Draft Transportation Effects Assessment Report

Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment

WM Canada

Watford, Ontario

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Executive Summary

HDR Corporation was contracted by WM Canada (WM) to prepare this Draft Transportation Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022. Transportation considers traffic operations, which includes traffic volumes, intersection performance, road safety (i.e., collisions), and sight distance.

The purpose of this Effects Assessment Report is to present the:

- potential environmental effects of the alternative methods on Transportation conditions;
- comparison of the net effects of each alternative method;
- selection of a preferred alternative;
- assessment of the environmental effects of the preferred alternative; and
- commitments and monitoring.

There are approximately 8 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed optimization would provide additional airspace of approximately 14 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043) and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, or annual fill rate.

Three alternative methods for carrying out the optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR). There are no noteworthy changes anticipated to the approved service area, annual fill rate, haul routes, origins/destinations of site traffic, employee traffic volumes, or operational hours, which would change the TCEC traffic operations compared to current operations.

The study areas for Transportation are as follows:

- On-site Study Area: the existing TCEC; and
- Off-site Study Area: the intersections that are used by facility vehicles to serve the local and broader areas based on known haul routes and typical origin-destinations for site traffic; specifically, Nauvoo Road intersections with Highway 402 Eastbound Off-ramp Terminal, Highway 402 Westbound Off-ramp Terminal, Confederation Line, Zion Line, the Primary facility entrance on Nauvoo Road, and the new Renewable Natural Gas facility driveway on Confederation Line.

A net effects assessment was carried out for the three alternative methods following the methods outlined in the approved ToR incorporating the information contained in the CDR, and the Transportation Existing Conditions Report. The results of the net effects assessment were used in a comparative evaluation of the three alternative methods.

From a Transportation perspective, the TCEC site will have limited effects for all evaluation criteria and indicators. Under 2032 and 2043 future conditions, TCEC site traffic will remain the same as existing conditions. There is no anticipated change to the daily or hourly trip generation compared to the current conditions. This is because the tonnage limits will not be changed. Rather, the TCEC will continue to operate as it does today.

The traffic analysis component of the Transportation Effects Assessment considered the following scenarios:

- 2032 horizon year without the TCEC in operation (‘Do Nothing’);
- 2032 horizon year with the TCEC in operation (optimization proceeds);
- 2043 horizon year without the TCEC in operation (‘Do Nothing’); and
- 2043 horizon year with the TCEC in operation (optimization proceeds).

If the Project were to not occur, then site traffic would be removed from the road network; therefore, the ‘Do Nothing’ alternative was represented by removal of site traffic from the road network. For the future conditions analysis with the Project, the site traffic volumes are added back to the road network and a comparison is made between the ‘Do Nothing’ to identify impacts.

The alternative methods are equivalent with respect to the Transportation Effects Assessment, as a result of the alternative methods only affecting the TCEC internals which are independent from the traffic conditions. Therefore, there is no substantial difference between the alternatives.

Practically speaking, the TCEC will continue to operate as it does today and will maintain the same peak hour traffic volumes and daily traffic volumes, resulting in no observable changes to the Transportation environment external to the site compared with existing conditions. The Project will have limited impacts on traffic volumes within the On-site and Off-site Study Areas when comparing the background conditions (‘Do Nothing’) with the total traffic conditions. The Average Annual Daily Traffic will not change as a result of the project. The intersections operations will remain the same, excepting typical daily and seasonal fluctuations. The road safety will remain the same given that there are no changes proposed to the design of surrounding roadway facilities within the On-site and Off-site Study Areas, with the exception of intersection improvements at Nauvoo Road and Confederation Line which are expected to improve intersection safety.

A ’Do Nothing’ scenario has been analyzed that reflects the removal of TCEC site traffic from the On-site and Off-site Study Area road network. This is because if the

Project were to not occur, then the TCEC would halt operations. The 'Do Nothing' is then compared to the scenario where the Project occurs and the operating life is extended. As previously mentioned, practically speaking there will be no changes from existing operations.

Furthermore, collision rates and collision history were analyzed in the Transportation Existing Conditions Report and there were no correlations identified between TCEC vehicle activity and collisions. With the TCEC continuing to operate as it does today, it is expected that there will be no changes to collision rates. The primary TCEC driveway on Nauvoo Road will remain unchanged and will continue to operate as it does today. Sightlines were previously confirmed to be adequate, and these are not expected to change.

From a macro-collision analysis perspective, the future collisions are expected to be consistent with the analyzed collision history and there are no safety concerns specifically associated with the Project.

Based on the observed traffic volumes, there are very few cyclists on Nauvoo Road and within the Off-site Study Area and this is not expected to change substantially. Although there may be growth within the Town of Watford which could result in an increase in cyclist volumes, there are limited destinations surrounding the Town which would result in higher cyclist activity in the vicinity of the TCEC. Despite the low cyclist activity, Nauvoo Road is identified as a cycling route but is not signed in the vicinity of the TCEC.

A new driveway has been developed on Confederation Line to serve the newly-constructed TCEC Renewable Natural Gas (RNG) facility. Traffic associated with this driveway has been incorporated into the future conditions analysis and a high-level sightline assessment was performed in the general vicinity of the driveway location to confirm that the sightlines should be adequate given that Confederation Line is very straight and flat in the vicinity of the RNG driveway location.

GHG emissions from site traffic will remain the same between existing conditions and future conditions since TCEC site traffic will not change as a result of the Project.

The analysis in this report is based on the historical hourly, daily, seasonal patterns in terms of truck arrivals to the TCEC, and the assumption that the existing scheduling of arrivals will remain unchanged. From a Transportation perspective, the Project commitments are to continue the existing mitigation which includes scheduling of truck arrivals to distribute the truck arrival demand throughout the day.

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Acronyms, Units and Glossary

Acronyms

Acronym	Definition
AADT	Average Annual Daily Traffic
ATR	Automatic Traffic Recorder
CAGR	Compound Annual Growth Rate
CDR	Conceptual Design Report
DHV	Design Hourly Volume
EA	Environmental Assessment
GHG	Greenhouse Gas
HCM	Highway Capacity Manual
LFG	Landfill Gas
LOS	Level of Service
MECP	Ministry of Environment, Conservation and Parks
OEAA	*Ontario Environmental Assessment Act*
RNG	Renewable Natural Gas
SADT	Summer Average Daily Traffic
SMV	Single Motor Vehicle
TAC	Transportation Association of Canada
TCEC	Twin Creeks Environmental Centre
TMC	Turning Movement Count
ToR	Terms of Reference
V/C	Volume-to-Capacity Ratio
WM	WM Canada

Units

Unit	Definition
ha	hectares
kg	kilograms
km	kilometre
km/h	kilometres per hour
m	metre
m^3	cubic metres

Glossary

Term	Definition
Approval	Permission granted by an authorized individual or organization for an undertaking to proceed. This may be in the form of program approval, certificate of approval or provisional certificate of approval.
Capacity (Disposal Volume)	The total volume of air space available for disposal of waste at a landfill site for a particular design (typically in m^3); includes both waste and daily cover materials, but excludes the final cover.
Channelized	Channelized right-turns have separate turn lanes that diverge from the roadway and allow vehicles to perform the turn at higher speeds rather than coming to a full stop or slowing down to perform the right-turn at the intersection. Channelized right-turns are typically under yield control rather than stop control.
Composting	The controlled microbial decomposition of organic matter, such as food and yard wastes, in the presence of oxygen, into finished compost (humus), a soil-like material. Humus can be used in vegetable and flower gardens, hedges, etc.
Composting facility	A facility designed to compost organic matter either in the presence of oxygen (aerobic) or absence of oxygen (anaerobic).
Delay	Delay is the amount of time, expressed in seconds, that a vehicle is expected to have to wait when traveling through an intersection. Delays are often expressed as Level of Service level grades.
Demand Profile	The demand (or activity) experienced over a given time period, including fluctuations depending on time-of-day, day-of-week, or seasonal fluctuations.
Environment	As defined by the Environmental Assessment Act, environment means: • air, land or water; • plant and animal life, including human life; • the social, economic and cultural conditions that influence the life of humans or a community; • any building, structure, machine or other device or thing made by humans; • any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or any part or combination of the foregoing and the interrelationships between any two or more of them (ecosystem approach).
Environmental Assessment (EA)	A systematic planning process that is conducted in accordance with applicable laws or regulations aimed at assessing the effects of a proposed undertaking on the environment.
Evaluation criteria	Evaluation criteria are considerations or factors taken into account in assessing the advantages and disadvantages of various alternatives being considered.
Greenhouse gas (GHG)	Any of the gases whose absorption of solar radiation is responsible for the greenhouse effect, including carbon dioxide, methane, ozone, and the fluorocarbons.
Indicators	Indicators are specific characteristics of the evaluation criteria that can be measured or determined in some way, as opposed to the actual criteria, which are fairly general.
Landfill gas (LFG)	The gases produced from the wastes disposed in a landfill; the main constituents are typically carbon dioxide and methane, with small amounts of other organic and odour-causing compounds.
Landfill site	An approved engineered site/facility used for the final disposal of waste. Landfills are waste disposal sites where waste is spread in layers, compacted to the smallest practical volume, and typically covered by soil.
Leachate	Liquid that drains from solid waste in a landfill and which contains dissolved, suspended and/or microbial contaminants from the breakdown of this waste.

Glossary

Term	Definition
Level of Service (LOS)	Level of Service is a letter grade intended to represent the amount of delay (in seconds) experienced by a traffic movement. Level of Service ranges from 'A' (least delay) to 'F' (most delay). Typically, Level of Service 'A', 'B', and 'C' are considered acceptable, Level of Service 'D' is considered within acceptable range but justifies monitoring, and Level of Service 'E' and 'F' indicate deficiencies.
Mitigation	Measures taken to reduce adverse impacts on the environment.
Proponent	A person who: • carries out or proposes to carry out an undertaking; or is the owner or person having charge, management or control of an undertaking.
Queue	Vehicle queues are expressed in metres. The 95th percentile queue is typically used to determine storage needs, but the 50th percentile queue is also used to understand average queues.
Receptor	The person, plant or wildlife species that may be affected due to exposure to a contaminant.
Storage and Taper	Exclusive turning lanes for left-turns or right-turns can have two components to the lanes design: storage and taper. The storage is the section for storing vehicles while they wait to perform their turn. The taper is the segment of the left-turn lane where the lane begins to widen until it reaches the storage segment. The taper is intended for vehicles to transition from the adjacent through-lane and decelerate prior to entering the storage area.
Terms of Reference (ToR)	A terms of reference is a document that sets out detailed requirements for the preparation of an Environmental Assessment.
Undertaking	Is defined in the Environmental Assessment Act as follows: • An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity by or on behalf of Her Majesty in right of Ontario, by a public body or public bodies or by a municipality or municipalities; • A major commercial or business enterprise or activity or a proposal, plan or program in respect of a major commercial or business enterprise or activity of a person or persons other than a person or persons referred to in clause (1) that is designated by the regulations; or An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity of a person or persons, other than a person or persons referred to in clause (a), if an agreement is entered into under section 3.0.1 in respect of the enterprise, activity, proposal, plan or program ("enterprise").
Volume-to-Capacity Ratio (V/C)	The volume-to-capacity (v/c) ratio is a measure of the degree of capacity utilized at an intersection or for a specific traffic movement. Volume-to-capacity ratios can range from zero (when there is no demand), to 1.00 (when the movement is operating at capacity). If a v/c ratio exceeds 1.00 then the software is either underestimating the capacity for existing conditions, or is predicting that the intersection will not be able to serve the projected demand within the analysis period, resulting in queue buildup.
Waste	Refuse from places of human or animal habitation; unwanted materials left over from a manufacturing process.

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1 Introduction

HDR Corporation was contracted by WM Canada (WM) to prepare this Draft Transportation Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022.

The *OEAA* defines the environment in a broad, general sense that comprises physical, biological, and human considerations. In this EA, the environment has been separated broadly into the natural, socio-economic, cultural, and built aspects, with environmental components and evaluation criteria identified within each aspect as listed in **Table 1-1**, consistent with the approved ToR. The organization of the Effects Assessment Reports is also provided in **Table 1-1**.

Table 1-1. Environmental Aspects, Components, and Evaluation Criteria

Environmental Aspect	Environmental Component	Evaluation Criteria	Effects Assessment Report
Natural Environment	Atmospheric Environment	• Air Quality – Dust • Air Quality – Landfill Gas and Combustion By-Products • Air Quality – Blowing Litter • Odour • Noise	• Air Quality
			• Noise
	Hydrogeology	• Groundwater Quality • Groundwater Quantity	• Hydrogeology
	Surface Water Environment	• Surface Water Quality • Surface Water Quantity	• Surface Water Quality
			• Surface Water Quantity
	Ecological Environment	• Terrestrial Ecosystems • Aquatic Ecosystems	• Ecological Environment
Socio-Economic Environment	Social Environment	• Human Health • Effects on Local Community	• Human Health
			• Socio-Economic Environment
	Economic Environment	• Economic Effects on Local Community	
	Visual Landscape	• Visual Impact of Facility	• Visual Landscape
Cultural Environment	Cultural Environment	• Cultural Heritage Resources • Archaeological Resources	• Cultural Heritage Resources
			• Archaeological Resources
Built Environment	Transportation	• Traffic Operations	• Transportation
	Current and Planned Future Land Use	• Effects on Current and Future Land Uses	• Land Use

Transportation considers traffic operations including traffic volumes, intersection performance, road safety (i.e., collisions), and sight distance. The purpose of this Effects Assessment Report is to present the potential environmental effects of the alternative methods on Transportation, a comparison of the net effects of each alternative method, the selection of a preferred alternative, the assessment of the environmental effects of the preferred alternative, and commitments and monitoring.

Safety considerations were assessed in the Transportation Existing Conditions Report, including a review of the driveway sightlines and a review of historical collision history. These criteria will not change with the extension of the TCEC operating life.

This Transportation Effects Assessment Report is one component of the EA. The EA Study Report will incorporate the information presented herein as appropriate, and this report will be included with the EA Study Report as a supporting document.

1.1 Project and Alternative Methods

There are approximately 8 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed landfill optimization would provide additional airspace of approximately 14 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043) and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, haul route, or annual fill rate.

Three alternative methods for carrying out the landfill optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR) and are described below as they are relevant to Transportation.

From a transportation perspective, there are no differences between the designs of Alternative Methods 1, 2 and 3, described below.

This Transportation Effects Assessment Report assesses the effects of the of the project on the Traffic Operation portion of the Transportation Environment. Traffic operations will change as a result of general background traffic growth associated with regional growth as well as new nearby developments. Additionally, if the optimization were not to result in an extended lifespan of the TCEC (i.e. the ‘Do Nothing’ scenario), then vehicular traffic associated with the TCEC would be removed from the road network. Therefore, for the purposes of this analysis, a comparison is made between the ‘Do Nothing’ (site traffic removed from the network) and the optimization (site traffic is retained).

1.1.1 Alternative Method 1

With respect to Transportation, there are no operational changes anticipated as a result of the landfill optimization and the landfill will operate consistent with current conditions with the same annual tonnage limit. There is no proposed change to the effective catchment area for the facility, haul routes, the origin-destination patterns of vehicles travelling to or from the TCEC (including trucks as well as regular passenger

vehicles), or the hourly or daily trips generated. Accordingly, there will be little to no impact to the surrounding road network or along the haul routes with the exception of typical daily or monthly variations.

The landfill optimization will not increase its average daily tonnage received or the annual tonnage limits. The tonnage limits correlate directly to the truck traffic generated by the TCEC. Therefore, traffic conditions are expected to remain the same as they are today.

Weigh scale and turning movement count data was used to project traffic volumes for the TCEC under the following assumptions:

- Employee traffic volumes remain unchanged.
- The origins/destinations of site traffic do not change.
- Haul routes do not change.
- The hourly, daily, and seasonal patterns remain stable.
- The breakdown of vehicle types and average vehicle loads remain stable.

Turning movement counts (TMCs) were collected in November 2022 and validated with landfill weigh scale data. Site traffic was adjusted using the weigh scale information to adjust the site traffic so that it was representative of a peak operating day. On a peak operating day there are typically 47 inbound and 77 outbound trips during the weekday AM peak hour, 44 inbound and 52 outbound trips during the midday peak hour, and 26 inbound and 30 outbound trips during the weekday PM peak hour. These volumes represent the existing condition peak day as well as future conditions consistent with the assumptions listed above.

No off-site road network improvements are required to accommodate the extension of the landfill's operating life to approximately 2043.

Traffic related to landfill construction is not anticipated (e.g., landfill cell preparation in advance of waste placement) as the landfill liner will be fully constructed prior to vertical expansion of the landfill. Current construction traffic and any materials used for landfill cover are captured in the weigh scale data provided for the traffic impact analysis and is therefore included in the projected vehicle trips.

1.1.2 Alternative Method 2

The assumptions, traffic and turning movements, and impacts of Alternative Method 2 are the same as Alternative Method 1. Please refer to Section 1.1.1.

1.1.3 Alternative Method 3

The assumptions, traffic and turning movements, and impacts of Alternative Method 3 are the same as Alternative Method 1. Please refer to Section 1.1.1.

2 Effects Assessment Methods

Using the evaluation criteria, indicators, rationale and data sources from the approved ToR and the existing conditions from the Transportation Existing Conditions Report, the effects assessment is carried out as follows:

- predict the potential environmental effects for each alternative method (**Section 2.1**);
- identify the preferred alternative based on a comparative evaluation of the potential environmental effects of each alternative method (**Section 2.2**);
- conduct an effects assessment on the preferred alternative, including the identification of mitigation measures and monitoring programs (**Section 2.3**); and
- compare the effects of the preferred alternative to those of the 'do nothing' alternative (i.e., the Expansion Landfill as approved) (**Section 2.4**).

2.1 Predict Potential Environmental Effects for Alternative Methods

The potential environmental effects for each alternative method are identified within the study areas based on the application of the evaluation criteria, indicators and data sources in the approved ToR and based on the maximum allowable waste receipt level for the TCEC landfill. The potential effects can be positive or negative, direct or indirect, and short- or long-term. Mitigation measures are identified to minimize or mitigate the potential effects and then the net effects are evaluated taking into consideration the application of mitigation measures. The study areas, evaluation criteria, indicators, data source, and key design considerations and assumptions for Transportation are provided below.

2.1.1 Study Areas

The TCEC landfill is located within the Township of Warwick, in the County of Lambton, approximately 1 km north of the Village of Watford. The TCEC is situated south of Highway 402 and southeast of the intersection of Nauvoo Road and Zion Line. The municipal street address of the TCEC is 5768 Nauvoo Road, Watford, Ontario. The area being considered for the landfill optimization is the approved Expansion Landfill footprint located within the northern portion of the 301 ha TCEC site.

The study areas include the existing TCEC site as well as the potentially affected surrounding areas. The general On-site and Off-site Study Areas identified for the EA in the approved ToR are depicted in **Figure 2-1** and are as follows:

- On-site Study Area: the existing TCEC;
- Off-site Study Area: the lands within the vicinity of the TCEC extending approximately 1 km out from the On-site Study Area.

For Transportation, the general Off-site Study Area has been extended to include the intersections that are used by facility vehicles to serve the local and broader areas based on known haul routes and typical origin-destinations for site traffic. These intersections are shown in **Figure 2-2**.

The intersections included in the Transportation scope of work include the following five (5) locations:

1. Highway 402 and Nauvoo Road Eastbound Off-ramp Terminal;
2. Highway 402 and Nauvoo Road Westbound Off-ramp Terminal;
3. Nauvoo Road and Confederation Line;
4. Nauvoo Road and Zion Line; and
5. Primary facility entrance on Nauvoo Road.

An additional site access for the Renewable Natural Gas (RNG) facility at the TCEC site has been developed along Confederation Line and is included in the Transportation Off-site Study Area.

Only local traffic arrives at the TCEC site from the south. The Off-site Study Area for Transportation also extends to the southerly limits of the Village of Watford, approximately 280 m south of Bond Street (the southernmost street) for the purposes of the collision history review while the most southerly Off-site Study Area intersection captured in the operational analysis is Nauvoo Road at Confederation Line as depicted in **Figure 2-2**.

Collision history for the Off-site Study Area was analyzed and discussed in the Transportation Existing Conditions report and the conclusions of that analysis are not expected to change in the future. Additionally, sightline considerations were also assessed for the site driveways and are not revisited in this report as it is not relevant to the effects assessment and is not expected to change in the future.

