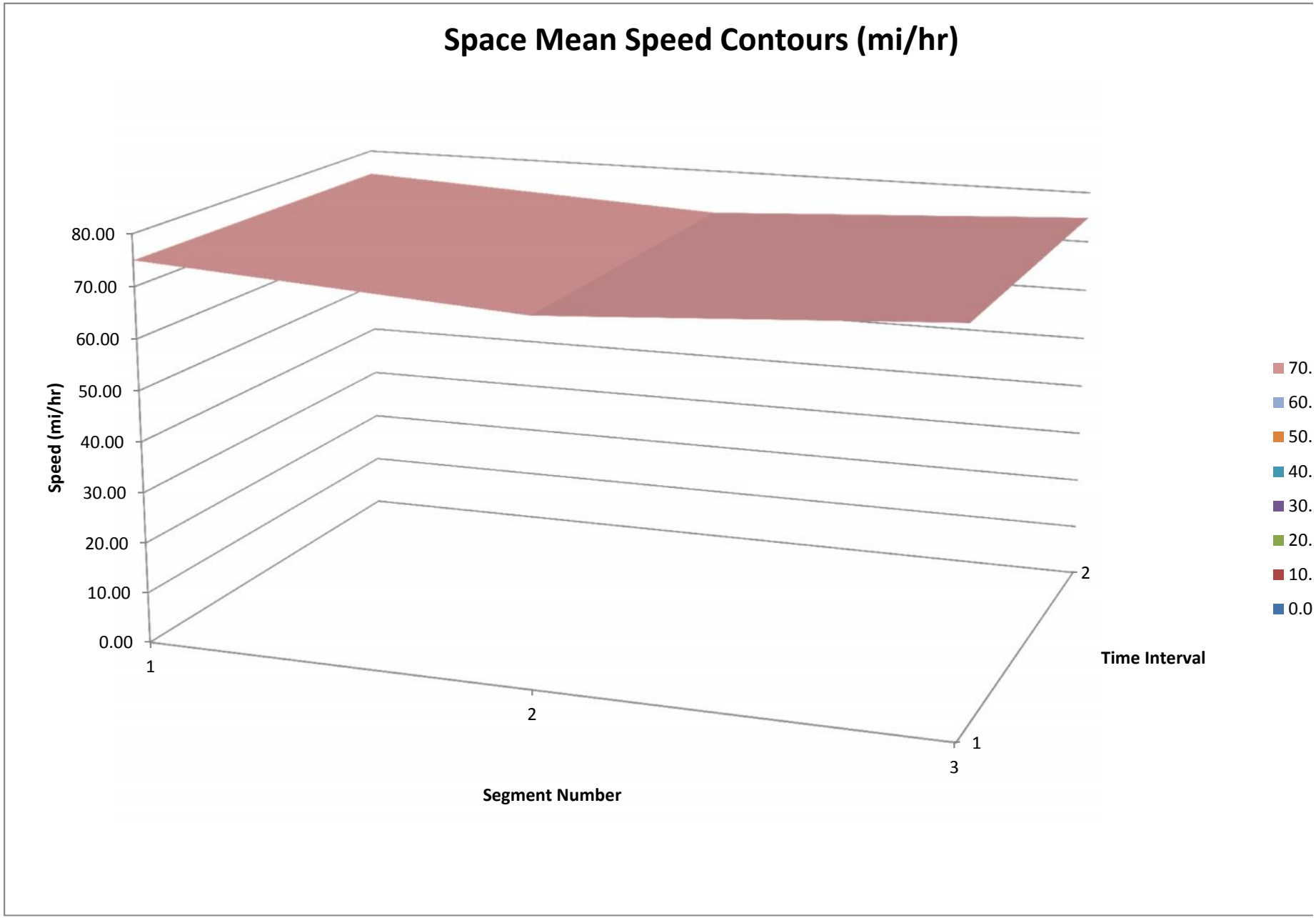
STEP 2

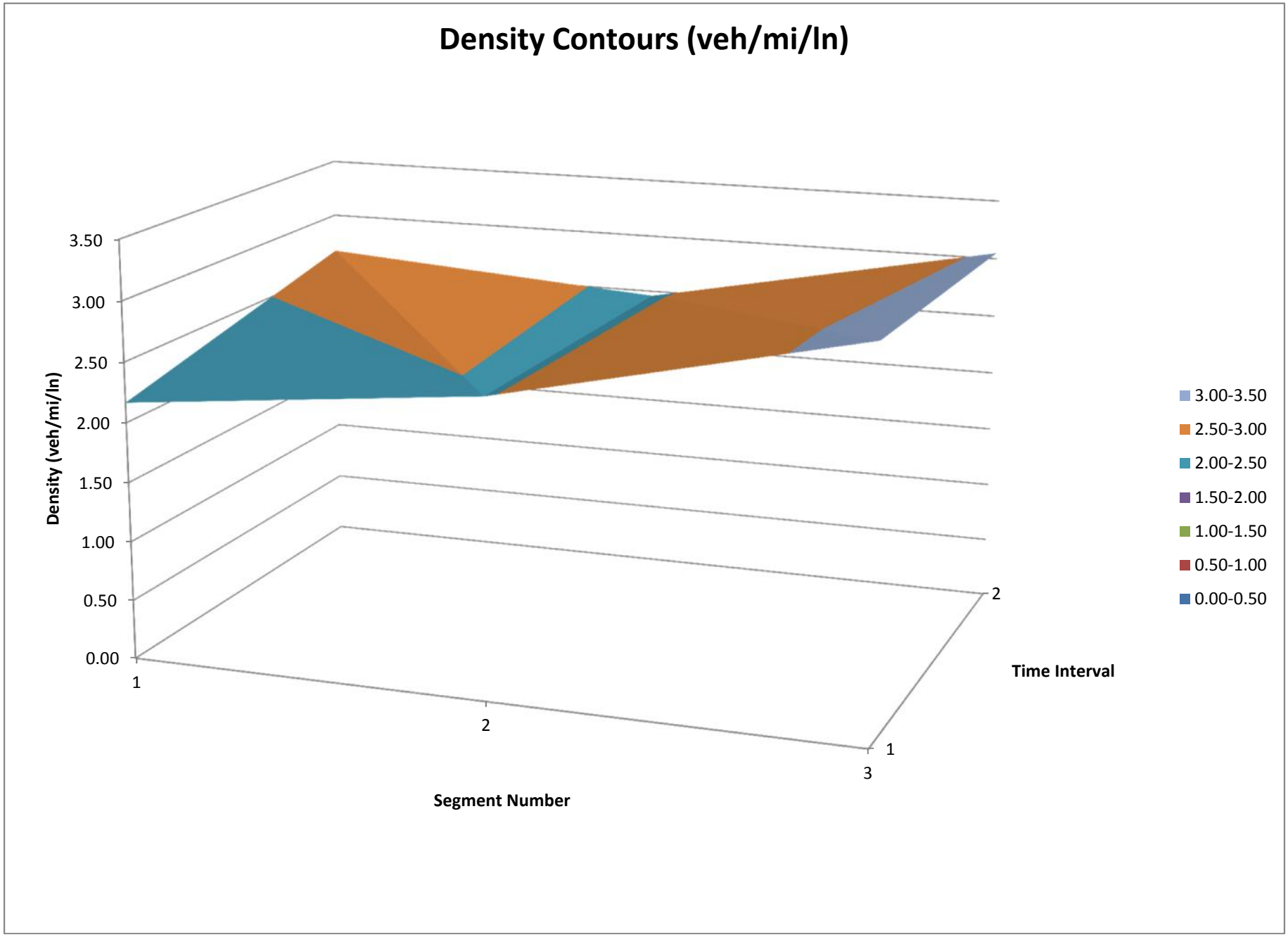
Input Worksheet - Directional Freeway Facility	Build January 4th, 2013			
FREEWAY SYSTEM TITLE:	Highway 102 SB			
SEGMENT NUMBER :	**1**	**2**	**3**	
SECTION NUMBER :	1	2	3	
SEGMENT LABEL :	S01	S02	S03	
Input or estimated segment type (B,W, ONR,OFR,R)	B	W	B	
Segment Length (ft)	1,500	3,400	1,500	1.21 miles
Number of lanes	2	3	2	
Free flow speed (mph)	75.0	75.0	75.0	
Space mean speed (mph)	75.0	71.1	74.9	
Segment density (veh/mi/lane)	2.7	2.5	3.0	2.6 veh/mi/ln
Segment capacity (vph)	4,465	6,002	4,465	
Segment demand (vph)	400	526	457	
Segment volume served (vph)	400	526	457	
d/c ratio	0.09	0.09	0.10	
On-Ramp demand (vph)	0	126	0	
On-Ramp capacity (vph)		2,100		
Off- Ramp demand (vph)	0	69	0	
Off-Ramp capacity (vph)		2,100		
Ramp-to-Ramp demand (vph)		17		
Travel time per vehicle (min)	0.23	0.54	0.23	1.00 min
Free-flow travel time (min)	0.23	0.52	0.23	0.97 min
Freeway mainline delay (min)	0.00	0.03	0.00	0.03 min
System delay-- includes on-ramps (min)	0.00	0.03	0.00	0.03 min
VMTD Veh-miles / interval (Demand)	28.4	84.7	32.5	146 veh-mi
VMTV Veh-miles / interval (Volume served)	28.4	84.7	32.5	146 veh-mi
VHT travel / interval (hrs)	0.38	1.19	0.43	2.00 hrs
VHD delay /interval (hrs)	0.00	0.06	0.00	0.06 hrs
Space mean speed = VMTV / VHT (mph)	75.0	71.1	74.9	72.7 mph
Segment density (pc/mi/lane)*	2.9	2.6	3.3	2.8 pc/mi/ln
Density-based LOS on segment	A	A	A	A
Demand-based LOS on segment				

