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nexTrans
CONSULTING ENGINEERS

Transportation Master Plan Study

PROPOSED WHITE CHURCH URBAN BOUNDARY EXPANSION

2450 Miles Road & 7156, 8064 & 8122 White Church Road East
HAMILTON, ONTARIO

January 2025
Project No: NT-23-111

EXECUTIVE SUMMARY

NexTrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Master Plan Study in support of the proposed White Church Urban Boundary Expansion, a new urban expansion area in the City of Hamilton.

The purpose of this Transportation Master Plan Study is to provide a complete assessment of the transportation road network, pedestrian route analysis, cycling route analysis, transit assessment, transportation demand management and design elements to accommodate the proposed White Church Urban Boundary Expansion Area. The proposed White Church Urban Boundary Expansion Area is generally bounded by Upper James Street to the west, Miles Road to the east, Airport Road to the north and White Church Road E to the south. The proposed White Church Urban Boundary Expansion Area is located is located to the east of the proposed Airport Employment Growth District (AEGD) Secondary Plan.

The proposed White Church Urban Boundary Expansion Area includes a residential target of approximately 7,629 residential dwelling units of mixed type, two public elementary schools, one Catholic elementary school and a commercial area of approximately 16.78 hectares. The Transportation Master Plan Study was prepared in accordance with the City of Hamilton guidelines indicates that the proposed White Church Urban Boundary Expansion Area can be efficiently accommodated by the existing and recommended transportation network improvements identified in this Transportation Master Plan Study. The Study will include the following assessment:

- Transportation Road Network
- Pedestrian Network
- Cycling Network
- Transit network
- Transportation Demand Management
- Overall Parking Strategy
- Implementation Plan

Transportation Road Network Recommendations:

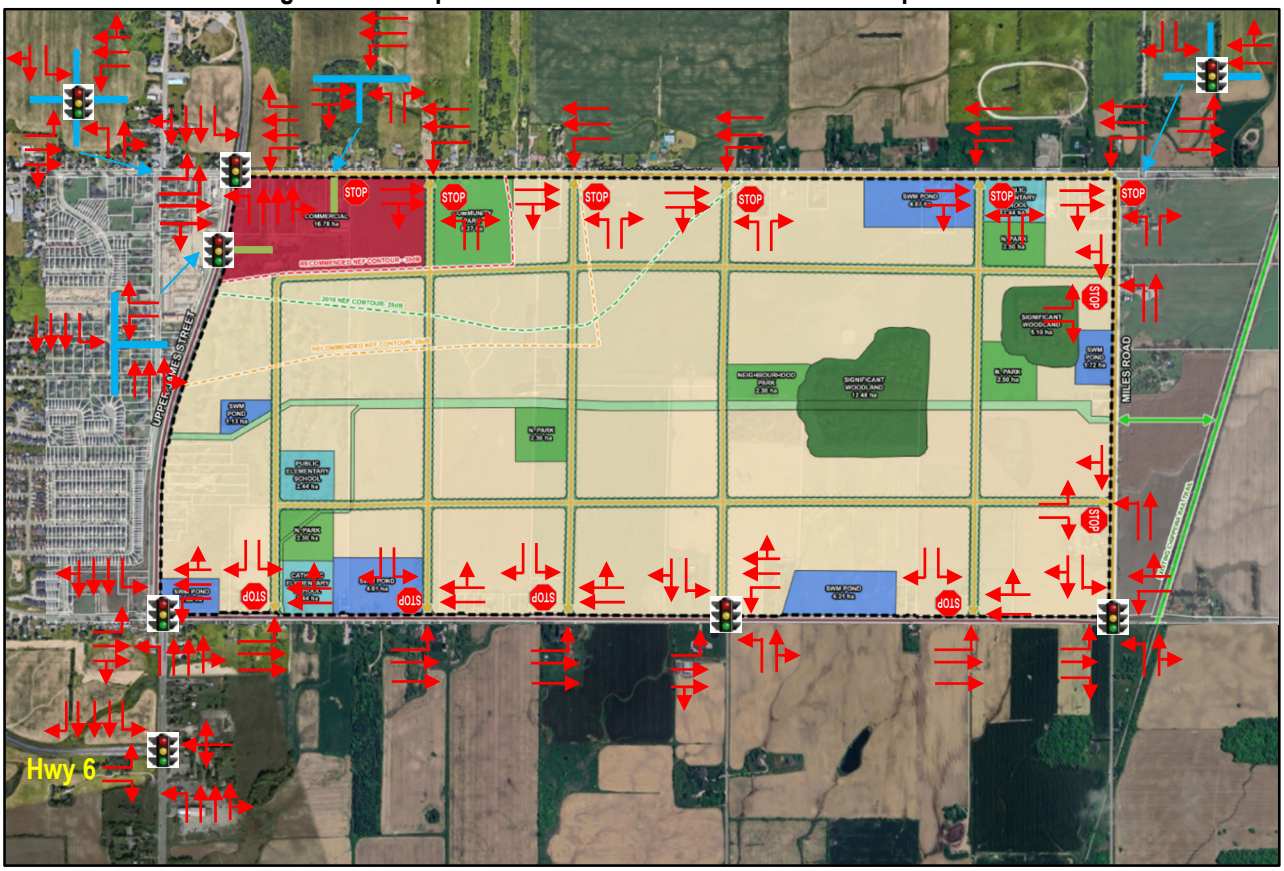
The proposed White Church Urban Boundary Expansion is expected to generate the following trips, with a minimum modal split target of 15%:

- 3,833 total two-way trips (1,391 inbound and 2,442 outbound) and 4,940 total two-way trips (2,859 inbound and 2,081 outbound) during the morning and afternoon peak hours, respectively;
- 410 total two-way transit trips (118 inbound and 292 outbound) and 709 total two-way trips (414 inbound and 294 outbound) during the morning and afternoon peak hours, respectively; and
- 2,218 total two-way auto trips (604 inbound and 1,615 outbound) and 3,231 total two-way auto trips (1,965 inbound and 1,267 outbound) during the morning and afternoon peak hours, respectively.