Figure 2-1. On-site and Off-site Study Areas for Transportation

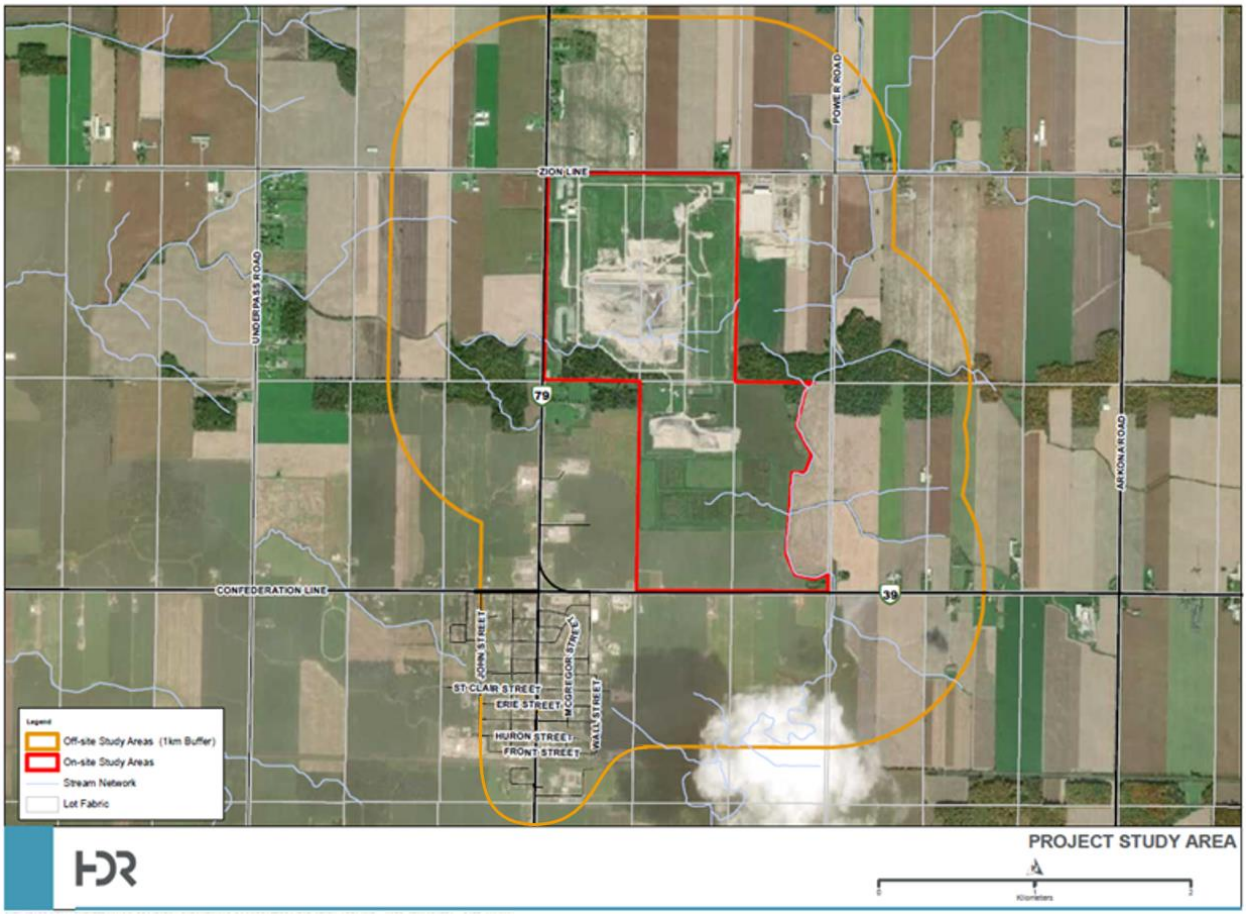
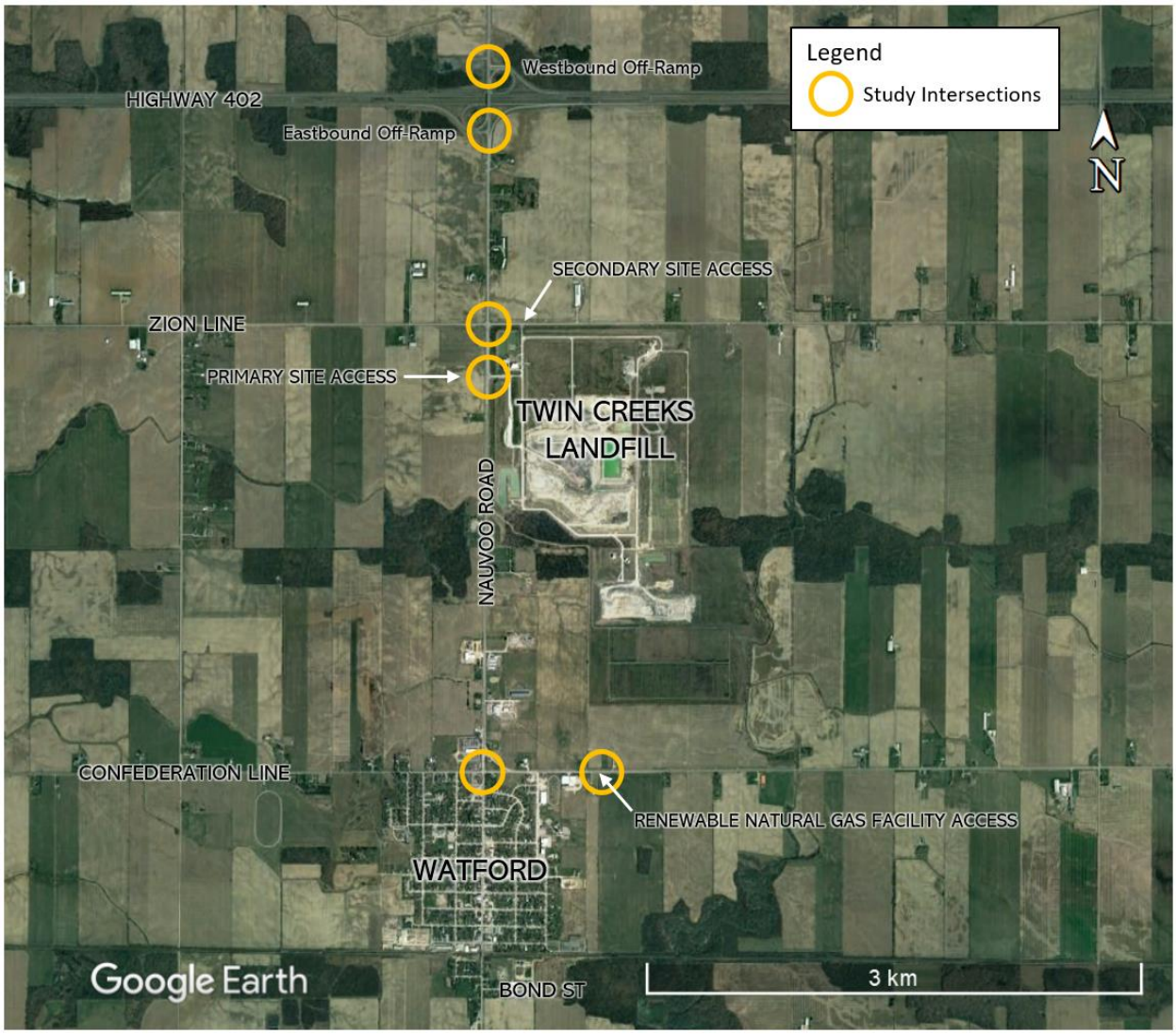


Figure 2-2. On-site and Off-site Study Areas Intersections



2.1.2 Evaluation Criteria, Indicators, and Data Sources

The evaluation criteria, rationale, indicators, and data sources used for Transportation as per the approved ToR are provided in **Table 2-1**.

Table 2-1. Evaluation Criteria, Indicators, and Data Sources for Transportation

Evaluation Criteria	Rationale	Indicators	Data Sources
Built Environment			
Transportation			

Traffic Operations	Truck traffic associated with continued operations of the landfill may adversely affect residents, businesses, institutions and movement of farm vehicles in the site vicinity.	• Change in peak hour and daily truck traffic volume and Average Annual Daily Traffic (AADT) along the Off-site Study Area road segments
		• Intersection performance – capacity, delay, queues (based on HCM 2000 and generated by Synchro Traffic Signal Coordination Software Version 11) – for the Off-site Study Area intersections
		• Road safety
		  • Collisions per million vehicles at all Off-site Study Area intersections (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)
		  • Collisions per million vehicle-km along all Off-site Study Area road segments (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)
		  • Collisions by environmental conditions for segments and intersections
		• Sight distance at the primary site entrance
			• Turning Movement Counts
			• Traffic Model
			• Road Safety Assessment
			  • Collision History
			  • Aerials
			  • Land Survey
			  • Stopping and Turning Sight Distance Review
			• Field inventory/investigation: Clear Zone, Conflicts, Visual Obstructions, Signage, Pavement Condition, Linework Condition

As noted, the effects assessment focuses on the transportation intersection performance since the other indicators are expected to remain the same as existing conditions due to the site traffic remaining unchanged. Background traffic growth is expected and has been incorporated into the traffic forecasts for the purposes of the intersection performance analysis and this would be the only factor which could affect the collision rates and traffic volumes within the Off-site Study Area.

2.1.3 Key Considerations and Assumptions

The key existing conditions elements, design considerations, and assumptions for the Transportation effects assessment are described below.

2.1.3.1 Key Elements of Existing Conditions

The key elements to the Transportation effects assessment from the existing conditions report is the existing traffic operations and measures of effectiveness, which include: volume-to-capacity ratios, level of service (delays), and queues.

Background information informing intersection selection was extracted from the report entitled Twin Creeks Landfill Annual Fill Rate Increase Traffic Impact Study (February 2017, HDR). Based on knowledge of the site operations, the primary haul routes are

to and from Highway 402, with approximately 80% of site truck traffic going to the north to Highway 402 and the remainder of site traffic heading to the south towards Watford. Smaller vehicles are more evenly split between those destined to/from the north and south, which may be due to the employees and visitors living in the immediate area. The same traffic patterns are expected to continue in the future.

Under existing conditions, the surrounding Off-site Study Area study intersections are operating within acceptable thresholds. The intersection characteristics (lane configuration, travel speeds, and traffic volumes) and the existing traffic volumes were used as the basis to forecast and assess future traffic operations.

The Highway 402 interchange includes two stop-controlled intersections (intersections 1 and 2, identified above), as well as free-flow ramps which were not analyzed as there are no controlled movements. The employee-only secondary entrance along Zion Line is closed to facility traffic and was not included in the analysis, although it is acknowledged that this entrance may be used under some rare conditions when the primary entrance on Nauvoo Road is inaccessible.

Despite the existing conditions analysis, the primary comparator to assess the effects of the alternative methods will be the difference between background conditions (which is the 'Do Nothing' scenario that removes site traffic) and total traffic conditions (future operations with site traffic), but practically speaking, there will be no change from existing conditions in terms of the TCEC operations and the TCEC contribution to traffic volumes on the surrounding roadways.

2.1.3.2 Key Design Considerations

It is assumed that the TCEC will continue to operate as it does today with no changes to traffic generated or the origins and destinations of site traffic. There may be general background growth associated with traffic passing through the Off-site Study Area, or growth associated with nearby developments. The daily, seasonable, and hourly vehicle arrival patterns will remain unchanged.

No changes to the approved service area, annual fill rate, haul routes, origins/destinations of site traffic, employee traffic volumes, or operational hours are anticipated from the Project.

No changes or alternatives are being proposed for the current haul route as part of the landfill optimization. Intersections at the interchanges with Kerwood Road and Forest Road were not included since facility-related traffic traveling through these interchanges will be free-flow and will not exit or enter Highway 402 via the interchanges.

There will be improvements to the intersection of Nauvoo Road and Confederation Road which will provide exclusive left-turn lanes for all approaches and will remove the westbound right-turn channelization. There will be no other changes to the existing driveway or surrounding road network within the Off-site Study Area.

From a Transportation perspective, the design of the alternative methods does not impact the above Transportation assumptions.

2.1.3.3 Key Assumptions

The TCEC will continue to operate as it does today and will maintain the same peak hour traffic volumes, daily traffic volumes, seasonal variations, and hourly variations throughout the day.

The traffic analysis component of the Transportation Effects Assessment considered the following scenarios which were approved by review agencies:

- 2032 horizon year without the TCEC in operation ('Do Nothing');
- 2032 horizon year with the TCEC in operation (optimization proceeds);
- 2043 horizon year without the TCEC in operation ('Do Nothing'); and
- 2043 horizon year with the TCEC in operation (optimization proceeds).

The 2032 horizon represents the 10-year horizon from existing conditions and the 2043 horizon year represents the extension of the TCEC operating life to 2043.

On a peak operating day there are typically 47 inbound and 77 outbound trips during the weekday AM peak hour, 44 inbound and 52 outbound trips during the midday peak hour, and 26 inbound and 30 outbound trips during the weekday PM peak hour. These volumes represent the existing condition peak day as well as future conditions.

Project traffic volumes for the TCEC were projected under the following assumptions:

- Employee traffic volumes remain unchanged.
- The origins/destinations of site traffic do not change.
- Haul routes do not change.
- The hourly, daily, and seasonal patterns remain stable.
- The breakdown of vehicle types and average vehicle loads remain stable.

2.2 Comparative Evaluation and Identification of the Preferred Alternative

The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the preferred alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method.

The net environmental effects are used to compare the three alternative methods to one another at the criteria and indicator level for each discipline. The following two step methodology was applied to carry out the comparative evaluation for Transportation:

1. Identify the predicted net effect(s) associated with each alternative method for each indicator and assign a preference rating (i.e., Preferred, Not Preferred, No Substantial Difference); and

2. Rate each alternative method at the criteria level (i.e., Preferred, Not Preferred, No Substantial Difference) based on the identified preference rating for each indicator and provide a rationale.

2.3 Effects Assessment of the Preferred Alternative

An assessment of the environmental effects of the Preferred Alternative is carried out considering the same criteria, indicators, and data sources, considering potential mitigation/management measures and cumulative effects. The effects assessment of the Preferred Alternative will be compiled and presented in the EA Study Report.

2.4 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration. The advantages and disadvantages of the Preferred Alternative compared to the 'Do Nothing' alternative are identified. The comparison of the effects of the Preferred Alternative against the 'Do Nothing' alternative will be compiled and presented in the EA Study Report.

3 Net Effects Assessment

To identify the potential effects of the Project on Transportation, the conceptual design of each alternative method for the landfill optimization is examined to determine if it will have an effect on:

- Traffic operations through changes in peak traffic volume and intersection performance (capacity, delay, queues),
- Average Annual Daily Traffic, and
- Collision and safety.

Since the Alternative Methods are equivalent from a Transportation perspective, there is no comparison to be made. The only comparison that can be derived is between the Do Nothing scenario and the future 2032 and 2043 total traffic conditions. As previously noted, the Average Annual Daily Traffic and the collision history is not expected to be impacted by the Project since the TCEC will continue to operate as it does today and the site access is going to remain as it is today.

The results of the net effects assessment are provided in Sections 3.1 through 3.3, below.

3.1 Traffic Analysis Methodology

Intersection operations were assessed for the Off-site Study Area intersections using the software program Synchro Traffic Signal Coordination Software Version 11, which employs methodology from the Highway Capacity Manual (HCM 2000) published by the Transportation Research Board National Research Council. Synchro can analyze both signalized and unsignalized intersections in a road corridor or network, taking into account the spacing, interaction, queues, and operations between intersections.

- The intersection analysis considers three separate measures of performance:
  - The capacity of all intersection movements, represented by the volume to capacity (v/c) ratio;
  - The level of service (LOS) for all intersection turning movements as well as for the overall intersection. The overall intersection LOS is based on the average control delay per vehicle (weighted) for the various movements through the intersection; and,
  - The forecasted queue lengths (50th and 95th percentile queue lengths).

LOS is an indicator of how long a vehicle must wait to complete a movement and is represented by a letter between 'A' and 'F', with 'F' being the longest delay. The volume to capacity (v/c) ratio is a measure of the degree of capacity utilized at an intersection. HCM definitions are summarized in **Table 3-1**.

Table 3-1. HCM Level of Service Definitions

Level of Service (LOS)	Signalized Control Delay per Vehicle (s)	Unsignalized Control Delay per Vehicle (s)	Description
A	≤ 10	≤ 10	Ideal
B	> 10 and ≤ 20	> 10 and ≤ 15	Acceptable
C	> 20 and ≤ 35	> 15 and ≤ 25	Acceptable
D	> 35 and ≤ 55	> 25 and ≤ 35	Somewhat undesirable
E	> 55 and ≤ 80	> 35 and ≤ 50	Undesirable
F	> 80	> 50	Poor

In this study, critical operations have been defined as:

- Shared traffic movements with v/c ratios exceeding 0.85;
- Exclusive turning movements with v/c ratios exceeding 1.00;
- Exclusive turning movements where queues exceed available storage or shared movements where queue spillback impacts upstream intersections; and
- Exclusive turn lanes that are inaccessible due to the adjacent queues.

Detailed Synchro intersection operation reports are provided in **Appendix A**. Detailed SimTraffic Queueing reports are provided in **Appendix B**.

3.2 Future Baseline Conditions

The Off-site Study Area transportation network will remain unchanged under 2032 and 2043 future conditions. Background traffic growth was applied throughout the Off-site Study Area transportation network. Historic traffic growth was calculated using automatic traffic recorder counts for the years 2015 to 2022 and is presented in **Table 3-2**.

Table 3-2. Historical ATR counts and Calculated Compounded Growth Rate

ATR Station and Description	2015	2016	2017	2018	2019	2020	2021	2022	Compounded Annual Growth
133901 - Confederation East of Watford	1728	n/a	1773	1751	n/a	n/a	1577	1866	1.10%
147908 - Nauvoo between St. Clair and Victoria	5147	n/a	5600	5368	n/a	n/a	4756	4753	-1.13%
147909 - Nauvoo South of Highway 402	4167	3757	n/a	4440	4350	n/a	n/a	n/a	1.08%
147910 - Nauvoo North of Highway 402	3272	2912	n/a	3808	n/a	n/a	n/a	n/a	2.19%

Notes: “n/a” = not available. An Automatic Traffic Recorder count was not available. The Compound annual growth was calculated based on the oldest and most recent available data.

Based on the calculated growth rates, conservative growth rates were selected and used in the traffic volume forecasting. The north-south volumes on Nauvoo Road were assumed to grow at a compounded annual growth rate (CAGR) of 2.0%, while side streets were assumed to grow at 1.0% CAGR. Site traffic volume in and out of the site was assumed to be the same as existing volume for both 2032 and 2043 future conditions and matches the volumes analyzed in the Transportation Existing Conditions Report.

The inbound weigh scale processing time is assumed to be the same under future conditions.

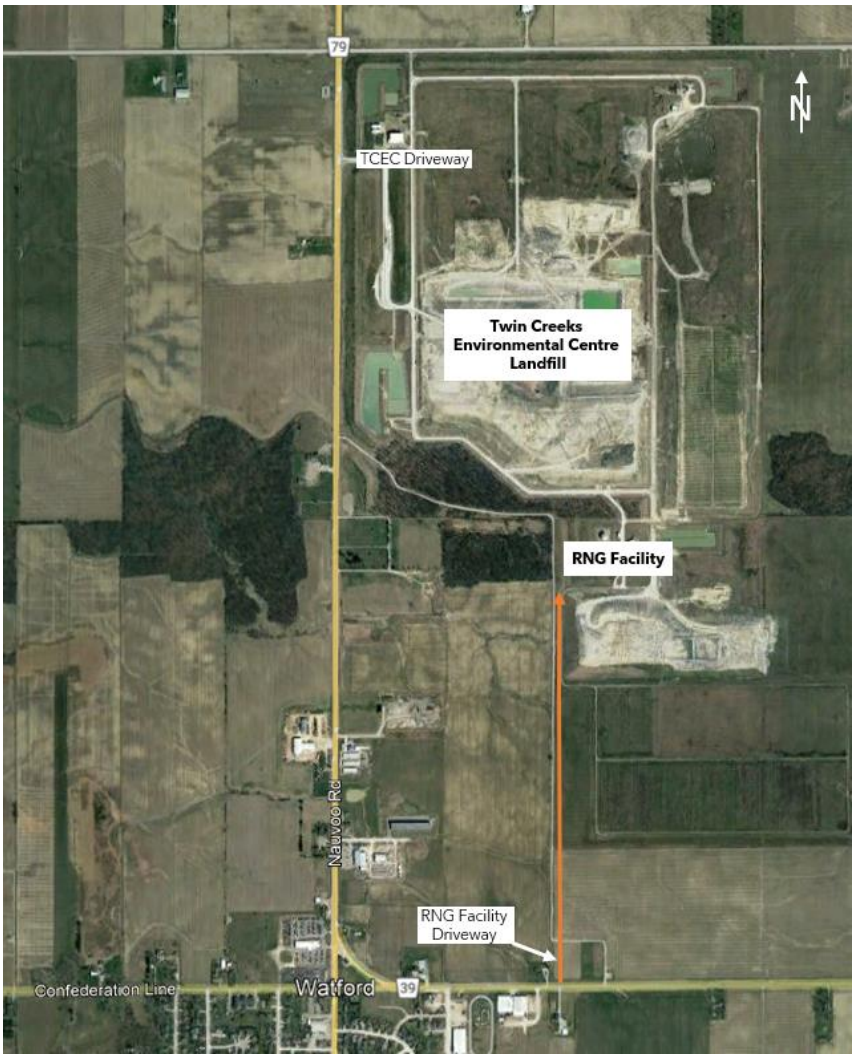
3.2.1 Renewable Natural Gas Facility

The RNG facility will be located south of the existing Twin Creeks landfill near the existing landfill gas facility. A new access point to the RNG facility has been constructed on Confederation Line between the existing Twin Creeks dog park, and the landfill western property line. The general location of the proposed RNG facility in the context of the landfill and dog park is shown in **Figure 3-1**. Traffic to the TCEC will continue to use the existing entrance on Nauvoo Road while RNG facility related traffic will use the new driveway on Confederation Line.

Construction of the RNG facility will be completed by 2025, in advance of the 2032 and 2043 future horizon years. Once operational, the RNG facility will have approximately 6-10 employees on site who will operate the facility and these employees are expected to arrive or leave the site outside the peak periods. Despite the expectation that RNG related trips will occur outside of the peak periods, it has

been assumed that there will be 10 inbound trips during the morning peak hour, and 10 outbound trips during the PM peak hour.

Figure 3-1. RNG Facility Location



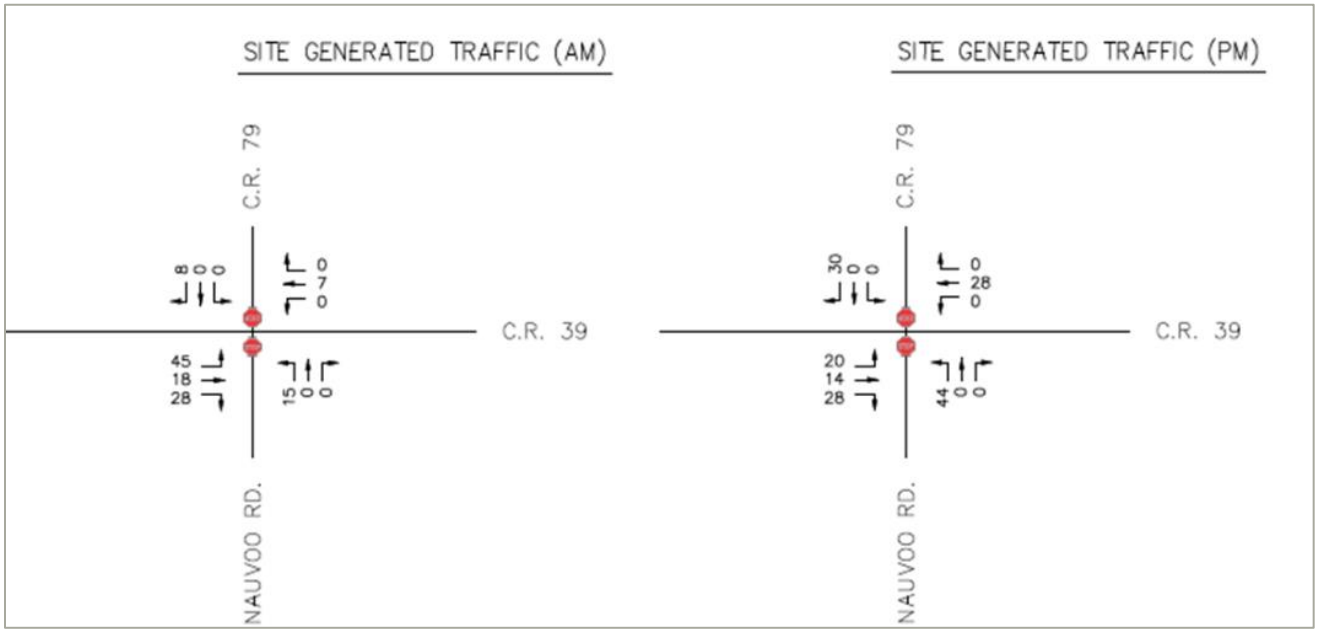
3.2.2 Background Developments

One background development has been identified within the Off-site Study Area. A residential subdivision development is proposed for the lands situated on the north side of Confederation Line, across from the intersection with John Street and Sunset Avenue. **Figure 3-2** illustrates the location of the background development. **Figure 3-3** shows the site traffic generated by the background development extracted from the Traffic Impact Study for that development. This background development site traffic was also distributed along Off-site Study Area intersections. 80% of background development traffic was assumed to/from east on Highway 402. The remaining 20% of background development traffic was assumed to/from west on Highway 402.

Figure 3-2. Background Development Location (Heritage Creek Subdivision)

Source: Heritage Creek Subdivision, Watford ON, Traffic Impact Study (RC Spencer Associates Inc., November 2020)

Figure 3-3. Background Development Traffic (Heritage Creek Subdivision)



Source: Heritage Creek Subdivision, Watford ON, Traffic Impact Study (RC Spencer Associates Inc., November 2020)

3.2.3 Future Lane Configuration

RC Spencer & Associates conducted an Intersection Improvement Study entitled “C.R. 79 / C.R.39 Watford, ON Intersection Improvement Study” dated June 2022 for the intersection of Confederation Line and Nauvoo Road. The study examined the appropriate lane configuration that should be adopted under 2025 conditions.

The study concluded that the intersection should remain under east-west stop-control but should be improved to provide exclusive left turn lanes on all approaches with shared through-right turn lanes. This would entail the removal of the northbound right-turn lane as well as the channelized westbound right turn lane.

Figure 3-7 illustrates the recommended lane configuration for Confederation Line and Nauvoo Road. This proposed lane configuration was adopted for traffic analyses under 2032 and 2043 future conditions.