* For Merge and Diverge Segments this Density is only for Ramp Influence Area!


d/c Contours
0.12
0.10
0.08
0.06
0.04
0.02
0.00
d/c
1
2
3
Segment Number
1
2
Time Interval
0.10-0.12
0.08-0.10
0.06-0.08
0.04-0.06
0.02-0.04
0.00-0.02


v/c Contours
0.12
0.10
0.08
0.06
0.04
0.02
0.00
v/c
1
2
Segment Number
1
2
3
Time Interval
0.10-0.12
0.08-0.10
0.06-0.08
0.04-0.06
0.02-0.04
0.00-0.02


Space Mean Speed Contours (mi/hr)
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Speed (mi/hr)
1
2
3
Segment Number
1
2
Time Interval
70.
60.
50.
40.
30.
20.
10.
0.0


Density Contours (veh/mi/ln)
Density (veh/mi/ln)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1
2
Segment Number
1
2
3
Time Interval
3.00-3.50
2.50-3.00
2.00-2.50
1.50-2.00
1.00-1.50
0.50-1.00
0.00-0.50

DENSITY BASED Level Of Service

	Segment			FACILITY
Time	1	2	3	LOS
1	A	A	A	A
2	A	A	A	A

LEGEND
A
B
C
D
E
F

DEMAND BASED Level Of Service

	Segment		
Time	1	2	3
1			
2			

***IF ALL CELLS BLANK, D/C<1.0 ACROSS ALL SEGMENTS AND TIME PERIODS.**

APPENDIX F

Results of Turning Lane Analyses

Left Turn Warrants

2023 AM Scenario 1					
Existing SB Interchange Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)					
EB Approach Volume	498	Left turning volume	0	Percent Left Turn	0.00%
WB Approach Volume	1098	Left turning volume	687	Percent Left Turn	62.57%
WB Approach - 40% graph used - Warranted: 95 metres					

2023 PM Scenario 1					
Existing SB Interchange Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)					
EB Approach Volume	878	Left turning volume	0	Percent Left Turn	0.00%
WB Approach Volume	1234	Left turning volume	387	Percent Left Turn	31.36%
WB Approach - 30% graph used - Warranted: 70+ metres					

Left Turn Warrants

2023 AM Scenario 2							
South Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	789	Left turning volume	19	Percent Left Turn	2.41%		
NB Approach Volume	169	Left turning volume	11	Percent Left Turn	6.51%		
EB Approach Volume	151	Left turning volume	125	Percent Left Turn	82.78%		
WB Approach Volume	22	Left turning volume	4	Percent Left Turn	18.18%		
SB approach - Less than 5% left turning - not warranted							
NB Approach - 5% graph used -not warranted							
EB Appaoach -40% graph used - not warranted							
WB Appoacgh - 20% graph used - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	668	Left turning volume	257	Percent Left Turn	38.47%		
EB Approach Volume	492	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 40% graph used - Warranted: 50 metres							

2023 PM Scenario 2							
South Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	506	Left turning volume	2	Percent Left Turn	0.40%		
NB Approach Volume	464	Left turning volume	7	Percent Left Turn	1.51%		
EB Approach Volume	423	Left turning volume	410	Percent Left Turn	96.93%		
WB Approach Volume	30	Left turning volume	8	Percent Left Turn	26.67%		
SB approach - Less than 5% left turning - not warranted							
NB Approach - Less than 5% - not warranted							
EB Appaoach -40% graph used - not warranted							
WB Appoacgh - 25% graph used - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	954	Left turning volume	107	Percent Left Turn	11.22%		
EB Approach Volume	878	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 10% graph used - Warranted: 50 metres							

Left Turn Warrants

2033 AM Scenario 2							
South Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	1334	Left turning volume	25	Percent Left Turn	1.87%		
NB Approach Volume	262	Left turning volume	27	Percent Left Turn	10.31%		
EB Approach Volume	262	Left turning volume	228	Percent Left Turn	87.02%		
WB Approach Volume	18	Left turning volume	4	Percent Left Turn	22.22%		
SB approach - Less than 5% left turning - not warranted							
NB Approach - 10% graph used -WARRANTED: 15 metres							
EB Appaoach -40% graph used - not warranted							
WB Appoacgh - 20% graph used - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	862	Left turning volume	333	Percent Left Turn	38.63%		
EB Approach Volume	588	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 40% graph used - Warranted: 95 metres							

2033 PM Scenario 2							
South Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	837	Left turning volume	3	Percent Left Turn	0.36%		
NB Approach Volume	711	Left turning volume	18	Percent Left Turn	2.53%		
EB Approach Volume	769	Left turning volume	738	Percent Left Turn	95.97%		
WB Approach Volume	38	Left turning volume	9	Percent Left Turn	23.68%		
SB approach - Less than 5% left turning - not warranted							
NB Approach - Less than 5% - not warranted							
EB Appaoach -40% graph used - not warranted							
WB Appoacgh - 25% graph used - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	1160	Left turning volume	147	Percent Left Turn	12.67%		
EB Approach Volume	1071	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 10% graph used - Warranted: 50+ metres							

Left Turn Warrants

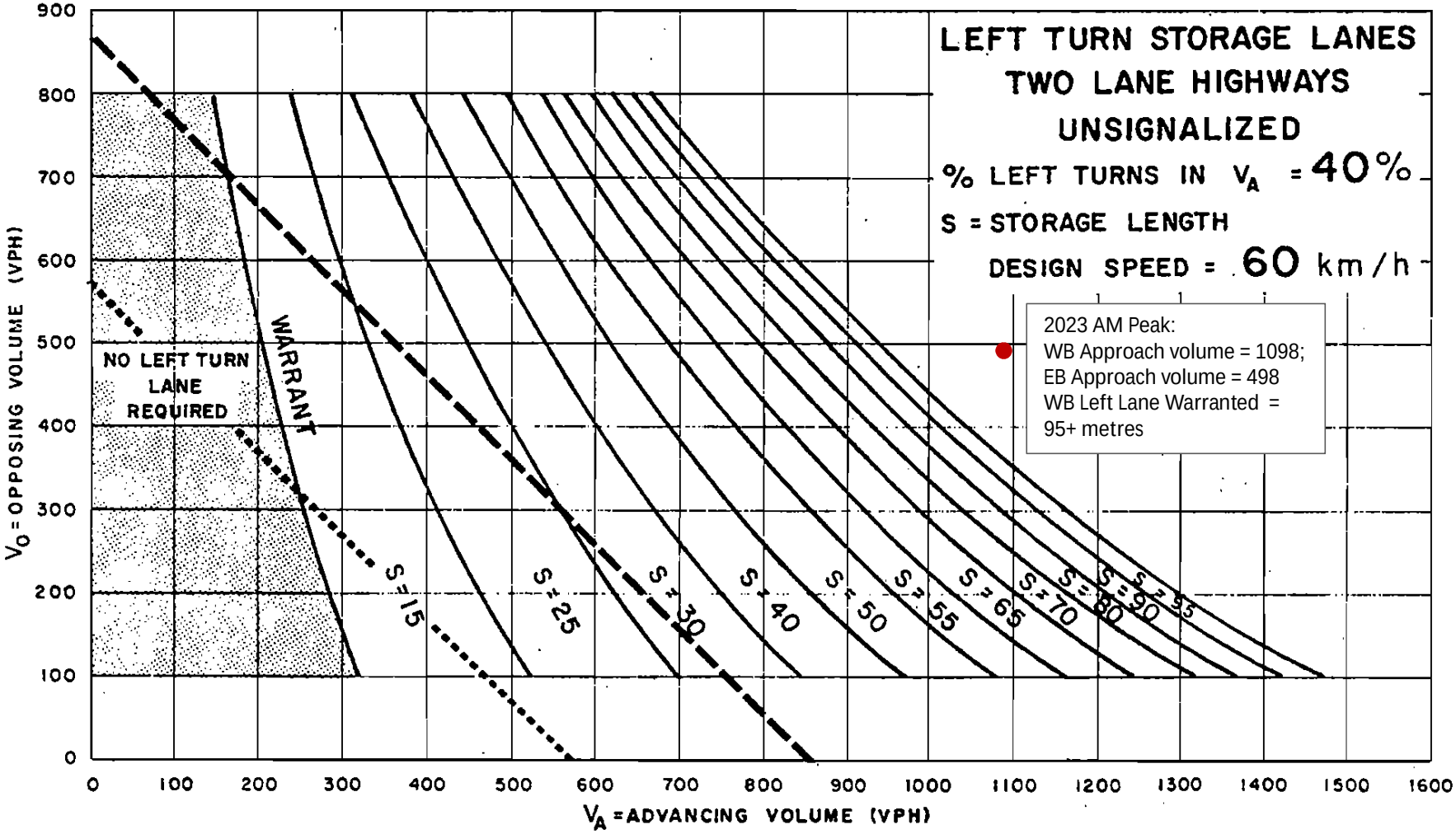
2023 AM Scenario 3							
North Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	306	Left turning volume	0	Percent Left Turn	0.00%		
NB Approach Volume	159	Left turning volume	75	Percent Left Turn	47.17%		
EB Approach Volume	129	Left turning volume	52	Percent Left Turn	40.31%		
NB Approach - 40% graph used -Not Warranted							
EB Appaoach - no opposing traffic - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	730	Left turning volume	319	Percent Left Turn	43.70%		
EB Approach Volume	492	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 40% graph used - Warranted: 55 metres							