The following are road network recommendations for the White Church Urban Boundary Expansion Area, with **Figure E1** illustrates the proposed road network and potential lane configurations and traffic control:

- The proposed road network as illustrated in Figure E1;
- Upper James Street — widening from 4 lanes to 6 lanes from south of Hwy 6 to north of Airport Road;
- Eastbound double left turn at the Airport Road/Upper James Street intersection;
- White Church Road W widening from 4 lanes to 6 lanes from west of Hwy 6 to Miles Road South;
- Airport Road widening from 2 lanes to 4 lanes from Upper James Street to Miles Road North;
- Jog elimination at the White Church Road E/Miles Road intersection;
- New signalized intersection at the Upper James Street/Commercial Block potential access;
- New signalized intersection or roundabout at the White Church Road/Miles Road South; and
- New signalized intersection or roundabout at the White Church Road/Ferris Road

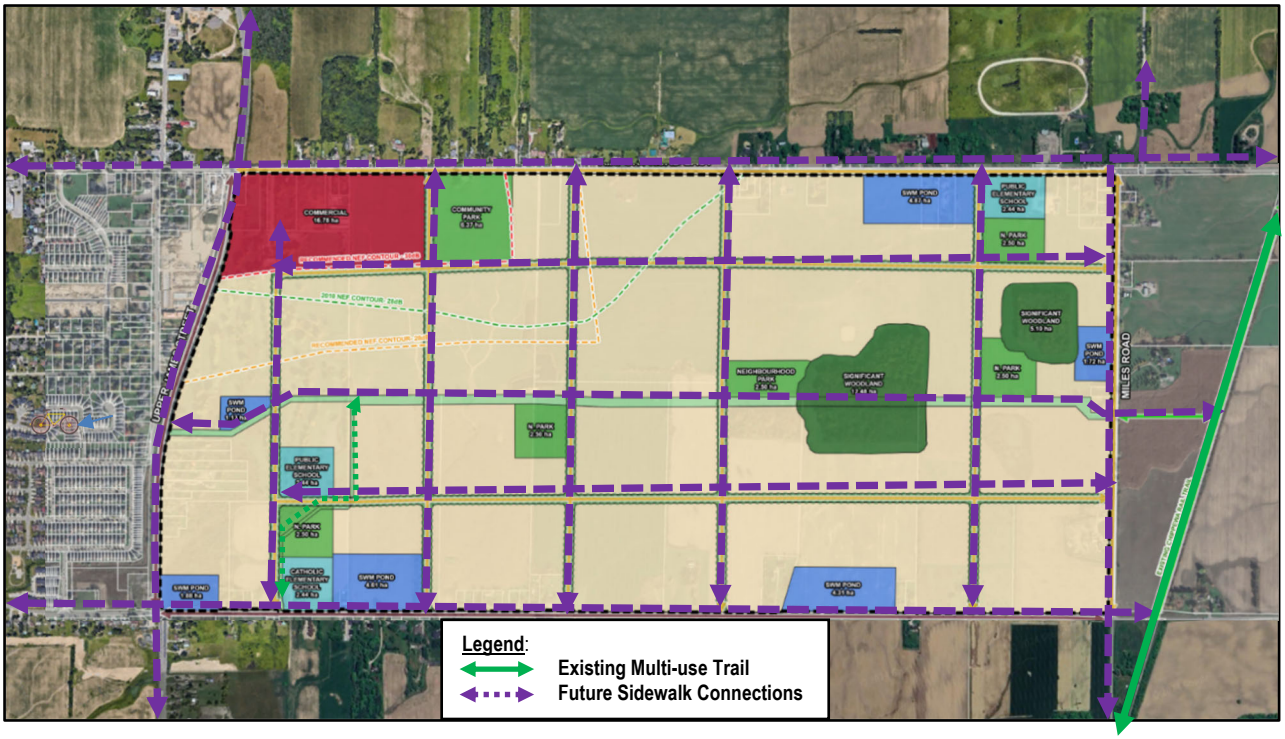
Figure E1 – Proposed Road Network and Intersection Improvements



Pedestrian Network Recommendations:

It is recommended that the proposed Secondary Plan provides a complete, fine grid and safe pedestrian network, as illustrated in **Figure E2**.