The study recommended that operations be monitored for potential conversion to a traffic signal, when warranted. However, the mode of control within this study has been assumed to remain stop-controlled.

3.2.4 Future Background Traffic Operations

3.2.4.1 Traffic Volumes – Future Background Conditions

Existing traffic volumes are presented in the Transportation Existing Conditions report. Future background traffic volumes for the 2032 and 2043 horizon years were developed by applying a compound annual growth rate (CAGR) to the existing traffic volumes.

As mentioned in Section 3.2, north-south volumes along Nauvoo Road were grown at 2.0% CAGR, while side streets volumes were grown at 1.0% CAGR. In addition, site traffic for one background development was included in the forecasts (**Figure 3-3**), and the RNG facility employee traffic was also added onto Off-site Study Area intersections. Background development traffic on Off-site Study Area intersections is shown in **Figure 3-4**.

Site traffic from TCEC were removed in future background analyses, so that traffic impacts associated with TCEC traffic can be measured when they are re-introduced in total future conditions analyses. Future background traffic volumes for 2032 and 2043 horizon years are shown in **Figure 3-5** and **Figure 3-6**, respectively.

Figure 3-4. Background Development Traffic

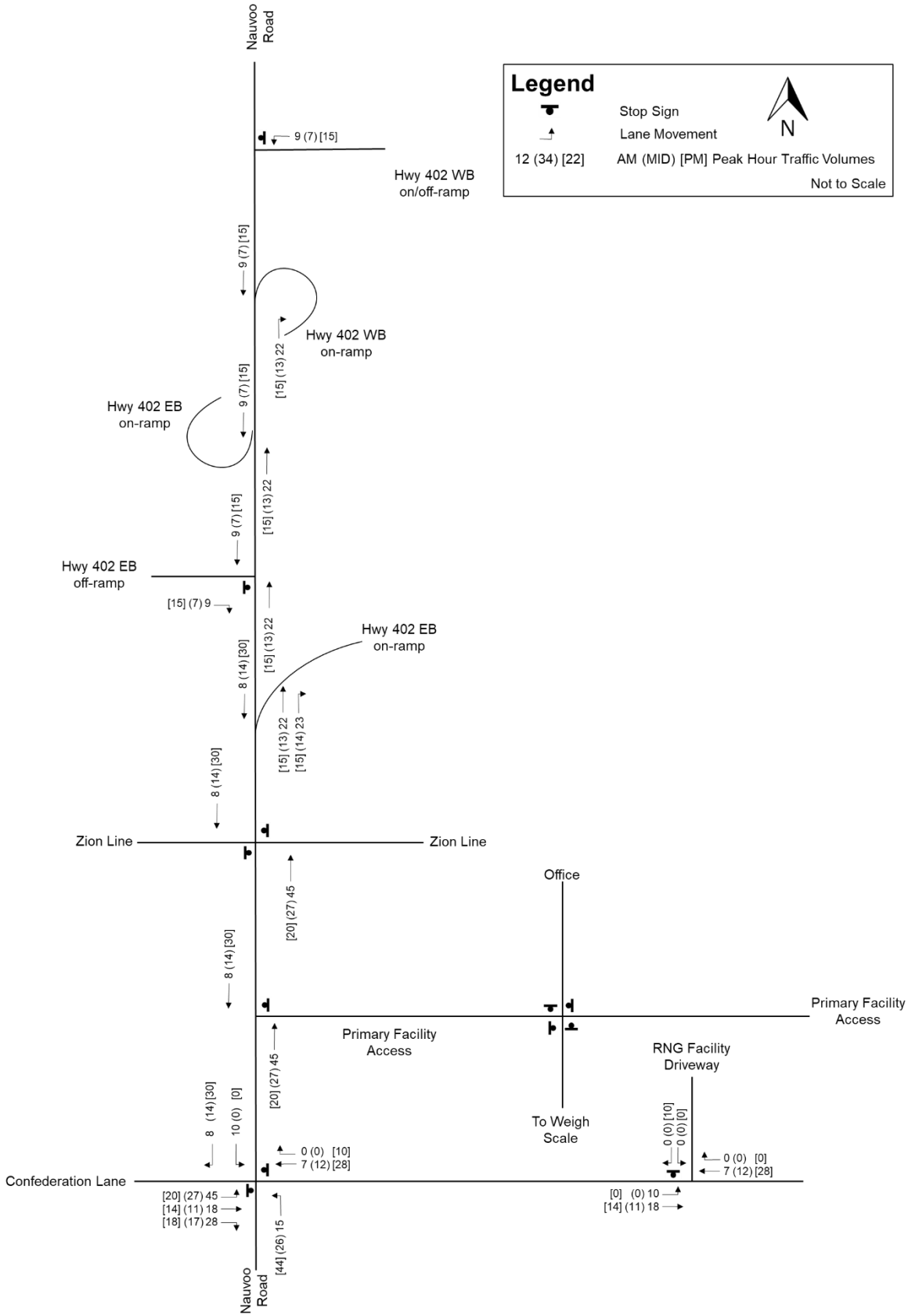


Figure 3-5. 2032 Future Background Traffic Volumes

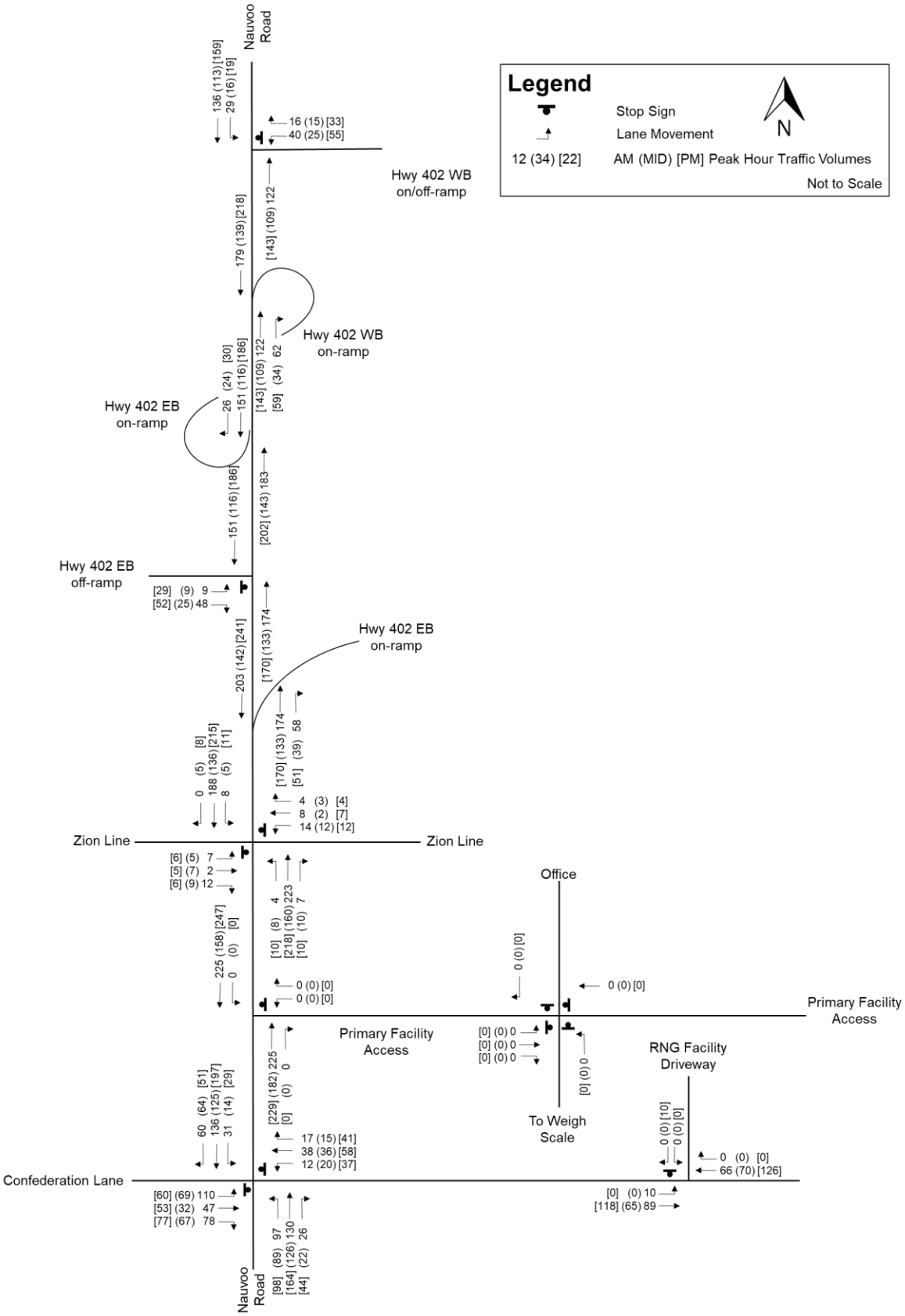
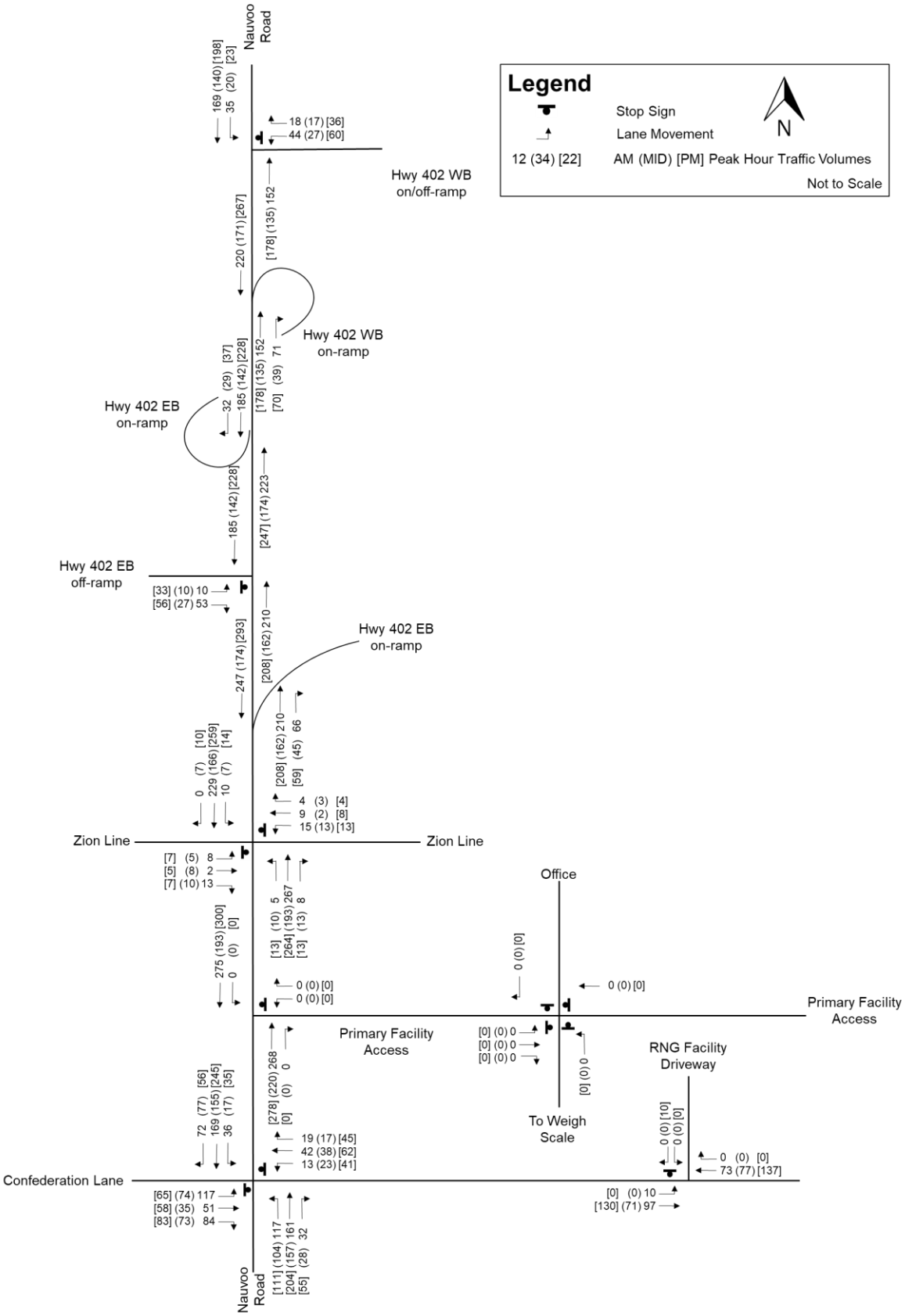


Figure 3-6. 2043 Future Background Traffic Volumes



3.2.4.2 2032 Future Background Traffic Operations

Traffic operations and queues for the 2032 future background horizon are summarized in **Table 3-3**, and **Table 3-4**, respectively.

Table 3-3. 2032 Future Background Traffic Operation

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Nauvoo Road at Highway 402 Eastbound Off-Ramp						
Eastbound Approach	A	0.07	A	0.05	B	0.12
Northbound Through	-	0.11	-	0.09	-	0.11
Southbound Through	-	0.09	-	0.08	-	0.12
Nauvoo Road at Highway 402 Westbound Off-Ramp						
Westbound Approach	B	0.09	B	0.07	B	0.15
Northbound Through	-	0.08	-	0.07	-	0.10
Southbound Left-turn	A	0.02	A	0.01	A	0.02
Southbound Through	-	0.09	-	0.08	-	0.11
Nauvoo Road at Confederation Line						
Eastbound Left	C	0.37	C	0.22	D	0.34
Eastbound Through-Right	B	0.24	B	0.18	C	0.33
Westbound Left	C	0.05	C	0.07	D	0.23
Westbound Through-Right	B	0.14	B	0.13	C	0.29
Northbound Left	A	0.08	A	0.07	A	0.09
Northbound Through-Right	-	0.10	-	0.1	-	0.14
Southbound Left-turn	A	0.02	A	0.01	A	0.02
Southbound Through-Right	-	0.12	-	0.12	-	0.17
Nauvoo Road at Zion Line						
Eastbound Approach	B	0.03	B	0.03	B	0.04
Westbound Approach	B	0.05	B	0.03	B	0.06
Northbound Approach	A	0.00	A	0.01	A	0.01
Southbound Approach	A	0.01	A	0.00	A	0.01
Nauvoo Road at TCEC Entrance						
Westbound Approach	-	-	-	-	-	-
Northbound Through	-	0.14	-	0.12	-	0.14
Northbound Right-turn	-	-	-	-	-	-
Southbound Left-turn	-	-	-	-	-	-
Southbound Through	-	0.14	-	0.1	-	0.16

Notes: Critical movements include exclusive turning movements with v/c ratios exceeding 1.00 and shared movements with v/c exceeding 0.85, or movements with LOS ‘E’ or ‘F’. Critical movements are highlighted in red.

Table 3-4. 2032 Future Background Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Nauvoo Road at Highway 402 Eastbound Off-Ramp				
Eastbound Approach	-	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Highway 402 Westbound Off-Ramp				
Westbound Approach	-	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Confederation Line				
Eastbound Left	30	13	6	11
Eastbound Through-Right	-	7	5	11
Westbound Left	30	< 5	< 5	7
Westbound Through-Right	-	< 5	< 5	9
Northbound Left	30	< 5	< 5	< 5
Northbound Through-Right	-	< 5	< 5	< 5
Southbound Left-turn	30	< 5	< 5	< 5
Southbound Through-Right	-	< 5	< 5	< 5
Nauvoo Road at Zion Line				
Eastbound Approach	-	< 5	< 5	< 5
Westbound Approach	-	< 5	< 5	< 5
Northbound Approach	-	< 5	< 5	< 5
Southbound Approach	-	< 5	< 5	< 5
Nauvoo Road at TCEC Entrance				
Westbound Approach	100	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Northbound Right-turn	65	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5

All movements operate at LOS C or better except for the eastbound and westbound movements at Confederation Line and Nauvoo Road. Eastbound and westbound left is anticipated to operate at LOS D during the PM peak hour. All movements at all intersections and for all periods have sufficient residual capacity. 95th percentile queues for eastbound and westbound movements at Confederation Line and Nauvoo Road are not expected to exceed 12 metres. 95th percentile queues for all other movements are not expected to exceed 5 metres for all periods.

3.2.4.3 2043 Future Background Traffic Operations

Traffic operations and queues for the 2043 future background horizon are summarized in **Table 3-5**, and **Table 3-6**, respectively.

Table 3-5. 2043 Future Background Traffic Operations

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Nauvoo Road at Highway 402 Eastbound Off-Ramp						
Eastbound Approach	B	0.08	A	0.05	B	0.15
Northbound Through	-	0.13	-	0.11	-	0.14
Southbound Through	-	0.11	-	0.09	-	0.15
Nauvoo Road at Highway 402 Westbound Off-Ramp						
Westbound Approach	B	0.12	B	0.08	B	0.18
Northbound Through	-	0.10	-	0.09	-	0.12
Southbound Left-turn	A	0.03	A	0.02	A	0.02
Southbound Through	-	0.11	-	0.09	-	0.13
Nauvoo Road at Confederation Line						
Eastbound Left	D	0.52	C	0.29	**F**	0.53
Eastbound Through-Right	C	0.30	B	0.22	C	0.44
Westbound Left	D	0.07	C	0.10	**E**	0.37
Westbound Through-Right	C	0.18	C	0.16	C	0.39
Northbound Left	A	0.10	A	0.09	A	0.11
Northbound Through-Right	-	0.12	-	0.12	-	0.17
Southbound Left-turn	A	0.03	A	0.01	A	0.03
Southbound Through-Right	-	0.15	-	0.15	-	0.20
Nauvoo Road at Zion Line						
Eastbound Approach	B	0.04	B	0.04	B	0.05
Westbound Approach	B	0.06	B	0.03	C	0.08
Northbound Approach	A	0.00	A	0.01	A	0.01
Southbound Approach	A	0.01	A	0.01	A	0.01
Nauvoo Road at TCEC Entrance						
Westbound Approach	-	-	-	-	-	-
Northbound Through	-	0.17	-	0.14	-	0.18
Northbound Right-turn	-	-	-	-	-	-
Southbound Left-turn	-	-	-	-	-	-
Southbound Through	-	0.17	-	0.13	-	0.19

Notes: Critical movements include exclusive turning movements with v/c ratios exceeding 1.00 and shared movements with v/c exceeding 0.85, or movements with LOS ‘E’ or ‘F’. Critical movements are highlighted in red.

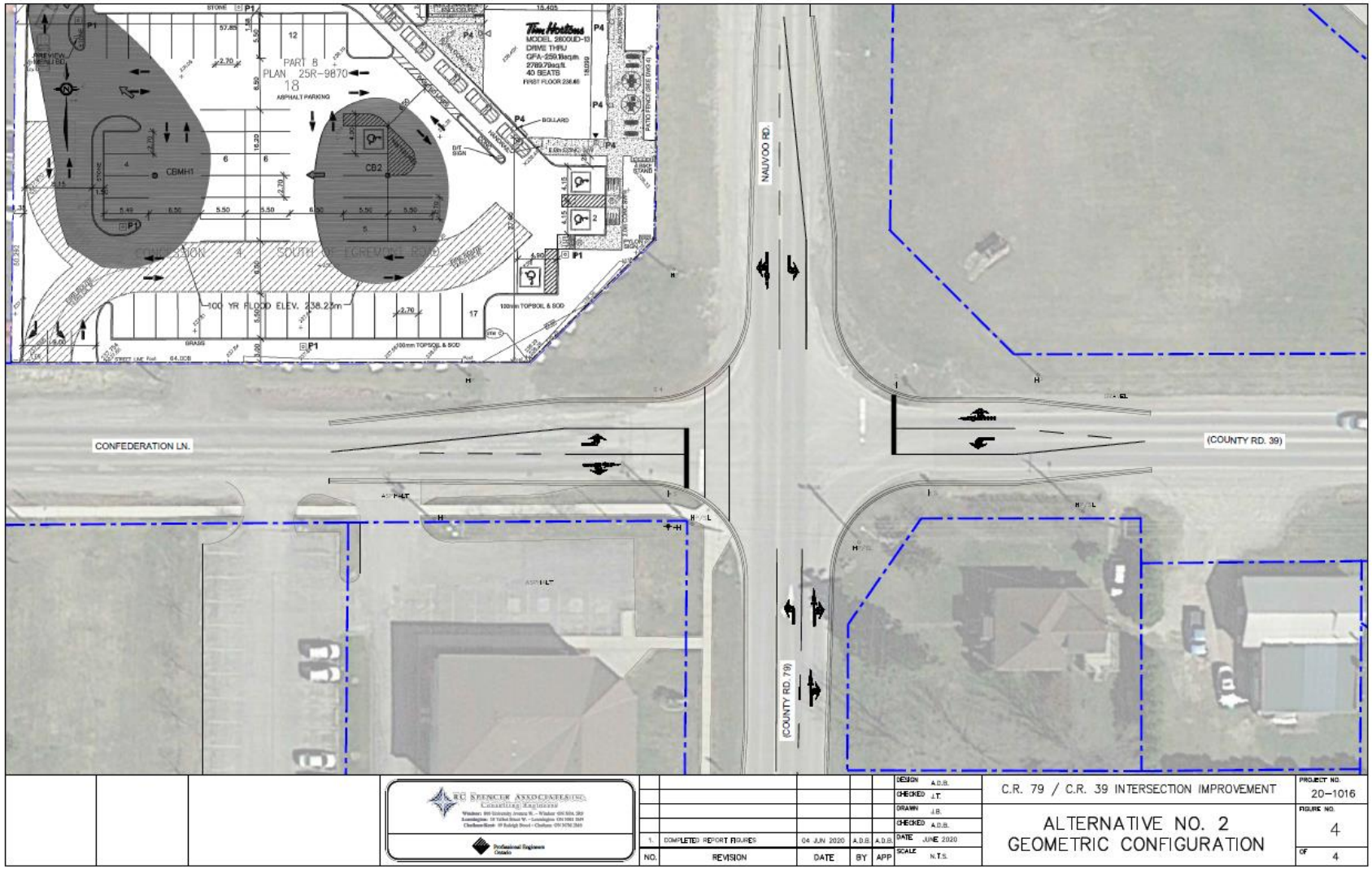
Table 3-6. 2043 Future Background Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Nauvoo Road at Highway 402 Eastbound Off-Ramp				
Eastbound Approach	-	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Highway 402 Westbound Off-Ramp				
Westbound Approach	-	< 5	< 5	5
Northbound Through	-	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Confederation Line				
Eastbound Left	30	21	9	20
Eastbound Through-Right	-	10	6	17
Westbound Left	30	< 5	< 5	12
Westbound Through-Right	-	5	< 5	13
Northbound Left	30	< 5	< 5	< 5
Northbound Through-Right	-	< 5	< 5	< 5
Southbound Left-turn	30	< 5	< 5	< 5
Southbound Through-Right	-	< 5	< 5	< 5
Nauvoo Road at Zion Line				
Eastbound Approach	-	< 5	< 5	< 5
Westbound Approach	-	< 5	< 5	< 5
Northbound Approach	-	< 5	< 5	< 5
Southbound Approach	-	< 5	< 5	< 5
Nauvoo Road at TCEC Entrance				
Westbound Approach	100	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Northbound Right-turn	65	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5

Two critical movements are identified for the 2043 future background horizon. The eastbound left-turn at Confederation Line and Nauvoo Road is expected to operate at LOS F during the PM peak hour. During the PM peak hour, westbound left is expected to operate at LOS E. Despite the delays, all other movements will operate with residual capacity during all periods. A signal warrant is presented in **Section 3.3.1.4**.

95th percentile queues on the eastbound and westbound approaches at Confederation Line and Nauvoo Road are expected to be less than 20m. 95th percentile queues for all other movements are expected to be 5m or less for all periods.