2023 PM Scenario 3							
North Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	226	Left turning volume	0	Percent Left Turn	0.00%		
NB Approach Volume	342	Left turning volume	115	Percent Left Turn	33.63%		
EB Approach Volume	243	Left turning volume	153	Percent Left Turn	62.96%		
NB Approach - 30% graph used- WARRANTED: 15 metres							
EB Appaoach - no opposing traffic - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	1003	Left turning volume	156	Percent Left Turn	15.55%		
EB Approach Volume	878	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 10% graph used - Warranted: 55+ metres							

Left Turn Warrants

2033 AM Scenario 3							
North Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	490	Left turning volume	0	Percent Left Turn	0.00%		
NB Approach Volume	222	Left turning volume	133	Percent Left Turn	59.91%		
EB Approach Volume	201	Left turning volume	98	Percent Left Turn	48.76%		
NB Approach - 40% graph used -WARRANTED: 15 metres							
EB Approach - no opposing traffic - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	903	Left turning volume	374	Percent Left Turn	41.42%		
EB Approach Volume	588	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 40% graph used - Warranted: 95+ metres							

2033 PM Scenario 3							
North Interchange Connector Rd and Trunk 2 (Trunk 2 Design Speed 60 km/h; Connector Rd Design Speed 70 km/h)							
SB Approach Volume	331	Left turning volume	0	Percent Left Turn	0.00%		
NB Approach Volume	428	Left turning volume	162	Percent Left Turn	37.85%		
EB Approach Volume	473	Left turning volume	316	Percent Left Turn	66.81%		
NB Approach - 35% graph used- WARRANTED: 25 metres							
EB Appaoach - no opposing traffic - not warranted							
Existing Interchange SB Ramps and Rte 214 (Rte 214 Design Speed 60 km/h)							
WB Approach Volume	1212	Left turning volume	199	Percent Left Turn	16.42%		
EB Approach Volume	1071	Left turning volume	0	Percent Left Turn	0.00%		
WB Approach - 15% graph used - Warranted: 55+ metres							



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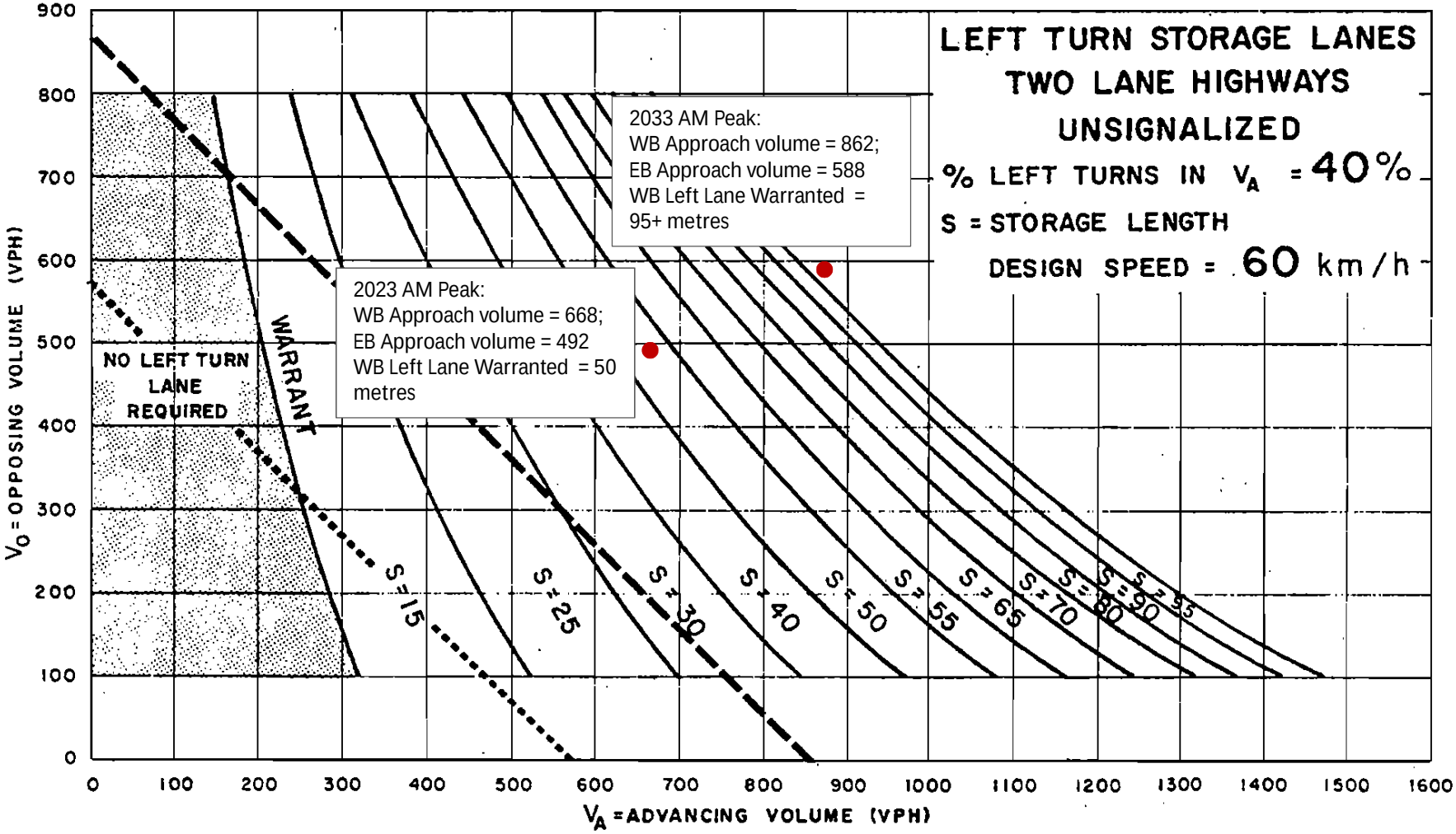
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7a
Left Turn Lane Warrants
Scenario 1 (Existing Southbound Ramps/Route 214