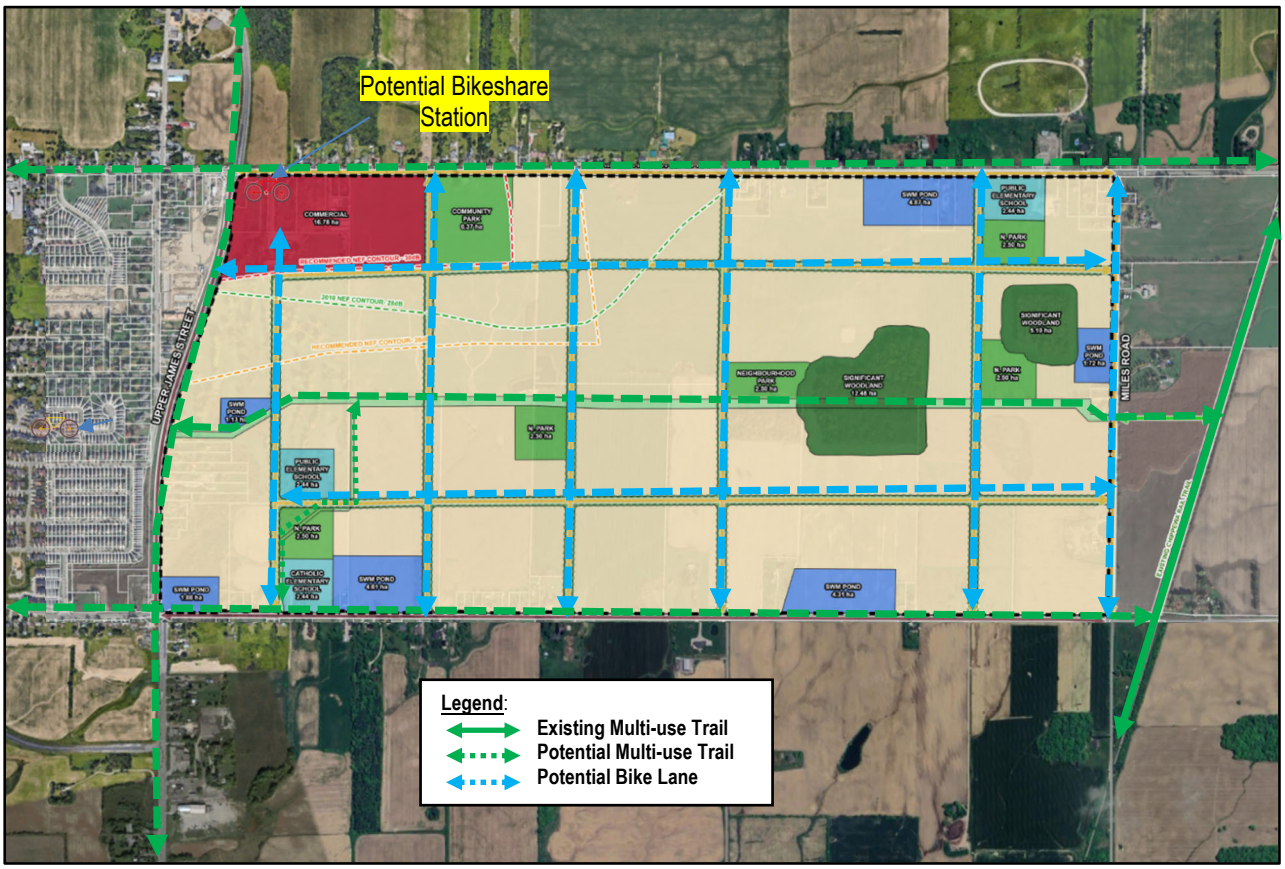
Figure E2 – Recommended Pedestrian Network



Cycling Network Recommendations:

It is recommended that the proposed Secondary Plan provides a complete, fine grid and safe cycling network, as illustrated in **Figure E3**.

Figure E3 – Recommended Cycling Network



Transit Network Recommendations:

It is recommended that the proposed Secondary Plan provides a complete, fine grid and safe cycling network, as illustrated in **Figure E4**.

Vehicle and Bicycle Parking Recommendations:

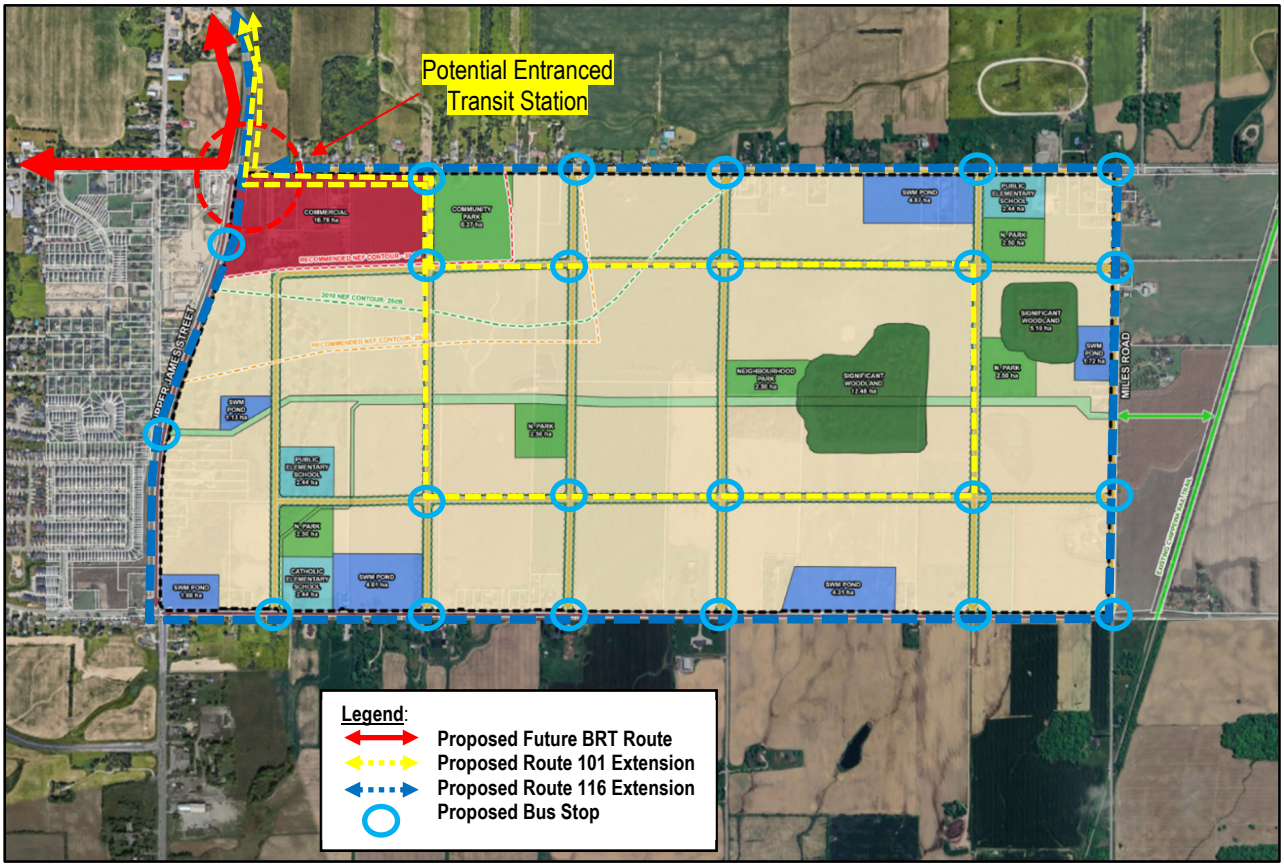
Appropriate parking demand management is the best transportation demand management measure at this time because:

- Limited available parking spaces will encourage residents not to own a car;
- It encourages residents to take other sustainable modes of transportation available in the area such as walking, cycling and public transit; and
- It maximizes transit ridership and therefore maximizes the impact of major transit infrastructure improvements

It is recommended that the proposed Secondary Plan Policies will include lower vehicle parking rates the residential and commercial components.

Similarly, the proposed Secondary Plan will include appropriate bicycle parking rates and policy for each land use components that are specific and appropriate for the context of the Secondary Plan objectives and visions.

Figure E4 – White Church Urban Boundary Expansion Proposed Transit Extension (Internal)



Transportation Demand Management Recommendations:

Table E1 below provides the recommended transportation demand management measures and incentives for the proposed White Church Urban Boundary Expansion Area.

Table E1 – Recommended TDM Measures for the Proposed White Church Urban Boundary Expansion Area

Category	TDM Initiative	Recommended Actions
Cycling	• Visible, well-lit, short-term bicycle parking for visitors (above minimum provisions or recommendations) • Secure, indoor bicycle parking storage spaces for tenants/residents • Ensure development connects to bicycle network	• Applicable to the mid-rise and high-rise developments
Walking	• Safe, attractive and direct walkways for pedestrians linking building entrances with public sidewalks and with key destinations such as schools • Enhanced pedestrian amenities on-site (benches, landscaping, lighting)	• Applicable to all development applications in the proposed Secondary Plan Area
Transit	• Enhance walking routes between main building entrance(s) and transit stops/stations • Bicycle parking located at or near transit stops • Implement transit priority measures (queue jump lanes, traffic signal priority, bus only lanes)	• Applicable to all development applications in the proposed Secondary Plan Area
Parking	• Reduced minimum parking requirements based on proximity to transit • Shared parking with nearby developments or on-street spaces • Unbundle parking costs from unit costs	• Applicable to all mid-rise and high-rise development applications in the proposed Secondary Plan Area
Information Brochure/ Letter	• Provide an information brochure/letter for each residential unit that include HSR Transit System schedules, GO Transit schedules, cycling maps and community maps.	• Provide a brochure (or a letter) to new residents that include all website links to Hamilton Transit System schedules, community maps and cycling maps. The information package can be distributed at the sale office.
Transit Incentive	• Provide transit incentives	• To be determined at the late stage

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

Nextrans Consulting Engineers
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January 23, 2025

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1.0 STUDY OVERVIEW AND PURPOSE

1.1. Study Purpose

The purpose of this Transportation Master Plan Study is to support the proposed White Church Urban Boundary Expansion Area, a new urban expansion area in the south of the City of Hamilton. The Transportation Master Plan will identify multimodal infrastructure requirements to accommodate the Secondary Plan and ensure that individual development will following the Secondary Plan recommendations.

1.2. Study Objectives and Principles

In review of the City of Hamilton's Secondary Plan Guidelines for Urban Expansion Areas, the following are the ten directions to guide development that were endorsed by the City Council as a tool to guide and evaluate decisions related to growth.

- **Direction 1**: Plan for climate change mitigation and adaptation, and reduce greenhouse gas emissions.
- **Direction 2**: Encourage a compatible mix of uses in neighbourhoods, including a range of housing types and affordability, that provide opportunities to live, work, learn, shop and play, promoting a healthy, safe and complete community.
- **Direction 3**: Concentrate new development and infrastructure within existing built-up areas and within the urban boundary through intensification and adaptive re-use.
- **Direction 4**: Protect rural areas for a viable rural economy, agricultural resources, environmentally sensitive recreation and the enjoyment of the rural landscape.
- **Direction 5**: Design neighbourhoods to improve access to community life for all, regardless of age, ethnicity, race, gender, ability, income and spirituality.
- **Direction 6**: Retain and intensify existing employment land, attract jobs in Hamilton's strength areas and targeted new sectors, and support access to education and training for all residents.
- **Direction 7**: Expand transportation options through the development of complete streets that encourage travel by foot, bike and transit, and enhance efficient inter-regional transportation connections.
- **Direction 8**: Maximize the use of existing buildings, infrastructure, and vacant or abandoned land.
- **Direction 9**: Protect ecological systems and the natural environment, reduce waste, improve air, land and water quality, and encourage the use of green infrastructure.
- **Direction 10**: Maintain and create attractive public and private spaces and respect the unique character of existing buildings, neighbourhoods and communities, protect cultural heritage resources, and support arts and culture as an important part of community identity.