Figure 3-7. Proposed Lane Configuration at Confederation Line and Nauvoo Road



Source: C.R. 79 / C.R. 39 Watford, ON – Intersection Improvement Study (RC Spencer Associates Inc., June 202)

3.3 Alternative Method 1

The assessment of effects for Alternative Method 1 is described below for the environmental criteria and indicators of Transportation in **Section 3.3.1** to **Section 3.3.4**.

3.3.1 Total Future Traffic Operations

Traffic operations under 2032 and 2043 total future conditions are detailed in the subsequent subsections. In addition, anticipated queue lengths at the inbound weigh scale are discussed. The traffic analysis methodology is described in **Section 3.1**.

3.3.1.1 Traffic Volumes – Total Future Conditions

Traffic volumes under total future conditions takes future background volume as a base and then adds on TCEC site traffic on top of the background traffic. By doing so, traffic operations from total future conditions can be compared with traffic operations from future background conditions to quantify impacts of TCEC optimization.

TCEC site traffic by car and trucks are shown in **Figure 3-8** and **Figure 3-9**. Truck site traffic was adjusted to peak conditions using weigh scale data. For more details on adjustment of site traffic, please refer to the Transportation Existing Conditions report. TCEC site traffic is shown in **Figure 3-10**. 2032 and 2043 total future condition traffic volumes are shown in **Figure 3-11** and **Figure 3-12**, respectively.

Figure 3-8. TCEC Site Traffic (Cars)

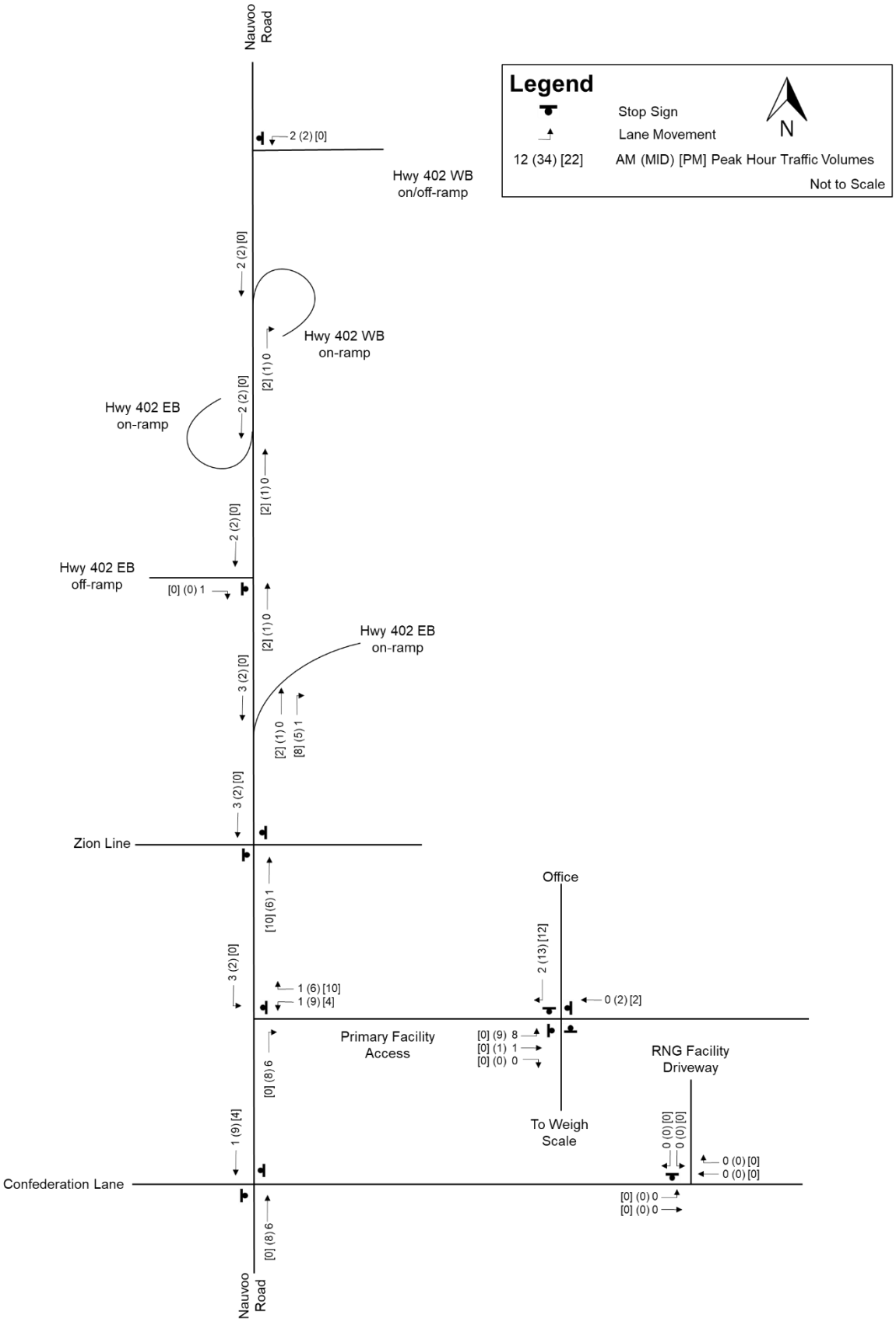


Figure 3-9. TCEC Site Traffic (Trucks Adjusted to Peak Conditions)

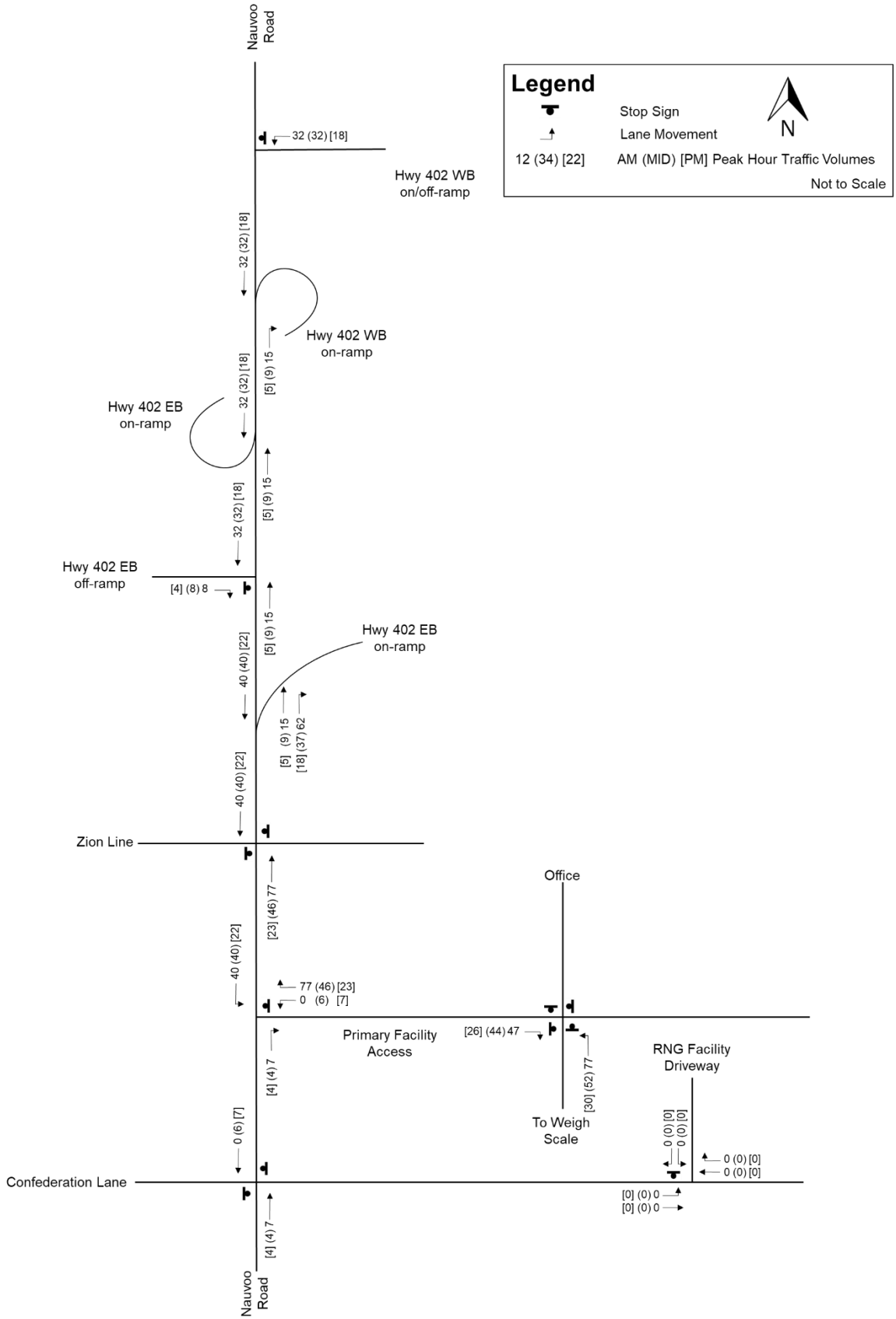


Figure 3-10. TCEC Total Site Traffic (Adjusted)

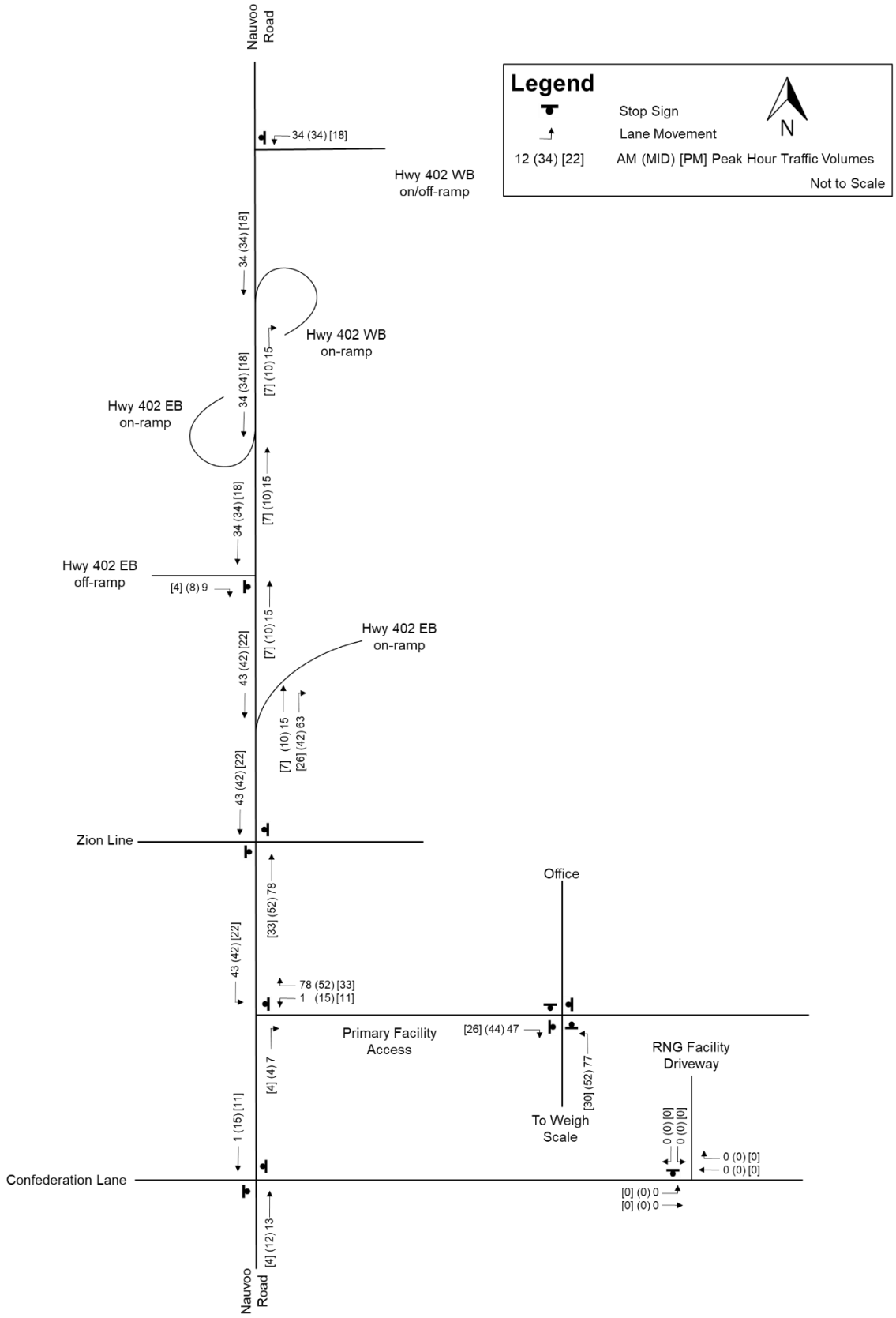


Figure 3-11. 2032 Total Future Traffic Volumes

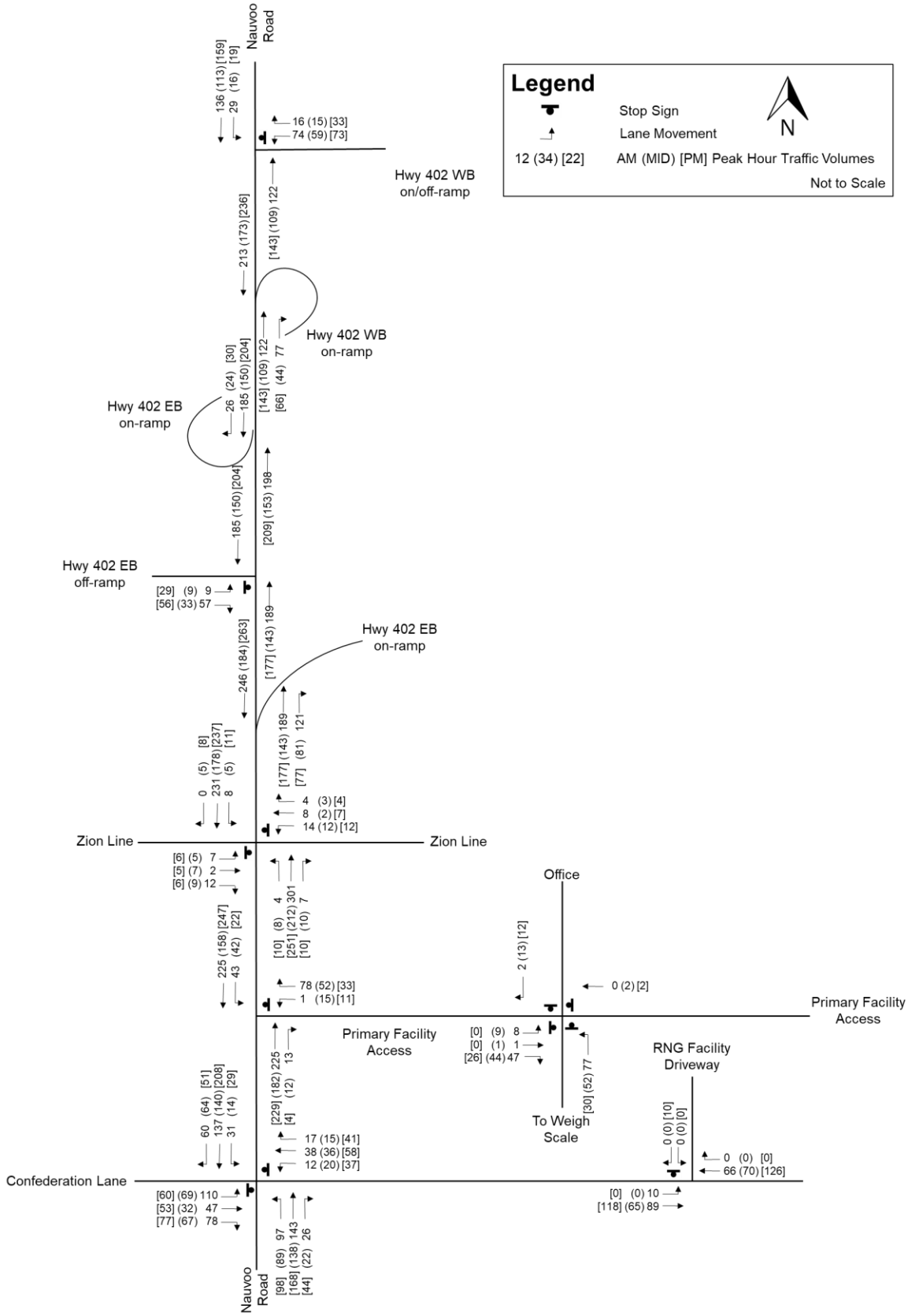
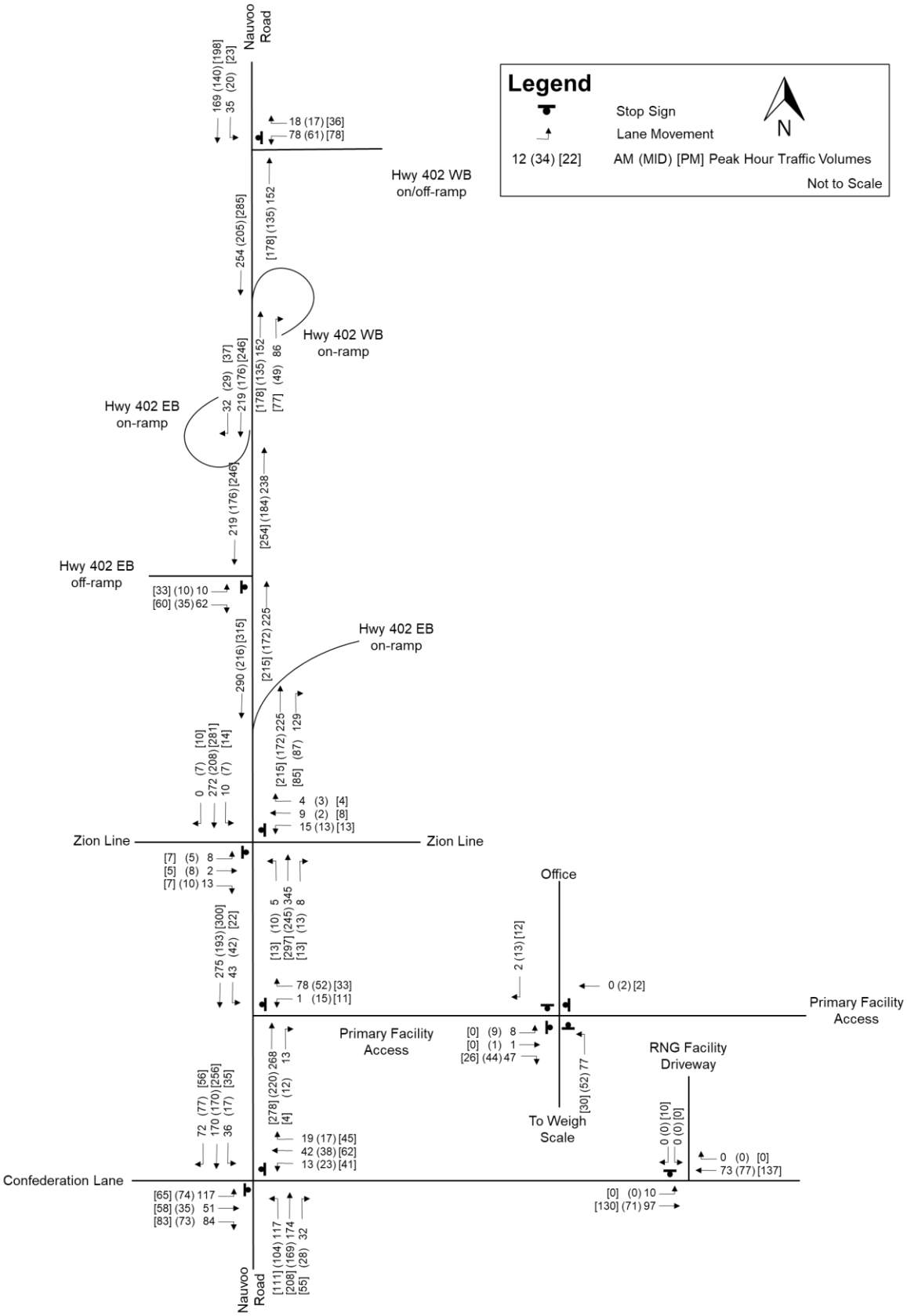


Figure 3-12. 2043 Total Future Traffic Volumes



3.3.1.2 2032 Total Future Traffic Operations

Table 3-7 summarizes traffic operations at Off-site Study Area intersections for the 2032 horizon year.

Table 3-7. 2032 Total Future Traffic Operations

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Nauvoo Road at Highway 402 Eastbound Off-Ramp						
Eastbound Approach	B	0.09	A	0.06	B	0.13
Northbound Through	-	0.12	-	0.09	-	0.11
Southbound Through	-	0.11	-	0.10	-	0.13
Nauvoo Road at Highway 402 Westbound Off-Ramp						
Westbound Approach	B	0.16	B	0.14	B	0.18
Northbound Through	-	0.08	-	0.07	-	0.10
Southbound Left-turn	A	0.02	A	0.01	A	0.02
Southbound Through	-	0.09	-	0.08	-	0.11
Nauvoo Road at Confederation Line						
Eastbound Left	C	0.36	C	0.23	D	0.36
Eastbound Through-Right	B	0.24	B	0.18	C	0.34
Westbound Left	C	0.05	C	0.07	D	0.24
Westbound Through-Right	B	0.14	B	0.13	C	0.30
Northbound Left	A	0.08	A	0.07	A	0.09
Northbound Through-Right	-	0.11	-	0.10	-	0.14
Southbound Left-turn	A	0.02	A	0.01	A	0.02
Southbound Through-Right	-	0.12	-	0.13	-	0.18
Nauvoo Road at Zion Line						
Eastbound Approach	B	0.04	B	0.04	B	0.05
Westbound Approach	B	0.06	B	0.03	B	0.07
Northbound Approach	A	0.00	A	0.01	A	0.01
Southbound Approach	A	0.01	A	0.00	A	0.01
Nauvoo Road at TCEC Entrance						
Westbound Approach	B	0.14	B	0.12	B	0.07
Northbound Through	-	0.14	-	0.12	-	0.14
Northbound Right-turn	-	0.01	-	0.01	-	0.00
Southbound Left-turn	A	0.05	A	0.05	A	0.02
Southbound Through	-	0.14	-	0.10	-	0.16

Table 3-7. 2032 Total Future Traffic Operations

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Nauvoo Road at RNG Facility Driveway						
Eastbound Through-Left	A	0.01	A	0.00	A	0.00
Southbound Approach	A	0.01	A	0.01	A	0.01

Notes: Critical movements include exclusive turning movements with v/c ratios exceeding 1.00 and shared movements with v/c exceeding 0.85, or movements with LOS 'E' or 'F'.

Compared with background conditions, all intersection approach or movement level of service values will remain the same. There are nominal increases to the volume to capacity ratios, however, these increases are small, and all movements are expected to continue operating within acceptable thresholds.

Table 3-8 summarizes the expected queues under 2032 total future conditions.