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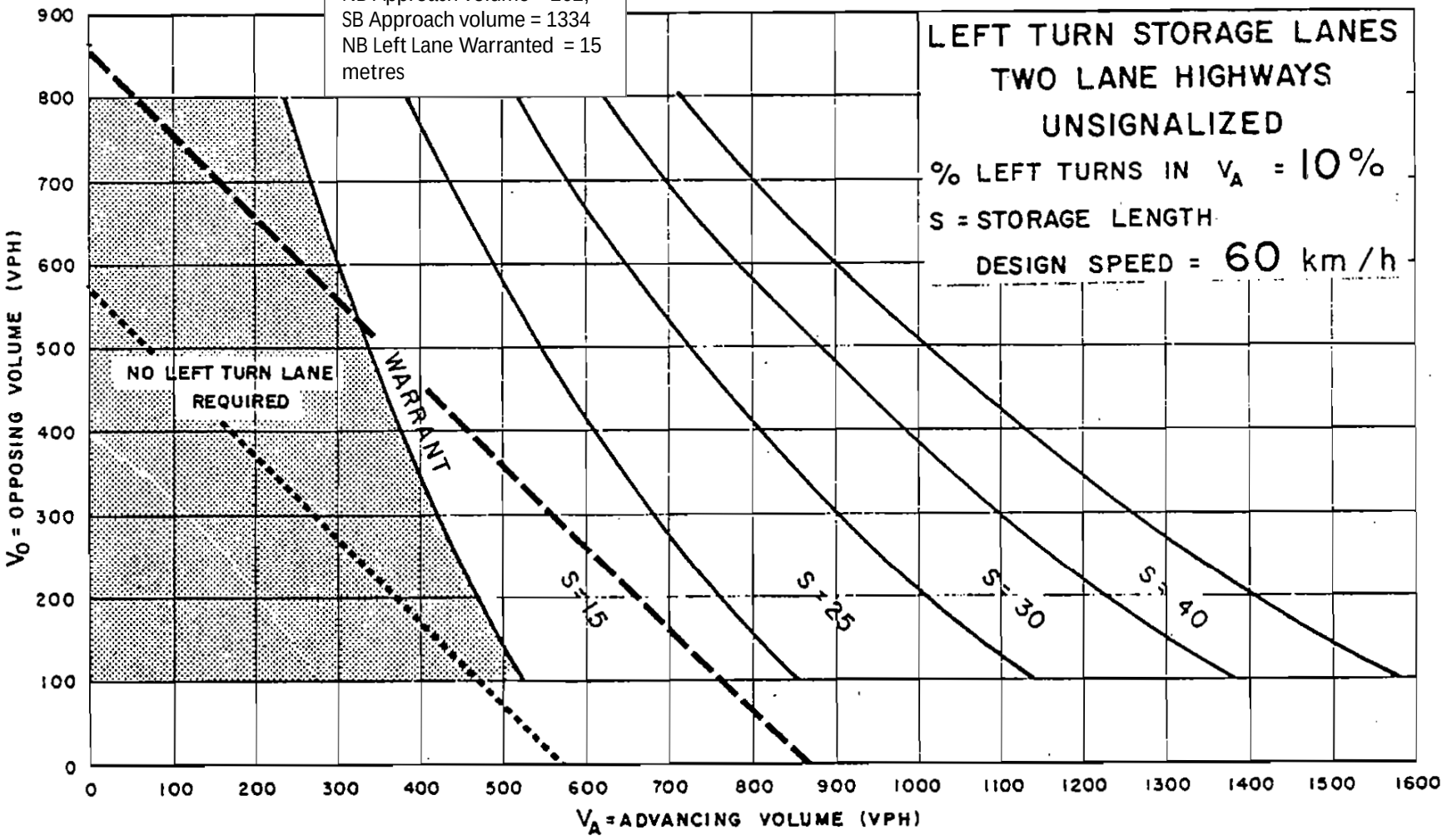
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7b
Left Turn Lane Warrants
Scenario 2 (Existing Southbound Ramps/Route 214)

2033 AM Peak:
NB Approach volume = 262;
SB Approach volume = 1334
NB Left Lane Warranted = 15 metres



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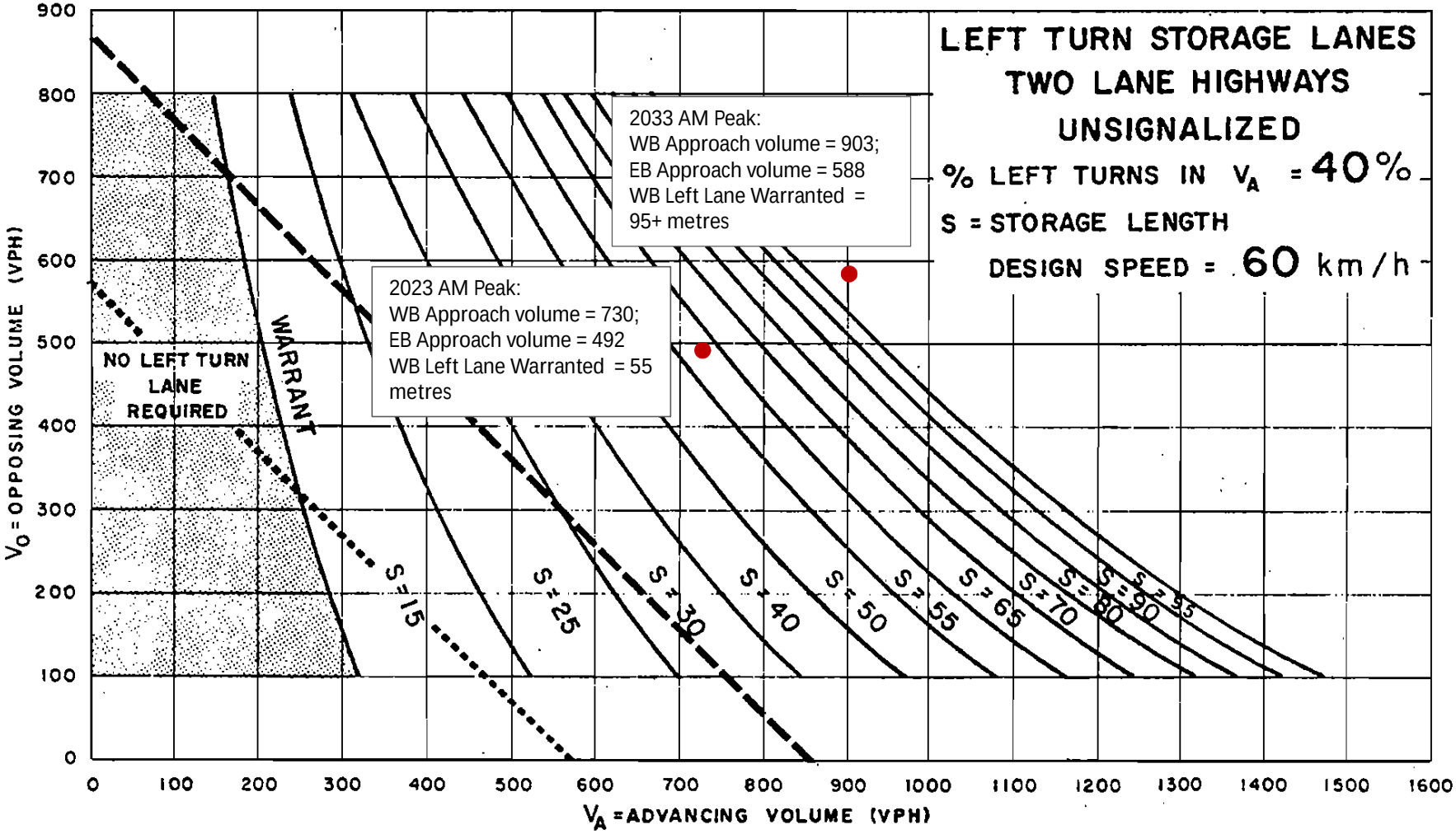
ISO 9001 CERTIFIED

NOVA SCOTIA
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7c
Left Turn Lane Warrants
Scenario 2 (Trunk 2/new Connector Road)