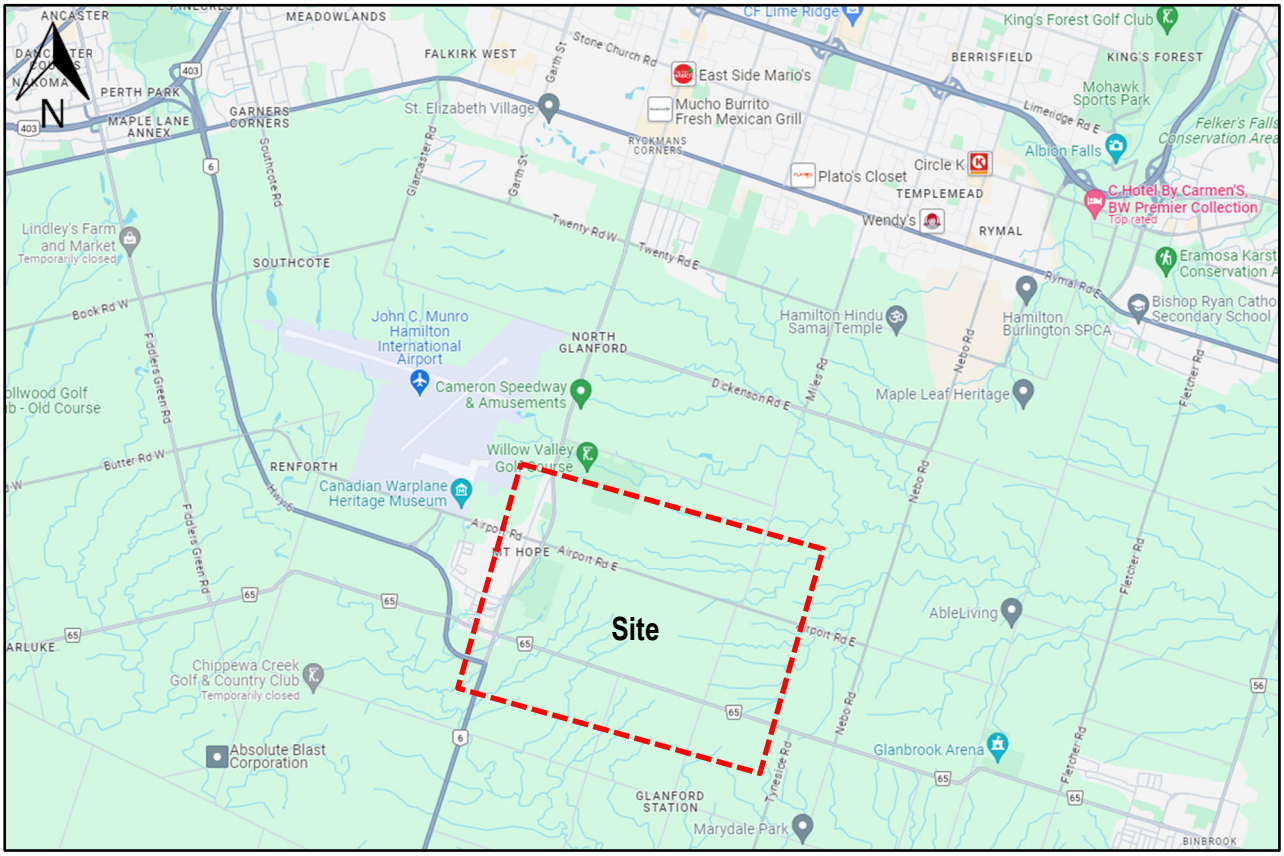
The focus of this Transportation Master Plan Study will be on Directions 1, 5 and 7. This Study will identify a master plan transportation framework for the secondary plan transportation network so that individual developments can follow and implement these improvements with their respective stage of development. It will also assist the City with transportation planning requirements when reviewing development applications. The Study will include the following assessment:

- Transportation road network
- Pedestrian network
- Cycling network
- Transit network
- Transportation Demand Management
- Overall Parking strategy

1.3. Transportation Master Plan Study Area

The proposed White Church Urban Boundary Expansion Area is generally bounded by Upper James Street to the west, Miles Road to the east, Airport Road to the north and White Church Road E to the south. The proposed White Church Urban Boundary Expansion Area is located is located to the east of the proposed Airport Employment Growth District (AEGD) Secondary Plan. **Figure 1** illustrates the study area.

Figure 1 – White Church Transportation Master Plan Study Area



Source: Google Map

1.4. Reference Documents

The following documents are referenced in this Transportation Master Plan Study:

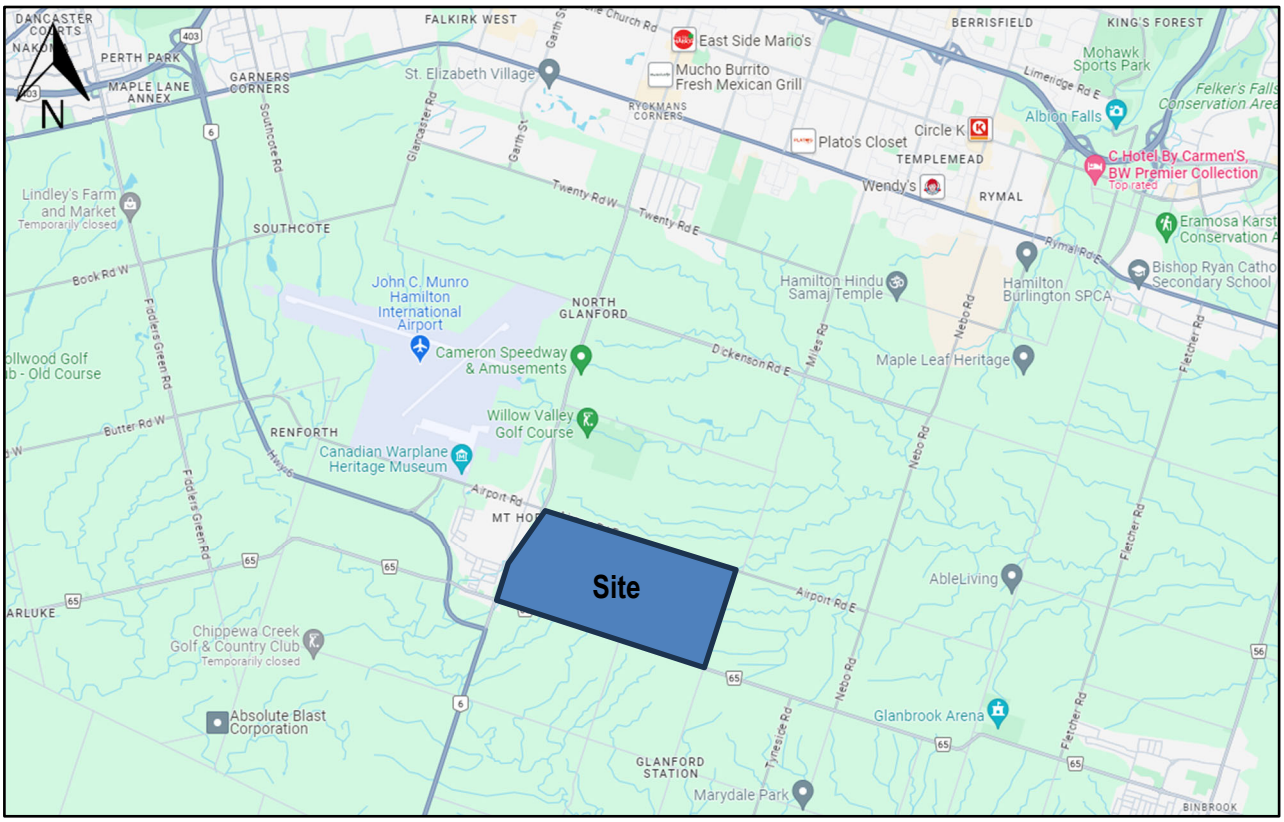
- Airport Employment Growth District (AEGD) Secondary Plan
- Urban Hamilton Official Plan Amendment Provincial plan
- City of Hamilton Policies, Master Plans, Official Plans, Secondary Plans and Documents
- Transportation Assessment Guidelines 2024
- Cycling Master Plan (CMP)
- Pedestrian Mobility Plan (PMP)
- Hamilton Complete Streets Design Manual
- Development Engineering Guidelines

2.0 PROPOSED WHITE CHURCH URBAN BOUNDARY EXPANSION OVERVIEW

2.1. White Church Road Secondary Plan Area Location

The proposed White Church Urban Boundary Expansion is one of the six urban expansion areas in the City of Hamilton and its location is shown in **Figure 2** below. The proposed Secondary Plan is generally bounded by Upper James Street to the west, Miles Road to the east, Airport Road to the north and White Church Road E to the south.