Table 3-8. 2032 Total Future Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Nauvoo Road at Highway 402 Eastbound Off-Ramp				
Eastbound Approach	-	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Highway 402 Westbound Off-Ramp				
Westbound Approach	-	< 5	< 5	5
Northbound Through	-	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Confederation Line				
Eastbound Left	30	12	7	12
Eastbound Through-Right	-	7	5	11
Westbound Left	30	< 5	< 5	7
Westbound Through-Right	-	< 5	< 5	9
Northbound Left	30	< 5	< 5	< 5
Northbound Through-Right	-	< 5	< 5	< 5
Southbound Left-turn	30	< 5	< 5	< 5
Southbound Through-Right	-	< 5	< 5	< 5

Table 3-8. 2032 Total Future Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Nauvoo Road at Zion Line				
Eastbound Approach	-	< 5	< 5	< 5
Westbound Approach	-	< 5	< 5	< 5
Northbound Approach	-	< 5	< 5	< 5
Southbound Approach	-	< 5	< 5	< 5
Nauvoo Road at TCEC Entrance				
Westbound Approach	100	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Northbound Right-turn	65	< 5	< 5	< 5
Southbound Left-turn	140	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at RNG Facility Driveway				
Eastbound Through-Left	635	< 5	< 5	< 5
Southbound Approach	>100	< 5	< 5	< 5
Inbound Weigh Scale				
Weigh Scale Queue[1]	280	310	301	100

Notes: Storage length is shown for exclusive turning lanes or is based on the upstream link length. Exact queue lengths are only shown when the queue length is greater than 5 metres or approximately one vehicle. Queues exceeding storage are highlighted in red.

1) Queues at the Weigh scale was determined using SimTraffic maximum queues. This queue is the summation of each link leading up to the weigh scale (southbound at weigh scale, eastbound right at first internal intersection leading up to weigh scale, and southbound left at Nauvoo Road and Primary Facility Driveway). There are two inbound queue lanes leading into the site up to the first internal intersection. As the inbound queue turns southbound towards the inbound scale, the lanes merge into a single lane on approach to the inbound weigh scale. Only one inbound scale queue was modeled in SimTraffic on approach to the inbound weigh scale, and a post-processing adjustment has been made to determine the location of the back-end of queue, as discussed below.

95th percentile queues under total future conditions are nearly identical to future background conditions. In short, TCEC site traffic is anticipated to have negligible impact on queues at all Off-site Study Area intersections except at the TCEC site entrance. Queues, particularly southbound left and northbound right, at Nauvoo Road and TCEC site entrance will be affected by the inbound weigh scale. Queues resulting from the inbound weigh scale was determined using SimTraffic.

The modeling of the inbound queues approaching the weigh scales reflects two inbound lanes within the driveway throat from Nauvoo Road to the first internal four-leg intersection where traffic splits to the offices, the scales, or into the landfill. This distance is approximately 110 metres. Traffic destined to/from the main offices uses the north leg, while traffic destined to/from the scales uses the south leg. The south

leg was modeled as a single lane approach to the inbound scales with a total distance of approximately 155 metres. When activity is low, trucks form a single queue towards the inbound scale. However, when activity is high and there are a large number of trucks arriving simultaneously, the trucks may queue side-by-side and form two queues which merge as trucks enter the weigh scale.

With a single queue lane approaching the inbound weigh scale, queues are expected to exceed available storage length during the AM peak hour. The maximum anticipated weigh scale queue during the AM and Midday peak hour is approximately 310m and 301m, respectively. This queue will spill approximately 30m onto Nauvoo Road on either the exclusive southbound left or northbound right turn lanes. The exclusive southbound left turn lane has 140m of storage, which can sufficiently accommodate excess queues. Maximum queues during PM peak hours are not expected to exceed available storage. However, as noted above, trucks may stack side-by-side on approach to the inbound weigh scale, which provides an additional 155 metres of storage space. Therefore, this means that during the AM peak hour, there would be 125 metres of additional queueing space before the inbound queue reaches Nauvoo Road.

3.3.1.3 2043 Total Future Traffic Operations

Table 3-9 summarizes 2032 total future traffic operations.

Table 3-9. 2043 Total Future Traffic Operations

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Nauvoo Road at Highway 402 Eastbound Off-Ramp						
Eastbound Approach	B	0.10	B	0.07	B	0.16
Northbound Through	-	0.14	-	0.11	-	0.14
Southbound Through	-	0.13	-	0.12	-	0.17
Nauvoo Road at Highway 402 Westbound Off-Ramp						
Westbound Approach	B	0.19	B	0.16	B	0.22
Northbound Through	-	0.10	-	0.09	-	0.12
Southbound Left-turn	A	0.03	-	0.02	A	0.02
Southbound Through	-	0.11	A	0.09	-	0.13
Nauvoo Road at Confederation Line						
Eastbound Left	**E**	0.53	C	0.31	**F**	0.55
Eastbound Through-Right	C	0.31	B	0.23	C	0.45
Westbound Left	D	0.08	C	0.11	**F**	0.39
Westbound Through-Right	C	0.19	C	0.16	C	0.39
Northbound Left	A	0.10	A	0.09	A	0.11
Northbound Through-Right	-	0.13	-	0.13	-	0.18
Southbound Left-turn	A	0.03	A	0.01	A	0.03
Southbound Through-Right	-	0.15	-	0.16	-	0.21
Nauvoo Road at Zion Line						
Eastbound Approach	B	0.05	B	0.04	C	0.06
Westbound Approach	C	0.07	B	0.04	C	0.08
Northbound Approach	A	0.00	A	0.01	A	0.01
Southbound Approach	A	0.01	A	0.01	A	0.01
Nauvoo Road at TCEC Entrance						
Westbound Approach	B	0.15	B	0.13	B	0.08
Northbound Through	-	0.17	-	0.14	-	0.18

Table 3-9. 2043 Total Future Traffic Operations

Intersection and Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Northbound Right-turn	-	0.01	-	0.01	-	0.00
Southbound Left-turn	A	0.05	A	0.05	A	0.02
Southbound Through	-	0.17	-	0.13	-	0.19
Nauvoo Road at RNG Facility Driveway						
Eastbound Through-Left	A	0.01	A	0.00	A	0.00
Southbound Approach	A	0.01	A	0.01	A	0.01

Notes: Critical movements include exclusive turning movements with v/c ratios exceeding 1.00 and shared movements with v/c exceeding 0.85, or movements with LOS 'E' or 'F'. Critical movements are highlighted in red.

Compared with background conditions, most level of service have remained the same. However, there were some changes including the westbound left-turn at Nauvoo Road and Confederation Line which increases to level of service F from E, as well as the eastbound left-turn which increases to level of service E from D. There are nominal increases to the volume to capacity ratios, however, the increases are small, and all movements are expected to operate within acceptable thresholds. A signal warrant was conducted and is summarized in **Section 3.3.1.4**.

Table 3-10 summarizes the expected queues of the Off-site Study Area intersections, as well as at the inbound scale, under 2043 total future conditions.

Table 3-10. 2043 Total Future Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Nauvoo Road at Highway 402 Eastbound Off-Ramp				
Eastbound Approach	-	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Highway 402 Westbound Off-Ramp				
Westbound Approach	-	< 5	< 5	6
Northbound Through	-	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at Confederation Line				
Eastbound Left	30	21	10	21
Eastbound Through-Right	-	10	7	17
Westbound Left	30	< 5	< 5	12
Westbound Through-Right	-	5	< 5	14
Northbound Left	30	< 5	< 5	< 5
Northbound Through-Right	-	< 5	< 5	< 5

Table 3-10. 2043 Total Future Queues

Intersection and Movement	Storage	95th Percentile Queue (m)		
		Weekday AM Peak Hour	Weekday Midday	Weekday PM Peak Hour
Southbound Left-turn	30	< 5	< 5	< 5
Southbound Through-Right	-	< 5	< 5	< 5
Nauvoo Road at Zion Line				
Eastbound Approach	-	< 5	< 5	< 5
Westbound Approach	-	< 5	< 5	< 5
Northbound Approach	-	< 5	< 5	< 5
Southbound Approach	-	< 5	< 5	< 5
Nauvoo Road at TCEC Entrance				
Westbound Approach	100	< 5	< 5	< 5
Northbound Through	-	< 5	< 5	< 5
Northbound Right-turn	65	< 5	< 5	< 5
Southbound Left-turn	-	< 5	< 5	< 5
Southbound Through	-	< 5	< 5	< 5
Nauvoo Road at RNG Facility Driveway				
Eastbound Through-Left	635	< 5	< 5	< 5
Southbound Approach	>100	< 5	< 5	< 5
Inbound Weigh Scale				
Weigh Scale Queue[1]	280	286	281	104

Notes: Storage length is shown for exclusive turning lanes or is based on the upstream link length. Exact queue lengths are only shown when the queue length is greater than 5 metres or approximately one vehicle. Queues exceeding storage are highlighted in red.

1) Queues at the Weigh scale was determined using SimTraffic maximum queues. This queue is the summation of each link leading up to the weigh scale (southbound at weigh scale, eastbound right at first internal intersection leading up to weigh scale, and southbound left at Nauvoo Road and Primary Facility Driveway). There are two inbound queue lanes leading into the site up to the first internal intersection. As the inbound queue turns southbound towards the inbound scale, the lanes merge into a single lane on approach to the inbound weigh scale. Only one inbound scale queue was modeled in SimTraffic on approach to the inbound weigh scale, and a post-processing adjustment has been made to determine the location of the back-end of queue, as discussed below.

95th percentile queues under total future conditions are nearly identical to future background conditions.

Similar to 2032 total future conditions, the inbound weigh scale maximum queue during AM and Midday peak hour is expected to exceed available storage and spill onto the southbound left turn lane at Nauvoo Road and TCEC site entrance. The maximum inbound weigh scale queue is expected to be approximately 286m, which exceeds available storage by 6m. The excess queue will likely be on the exclusive southbound

left turn lane at Nauvoo Road and TCEC site entrance. The excess queue will not utilize the full storage within the southbound left turn lane.

However, as previously noted, the modeling of the inbound queues approaching the weigh scales reflects two inbound lanes within the driveway throat from Nauvoo Road to the first internal four-leg intersection where traffic splits to the offices, the scales, or into the TCEC. This distance is approximately 110 metres. Traffic destined to/from the main offices uses the north leg, while traffic destined to/from the scales uses the south leg. The south leg was modeled as a single lane approach to the inbound scales with a total distance of approximately 155 metres. When activity is low, trucks form a single queue towards the inbound scale. However, when activity is high and there are a large number of trucks arriving simultaneously, the trucks may queue side-by-side and form two queues which merge as trucks enter the weigh scale. As a result, there is an additional 155 metres of storage to accommodate queues internally, and if this is taken into account, then there will be 149 metres of additional queueing space. The improved queue compared to 2032 conditions is likely a result of the SimTraffic model random arrivals since it is a dynamic model, but this does demonstrate that the range of queues can vary by at least 30 metres.

3.3.1.4 Traffic Signal Warrant at Confederation Line and Nauvoo Road

A signal warrant analysis was conducted for Confederation Line and Nauvoo Road using methodology in the Ontario Traffic Manual (OTM) Book 12. The warrant analysis was undertaken using “Justification 7: Projected Volumes” for the projected 2043 traffic volumes which has elevated volume thresholds compared to a warrant conducted using existing/observed traffic data. A traffic signal warrant was conducted for 2043 only because if a traffic signal is not warranted in 2043, then it would also not be warranted in 2032. The peak hours used for the warrant are the AM and PM peak hours since these are the time periods with the poorest level of service. The existing intersection layout (4-leg intersection) under a ‘rural’ environment was used as input.

The signal warrant analysis determined that signalization is not warranted for Confederation Line and Nauvoo Road under 2043 traffic conditions. Justification 1A and 1B resulted in sectional percentages of 80% and 100%, respectively. Warrant 1 is not satisfied since both Justifications 1A and 1B have sectional percentages of 80% or higher. Likewise, the sectional percentages for Justification 2A and 2B are 58% and 100%, respectively, hence Warrant 2 is not satisfied. Since both Warrant 1 and Warrant 2 are not satisfied independently and both do not have at least 80% compliance, a signalized intersection is not warranted at Confederation Line and Nauvoo Road.

The limiting factor for the signal warrant is the low side street (eastbound and westbound) minor street approach volumes. Despite the delays, the volume is low and does not warrant a traffic signal by 2043. Therefore, the same conclusion (not warranted) can be drawn for the earlier horizon year of 2032. Details of the traffic signal warrant analysis are provided in **Appendix C**.

3.3.2 Change in Peak Hour Traffic

The TCEC site traffic will not change under 2032 and 2043 future conditions and thus will have no additional effect to the surrounding transportation network traffic volumes. The growth of traffic volume within the Off-site Study Area is attributed to background growth and background developments.

3.3.3 Road Safety

Collision rates are not expected to change as a result of the TCEC site optimization, compared with existing conditions. The Transportation Existing Conditions Report did not identify any relation between truck traffic generated by the TCEC and collisions occurring within the Off-site Study Area . Background traffic volumes are expected to increase, which may affect collision rates, but this is not expected to be related to the TCEC optimization.

3.3.4 Sightlines

The TCEC site entrance on Nauvoo Road is expected to remain unchanged from existing conditions. The Transportation Existing Conditions Report confirmed that the sight distances at the driveway are adequate and that there are no apparent concerns with the driveway functional, and this will remain the same under future conditions.

3.3.5 Summary

A summary of the effects assessment of Alternative Method 1 is summarized below in **Table 3-11**.

Table 3-11. Net Effects Assessment – Alternative Method 1

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Traffic Operations	Change in peak hour and daily truck traffic volume and Average Annual Daily Traffic (AADT) along the Off-site Study Area road segments	• Changes in traffic volumes within Off-site Study Area is the result of background growth and background developments. • TCEC site traffic will not change under 2032 and 2043 future conditions	• No changes as a result of TCEC optimization under future conditions. As a result, TCEC will not have any effects on Off-site Study Area in 2032 and 2043 future conditions	• No mitigation measures required in 2032 and 2043 future conditions	• No effects predicted
	Intersection performance – capacity, delay, queues (based on HCM 2000 and generated by Synchro Traffic Signal Coordination Software Version 11) – for the Off-site Study Area intersections	• Exclusive left turn lanes with shared through-right lanes at Confederation Line and Nauvoo Road are assumed to be in place by the 2032 horizon year	• No changes as a result of TCEC optimization under future conditions. As a result, TCEC will not have any effects on Off-site Study Area in 2032 and 2043 future conditions	• No mitigation measures required in 2032 and 2043 future conditions	• No effects predicted
	Road safety • Collisions per million vehicles at all Off-site Study Area intersections (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles) • Collisions per million vehicle-km along all Off-site Study Area road segments (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles) • Collisions by environmental conditions for segments and intersections	• TCEC site traffic will not change under 2032 and 2043 future conditions	• No changes as a result of TCEC optimization under future conditions. As a result, TCEC will not have any effects on Off-site Study Area in 2032 and 2043 future conditions	• No mitigation measures required in 2032 and 2043 future conditions	• No effects predicted
	Sight distance at the primary site entrance	• TCEC site driveway will remain unchanged compared to existing conditions.	• No changes from TCEC site under future conditions. As a result, there are no impacts to consider.	• No mitigation measures required in 2032 and 2043 future conditions	• No effects predicted

3.4 Alternative Method 2

The design of the Alternative Methods do not impact the Transportation assumptions previously described. The design changes within the TCEC are independent from the traffic conditions. The assessment of Transportation effects for Alternative Method 2 are consistent with those for Alternative Method 1. Please refer to **Section 3.3.1** to **Section 3.3.5**.

3.5 Alternative Method 3

The design of the Alternative Methods do not impact the Transportation assumptions previously described. The design changes within the TCEC are independent from the traffic conditions. The assessment of Transportation effects for Alternative Method 3 are consistent with those for Alternative Method 1. Please refer to **Section 3.3.1** to **Section 3.3.5**.

4 Comparative Evaluation of Net Effects and Identification of the Preferred Alternative

The comparative evaluation of the net effects of each alternative method and the identification of a Preferred Alternative are carried out in accordance with the methods described in Section 2.2. The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the Preferred Alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method. The comparative evaluation of the alternative methods for Transportation is provided in **Table 4-1**, below.

None of the alternative methods will result in a net effect on Transportation. There is no substantial difference between the alternative methods from a Transportation perspective, and no Preferred Alternative is identified.

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for Transportation

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
Traffic Operations	Change in peak hour and daily truck traffic volume and Average Annual Daily Traffic (AADT) along the Off-site Study Area road segments	No net effect on traffic volumes. **No Substantial Difference.**		
	Intersection performance – capacity, delay, queues (based on HCM 2000 and generated by Synchro Traffic Signal Coordination Software Version 11) – for the Off-site Study Area intersections	No net effect on traffic volumes. **No Substantial Difference.**		

	• Road safety
	  • Collisions per million vehicles at all Off-site Study Area intersections (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)
	  • Collisions per million vehicle-km along all Off-site Study Area road segments (severity, involving pedestrians, cyclists, autos, trucks, school buses, and agricultural vehicles)
	  • Collisions by environmental conditions for segments and intersections
		No net effect on traffic volumes.
		
		No Substantial Difference.		

	Sight distance at the primary site entrance	No net effect on traffic volumes. **No Substantial Difference.**		
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for Traffic Operations.*** None of the alternative methods will result in net effects to Traffic Operations.		
Preferred Alternative: All three alternatives are equivalent from the perspective of Transportation, and no Preferred Alternative is identified.				

5 Effects Assessment of the Preferred Alternative

Section 3.2 examined a future background condition without the TCEC site traffic, since this would be the case if the TCEC optimization was not to extend the operating life. Therefore, TCEC site traffic impacts can be quantified when reintroduced in future total conditions in **Section 3.3.1**. However, in reality, there will be no change in traffic conditions between existing conditions and future conditions with the TCEC optimization which allows for the site to continue operating.

A comparison of future background and total future conditions revealed that the TCEC site has minimal impacts on the surrounding Off-site Study Area intersections. However, compared with existing conditions the TCEC optimization will have no effects within the Off-site Study Area since site traffic is present under existing conditions and will remain the same in 2032 and 2043 horizon years.

Section 3.3.2 to Section 3.3.4 outlines the transportation effects of TCEC on the Off-site Study Area traffic, road safety, and sightlines. There are no effects on the Off-site Study Area traffic, road safety, and sightlines because nothing changes at the TCEC site from a transportation perspective.

5.1 Climate Change Considerations

There are no effects on GHG emissions under future conditions since traffic volume in/out of the TCEC remains the same as existing conditions. GHG emissions from vehicle traffic and climate change considerations are considered under the Air Quality net effects assessment.

6 Comparison of the Preferred Alternative against the ‘Do Nothing’ Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration below. The advantages and disadvantages of the Preferred Alternative compared to the ‘Do Nothing’ alternative are identified.

6.1 Effects of the 'Do Nothing' Alternative

The following bullet points summarize the impacts of the 'Do Nothing' alternative with respect to the indicators:

- Change in peak hour and daily truck traffic volumes, and Average Annual Daily Traffic – there would be a reduction in traffic volume resulting from the removal of the TCEC with the 'Do Nothing' scenario compared to the scenario if the Project were to proceed, and this is demonstrated when comparing the background traffic volumes to the total traffic volumes. Site traffic is a small component of the total traffic volumes, and background traffic represents a much larger portion of the traffic on the surrounding off-site road network. For reference, the site traffic volumes approaching the TCEC driveway on Nauvoo Road from the north represent 7% to 22% of total traffic during the 2043 horizon year, while TCEC site traffic approaching the TCEC driveway form the south represent 1% to 5% of total traffic. The TCEC has the largest contribution to traffic volumes during operating hours.
- Intersection performance – it should be expected that the reduction in traffic volume resulting from the removal of the TCEC associated traffic will improve traffic operations compared to the scenario if the Project is to proceed and this is demonstrated in the comparison of 'Do Nothing' operations against the 'Total Traffic' operations which indicates that site traffic only increases the volume-to-capacity ratio by less than 0.05, which is marginal. A similar impact is also seen when comparing the delays and queues experienced by vehicles at external intersections within the Off-site Study Area. These impacts are more pronounced at the site driveway since the driveway would be removed in the 'Do Nothing' scenario, and less pronounced at external intersections. Site traffic is a small component of the total traffic volumes, and background traffic represents a much larger portion of the traffic on the surrounding off-site road network. As a result, the 'Do Nothing' operations are only marginally better.
- Road safety – Frequency of collisions is generally tied to the overall traffic volumes. However, collisions tend to occur at consistent rates unless there are other factors that cause more collisions. The collision analysis contained in the Existing Transportation Conditions report did not identify any correlations between TCEC site traffic and collision causes or locations. Therefore, with the removal of TCEC site traffic, a change in the collision rates would not be expected. Removal of the TCEC driveway on Nauvoo Road would eliminate one potential location for intersection-related collisions.
- Sight distance – since the driveway to the TCEC would be removed under the 'Do Nothing' scenario, the sightline considerations are not applicable to the 'Do Nothing' scenario. If the Project were to proceed, then the sight distances would remain unchanged and the driveway would continue to operate as it currently does.

6.2 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The following bullet points summarize the impacts of the preferred alternative against the 'Do Nothing' alternative, with respect to the indicators:

- Change in peak hour and daily truck traffic volumes, and Average Annual Daily Traffic – compared to the 'Do Nothing' scenario, all alternatives would result in higher traffic volumes, and this is demonstrated when comparing the background traffic volumes to the total traffic volumes. Site traffic is a small component of the total traffic volumes, and background traffic represents a much larger portion of the traffic on the surrounding off-site road network. For reference, the site traffic volumes approaching the TCEC driveway on Nauvoo Road from the north represent 7% to 22% of total traffic during the 2043 horizon year, while TCEC site traffic approaching the TCEC driveway form the south represent 1% to 5% of total traffic. Landfill traffic would continue to operate as it does today until 2043, resulting in no apparent changes. However, compared to the 'Do Nothing' scenario, the Project would result in marginally higher traffic volumes on the surrounding off-site road network.
- Intersection performance – it should be expected that the traffic volumes on the surrounding off-site road network will be higher than the 'Do Nothing' alternative, resulting in more demand on the road network and marginally worse operations, and this is demonstrated in the comparison of 'Do Nothing' operations against the 'Total Traffic' operations which indicates that site traffic only increases the volume-to-capacity ratio by less than 0.05, which is marginal. A similar impact is also seen when comparing the delays and queues experienced by vehicles at external intersections within the Off-site Study Area. These impacts are more pronounced at the site driveway since the driveway would be removed in the 'Do Nothing' scenario, and less pronounced at external intersections. Site traffic is a small component of the total traffic volumes, and background traffic represents a much larger portion of the traffic on the surrounding off-site road network. As a result, the alternatives operations are only marginally worse but still within generally acceptable thresholds. The most noteworthy impacts of the Project (all alternatives) compared to the 'Do Nothing' are observed at Nauvoo Road and Confederation Line, where background traffic represents a much higher proportion of overall traffic volumes and the marginal increase of traffic generated by the TCEC passing through this intersection raises the eastbound left-turn level of service (delay) from 'D' to 'E'.
- Road safety – Frequency of collisions is generally tied to the overall traffic volumes. However, collisions tend to occur at consistent rates unless there are other factors that cause more collisions. The collision analysis contained in the Existing Transportation Conditions report did not identify any correlations between TCEC site traffic and collision causes or locations. Therefore, for all of the alternatives, a change in the collision rates would not be expected.

- Sight distance – the existing driveway on Nauvoo Road would remain unchanged under all future alternatives from a design perspective and would therefore be the same as existing conditions. Compared to the 'Do Nothing' alternative, the alternatives maintain the existing driveway.

6.3 Advantages and Disadvantages of the Preferred Alternative

The differences in net effects between the Preferred Alternative and the 'Do Nothing Alternative' are used to determine the advantages and disadvantages of the Preferred Alternative. The advantages and disadvantages of the Preferred Alternative are listed in **Table 6-1**.

Table 6-1. Advantages and Disadvantages of the Preferred Alternative

Evaluation Criteria	Advantages	Disadvantages
Traffic Operations	• No advantages identified.	• Marginally higher traffic volumes on the surrounding off-site road network. • Intersection performance is marginally lower but within generally acceptable thresholds. • The driveway on Nauvoo Road will remain and will continue to operate as it does today and will remain a potential conflict point. • Sight distance at the primary driveway on Nauvoo Road will remain unchanged but will remain a consideration. • Site traffic will continue to remain on the surrounding road network, resulting in potential for vehicle conflicts or collisions.