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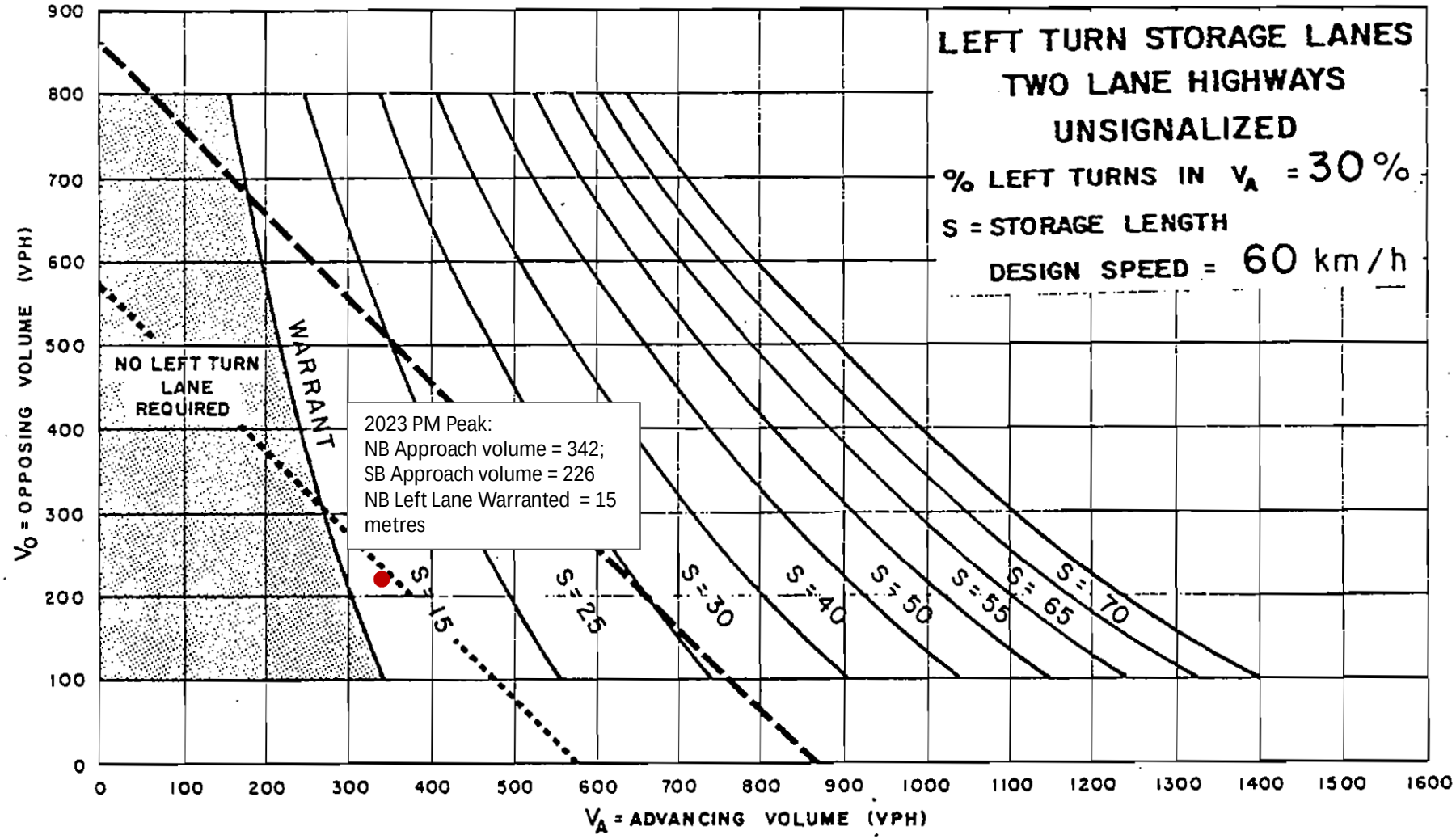
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7d
Left Turn Lane Warrants
Scenario 3 (Existing Southbound Ramps/Route 214)



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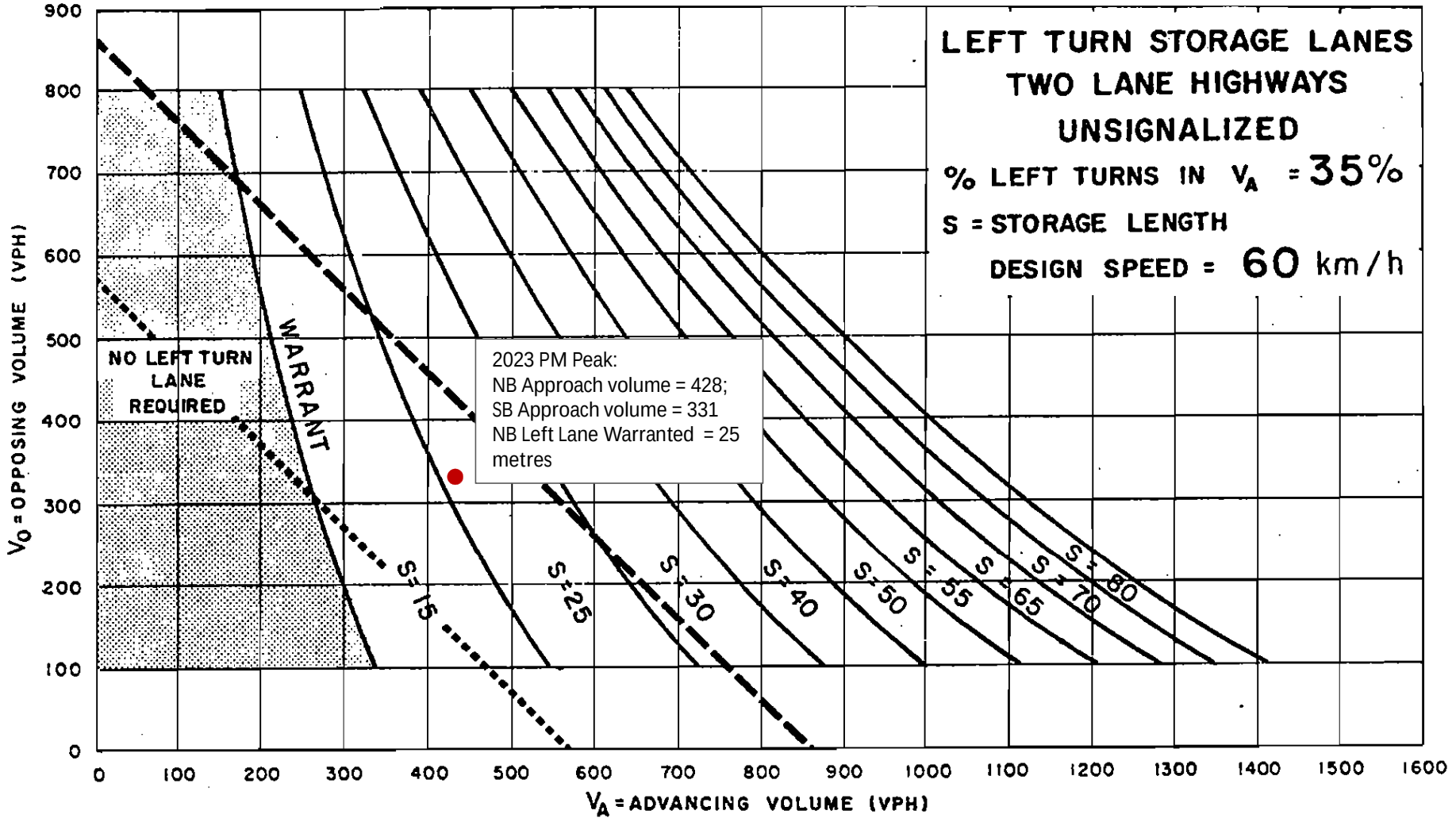
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7e
Left Turn Lane Warrants
Scenario 3 (Trunk 2/new Connector Road)



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Trunk 2/Route 214
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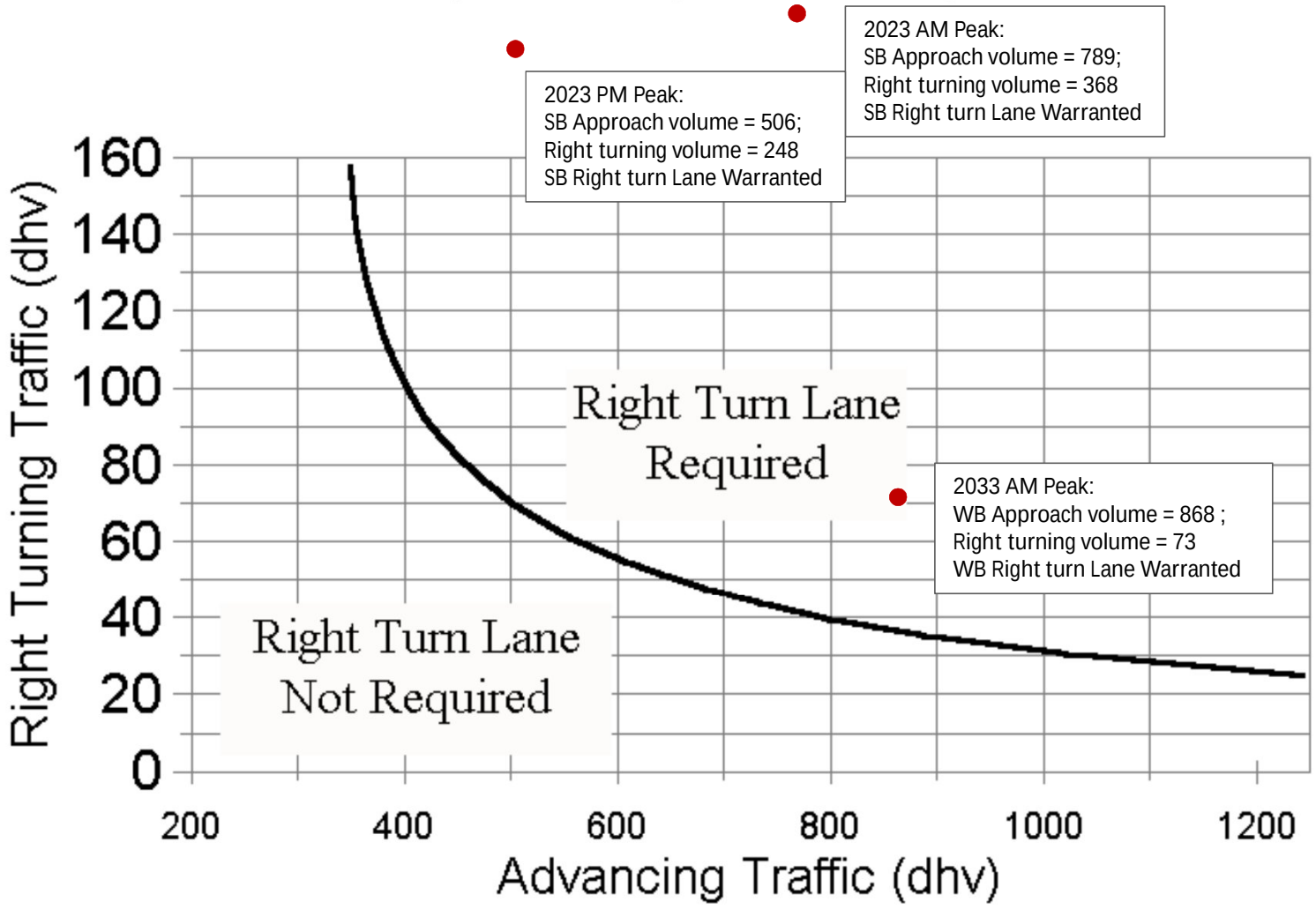
Figure A7f
Left Turn Lane Warrants
Scenario 3 (Trunk 2/new Connector Road)