Figure 2 – Proposed White Church Urban Boundary Expansion Area



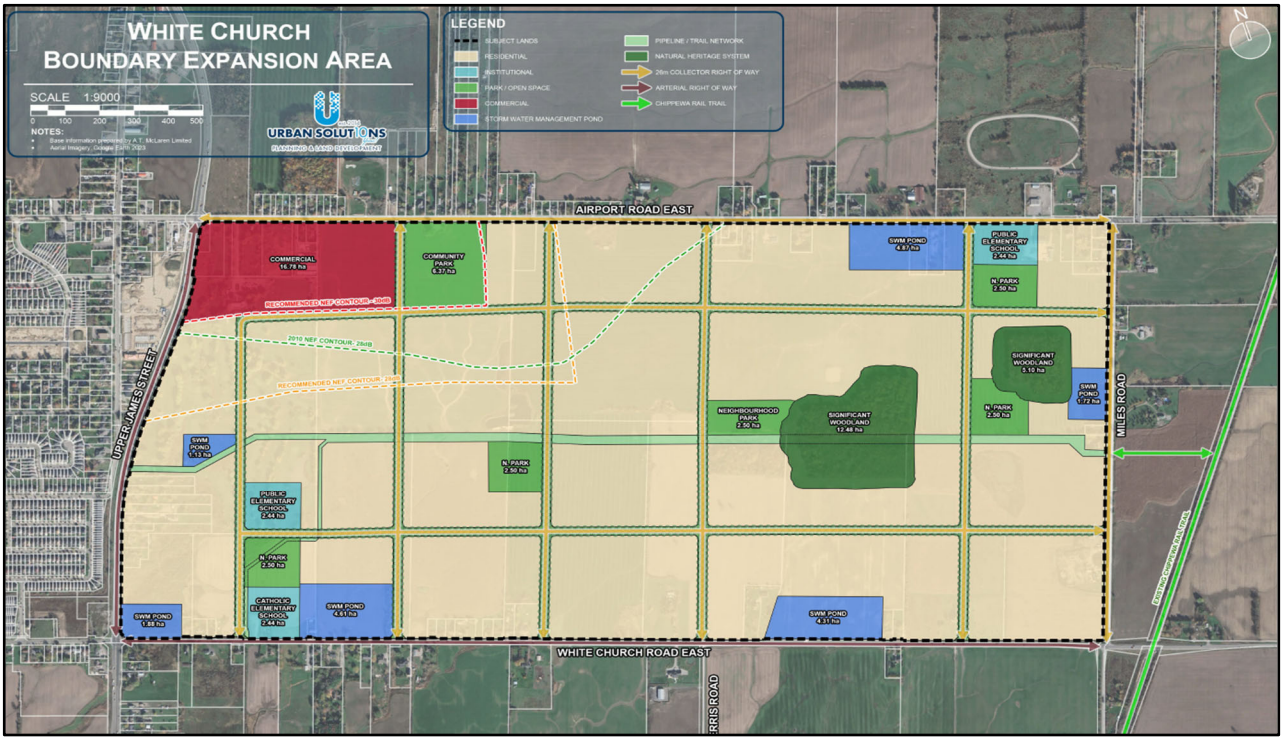
Source: Google Map

The proposed White Church Urban Boundary Expansion consists of approximately 326.26 hectares of developable lands. **Figure 3** illustrates the potential land use plan for proposed White Church Urban Boundary Expansion Area. The proposed White Church Urban Boundary Expansion Area includes a residential target of approximately 7,629 residential dwelling units of mixed type (or approximately 26,703 population), two public elementary schools, one Catholic elementary school and a commercial area of approximately 16.78 hectares.

2.2. Existing Land Uses in the Area

NexTrans has conducted a comprehensive review of the area. The proposed White Church Urban Boundary Expansion Area is located to the east of the existing Mount Hope settlement area and Hamilton International Airport, with a significant area of vacant lands for future employment development, as well as some existing low-rise development located along Homestead Drive north and south of Airport Road W. The lands located within the identified White Church Urban Boundary Expansion itself is mostly vacant open space and farm lands. There are several existing farm houses located along Airport Road E and White Church Road E, as well as along Upper James Street. There is an existing Southern Pines Golf & Country Club golf course located east of Upper James Street, between Airport Road and White Church Road E. It is our understanding that the southerly part of the existing golf course will be part of the White Church Urban Boundary Expansion, however, the northernly part of the golf course is not included in the White Church Urban Boundary Expansion.

Figure 3 – Potential Land Use Plan for Proposed White Church Urban Boundary Expansion Area



2.3. Overview Urban Hamilton Official Plan Amendment

In March 2023, Council approved a staff report at Planning Committee on options for Secondary Planning approaches, and endorsed a recommendation directing City staff to lead Secondary Planning for Urban Expansion Areas. **Figure 4** illustrates the 6 previously proposed urban expansion areas in the City of Hamilton through Official Plan Amendment 167. Since then, several key legislative changes have been made to the applicable policy framework which have had the effect of removing the subject lands from the City's Urban Boundary. As a result, an Urban Hamilton Official Plan Amendment is now required to propose an Urban Boundary Expansion to include the subject lands bounded by Miles Road, Airport Road East, Upper James Street and Whitechurch Road East within the Urban Boundary. In August 2024, Council approved a staff report at Planning Committee relating to the Draft Framework for Processing and Evaluating Urban Boundary Expansion Applications prepared by City staff to guide future applications. Below is an overview of the chronology of the project/legislative changes for the urban expansion areas:

Official Plan Amendment 167

A decision was made by the Ministry of Municipal Affairs and Housing on November 4, 2022 to approve, with modifications, amendments to the City of Hamilton Urban and Rural Official Plans. The approved official plan amendments outlined new policies and mapping to guide growth and development in the City to the year 2051. As part of the modifications made to the Urban and Rural Hamilton Official Plans, the subject lands were brought into the City's Urban Boundary as one of six Urban Expansion Areas. These six Urban Expansion Areas were required to undertake a Secondary Planning process in order to facilitate development in the future.

Formal Consultation (FC-23-040)

On January 27, 2023 a Request for Formal Consultation was submitted to the City of Hamilton for the lands subject lands for the creation of a Secondary Plan to implement the Urban Expansion Area land use designations on Schedule E-1 of the UHOP. Following the City of Hamilton's review of the application, a Development Review Team meeting took place on March 22, 2023. Further, a Formal Consultation Document was issued by the City of Hamilton dated April 18, 2023.

Planning Statute Amendment Act, 2023 (Bill 150)

On November 16, 2023, the Ministry of Municipal Affairs and Housing opened a 30-day public consultation period for the proposed Planning Statute Law Amendment Act, 2023. The effect of this Act was the reversal of all provincial modifications previously made to the Urban Hamilton Official Plan through Official Plan Amendment 167. Prior to the 30-day consultation period concluding, Bill 150, which established the Planning Statute Law Amendment Act, 2023, received Royal Assent on December 6, 2023. The effect of this Act was the reversal of all provincial modifications previously made to the Urban Hamilton Official Plan through Official Plan Amendment 167. Accordingly, the subject lands were once again removed from the City's Urban Boundary and placed in the rural area.