The disadvantages are directly related to the presence of site traffic on the surrounding off-site road network as a result of the Project. If the Project were not to occur, then site traffic would be removed and the site driveway would be removed, resulting in an overall improvement to the Transportation environment.

7 Commitments and Monitoring

There is no monitoring required since there are no changes proposed to the operations of the TCEC. The TCEC commitments regarding traffic-related mitigation measures are listed in Section 7.1.

7.1 Transportation Commitments

The transportation commitments are for the TCEC to continue adhering to schedule arrivals of trucks to distribute them throughout the day. This will lessen the traffic

impacts on the external road network by reducing the proportion of TCEC-related traffic on the Off-site Study Area road network as a percentage of total traffic volumes.

7.2 Environmental Effects Monitoring for Transportation

Monitoring plans are developed as part of the detailed effects assessments carried out for the Preferred Alternative to confirm:

- the net effects are as predicted;
- unanticipated negative effects are addressed; and
- the effectiveness of the proposed mitigation measures.

Section 7.3 contains the environmental effects monitoring for the Preferred Alternative.

7.3 Transportation Compliance Monitoring

There is no Transportation monitoring required for any of the alternative methods.

8 Transportation Approvals

No Transportation approvals are required for the project.

9 References

HDR Corporation
2024 Waste Management Twin Creeks – Existing Transportation Conditions Report.

HDR Corporation
2023 Traffic Brief in Support of Site Plan Approval for Proposed Renewable Natural Gas (RNG) Facility.

RC Spencer Associates Inc.
2020 C.R. 79 / C.R. 39 Watford, ON – Intersection Improvement Study.

RC Spencer Associates Inc.
2020 Heritage Creek Subdivision, Watford ON, Traffic Impact Study.

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Detailed Synchro Reports

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	48	0	174	151	0
Future Volume (Veh/h)	9	48	0	174	151	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	50	0	181	157	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	338	157	157			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	338	157	157			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	94	100			
cM capacity (veh/h)	636	865	1423			

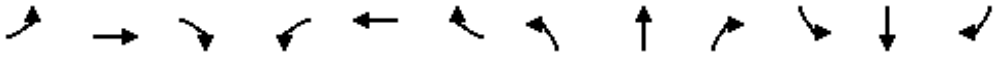
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	59	181	157
Volume Left	9	0	0
Volume Right	50	0	0
cSH	820	1700	1700
Volume to Capacity	0.07	0.11	0.09
Queue Length 95th (m)	1.8	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	40	16	122	0	29	136
Future Volume (Veh/h)	40	16	122	0	29	136
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	17	133	0	32	148
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	345	133			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	345	133			133	
tC, single (s)	6.7	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.4	
p0 queue free %	93	98			98	
cM capacity (veh/h)	580	922			1364	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	60	133	32	148
Volume Left	43	0	32	0
Volume Right	17	0	0	0
cSH	648	1700	1364	1700
Volume to Capacity	0.09	0.08	0.02	0.09
Queue Length 95th (m)	2.3	0.0	0.5	0.0
Control Delay (s)	11.1	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	11.1	0.0	1.4	
Approach LOS	B			

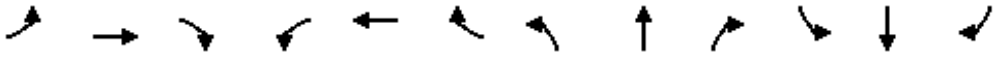
Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	47	78	12	38	17	97	130	26	31	136	60
Future Volume (Veh/h)	110	47	78	12	38	17	97	130	26	31	136	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	118	51	84	13	41	18	104	140	28	33	146	65
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	633	622	180	684	641	154	213			168		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	633	622	180	684	641	154	213			168		
tC, single (s)	7.1	6.6	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	63	86	90	95	88	98	92			98		
cM capacity (veh/h)	319	355	855	252	351	897	1343			1386		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	118	135	13	59	104	168	33	211
Volume Left	118	0	13	0	104	0	33	0
Volume Right	0	84	0	18	0	28	0	65
cSH	319	558	252	431	1343	1700	1386	1700
Volume to Capacity	0.37	0.24	0.05	0.14	0.08	0.10	0.02	0.12
Queue Length 95th (m)	12.5	7.1	1.2	3.6	1.9	0.0	0.6	0.0
Control Delay (s)	22.7	13.5	20.1	14.7	7.9	0.0	7.7	0.0
Lane LOS	C	B	C	B	A		A	
Approach Delay (s)	17.8		15.6		3.0		1.0	
Approach LOS	C		C					

Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	39.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	2	12	14	8	4	4	223	7	8	188	0
Future Volume (Veh/h)	7	2	12	14	8	4	4	223	7	8	188	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	7	2	12	14	8	4	4	228	7	8	192	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	456	451	192	460	448	232	192			235		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456	451	192	460	448	232	192			235		
tC, single (s)	7.1	6.5	6.3	7.2	6.5	6.2	4.1			4.6		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.6	4.0	3.3	2.2			2.7		
p0 queue free %	99	100	99	97	98	100	100			99		
cM capacity (veh/h)	506	502	830	489	504	813	1394			1096		

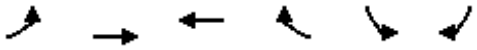
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	26	239	200
Volume Left	7	14	4	8
Volume Right	12	4	7	0
cSH	650	526	1394	1096
Volume to Capacity	0.03	0.05	0.00	0.01
Queue Length 95th (m)	0.8	1.2	0.1	0.2
Control Delay (s)	10.7	12.2	0.2	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	10.7	12.2	0.2	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	24.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	225	0	0	225
Future Volume (Veh/h)	0	0	225	0	0	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	239	0	0	239
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	478	239			239	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	478	239			239	
tC, single (s)	6.4	7.2			4.9	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.9	
p0 queue free %	100	100			100	
cM capacity (veh/h)	550	615			980	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	239	0	0	239
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.14	0.00	0.00	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	89	66	0	0	0
Future Volume (Veh/h)	10	89	66	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	97	72	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	72				191	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72				191	72
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1528				792	990

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	72	0
Volume Left	11	0	0
Volume Right	0	0	0
cSH	1528	1700	1700
Volume to Capacity	0.01	0.04	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	0.8	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	25	0	133	116	0
Future Volume (Veh/h)	9	25	0	133	116	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	28	0	148	129	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	277	129	129			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	277	129	129			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.2			
p0 queue free %	98	97	100			
cM capacity (veh/h)	666	913	1457			

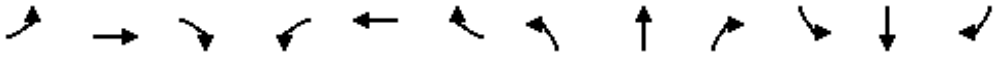
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	148	129
Volume Left	10	0	0
Volume Right	28	0	0
cSH	832	1700	1700
Volume to Capacity	0.05	0.09	0.08
Queue Length 95th (m)	1.1	0.0	0.0
Control Delay (s)	9.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.5	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	15	109	0	16	113
Future Volume (Veh/h)	25	15	109	0	16	113
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	29	17	125	0	18	130
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	291	125			125	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	291	125			125	
tC, single (s)	7.0	6.6			4.5	
tC, 2 stage (s)						
tF (s)	4.0	3.6			2.5	
p0 queue free %	95	98			99	
cM capacity (veh/h)	586	837			1266	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	46	125	18	130
Volume Left	29	0	18	0
Volume Right	17	0	0	0
cSH	659	1700	1266	1700
Volume to Capacity	0.07	0.07	0.01	0.08
Queue Length 95th (m)	1.7	0.0	0.3	0.0
Control Delay (s)	10.9	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	10.9	0.0	1.0	
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	32	67	20	36	15	89	126	22	14	125	64
Future Volume (Veh/h)	69	32	67	20	36	15	89	126	22	14	125	64
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	77	36	74	22	40	17	99	140	24	16	139	71
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	584	570	176	613	594	152	212			164		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	584	570	176	613	594	152	212			164		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	78	91	91	93	89	98	93			99		
cM capacity (veh/h)	352	390	870	317	378	861	1344			1373		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	77	110	22	57	99	164	16	210
Volume Left	77	0	22	0	99	0	16	0
Volume Right	0	74	0	17	0	24	0	71
cSH	352	620	317	454	1344	1700	1373	1700
Volume to Capacity	0.22	0.18	0.07	0.13	0.07	0.10	0.01	0.12
Queue Length 95th (m)	6.2	4.9	1.7	3.2	1.8	0.0	0.3	0.0
Control Delay (s)	18.1	12.0	17.2	14.1	7.9	0.0	7.7	0.0
Lane LOS	C	B	C	B	A		A	
Approach Delay (s)	14.5		14.9		3.0		0.5	
Approach LOS	B		B					

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	7	9	12	2	3	8	160	10	5	136	5
Future Volume (Veh/h)	5	7	9	12	2	3	8	160	10	5	136	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	7	9	12	2	3	8	165	10	5	140	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	342	344	142	351	341	170	145			175		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342	344	142	351	341	170	145			175		
tC, single (s)	7.3	6.8	6.7	7.2	7.5	6.7	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.8	3.6	4.9	3.8	2.4			2.4		
p0 queue free %	99	99	99	98	100	100	99			100		
cM capacity (veh/h)	562	527	792	572	447	763	1350			1274		

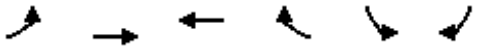
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	17	183	150
Volume Left	5	12	8	5
Volume Right	9	3	10	5
cSH	626	579	1350	1274
Volume to Capacity	0.03	0.03	0.01	0.00
Queue Length 95th (m)	0.8	0.7	0.1	0.1
Control Delay (s)	10.9	11.4	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	11.4	0.4	0.3
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	22.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	182	0	0	158
Future Volume (Veh/h)	0	0	182	0	0	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	202	0	0	176
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	378	202			202	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	202			202	
tC, single (s)	6.6	7.0			5.0	
tC, 2 stage (s)						
tF (s)	3.7	4.0			3.0	
p0 queue free %	100	100			100	
cM capacity (veh/h)	581	675			979	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	202	0	0	176
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.12	0.00	0.00	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	12.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	70	0	0	0
Future Volume (Veh/h)	0	65	70	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	76	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	76				147	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76				147	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1523				845	985

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	71	76	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1523	1700	1700
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	52	0	170	186	0
Future Volume (Veh/h)	29	52	0	170	186	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	32	57	0	187	204	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	391	204	204			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391	204	204			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	100			
cM capacity (veh/h)	609	834	1368			

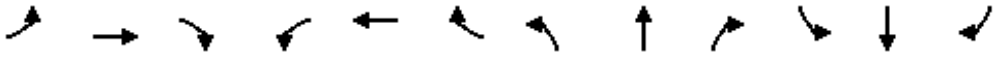
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	89	187	204
Volume Left	32	0	0
Volume Right	57	0	0
cSH	736	1700	1700
Volume to Capacity	0.12	0.11	0.12
Queue Length 95th (m)	3.1	0.0	0.0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	33	143	0	19	159
Future Volume (Veh/h)	55	33	143	0	19	159
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	62	38	162	0	22	181
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	162			162	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	162			162	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	90	96			98	
cM capacity (veh/h)	604	862			1353	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	100	162	22	181
Volume Left	62	0	22	0
Volume Right	38	0	0	0
cSH	682	1700	1353	1700
Volume to Capacity	0.15	0.10	0.02	0.11
Queue Length 95th (m)	3.9	0.0	0.4	0.0
Control Delay (s)	11.2	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	11.2	0.0	0.8	
Approach LOS	B			

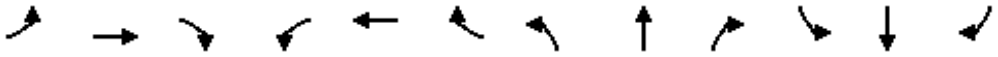
Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	53	77	37	58	41	98	164	44	29	197	51
Future Volume (Veh/h)	60	53	77	37	58	41	98	164	44	29	197	51
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	69	61	89	43	67	47	113	189	51	33	226	59
Pedestrians		7						2				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	824	794	264	854	798	214	292			240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	824	794	264	854	798	214	292			240		
tC, single (s)	7.2	6.6	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	66	78	88	77	76	94	91			98		
cM capacity (veh/h)	201	279	767	184	283	813	1261			1339		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	69	150	43	114	113	240	33	285
Volume Left	69	0	43	0	113	0	33	0
Volume Right	0	89	0	47	0	51	0	59
cSH	201	448	184	387	1261	1700	1339	1700
Volume to Capacity	0.34	0.33	0.23	0.29	0.09	0.14	0.02	0.17
Queue Length 95th (m)	11.0	11.1	6.6	9.2	2.2	0.0	0.6	0.0
Control Delay (s)	32.0	17.0	30.5	18.1	8.1	0.0	7.8	0.0
Lane LOS	D	C	D	C	A		A	
Approach Delay (s)	21.8		21.5		2.6		0.8	
Approach LOS	C		C					

Intersection Summary				
Average Delay	8.9			
Intersection Capacity Utilization	43.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	5	6	12	7	4	10	218	10	11	215	8
Future Volume (Veh/h)	6	5	6	12	7	4	10	218	10	11	215	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	7	6	7	14	8	5	12	256	12	13	253	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	578	576	258	580	574	262	262			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	576	258	580	574	262	262			268		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.5	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.6	2.2			2.3		
p0 queue free %	98	99	99	97	98	99	99			99		
cM capacity (veh/h)	387	423	739	414	423	707	1314			1245		

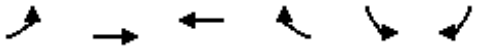
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	20	27	280	275
Volume Left	7	14	12	13
Volume Right	7	5	12	9
cSH	479	452	1314	1245
Volume to Capacity	0.04	0.06	0.01	0.01
Queue Length 95th (m)	1.0	1.4	0.2	0.2
Control Delay (s)	12.8	13.5	0.4	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	12.8	13.5	0.4	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	25.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	229	0	0	247
Future Volume (Veh/h)	0	0	229	0	0	247
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	246	0	0	266
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	512	246			246	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512	246			246	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	491	744			1332	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	246	0	0	266
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.14	0.00	0.00	0.16
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	118	126	0	10	0
Future Volume (Veh/h)	0	118	126	0	10	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	128	137	0	11	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	137				265	137
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	137				265	137
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1447				724	911

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	128	137	11
Volume Left	0	0	11
Volume Right	0	0	0
cSH	1447	1700	724
Volume to Capacity	0.00	0.08	0.02
Queue Length 95th (m)	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	57	0	189	185	0
Future Volume (Veh/h)	9	57	0	189	185	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	59	0	197	193	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	390	193	193			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390	193	193			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	93	100			
cM capacity (veh/h)	593	826	1380			

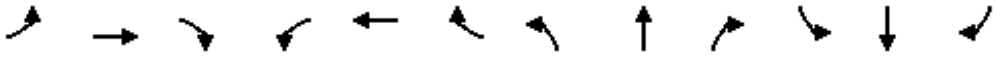
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	68	197	193
Volume Left	9	0	0
Volume Right	59	0	0
cSH	785	1700	1700
Volume to Capacity	0.09	0.12	0.11
Queue Length 95th (m)	2.2	0.0	0.0
Control Delay (s)	10.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	74	16	122	0	29	136
Future Volume (Veh/h)	74	16	122	0	29	136
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	17	133	0	32	148
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	345	133			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	345	133			133	
tC, single (s)	6.7	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.4	
p0 queue free %	86	98			98	
cM capacity (veh/h)	580	922			1364	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	97	133	32	148
Volume Left	80	0	32	0
Volume Right	17	0	0	0
cSH	620	1700	1364	1700
Volume to Capacity	0.16	0.08	0.02	0.09
Queue Length 95th (m)	4.2	0.0	0.5	0.0
Control Delay (s)	11.9	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	11.9	0.0	1.4	
Approach LOS	B			

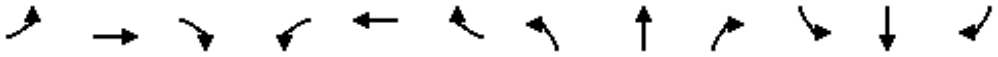
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	47	78	12	38	17	97	143	26	21	137	60
Future Volume (Veh/h)	110	47	78	12	38	17	97	143	26	21	137	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	118	51	84	13	41	18	104	154	28	23	147	65
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	628	618	182	678	636	168	214			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628	618	182	678	636	168	214			182		
tC, single (s)	7.1	6.6	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	64	86	90	95	88	98	92			98		
cM capacity (veh/h)	324	360	854	256	356	881	1342			1369		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	118	135	13	59	104	182	23	212
Volume Left	118	0	13	0	104	0	23	0
Volume Right	0	84	0	18	0	28	0	65
cSH	324	562	256	435	1342	1700	1369	1700
Volume to Capacity	0.36	0.24	0.05	0.14	0.08	0.11	0.02	0.12
Queue Length 95th (m)	12.3	7.1	1.2	3.5	1.9	0.0	0.4	0.0
Control Delay (s)	22.4	13.4	19.8	14.6	7.9	0.0	7.7	0.0
Lane LOS	C	B	C	B	A		A	
Approach Delay (s)	17.6		15.5		2.9		0.8	
Approach LOS	C		C					

Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	39.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	2	12	14	8	4	4	301	7	8	231	0
Future Volume (Veh/h)	7	2	12	14	8	4	4	301	7	8	231	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	7	2	12	14	8	4	4	307	7	8	236	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	578	574	236	584	570	310	236			314		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	574	236	584	570	310	236			314		
tC, single (s)	7.1	6.5	6.3	7.2	6.5	6.2	4.1			4.6		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.6	4.0	3.3	2.2			2.7		
p0 queue free %	98	100	98	97	98	99	100			99		
cM capacity (veh/h)	418	427	784	403	429	734	1343			1019		

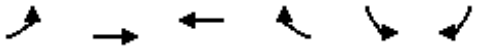
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	26	318	244
Volume Left	7	14	4	8
Volume Right	12	4	7	0
cSH	571	442	1343	1019
Volume to Capacity	0.04	0.06	0.00	0.01
Queue Length 95th (m)	0.9	1.4	0.1	0.2
Control Delay (s)	11.5	13.6	0.1	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	11.5	13.6	0.1	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	27.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	78	225	13	43	225
Future Volume (Veh/h)	1	78	225	13	43	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	83	239	14	46	239
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	570	239			253	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	570	239			253	
tC, single (s)	6.4	7.2			4.9	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.9	
p0 queue free %	100	87			95	
cM capacity (veh/h)	463	615			966	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	239	14	46	239
Volume Left	1	0	0	46	0
Volume Right	83	0	14	0	0
cSH	613	1700	1700	966	1700
Volume to Capacity	0.14	0.14	0.01	0.05	0.14
Queue Length 95th (m)	3.6	0.0	0.0	1.1	0.0
Control Delay (s)	11.8	0.0	0.0	8.9	0.0
Lane LOS	B			A	
Approach Delay (s)	11.8	0.0		1.4	
Approach LOS	B				

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	30.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	89	66	0	0	0
Future Volume (Veh/h)	10	89	66	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	97	72	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	72				191	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72				191	72
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1528				792	990

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	72	0
Volume Left	11	0	0
Volume Right	0	0	0
cSH	1528	1700	1700
Volume to Capacity	0.01	0.04	0.01
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	0.8	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	33	0	143	150	0
Future Volume (Veh/h)	9	33	0	143	150	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	37	0	159	167	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	326	167	167			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	167	167			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.2			
p0 queue free %	98	96	100			
cM capacity (veh/h)	624	869	1411			

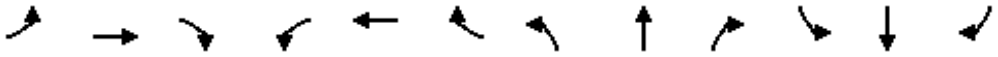
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	47	159	167
Volume Left	10	0	0
Volume Right	37	0	0
cSH	802	1700	1700
Volume to Capacity	0.06	0.09	0.10
Queue Length 95th (m)	1.4	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	15	109	0	16	113
Future Volume (Veh/h)	59	15	109	0	16	113
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	68	17	125	0	18	130
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	291	125			125	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	291	125			125	
tC, single (s)	7.0	6.6			4.5	
tC, 2 stage (s)						
tF (s)	4.0	3.6			2.5	
p0 queue free %	88	98			99	
cM capacity (veh/h)	586	837			1266	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	85	125	18	130
Volume Left	68	0	18	0
Volume Right	17	0	0	0
cSH	624	1700	1266	1700
Volume to Capacity	0.14	0.07	0.01	0.08
Queue Length 95th (m)	3.6	0.0	0.3	0.0
Control Delay (s)	11.7	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	11.7	0.0	1.0	
Approach LOS	B			

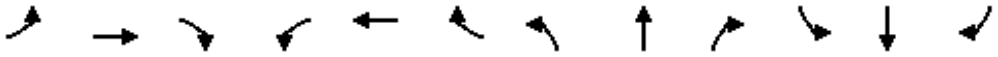
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	32	67	20	36	15	89	138	22	14	140	64
Future Volume (Veh/h)	69	32	67	20	36	15	89	138	22	14	140	64
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	77	36	74	22	40	17	99	153	24	16	156	71
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	614	600	194	643	624	165	229			177		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	614	600	194	643	624	165	229			177		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	77	90	91	93	89	98	93			99		
cM capacity (veh/h)	335	375	851	301	363	847	1325			1358		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	77	110	22	57	99	177	16	227
Volume Left	77	0	22	0	99	0	16	0
Volume Right	0	74	0	17	0	24	0	71
cSH	335	601	301	438	1325	1700	1358	1700
Volume to Capacity	0.23	0.18	0.07	0.13	0.07	0.10	0.01	0.13
Queue Length 95th (m)	6.6	5.1	1.8	3.4	1.8	0.0	0.3	0.0
Control Delay (s)	18.9	12.3	17.9	14.5	7.9	0.0	7.7	0.0
Lane LOS	C	B	C	B	A		A	
Approach Delay (s)	15.1		15.4		2.8		0.5	
Approach LOS	C		C					

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	36.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	7	9	12	2	3	8	212	10	5	178	5
Future Volume (Veh/h)	5	7	9	12	2	3	8	212	10	5	178	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	7	9	12	2	3	8	219	10	5	184	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	440	442	186	449	439	224	189			229		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440	442	186	449	439	224	189			229		
tC, single (s)	7.3	6.8	6.7	7.2	7.5	6.7	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.8	3.6	4.9	3.8	2.4			2.4		
p0 queue free %	99	98	99	98	99	100	99			100		
cM capacity (veh/h)	482	462	747	491	387	709	1300			1215		

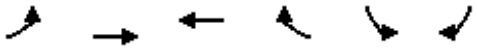
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	17	237	194
Volume Left	5	12	8	5
Volume Right	9	3	10	5
cSH	559	502	1300	1215
Volume to Capacity	0.04	0.03	0.01	0.00
Queue Length 95th (m)	0.9	0.8	0.1	0.1
Control Delay (s)	11.7	12.4	0.3	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	11.7	12.4	0.3	0.2
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	25.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	52	182	12	42	158
Future Volume (Veh/h)	15	52	182	12	42	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	58	202	13	47	176
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	472	202			215	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	202			215	
tC, single (s)	6.6	7.0			5.0	
tC, 2 stage (s)						
tF (s)	3.7	4.0			3.0	
p0 queue free %	97	91			95	
cM capacity (veh/h)	486	675			966	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	202	13	47	176
Volume Left	17	0	0	47	0
Volume Right	58	0	13	0	0
cSH	621	1700	1700	966	1700
Volume to Capacity	0.12	0.12	0.01	0.05	0.10
Queue Length 95th (m)	3.1	0.0	0.0	1.2	0.0
Control Delay (s)	11.6	0.0	0.0	8.9	0.0
Lane LOS	B			A	
Approach Delay (s)	11.6	0.0		1.9	
Approach LOS	B				