2-Lane Highway Right Turn Lane Warrant

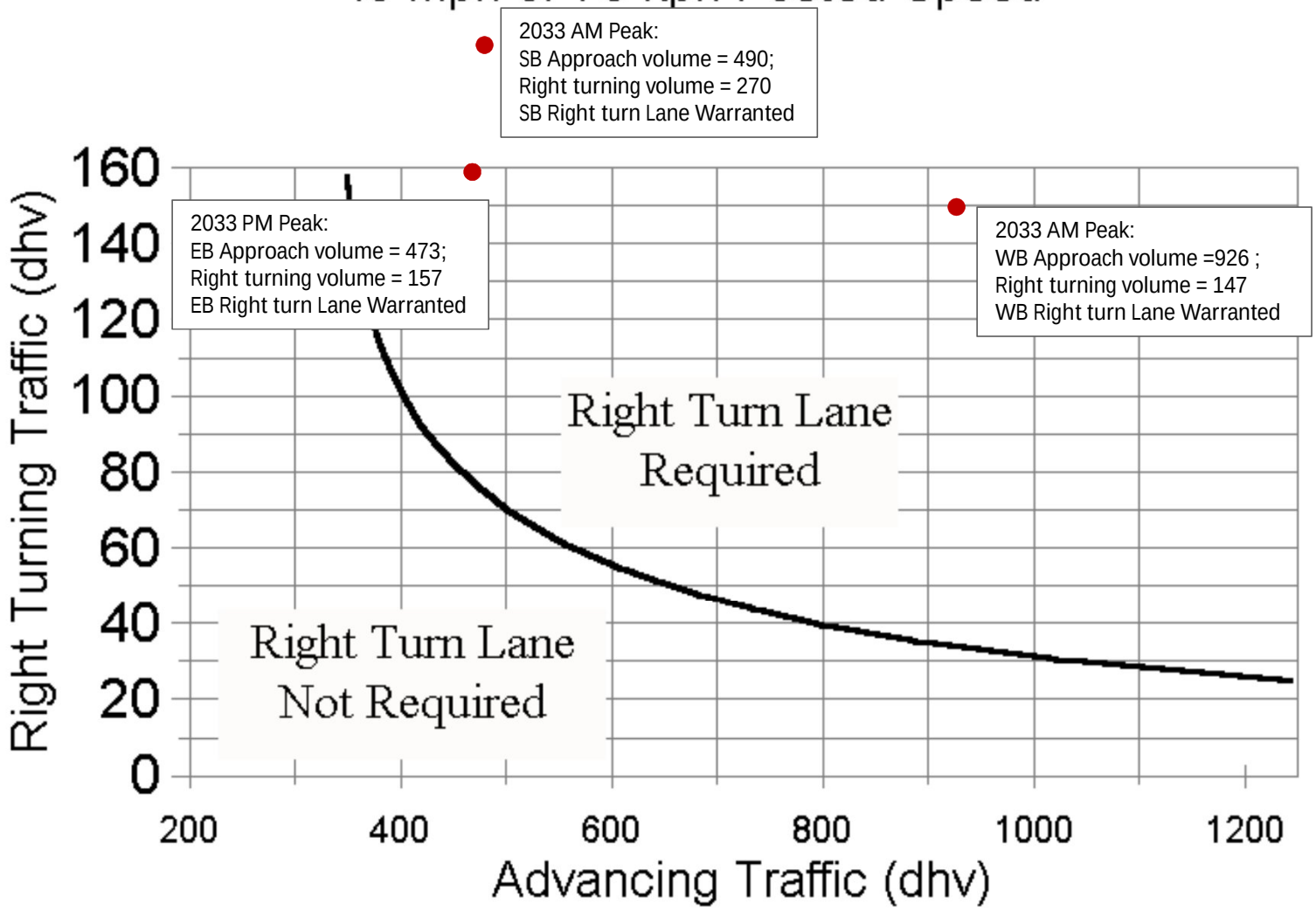
=< 40 mph or 70 kph Posted Speed



CBCL LIMITED Consulting Engineers ISO 9001 CERTIFIED; NOVA SCOTIA Transportation and Infrastructure Renewal	Trunk 2/Route 214 Corridor Traffic Study	Project No.: 131021 Date: March 2014	Figure A7g Right Turn Lane Warrants Scenario X

2-Lane Highway Right Turn Lane Warrant

=< 40 mph or 70 kph Posted Speed



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NOVA SCOTIA
Transportation and Infrastructure Renewal

Trunk 2/Route 214
Corridor Traffic Study

Project No.: 131021
Date: March 2014

Figure A7h
Right Turn Lane Warrants
Scenario Y

APPENDIX G

Functional Designs and Preliminary Cost Estimates

No.	Description	Date	By

Revision or Issue

NSTIR

TRUNK 2 INTERCHANGE STUDY

CIVIL

SOUTH LANTZ INTERCHANGE CONCEPT

LANTZ, NOVA SCOTIA

CBCL LIMITED
Consulting Engineers
ISO 9001 CERTIFIED

CBCL No	Contract No	Date	Scale
131021		SEPT. 2013	1:2500

Designed A.M.	Drawn K.D.M
Checked R.G.	Approved
Sheet No 1 of 2	
Drawing No 1	

DRAWING NAME: N:\HALIFAX\CAD\131021.00 - TRUNK 2 CORRIDOR TRAFFIC STUDY\131021_06-ROUNDABOUT INTERCHANGE.DWG LAYOUT NAME: LAYOUT PLOT DATE: March-31-14 11:12:36 AM CAD OPERATOR: SHAHEM

DRAWING NAME: Y:\HALIFAX\CAD\131021.00 - TRUNK 2 CORRIDOR TRAFFIC STUDY\131021_30-ROUNDABOUT INTERCHANGE.DWG LAYOUT NAME: LAYOUT PLOT DATE: March-31-14 11:14:27 AM CAD OPERATOR: SHAHIM

No.	Description	Date	By

Revision or Issue

NSTIR

TRUNK 2 INTERCHANGE STUDY

CIVIL

NORTH LANTZ INTERCHANGE CONCEPT

LANTZ, NOVA SCOTIA

CBCL LIMITED
Consulting Engineers
ISO 9001 CERTIFIED

CBCL No	Contract No	Date	Scale
131021		SEPT. 2013	1:2500

Designed	Drawn
A.M.	K.D.M
Checked	Approved
R.G.	

Sheet No 2 of 2

Drawing No **2**

APPENDIX H

Project Terms of Reference

NOVA SCOTIA

Transportation and
Infrastructure Renewal
Highway Engineering Services

Request For Proposals
for
Trunk 2/Route 214 Corridor Traffic Study

Highway Engineering Services Standing Offer Tender # 60145459

1.0 BACKGROUND

The Municipality of East Hants is one of the fastest growing municipalities in Nova Scotia in recent years. This growth has been led by residential development along the Trunk 2 corridor from Enfield to Lantz and commercial/industrial development near the Highway 102 (Exit 8) interchange in Elmsdale. A high growth rate is expected to continue with several large residential developments planned in this area, continued expansion of commercial and industrial areas near the interchange, and the possibility of an inland container port near Milford.