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	70	0	0	0
Future Volume (Veh/h)	0	65	70	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	76	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	76				147	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76				147	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1523				845	985

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	71	76	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1523	1700	1700
Volume to Capacity	0.00	0.04	0.01
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	56	0	177	204	0
Future Volume (Veh/h)	29	56	0	177	204	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	32	62	0	195	224	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	419	224	224			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	224	224			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	92	100			
cM capacity (veh/h)	587	813	1345			

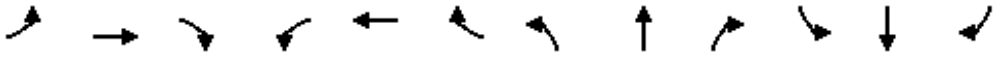
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	94	195	224
Volume Left	32	0	0
Volume Right	62	0	0
cSH	719	1700	1700
Volume to Capacity	0.13	0.11	0.13
Queue Length 95th (m)	3.4	0.0	0.0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	73	33	143	0	19	159
Future Volume (Veh/h)	73	33	143	0	19	159
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	83	38	162	0	22	181
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	162			162	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	162			162	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	86	96			98	
cM capacity (veh/h)	604	862			1353	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	121	162	22	181
Volume Left	83	0	22	0
Volume Right	38	0	0	0
cSH	667	1700	1353	1700
Volume to Capacity	0.18	0.10	0.02	0.11
Queue Length 95th (m)	5.0	0.0	0.4	0.0
Control Delay (s)	11.6	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	11.6	0.0	0.8	
Approach LOS	B			

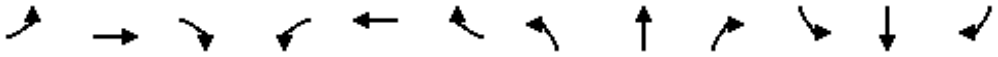
Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	26.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	53	77	37	58	41	98	168	44	29	208	51
Future Volume (Veh/h)	60	53	77	37	58	41	98	168	44	29	208	51
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	69	61	89	43	67	47	113	193	51	33	239	59
Pedestrians		7						2				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	841	812	278	871	816	218	305			244		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	841	812	278	871	816	218	305			244		
tC, single (s)	7.2	6.6	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	64	78	88	76	76	94	91			98		
cM capacity (veh/h)	194	272	755	177	276	809	1247			1334		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	69	150	43	114	113	244	33	298
Volume Left	69	0	43	0	113	0	33	0
Volume Right	0	89	0	47	0	51	0	59
cSH	194	438	177	379	1247	1700	1334	1700
Volume to Capacity	0.36	0.34	0.24	0.30	0.09	0.14	0.02	0.18
Queue Length 95th (m)	11.5	11.4	6.9	9.4	2.3	0.0	0.6	0.0
Control Delay (s)	33.4	17.4	31.7	18.5	8.2	0.0	7.8	0.0
Lane LOS	D	C	D	C	A		A	
Approach Delay (s)	22.5		22.1		2.6		0.8	
Approach LOS	C		C					

Intersection Summary				
Average Delay	9.0			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	5	6	12	7	4	10	251	10	11	237	8
Future Volume (Veh/h)	6	5	6	12	7	4	10	251	10	11	237	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	7	6	7	14	8	5	12	295	12	13	279	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	644	640	284	644	639	301	288			307		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	644	640	284	644	639	301	288			307		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.5	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.6	2.2			2.3		
p0 queue free %	98	98	99	96	98	99	99			99		
cM capacity (veh/h)	348	388	714	374	389	671	1286			1204		

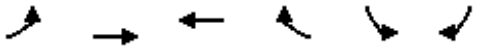
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	20	27	319	301
Volume Left	7	14	12	13
Volume Right	7	5	12	9
cSH	441	413	1286	1204
Volume to Capacity	0.05	0.07	0.01	0.01
Queue Length 95th (m)	1.1	1.6	0.2	0.2
Control Delay (s)	13.6	14.3	0.4	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	13.6	14.3	0.4	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	27.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	33	229	4	22	247
Future Volume (Veh/h)	11	33	229	4	22	247
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	12	35	246	4	24	266
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	560	246			250	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560	246			250	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	95			98	
cM capacity (veh/h)	452	744			1327	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	246	4	24	266
Volume Left	12	0	0	24	0
Volume Right	35	0	4	0	0
cSH	639	1700	1700	1327	1700
Volume to Capacity	0.07	0.14	0.00	0.02	0.16
Queue Length 95th (m)	1.8	0.0	0.0	0.4	0.0
Control Delay (s)	11.1	0.0	0.0	7.8	0.0
Lane LOS	B			A	
Approach Delay (s)	11.1	0.0		0.6	
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	118	126	0	0	10
Future Volume (Veh/h)	0	118	126	0	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	128	137	0	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	137				265	137
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	137				265	137
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1447				724	911

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	128	137	11
Volume Left	0	0	0
Volume Right	0	0	11
cSH	1447	1700	911
Volume to Capacity	0.00	0.08	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	53	0	210	185	0
Future Volume (Veh/h)	10	53	0	210	185	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	10	55	0	219	193	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	412	193	193			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	412	193	193			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	93	100			
cM capacity (veh/h)	576	826	1380			

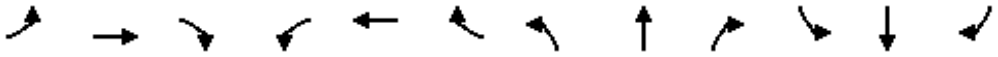
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	219	193
Volume Left	10	0	0
Volume Right	55	0	0
cSH	774	1700	1700
Volume to Capacity	0.08	0.13	0.11
Queue Length 95th (m)	2.1	0.0	0.0
Control Delay (s)	10.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	44	18	152	0	35	169
Future Volume (Veh/h)	44	18	152	0	35	169
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	20	165	0	38	184
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	425	165			165	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	425	165			165	
tC, single (s)	6.7	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.4	
p0 queue free %	91	98			97	
cM capacity (veh/h)	516	885			1327	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	68	165	38	184
Volume Left	48	0	38	0
Volume Right	20	0	0	0
cSH	588	1700	1327	1700
Volume to Capacity	0.12	0.10	0.03	0.11
Queue Length 95th (m)	3.0	0.0	0.7	0.0
Control Delay (s)	11.9	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	11.9	0.0	1.3	
Approach LOS	B			

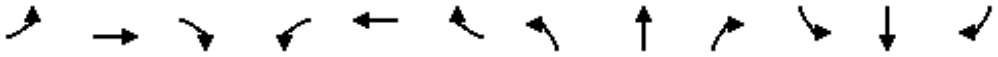
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	51	84	13	42	19	117	161	32	36	169	72
Future Volume (Veh/h)	117	51	84	13	42	19	117	161	32	36	169	72
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	126	55	90	14	45	20	126	173	34	39	182	77
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	768	760	222	820	781	190	261			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	768	760	222	820	781	190	261			207		
tC, single (s)	7.1	6.6	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	48	81	89	93	84	98	90			97		
cM capacity (veh/h)	244	287	810	188	283	857	1289			1341		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	126	145	14	65	126	207	39	259
Volume Left	126	0	14	0	126	0	39	0
Volume Right	0	90	0	20	0	34	0	77
cSH	244	480	188	357	1289	1700	1341	1700
Volume to Capacity	0.52	0.30	0.07	0.18	0.10	0.12	0.03	0.15
Queue Length 95th (m)	20.5	9.6	1.8	5.0	2.5	0.0	0.7	0.0
Control Delay (s)	34.5	15.7	25.6	17.3	8.1	0.0	7.8	0.0
Lane LOS	D	C	D	C	A		A	
Approach Delay (s)	24.4		18.8		3.1		1.0	
Approach LOS	C		C					

Intersection Summary				
Average Delay	9.6			
Intersection Capacity Utilization	43.0%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	2	13	15	9	4	5	267	8	10	229	0
Future Volume (Veh/h)	8	2	13	15	9	4	5	267	8	10	229	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	8	2	13	15	9	4	5	272	8	10	234	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	548	544	234	554	540	276	234			280		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	548	544	234	554	540	276	234			280		
tC, single (s)	7.1	6.5	6.3	7.2	6.5	6.2	4.1			4.6		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.6	4.0	3.3	2.2			2.7		
p0 queue free %	98	100	98	96	98	99	100			99		
cM capacity (veh/h)	436	443	786	421	445	768	1345			1051		

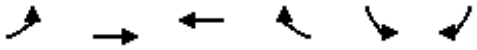
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	28	285	244
Volume Left	8	15	5	10
Volume Right	13	4	8	0
cSH	584	459	1345	1051
Volume to Capacity	0.04	0.06	0.00	0.01
Queue Length 95th (m)	0.9	1.5	0.1	0.2
Control Delay (s)	11.4	13.4	0.2	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	11.4	13.4	0.2	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	27.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	268	0	0	275
Future Volume (Veh/h)	0	0	268	0	0	275
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	285	0	0	293
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	578	285			285	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	578	285			285	
tC, single (s)	6.4	7.2			4.9	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.9	
p0 queue free %	100	100			100	
cM capacity (veh/h)	481	576			937	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	285	0	0	293
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.17	0.00	0.00	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	97	73	0	0	0
Future Volume (Veh/h)	10	97	73	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	105	79	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	79				206	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79				206	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1519				777	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	116	79	0
Volume Left	11	0	0
Volume Right	0	0	0
cSH	1519	1700	1700
Volume to Capacity	0.01	0.05	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	0.8	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	27	0	162	142	0
Future Volume (Veh/h)	10	27	0	162	142	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	30	0	180	158	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	338	158	158			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	338	158	158			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.2			
p0 queue free %	98	97	100			
cM capacity (veh/h)	613	880	1422			

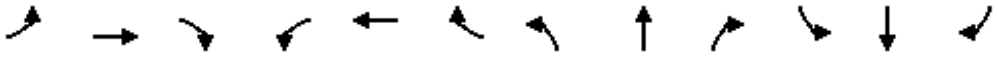
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	41	180	158
Volume Left	11	0	0
Volume Right	30	0	0
cSH	788	1700	1700
Volume to Capacity	0.05	0.11	0.09
Queue Length 95th (m)	1.2	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	17	135	0	20	140
Future Volume (Veh/h)	27	17	135	0	20	140
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	31	20	155	0	23	161
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	362	155			155	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	155			155	
tC, single (s)	7.0	6.6			4.5	
tC, 2 stage (s)						
tF (s)	4.0	3.6			2.5	
p0 queue free %	94	98			98	
cM capacity (veh/h)	528	805			1233	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	51	155	23	161
Volume Left	31	0	23	0
Volume Right	20	0	0	0
cSH	610	1700	1233	1700
Volume to Capacity	0.08	0.09	0.02	0.09
Queue Length 95th (m)	2.1	0.0	0.4	0.0
Control Delay (s)	11.4	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	11.4	0.0	1.0	
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	35	73	23	38	17	103	157	28	17	155	77
Future Volume (Veh/h)	74	35	73	23	38	17	103	157	28	17	155	77
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	82	39	81	26	42	19	114	174	31	19	172	86
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	697	688	217	728	716	190	260			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	697	688	217	728	716	190	260			205		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	71	88	90	90	87	98	91			99		
cM capacity (veh/h)	284	328	826	252	316	820	1290			1326		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	82	120	26	61	114	205	19	258
Volume Left	82	0	26	0	114	0	19	0
Volume Right	0	81	0	19	0	31	0	86
cSH	284	553	252	391	1290	1700	1326	1700
Volume to Capacity	0.29	0.22	0.10	0.16	0.09	0.12	0.01	0.15
Queue Length 95th (m)	8.8	6.2	2.6	4.2	2.2	0.0	0.3	0.0
Control Delay (s)	22.7	13.3	20.9	15.9	8.1	0.0	7.8	0.0
Lane LOS	C	B	C	C	A		A	
Approach Delay (s)	17.1		17.4		2.9		0.5	
Approach LOS	C		C					

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	39.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	8	10	13	2	3	10	193	13	7	166	7
Future Volume (Veh/h)	5	8	10	13	2	3	10	193	13	7	166	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	8	10	13	2	3	10	199	13	7	171	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	418	420	174	428	418	206	178			212		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418	420	174	428	418	206	178			212		
tC, single (s)	7.3	6.8	6.7	7.2	7.5	6.7	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.8	3.6	4.9	3.8	2.4			2.4		
p0 queue free %	99	98	99	97	99	100	99			99		
cM capacity (veh/h)	498	473	759	505	398	727	1312			1233		

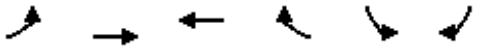
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	18	222	185
Volume Left	5	13	10	7
Volume Right	10	3	13	7
cSH	573	516	1312	1233
Volume to Capacity	0.04	0.03	0.01	0.01
Queue Length 95th (m)	1.0	0.8	0.2	0.1
Control Delay (s)	11.5	12.2	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	11.5	12.2	0.4	0.3
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	220	0	0	193
Future Volume (Veh/h)	0	0	220	0	0	193
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	244	0	0	214
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	458	244			244	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	458	244			244	
tC, single (s)	6.6	7.0			5.0	
tC, 2 stage (s)						
tF (s)	3.7	4.0			3.0	
p0 queue free %	100	100			100	
cM capacity (veh/h)	521	637			939	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	244	0	0	214
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.14	0.00	0.00	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	71	77	0	0	0
Future Volume (Veh/h)	0	71	77	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	84	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	84				161	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84				161	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1513				830	975

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	77	84	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1513	1700	1700
Volume to Capacity	0.00	0.05	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	56	0	213	228	0
Future Volume (Veh/h)	33	56	0	213	228	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	36	62	0	234	251	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	485	251	251			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	485	251	251			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	92	100			
cM capacity (veh/h)	537	785	1314			

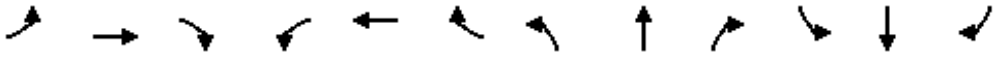
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	98	234	251
Volume Left	36	0	0
Volume Right	62	0	0
cSH	672	1700	1700
Volume to Capacity	0.15	0.14	0.15
Queue Length 95th (m)	3.9	0.0	0.0
Control Delay (s)	11.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	36	178	0	23	198
Future Volume (Veh/h)	60	36	178	0	23	198
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	68	41	202	0	26	225
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	479	202			202	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	202			202	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	87	95			98	
cM capacity (veh/h)	533	819			1307	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	109	202	26	225
Volume Left	68	0	26	0
Volume Right	41	0	0	0
cSH	613	1700	1307	1700
Volume to Capacity	0.18	0.12	0.02	0.13
Queue Length 95th (m)	4.9	0.0	0.5	0.0
Control Delay (s)	12.1	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	12.1	0.0	0.8	
Approach LOS	B			

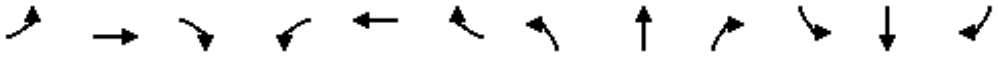
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	58	83	41	62	45	111	204	55	35	245	56
Future Volume (Veh/h)	65	58	83	41	62	45	111	204	55	35	245	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	75	67	95	47	71	52	128	234	63	40	282	64
Pedestrians		7						2				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	978	954	323	1014	954	266	353			297		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	978	954	323	1014	954	266	353			297		
tC, single (s)	7.2	6.6	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	47	69	87	63	68	93	89			97		
cM capacity (veh/h)	141	219	712	126	224	761	1198			1276		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	75	162	47	123	128	297	40	346
Volume Left	75	0	47	0	128	0	40	0
Volume Right	0	95	0	52	0	63	0	64
cSH	141	368	126	319	1198	1700	1276	1700
Volume to Capacity	0.53	0.44	0.37	0.39	0.11	0.17	0.03	0.20
Queue Length 95th (m)	19.6	16.5	11.7	13.3	2.7	0.0	0.7	0.0
Control Delay (s)	56.1	22.2	49.4	23.2	8.4	0.0	7.9	0.0
Lane LOS	F	C	E	C	A		A	
Approach Delay (s)	32.9		30.4		2.5		0.8	
Approach LOS	D		D					

Intersection Summary				
Average Delay	11.8			
Intersection Capacity Utilization	47.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	5	7	13	8	4	13	264	13	14	259	10
Future Volume (Veh/h)	7	5	7	13	8	4	13	264	13	14	259	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	6	8	15	9	5	15	311	15	16	305	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	701	699	311	702	698	318	317			326		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	701	699	311	702	698	318	317			326		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.5	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.6	2.2			2.3		
p0 queue free %	97	98	99	96	97	99	99			99		
cM capacity (veh/h)	316	357	689	340	358	656	1255			1185		

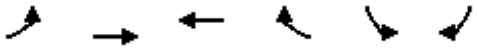
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	22	29	341	333
Volume Left	8	15	15	16
Volume Right	8	5	15	12
cSH	409	377	1255	1185
Volume to Capacity	0.05	0.08	0.01	0.01
Queue Length 95th (m)	1.3	1.9	0.3	0.3
Control Delay (s)	14.3	15.3	0.5	0.5
Lane LOS	B	C	A	A
Approach Delay (s)	14.3	15.3	0.5	0.5
Approach LOS	B	C		

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	29.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	278	0	0	300
Future Volume (Veh/h)	0	0	278	0	0	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	299	0	0	323
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	622	299			299	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	299			299	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	423	694			1274	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	299	0	0	323
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.18	0.00	0.00	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	130	0	137	0	10
Future Volume (Veh/h)	0	130	0	137	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	141	0	149	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149				216	74
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149				216	74
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1432				773	987

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	149	11
Volume Left	0	0	0
Volume Right	0	149	11
cSH	1432	1700	987
Volume to Capacity	0.00	0.09	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	8.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	62	0	225	219	0
Future Volume (Veh/h)	10	62	0	225	219	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	10	65	0	234	228	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	462	228	228			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	228	228			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	92	100			
cM capacity (veh/h)	538	789	1340			

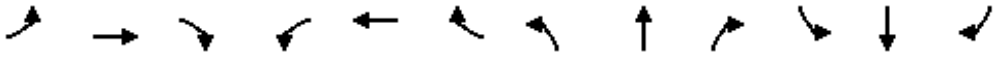
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	75	234	228
Volume Left	10	0	0
Volume Right	65	0	0
cSH	743	1700	1700
Volume to Capacity	0.10	0.14	0.13
Queue Length 95th (m)	2.5	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	78	18	152	0	35	169
Future Volume (Veh/h)	78	18	152	0	35	169
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	20	165	0	38	184
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	425	165			165	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	425	165			165	
tC, single (s)	6.7	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.4	
p0 queue free %	84	98			97	
cM capacity (veh/h)	516	885			1327	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	105	165	38	184
Volume Left	85	0	38	0
Volume Right	20	0	0	0
cSH	561	1700	1327	1700
Volume to Capacity	0.19	0.10	0.03	0.11
Queue Length 95th (m)	5.2	0.0	0.7	0.0
Control Delay (s)	12.9	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	12.9	0.0	1.3	
Approach LOS	B			

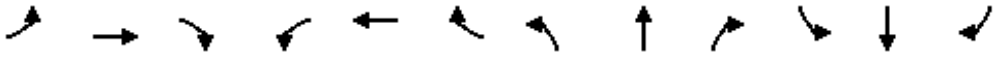
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	51	84	13	42	19	117	174	32	36	170	72
Future Volume (Veh/h)	117	51	84	13	42	19	117	174	32	36	170	72
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	126	55	90	14	45	20	126	187	34	39	183	77
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	783	774	224	834	796	204	262			221		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	783	774	224	834	796	204	262			221		
tC, single (s)	7.1	6.6	6.2	7.3	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.7	4.0	3.3	2.2			2.3		
p0 queue free %	47	80	89	92	84	98	90			97		
cM capacity (veh/h)	238	282	809	183	278	842	1288			1325		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	126	145	14	65	126	221	39	260
Volume Left	126	0	14	0	126	0	39	0
Volume Right	0	90	0	20	0	34	0	77
cSH	238	473	183	350	1288	1700	1325	1700
Volume to Capacity	0.53	0.31	0.08	0.19	0.10	0.13	0.03	0.15
Queue Length 95th (m)	21.4	9.8	1.9	5.1	2.5	0.0	0.7	0.0
Control Delay (s)	36.0	15.9	26.3	17.6	8.1	0.0	7.8	0.0
Lane LOS	E	C	D	C	A		A	
Approach Delay (s)	25.3		19.2		2.9		1.0	
Approach LOS	D		C					

Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	2	13	15	9	4	5	345	8	10	272	0
Future Volume (Veh/h)	8	2	13	15	9	4	5	345	8	10	272	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	8	2	13	15	9	4	5	352	8	10	278	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	672	668	278	678	664	356	278			360		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	672	668	278	678	664	356	278			360		
tC, single (s)	7.1	6.5	6.3	7.2	6.5	6.2	4.1			4.6		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.6	4.0	3.3	2.2			2.7		
p0 queue free %	98	99	98	96	98	99	100			99		
cM capacity (veh/h)	359	376	742	347	378	693	1296			976		

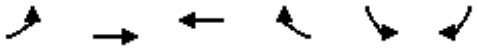
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	28	365	288
Volume Left	8	15	5	10
Volume Right	13	4	8	0
cSH	510	384	1296	976
Volume to Capacity	0.05	0.07	0.00	0.01
Queue Length 95th (m)	1.1	1.8	0.1	0.2
Control Delay (s)	12.4	15.1	0.1	0.4
Lane LOS	B	C	A	A
Approach Delay (s)	12.4	15.1	0.1	0.4
Approach LOS	B	C		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	30.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	78	268	13	43	275
Future Volume (Veh/h)	1	78	268	13	43	275
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	83	285	14	46	293
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	670	285			299	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670	285			299	
tC, single (s)	6.4	7.2			4.9	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.9	
p0 queue free %	100	86			95	
cM capacity (veh/h)	404	576			924	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	285	14	46	293
Volume Left	1	0	0	46	0
Volume Right	83	0	14	0	0
cSH	573	1700	1700	924	1700
Volume to Capacity	0.15	0.17	0.01	0.05	0.17
Queue Length 95th (m)	3.9	0.0	0.0	1.2	0.0
Control Delay (s)	12.4	0.0	0.0	9.1	0.0
Lane LOS	B			A	
Approach Delay (s)	12.4	0.0		1.2	
Approach LOS	B				

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	97	73	0	0	0
Future Volume (Veh/h)	10	97	73	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	105	79	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	79				206	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79				206	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1519				777	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	116	79	0
Volume Left	11	0	0
Volume Right	0	0	0
cSH	1519	1700	1700
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	0.8	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	35	0	172	176	0
Future Volume (Veh/h)	10	35	0	172	176	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	39	0	191	196	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	196	196			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	196	196			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.2			
p0 queue free %	98	95	100			
cM capacity (veh/h)	574	838	1377			