Increased development has resulted in a corresponding increase in traffic volumes along arterial and collector roads, in particular Route 214 between Trunk 2 and Park Road. In 1998 a traffic study was completed to assess traffic operations along Route 214 in Elmsdale. The two primary study recommendations were the widening of Route 214 to a 3 lane cross section with centre left turn lane, and the construction of the South Lantz interchange. The timing of both improvements were contingent upon traffic growth. To date warrants for these improvements are not met and they haven't been implemented. Planning for the South Lantz Interchange, including most of the land acquisition, has taken place.

Another study along Route 214 near Hwy. 102 was completed in 2003 which contained several recommendations for improvements in the vicinity of the interchange. Some recommendations from this study have been implemented including intersection upgrades/signals at the northbound ramp terminal and at Park Road.

Recent development proposals, including a large residential development on the north side of Lantz, along with the possible inland container port near Milford, have led to some questioning with regards to the best possible location for an interchange on Highway 102 near Lantz as recommended in the 1998 traffic study. A location north of the currently proposed interchange may have some benefits because of proximity to possible larger developments in the future. However, there are concerns a more northerly location may not be as effective in addressing traffic congestion on Route 214.

In order to determine the optimal location for the future Lantz interchange, and to assess the timing for needed roadway improvements (including the interchange), TIR and the Municipality of East Hants have decided to hire a qualified consulting firm to conduct a traffic study. The scope of work contained in this request for proposals (RFP) outlines the general requirements for the preparation of the Trunk 2/Route 214 Corridor Study. Innovation and suggestions for alternate study methodologies that achieve the desired study objectives are encouraged.

2.0 OBJECTIVES

The primary objectives of this study are to:

- **Assess future traffic flow patterns on Trunk 2 and Route 214 based on projected**

development within the study area and the following 3 interchange scenarios (see attached plan);

1. No Highway 102 Lantz Interchange

2. South Lantz Interchange location

3. North Lantz Interchange location

- **Based on estimated traffic flow patterns for each interchange scenario identify roadway deficiencies for each study horizon including recommended mitigation measures and costs.**

- **To service a possible inland container terminal near Milford investigate the potential for;**

  1. A second interchange and connector between Elmsdale and Milford (Scenario 1 and 2).

  2. A direct connection from the North Lantz Interchange location (Scenario 3).

- **Recommend an interchange location (South Lantz or North Lantz) taking into consideration analysis of traffic flow, roadway deficiencies, mitigation costs, construction costs, and potential benefits to future development including an inland container terminal near Milford.**

3.0 STUDY SCOPE

The study area includes Trunk 2 from South Milford to Route 214, Route 214 from Trunk 2 to Park Road, and Highway 102 from Exit 8 in Elmsdale to Exit 9 Milford. The study shall consider future traffic from the HRM side of the Shubenacadie River along Routes 214 and 277. The study shall be based on the following time horizons and interchange scenarios.

Horizon 1 - 10 years - 2023 (all 3 interchange scenarios)
Horizon 2 - 20 years - 2033 (all 3 interchange scenarios)

4.0 DUTIES OF THE CONSULTANT

- Familiarization with the study area including, but not necessarily limited to, existing and proposed highway infrastructure, existing development, zoning, land ownership, approved and proposed developments.

- Attend meetings based on the schedule in Section 7.0.

- Review all relevant past transportation, traffic impact and land use studies within the study area.

- Collect all traffic and other data in order to perform required analysis.

- Meet with local municipal planning officials and representatives of the Municipality of East Hants to determine future development plans (including a possible inland container port facility), zoning, and other land use characteristics that may impact future travel demand in the study area.

- For each study time horizon/interchange scenario provide projections of traffic volumes on study area roadways and intersections. Projections are to include AM and PM peak hour volumes, including turning movements, at the following intersections;

  - Rte. 214/Park Rd.
  - Rte. 214/102 SB Ramp
  - Rte 214/102 NB Ramp
  - Rte. 214/Trunk 2
  - Trunk 2/ Rte. 277
  - Trunk 2/South Lantz Interchange Connector (interchange scenario 2 only)
  - South Lantz Interchange Ramp terminals (interchange scenario 2 only)
  - Trunk 2/North Lantz Interchange Connector (interchange scenario 3 only)
  - North Lantz Interchange Ramp terminals (interchange scenario 3 only)

  Estimations of noon hourly volumes (11am to 1pm) are also required at existing un-signalized intersections and any proposed future intersections.

- Based on projected traffic volumes identify capacity and operational deficiencies along study area roadways and intersections for each horizon/interchange scenario. This analysis shall include, but not necessarily be limited to, capacity and level of service assessment, signal warrant analysis, turning lane analysis, evaluation of the need for a two way left turn lane (TWLTL) on Route 214, and a weaving analysis on Hwy. 102 between Exit 8 Elmsdale and interchanges being considered at South and North Lantz.

- If signalization is required the intersection is to be analysed as both signalized and as a roundabout. Signalized intersection analysis shall be completed using Synchro SimTraffic software and roundabout analysis, if required, shall be undertaken using Arcady software.

- Appropriate cost effective roadway upgrading measures, required to mitigate future capacity and/or operational deficiencies, shall be identified for each horizon/interchange scenario. All recommended upgrading measures shall include conceptual plans and preliminary cost estimates.

- Considering traffic flow changes, required mitigation measures, construction costs, benefits to development and motorists, and ability to service a potential inland container terminal in Milford, make a recommendation on the optimal interchange location (South or North Lantz).

- Assess the potential for a second interchange and connector road on Highway 102 between Elmsdale and Milford to service a possible inland container terminal in Milford.

- If North Lantz is the recommended interchange location, assess the potential for a direct connection between the interchange and a possible inland container terminal in Milford.

- Prepare a final report summarizing all work completed.

5.0 DUTIES OF TIR AND EAST HANTS

- Meet with the Consultant on an arranged schedule.

- Provide the Consultant with any available documentation (reports, studies, plans, traffic data, etc.).

- Answer any questions and provide guidance and clarification in a timely manner as required.

6.0 GUIDANCE

A Project Steering Committee comprised of representatives from TIR and the Municipality of East Hants will be responsible for overall administration of the study. Acceptance and approval of the work will take place after the Project Steering Committee has been satisfied that the study requirements have been met.

7.0 MEETINGS AND REPORTS

The Consultant shall meet with the Steering Committee for the project initiation and to present the study findings. All meetings will be held in Elmsdale, Nova Scotia. The initial meeting with the consultant will be to finalize the study requirements, data requirements and the methodologies to be used.

The consultant shall provide **ten (10)** bound copies and one unbound copy of the final report. The consultant shall provide one electronic copy of the final report in PDF format. Copies of the final report shall be on letter size paper and appropriately titled. A draft final report for the study in PDF format must be submitted for comment and possible amendments before the final version is submitted. The draft final report shall be submitted **5 working days** prior to the meeting to

present the study findings. The final report shall include an executive summary and a list of references. All reports shall contain copies of conceptual design plans. The Terms of Reference shall be attached as an appendix to the final report.

Written, biweekly progress updates are to be submitted to the Steering Committee Chair. The reports will review progress of the pervious reporting period, forecast the work of the upcoming period, identify any changes to the schedule and highlight any issues that may have arisen.

8.0 STUDY SCHEDULE

The Consultant shall meet with the Project Steering Committee within one week of notification of award of contract. The study shall be completed and the required copies of the final report presented within **3 months** of award of contract.

9.0 PROPOSAL REQUIREMENTS

Failure to provide information outlined in this section may result in disqualification.

Five (5) copies of your proposal (fax copies are not acceptable) are to be delivered **by 2:00 pm** local time, **Wednesday May 22nd** to the 1st Floor receptionist at the Johnston Building, 1672 Granville St., Halifax, Nova Scotia.

Proposals and their envelopes should be clearly marked with the name and address of the proponent and the project or program title. Late proposals will not be accepted and will be returned to the proponent. Proponents are solely responsible for their own expenses in preparing, delivering or presenting a proposal.

To facilitate efficient review of the proposals, proponents are requested to use the following format. The proposal shall be organized into four chapters and such chapters limited where indicated.

1. Introduction

This chapter shall include, but not necessarily be limited to, background information, a description of the study area, and understanding of the project and its objectives, including potential key issues.

2. Qualifications

A summary of project team member experience in areas related to these terms of reference. The role of each team member in the study shall be clearly explained.

3. Methodology

This chapter shall include, but not necessarily be limited to:

A list of all information and data sources available to the Consultant and expected to be used in the Study.

A detailed work plan, identifying planned field work, and including intended approach, methodology and schedule for the study.

4. Project Management

Number of person-days for each team member by task assigned to the project. For consistency, the basis of remuneration will be per **8 hour day** for all team members.

One copy of the cost proposal shall be provided, **to be separately sealed in an envelope,** including labour costs, related expenses, printing costs and professional services obtained outside of the firm. Prices quoted are to be in Canadian dollars and **exclusive of federal and provincial taxes**.

By submitting a proposal, the proponent warrants that all components required to deliver the services requested have been identified in the proposal or will be provided by the Consultant at no additional charge. The technical proposal must be signed by the person(s) authorized to sign on behalf of the proponent and to bind the proponent to statements made in response to this Request for Proposal.

10.0 LIABILITY FOR ERRORS

While considerable effort to ensure the accuracy of the information in this Request for Proposal has been made, the information contained in this Request for Proposal is supplied solely as a guideline to Proponents. The information is not guaranteed or warranted, nor is it necessarily comprehensive or exhaustive.

11.0 REQUEST FOR PROPOSAL AMENDMENTS

All proponents will be notified regarding any changes made to the Request for Proposal or any appendices or any change in the closing date or time. It is the responsibility of the proponent to ensure they have received all amendments. When these changes occur within five government business days of the close of the proposal, the proposal closing date will be extended to allow for a suitable number of bid preparation days between the issuance of the change and the closing date. All amendments must accompany each proposal. Proposals that do not contain all the

amendments may be immediately returned and the proponent eliminated from further consideration.

12.0 PAYMENT SCHEDULE

A lump sum payment for professional services rendered will be made upon completion of work as outlined in the RFP to the satisfaction of the Project Manager and receipt of an invoice detailing progress work completed.

The consultant is expected to provide a level of service consistent within a budget of **$75,000.**

13.0 EVALUATION OF PROPOSALS

Proposals shall be evaluated based on the "Government Procurement Process: Architects and Professional Services" (June 15, 1998).

All proposals will be initially assessed based on the experience and expertise of the project team. Any proposals not meeting minimum qualifications will not be evaluated further.

The criteria for evaluating proposals, based on technical and managerial merit, will be the following;

Qualification and experience of team members on similar projects.	35 points
Understanding of project and Proposed methodology	35 points
Quality of the proposal and project management	15 points

After meeting initial qualifications, proposals will be evaluated on the basis of their technical and managerial merit and then on the basis of price. The technical submission shall be rated as shown above, out of 85 points, and the remaining 15 points shall be allotted based on price. Only those proposals achieving an aggregate score of 68/85 (80%) or greater will have their sealed cost envelopes opened. The lowest price shall be awarded 15 points (all prices within 5% will receive the same price points). The next lowest price (beyond 5%) will receive 12 points. Points for other submissions will be assigned with 3 fewer points for each successively higher priced price proposal. But again, each time the same score will be awarded if successive prices are within 5% of the last highest price. The proposal with the highest total points will be awarded the contract. Proposals not meeting the required 68/85 will have their unopened cost envelopes returned.

Notwithstanding the technical/managerial and price scores, TIR reserves the right to reject any proposal where prices are deemed unreasonable relative to other prices bid, typically a 25% variance from the average qualified bid (excluding the bid in question).

The Department reserves the right to negotiate any or all conditions of the Consultant's proposed work plan and reject all submitted proposals. Unsuccessful proponents may request a debriefing meeting following execution of a contract with the successful proponent.

14.0 CONTRACT PROCEDURES

Notice in writing to a proponent of the acceptance of its proposal by the Province will constitute a contract for the goods or services based on the study terms of reference and consultant's proposal.

15.0 OWNERSHIP OF INFORMATION

The consultant agrees that all information collected, materials gathered and reports produced shall be the property of the Province of Nova Scotia. The consultant shall not be permitted to publish or in any way use said information without the expression or prior approval of TPW.

All documents, including proposals, submitted to the Province are subject to disclosure under the Nova Scotia Freedom of Information and Protection of Privacy Act. By submitting a proposal the proponent thereby agrees to public disclosure of its contents. Any information the proponent considers 'personal information' because of its proprietary nature should be marked as "confidential", and will be subject to appropriate consideration as defined within the Nova Scotia Freedom of Information and Protection of Privacy Act.

Information pertaining to this competition or any Department obtained by the proponent as a result of participation in this project is confidential and must not be disclosed without written authorization from the Province.

16.0 INSURANCE AND CERTIFICATION OF RECOGNITION

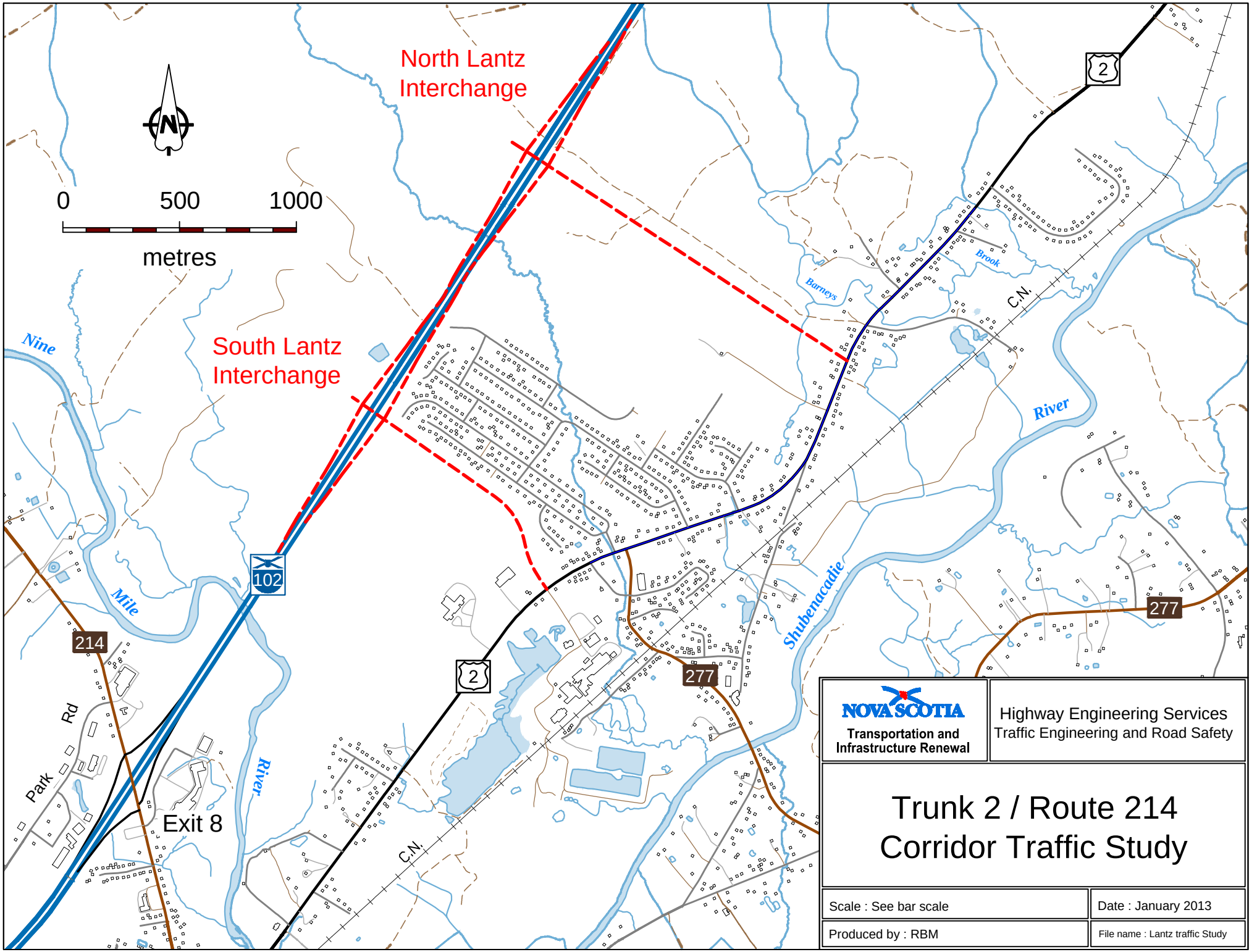
Prior to award of contract the consultant will be asked to provide proof of insurance coverage for the time period of the study and letter of good standing from an occupational health organization as required in the latest Standing Offer for Highway Engineering Services..

17.0 INQUIRIES

All enquiries related to this Request for Proposal are to be directed to the following person. Information obtained from any other source is not official and may be inaccurate. Enquiries and responses may be recorded and may be distributed to all proponents at the Province's option.

Department Contact:
Mike Croft, P.Eng. (Project Manager)
Access Management Engineer

Telephone: 902-424-3548
Fax: 902-424-0571
Email: croftmi@gov.ns.ca



NOVA SCOTIA
Transportation and Infrastructure Renewal

Highway Engineering Services
Traffic Engineering and Road Safety

Trunk 2 / Route 214 Corridor Traffic Study

Scale : See bar scale	Date : January 2013
Produced by : RBM	File name : Lantz traffic Study