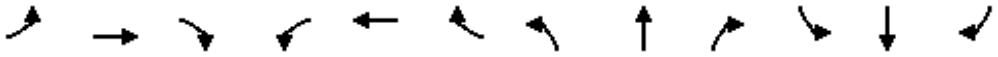
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	191	196
Volume Left	11	0	0
Volume Right	39	0	0
cSH	761	1700	1700
Volume to Capacity	0.07	0.11	0.12
Queue Length 95th (m)	1.6	0.0	0.0
Control Delay (s)	10.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	17	135	0	20	140
Future Volume (Veh/h)	61	17	135	0	20	140
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	70	20	155	0	23	161
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	362	155			155	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	155			155	
tC, single (s)	7.0	6.6			4.5	
tC, 2 stage (s)						
tF (s)	4.0	3.6			2.5	
p0 queue free %	87	98			98	
cM capacity (veh/h)	528	805			1233	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	90	155	23	161
Volume Left	70	0	23	0
Volume Right	20	0	0	0
cSH	572	1700	1233	1700
Volume to Capacity	0.16	0.09	0.02	0.09
Queue Length 95th (m)	4.2	0.0	0.4	0.0
Control Delay (s)	12.5	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	12.5	0.0	1.0	
Approach LOS	B			

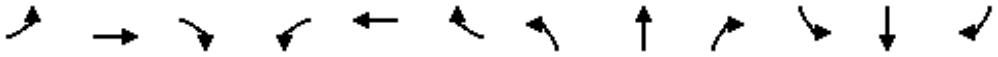
Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	35	73	23	38	17	104	169	28	17	170	77
Future Volume (Veh/h)	74	35	73	23	38	17	104	169	28	17	170	77
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	82	39	81	26	42	19	116	188	31	19	189	86
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	732	723	234	763	750	204	277			219		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	732	723	234	763	750	204	277			219		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	69	87	90	89	86	98	91			99		
cM capacity (veh/h)	267	312	808	237	301	805	1272			1310		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	82	120	26	61	116	219	19	275
Volume Left	82	0	26	0	116	0	19	0
Volume Right	0	81	0	19	0	31	0	86
cSH	267	533	237	373	1272	1700	1310	1700
Volume to Capacity	0.31	0.23	0.11	0.16	0.09	0.13	0.01	0.16
Queue Length 95th (m)	9.6	6.5	2.8	4.4	2.3	0.0	0.3	0.0
Control Delay (s)	24.4	13.7	22.1	16.5	8.1	0.0	7.8	0.0
Lane LOS	C	B	C	C	A		A	
Approach Delay (s)	18.0		18.2		2.8		0.5	
Approach LOS	C		C					

Intersection Summary				
Average Delay	6.9			
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	8	10	13	2	3	10	245	13	7	208	7
Future Volume (Veh/h)	5	8	10	13	2	3	10	245	13	7	208	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	8	10	13	2	3	10	253	13	7	214	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	515	518	218	525	514	260	221			266		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515	518	218	525	514	260	221			266		
tC, single (s)	7.3	6.8	6.7	7.2	7.5	6.7	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.8	3.6	4.9	3.8	2.4			2.4		
p0 queue free %	99	98	99	97	99	100	99			99		
cM capacity (veh/h)	427	415	716	433	345	676	1264			1176		

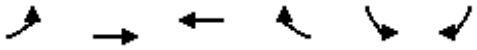
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	18	276	228
Volume Left	5	13	10	7
Volume Right	10	3	13	7
cSH	512	447	1264	1176
Volume to Capacity	0.04	0.04	0.01	0.01
Queue Length 95th (m)	1.1	1.0	0.2	0.1
Control Delay (s)	12.4	13.4	0.4	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	12.4	13.4	0.4	0.3
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	28.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	52	220	12	42	193
Future Volume (Veh/h)	15	52	220	12	42	193
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	58	244	13	47	214
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	552	244			257	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	552	244			257	
tC, single (s)	6.6	7.0			5.0	
tC, 2 stage (s)						
tF (s)	3.7	4.0			3.0	
p0 queue free %	96	91			95	
cM capacity (veh/h)	434	637			927	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	244	13	47	214
Volume Left	17	0	0	47	0
Volume Right	58	0	13	0	0
cSH	576	1700	1700	927	1700
Volume to Capacity	0.13	0.14	0.01	0.05	0.13
Queue Length 95th (m)	3.4	0.0	0.0	1.2	0.0
Control Delay (s)	12.2	0.0	0.0	9.1	0.0
Lane LOS	B			A	
Approach Delay (s)	12.2	0.0		1.6	
Approach LOS	B				

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	71	77	0	0	0
Future Volume (Veh/h)	0	71	77	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	84	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	84				161	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84				161	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1513				830	975

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	77	84	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1513	1700	1700
Volume to Capacity	0.00	0.05	0.01
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	60	0	215	256	0
Future Volume (Veh/h)	33	60	0	215	256	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	36	66	0	236	281	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	517	281	281			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	281	281			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	91	100			
cM capacity (veh/h)	515	755	1282			

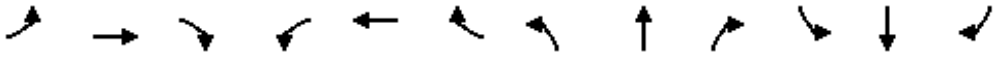
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	102	236	281
Volume Left	36	0	0
Volume Right	66	0	0
cSH	649	1700	1700
Volume to Capacity	0.16	0.14	0.17
Queue Length 95th (m)	4.2	0.0	0.0
Control Delay (s)	11.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	78	36	178	0	23	198
Future Volume (Veh/h)	78	36	178	0	23	198
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	89	41	202	0	26	225
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	479	202			202	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	202			202	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	83	95			98	
cM capacity (veh/h)	533	819			1307	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	130	202	26	225
Volume Left	89	0	26	0
Volume Right	41	0	0	0
cSH	599	1700	1307	1700
Volume to Capacity	0.22	0.12	0.02	0.13
Queue Length 95th (m)	6.2	0.0	0.5	0.0
Control Delay (s)	12.7	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	12.7	0.0	0.8	
Approach LOS	B			

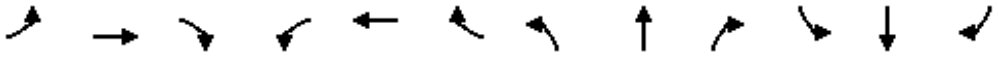
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	58	83	41	62	45	111	208	55	35	256	56
Future Volume (Veh/h)	65	58	83	41	62	45	111	208	55	35	256	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	75	67	95	47	71	52	128	239	63	40	294	64
Pedestrians		7						2				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	996	971	335	1031	972	270	365			302		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	996	971	335	1031	972	270	365			302		
tC, single (s)	7.2	6.6	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	45	69	86	61	68	93	89			97		
cM capacity (veh/h)	136	214	701	122	219	756	1185			1270		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	75	162	47	123	128	302	40	358
Volume Left	75	0	47	0	128	0	40	0
Volume Right	0	95	0	52	0	63	0	64
cSH	136	361	122	312	1185	1700	1270	1700
Volume to Capacity	0.55	0.45	0.39	0.39	0.11	0.18	0.03	0.21
Queue Length 95th (m)	20.6	17.1	12.2	13.8	2.8	0.0	0.7	0.0
Control Delay (s)	59.7	22.9	52.1	23.8	8.4	0.0	7.9	0.0
Lane LOS	F	C	F	C	A		A	
Approach Delay (s)	34.5		31.6		2.5		0.8	
Approach LOS	D		D					

Intersection Summary				
Average Delay	12.1			
Intersection Capacity Utilization	48.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	5	7	13	8	4	13	297	13	14	281	10
Future Volume (Veh/h)	7	5	7	13	8	4	13	297	13	14	281	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	6	8	15	9	5	15	349	15	16	331	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	765	763	337	766	762	356	343			364		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	765	763	337	766	762	356	343			364		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.5	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.6	2.2			2.3		
p0 queue free %	97	98	99	95	97	99	99			99		
cM capacity (veh/h)	285	328	666	307	328	623	1227			1147		

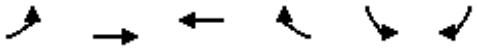
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	22	29	379	359
Volume Left	8	15	15	16
Volume Right	8	5	15	12
cSH	377	344	1227	1147
Volume to Capacity	0.06	0.08	0.01	0.01
Queue Length 95th (m)	1.4	2.1	0.3	0.3
Control Delay (s)	15.2	16.4	0.4	0.5
Lane LOS	C	C	A	A
Approach Delay (s)	15.2	16.4	0.4	0.5
Approach LOS	C	C		

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	33	278	4	22	300
Future Volume (Veh/h)	11	33	278	4	22	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	12	35	299	4	24	323
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	670	299			303	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670	299			303	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	95			98	
cM capacity (veh/h)	388	694			1269	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	299	4	24	323
Volume Left	12	0	0	24	0
Volume Right	35	0	4	0	0
cSH	578	1700	1700	1269	1700
Volume to Capacity	0.08	0.18	0.00	0.02	0.19
Queue Length 95th (m)	2.0	0.0	0.0	0.4	0.0
Control Delay (s)	11.8	0.0	0.0	7.9	0.0
Lane LOS	B			A	
Approach Delay (s)	11.8	0.0		0.5	
Approach LOS	B				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	130	137	0	0	10
Future Volume (Veh/h)	0	130	137	0	0	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	141	149	0	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149				290	149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149				290	149
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1432				701	898

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	149	11
Volume Left	0	0	0
Volume Right	0	0	11
cSH	1432	1700	898
Volume to Capacity	0.00	0.09	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

B

SimTraffic Queueing Reports

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1138	1085	1077	1135	1137	1112
Vehs Exited	1062	1010	1011	1080	1090	1050
Starting Vehs	70	77	85	76	66	73
Ending Vehs	146	152	151	131	113	135
Travel Distance (km)	3095	2940	2881	2984	3100	3000
Travel Time (hr)	117.4	113.6	121.8	106.2	114.9	114.8
Total Delay (hr)	50.3	49.3	58.6	41.1	47.4	49.3
Total Stops	728	736	746	733	755	742
Fuel Used (l)	243.1	234.0	232.1	232.2	241.4	236.6

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1138	1085	1077	1135	1137	1112
Vehs Exited	1062	1010	1011	1080	1090	1050
Starting Vehs	70	77	85	76	66	73
Ending Vehs	146	152	151	131	113	135
Travel Distance (km)	3095	2940	2881	2984	3100	3000
Travel Time (hr)	117.4	113.6	121.8	106.2	114.9	114.8
Total Delay (hr)	50.3	49.3	58.6	41.1	47.4	49.3
Total Stops	728	736	746	733	755	742
Fuel Used (l)	243.1	234.0	232.1	232.2	241.4	236.6

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	EB	EB	NB	SB
Directions Served	LT	R	LTR	LTR
Maximum Queue (m)	13.6	84.9	27.2	9.0
Average Queue (m)	0.5	20.9	8.3	0.7
95th Queue (m)	9.6	84.5	23.2	4.6
Link Distance (m)	111.3	111.3	224.5	78.6
Upstream Blk Time (%)		7		
Queuing Penalty (veh)		2		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	B32	SB
Directions Served	T	T	T	T
Maximum Queue (m)	196.8	95.2	387.1	224.9
Average Queue (m)	181.6	71.1	204.6	152.4
95th Queue (m)	218.6	122.4	465.7	263.8
Link Distance (m)	174.0	66.3	373.2	224.5
Upstream Blk Time (%)	88	79	28	25
Queuing Penalty (veh)	0	0	0	12
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 14

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (m)	22.8	2.5	1.8	48.6	52.2
Average Queue (m)	7.8	0.1	0.2	10.5	5.0
95th Queue (m)	20.6	1.3	2.3	55.9	55.8
Link Distance (m)	111.3	2113.9			298.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			85.0	140.0	
Storage Blk Time (%)				1	1
Queuing Penalty (veh)				3	0

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	927	903	946	925
Vehs Exited	865	868	905	880
Starting Vehs	59	68	54	56
Ending Vehs	121	103	95	105
Travel Distance (km)	2343	2291	2525	2386
Travel Time (hr)	89.2	85.7	79.9	84.9
Total Delay (hr)	38.9	36.3	25.0	33.4
Total Stops	647	620	610	626
Fuel Used (l)	183.9	178.8	188.6	183.8

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	927	903	946	925
Vehs Exited	865	868	905	880
Starting Vehs	59	68	54	56
Ending Vehs	121	103	95	105
Travel Distance (km)	2343	2291	2525	2386
Travel Time (hr)	89.2	85.7	79.9	84.9
Total Delay (hr)	38.9	36.3	25.0	33.4
Total Stops	647	620	610	626
Fuel Used (l)	183.9	178.8	188.6	183.8

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	EB	NB	SB
Directions Served	R	LTR	LTR
Maximum Queue (m)	73.6	25.9	9.2
Average Queue (m)	15.4	8.8	3.2
95th Queue (m)	65.1	24.5	10.3
Link Distance (m)	111.3	224.5	78.6
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	B32	SB
Directions Served	T	T	T	T
Maximum Queue (m)	197.6	91.3	165.6	227.7
Average Queue (m)	174.9	51.7	47.3	174.4
95th Queue (m)	217.8	116.1	168.2	248.8
Link Distance (m)	174.0	66.3	373.2	224.5
Upstream Blk Time (%)	73	51		22
Queuing Penalty (veh)	0	0		10
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 10

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	NB	SB
Directions Served	LR	T	L
Maximum Queue (m)	24.9	2.2	28.2
Average Queue (m)	8.6	0.1	4.0
95th Queue (m)	20.9	1.2	17.6
Link Distance (m)	111.3	2113.9	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			140.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	1249	1234	1193	1225
Vehs Exited	1236	1211	1178	1210
Starting Vehs	87	70	76	72
Ending Vehs	100	93	91	93
Travel Distance (km)	3309	3283	3040	3211
Travel Time (hr)	80.2	84.2	79.2	81.2
Total Delay (hr)	9.1	13.7	13.5	12.1
Total Stops	789	760	729	757
Fuel Used (l)	235.8	234.9	217.8	229.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	1249	1234	1193	1225
Vehs Exited	1236	1211	1178	1210
Starting Vehs	87	70	76	72
Ending Vehs	100	93	91	93
Travel Distance (km)	3309	3283	3040	3211
Travel Time (hr)	80.2	84.2	79.2	81.2
Total Delay (hr)	9.1	13.7	13.5	12.1
Total Stops	789	760	729	757
Fuel Used (l)	235.8	234.9	217.8	229.5

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (m)	24.4	9.2
Average Queue (m)	8.0	2.9
95th Queue (m)	22.7	9.8
Link Distance (m)	224.5	78.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	SB
Directions Served	T	T	T
Maximum Queue (m)	142.6	4.8	100.2
Average Queue (m)	75.9	0.2	43.5
95th Queue (m)	164.9	2.6	120.5
Link Distance (m)	174.0	66.3	224.5
Upstream Blk Time (%)	4		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (m)	20.3	9.1
Average Queue (m)	6.4	0.6
95th Queue (m)	15.5	4.3
Link Distance (m)	111.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		140.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1312	1333	1371	1311	1335	1332
Vehs Exited	1255	1267	1311	1244	1280	1275
Starting Vehs	93	94	86	85	94	84
Ending Vehs	150	160	146	152	149	146
Travel Distance (km)	3342	3527	3616	3456	3626	3514
Travel Time (hr)	136.0	115.7	122.0	122.5	133.0	125.8
Total Delay (hr)	63.2	39.5	43.2	47.1	53.9	49.4
Total Stops	751	775	782	828	795	784
Fuel Used (l)	265.9	270.5	275.2	266.4	278.6	271.3

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1312	1333	1371	1311	1335	1332
Vehs Exited	1255	1267	1311	1244	1280	1275
Starting Vehs	93	94	86	85	94	84
Ending Vehs	150	160	146	152	149	146
Travel Distance (km)	3342	3527	3616	3456	3626	3514
Travel Time (hr)	136.0	115.7	122.0	122.5	133.0	125.8
Total Delay (hr)	63.2	39.5	43.2	47.1	53.9	49.4
Total Stops	751	775	782	828	795	784
Fuel Used (l)	265.9	270.5	275.2	266.4	278.6	271.3

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	EB	EB	NB	SB
Directions Served	LT	R	LTR	LTR
Maximum Queue (m)	13.9	62.9	26.0	8.7
Average Queue (m)	1.5	19.7	8.9	0.9
95th Queue (m)	17.1	80.0	24.1	5.3
Link Distance (m)	111.3	111.3	224.5	78.6
Upstream Blk Time (%)		4		
Queuing Penalty (veh)		1		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	B32	SB
Directions Served	T	T	T	T
Maximum Queue (m)	198.4	95.1	377.9	222.8
Average Queue (m)	187.7	72.5	208.9	139.3
95th Queue (m)	204.3	121.5	464.3	258.7
Link Distance (m)	174.0	66.3	373.2	224.5
Upstream Blk Time (%)	91	80	27	25
Queuing Penalty (veh)	0	0	0	12
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 13

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (m)	24.4	1.3	9.5	39.0	18.9
Average Queue (m)	8.2	0.0	0.9	8.1	0.6
95th Queue (m)	21.7	0.9	7.5	34.3	13.3
Link Distance (m)	111.3	2113.9			298.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			85.0	140.0	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	1034	1072	1042	1050
Vehs Exited	1001	1035	1013	1016
Starting Vehs	79	70	81	70
Ending Vehs	112	107	110	108
Travel Distance (km)	2821	2990	2768	2860
Travel Time (hr)	86.9	89.9	85.8	87.6
Total Delay (hr)	26.3	25.6	25.9	25.9
Total Stops	666	675	692	677
Fuel Used (l)	210.4	222.3	203.8	212.2

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	1034	1072	1042	1050
Vehs Exited	1001	1035	1013	1016
Starting Vehs	79	70	81	70
Ending Vehs	112	107	110	108
Travel Distance (km)	2821	2990	2768	2860
Travel Time (hr)	86.9	89.9	85.8	87.6
Total Delay (hr)	26.3	25.6	25.9	25.9
Total Stops	666	675	692	677
Fuel Used (l)	210.4	222.3	203.8	212.2

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	EB	NB	SB
Directions Served	R	LTR	LTR
Maximum Queue (m)	55.7	25.3	9.2
Average Queue (m)	6.3	8.9	3.0
95th Queue (m)	34.8	24.5	10.0
Link Distance (m)	111.3	224.5	78.6
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	B32	SB
Directions Served	T	T	T	T
Maximum Queue (m)	195.1	71.2	56.8	225.3
Average Queue (m)	153.7	25.1	7.3	137.3
95th Queue (m)	222.9	83.7	43.2	243.3
Link Distance (m)	174.0	66.3	373.2	224.5
Upstream Blk Time (%)	48	22		16
Queuing Penalty (veh)	0	0		7
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 7

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (m)	24.1	23.9
Average Queue (m)	10.6	4.0
95th Queue (m)	21.3	17.3
Link Distance (m)	111.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		140.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	1384	1449	1352	1395
Vehs Exited	1355	1445	1354	1384
Starting Vehs	94	104	95	95
Ending Vehs	123	108	93	107
Travel Distance (km)	3565	3871	3563	3666
Travel Time (hr)	93.0	95.2	88.2	92.1
Total Delay (hr)	16.2	12.0	11.5	13.2
Total Stops	789	877	783	819
Fuel Used (l)	253.8	274.0	253.6	260.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	1384	1449	1352	1395
Vehs Exited	1355	1445	1354	1384
Starting Vehs	94	104	95	95
Ending Vehs	123	108	93	107
Travel Distance (km)	3565	3871	3563	3666
Travel Time (hr)	93.0	95.2	88.2	92.1
Total Delay (hr)	16.2	12.0	11.5	13.2
Total Stops	789	877	783	819
Fuel Used (l)	253.8	274.0	253.6	260.5

Intersection: 13: Inbound Scale/Office & Primary Facility Access

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (m)	26.8	9.2
Average Queue (m)	7.6	3.0
95th Queue (m)	21.9	9.9
Link Distance (m)	224.5	78.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 27: Outbound Scale/Inbound Scale & Weigh Scale

Movement	NB	B30	B32	SB
Directions Served	T	T	T	T
Maximum Queue (m)	127.9	31.0	15.5	104.2
Average Queue (m)	66.7	6.0	1.2	47.8
95th Queue (m)	151.1	39.7	12.0	110.6
Link Distance (m)	174.0	66.3	373.2	224.5
Upstream Blk Time (%)	10	5		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 5: Nauvoo Road & Primary Facility Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (m)	21.4	11.5
Average Queue (m)	5.9	1.1
95th Queue (m)	15.0	6.3
Link Distance (m)	111.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		140.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

C

Ontario Traffic Manual Book 12 – Justification 7 Projected Volumes

TRAFFIC SIGNAL WARRANT ANALYSIS FORM FOR INTERSECTION CONTROL

OTM Book 12 Justification 7 Projected Volumes (March 2012)

Major Street: **Nauvoo Road** — New intersection? Y or N: **N**
Minor Street: **Confederation Line (CR39)** — ' T ' intersection? Y or N: **N**

WARRANT 1 - MINIMUM VEHICULAR VOLUME

100% SATISFIED YES [ ] NO [X]
80% SATISFIED YES [X] NO [ ]

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PERCENTAGE WARRANT									
APPROACH LANES	1		2 OR MORE		HOUR ENDING									
FLOW CONDITION	RURAL	URBAN	RURAL	URBAN	AHV									
	X													
1A. ALL APPROACHES	576 (461)	864 (691)	720 (576)	1080 (864)	503								TOTAL ACROSS	
100% FULFILLED					0								0	
80% FULFILLED					80								80	SECTIONAL
ACTUAL % IF BELOW 80% VALUE													0	PERCENT
												TOTAL	80	**80**

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PERCENTAGE WARRANT									
APPROACH LANES	1		2 OR MORE		HOUR ENDING									
FLOW CONDITION	RURAL	URBAN	RURAL	URBAN	AHV									
	X													
1B. MINOR STREET BOTH APPROACHES	144 (115)	204 (163)	144 (115)	204 (163)	171								TOTAL ACROSS	
100% FULFILLED					100								100	
80% FULFILLED					0								0	SECTIONAL
ACTUAL % IF BELOW 80% VALUE													0	PERCENT
												TOTAL	100	**100**

WARRANT 2 - DELAY TO CROSS TRAFFIC

100% SATISFIED YES [ ] NO [X]
80% SATISFIED YES [ ] NO [X]

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PERCENTAGE WARRANT									
APPROACH LANES	1		2 OR MORE		HOUR ENDING									
FLOW CONDITION	RURAL	URBAN	RURAL	URBAN	AHV									
	X													
A. MAJOR STREET BOTH APPROACHES	576 (461)	864 (691)	720 (576)	1080 (864)	332								TOTAL ACROSS	
100% FULFILLED					0								0	
80% FULFILLED					0								0	SECTIONAL
ACTUAL % IF BELOW 80% VALUE					58%								58	PERCENT
												TOTAL	58	**58**

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PERCENTAGE WARRANT									
APPROACH LANES	1		2 OR MORE		HOUR ENDING									
FLOW CONDITION	RURAL	URBAN	RURAL	URBAN	AHV									
	X													
B. TRAFFIC CROSSING MAJOR STREET	60 (48)	90 (72)	144 (115)	204 (163)	87								TOTAL ACROSS	
100% FULFILLED					100								100	
80% FULFILLED					0								0	SECTIONAL
ACTUAL % IF BELOW 80% VALUE													0	PERCENT
												TOTAL	100	**100**

WARRANT 4 - COMBINATION WARRANT

Used if neither Justification 1 or 2 met 100%

SATISFIED YES [ ] NO [X]

REQUIREMENT	WARRANT SATISFIED 80% OR MORE	Yes	No
Two Warrants Satisfied 80%	Warrant 1 - Minimum Vehicular Volume	X	
	Warrant 2 - Delay to Cross Traffic		X

FULFILLED	
Yes	No
	X

CONCLUSION: TRAFFIC SIGNALS WARRANTED? YES [ ] NO [X]