Official Plan Amendment 2023

Shortly after the Planning Statute Law Amendment Act received royal assent an Official Plan Amendment submission for the creation of a Secondary Plan was provided to the City of Hamilton for review on December 13, 2023. The Official Plan Amendment submission was made on the basis that the subject lands were still within the Urban Boundary, as it was assumed that Bill 150 would not receive royal assent in advance of the December 16th deadline for the 30-day consultation period. As a result, the materials submitted contemplated an Official Plan Amendment to establish a Secondary Plan for lands designated as 'Urban'. Whereas in reality, the subject lands were officially 'Rural' and the Official Plan Amendment was treated as an Urban Boundary Expansion application by the City of Hamilton. On January 12, 2024, the City of Hamilton issued a Notice of Incomplete Application based on their review of the supporting materials submitted as part of the Official Plan Amendment application.

Provincial Planning Statement, 2024

On August 20, 2024 notice was received from the Ministry of Municipal Affairs and Housing on the creation of a new Provincial Planning Statement (PPS) which would consolidate the former A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019 and the Provincial Policy Statement, 2020. Included in the new PPS, were updates to allow landowners to apply to expand the urban boundary at any time and without a limitation on expansion size. The new Provincial Planning Statement took effect as of October 20, 2024.

Official Plan Amendment 2024

The Whitechurch Landowners Group Inc. is now preparing a submission for an Official Plan Amendment application to bring the subject lands into the City's Urban Boundary through the new permissions granted by the Provincial Planning Statement.

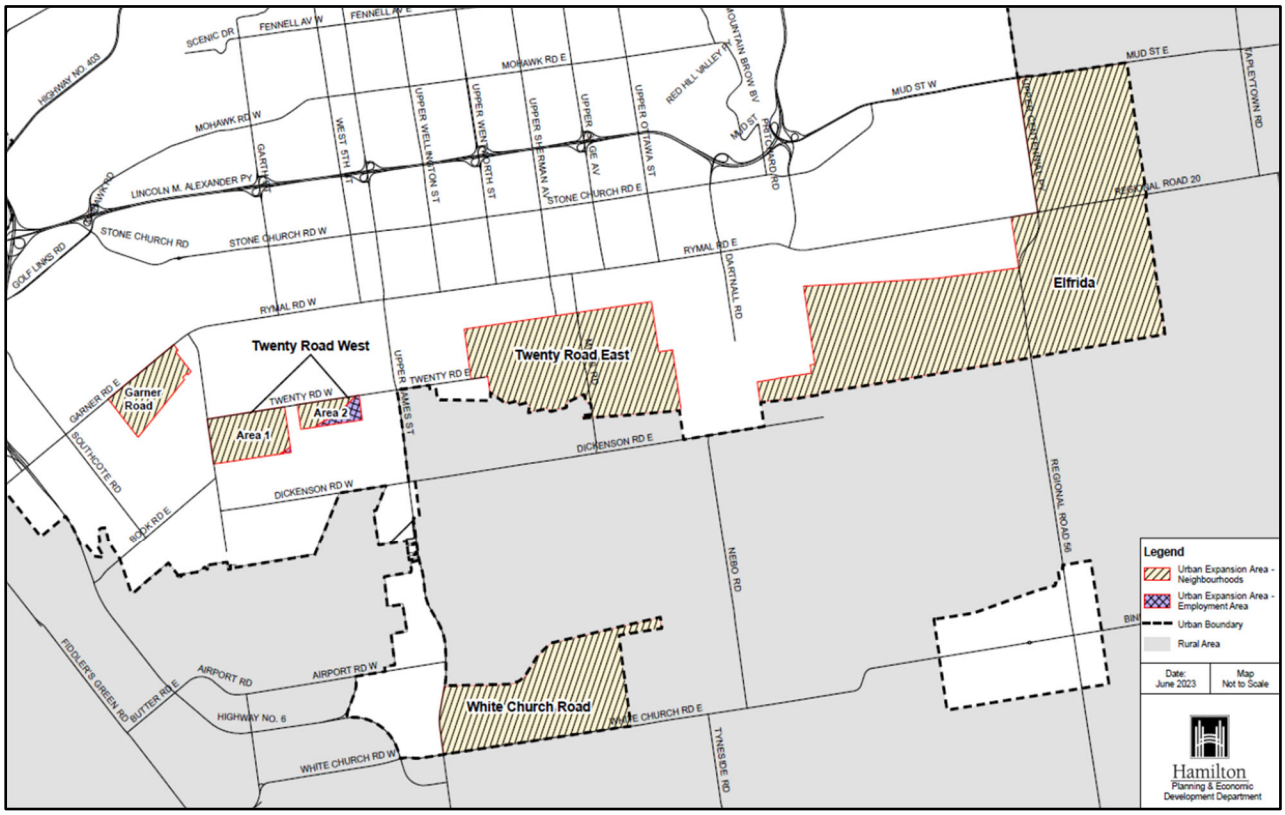
2.4. Airport Employment Growth District (AEGD) Secondary Plan

Based on the information obtained from the City of Hamilton website (www.hamilton.ca), the Airport Employment Growth District (AEGD) is a planned development area of 551 net developable hectares of employment land per the Secondary Plan. The Secondary Plan is bounded by Garner Road East and Twenty Road West to the north; Upper James Street to the east, Whitechurch Road West to the south and Fiddler's Green Road to the west.

The AEGD provides the opportunity to create a new employment area which improves live-work opportunities and helps meet provincial employment targets for the City. It supports the existing John C. Munro Hamilton International Airport as important infrastructure and as an economic driver, supports long-term prosperity, contributes to quality of life, and establishes a gateway for economic and goods movements for the City.

In particular, the AEGD is intended to offer a range of employment and employment-related land uses in the context of an eco-industrial park, which provides for prestige industrial, light industrial, airport-related business and institutional development as well as an environmental footprint that is managed through a range of urban design and eco-friendly sustainable design techniques. All of which allows for the development of land uses consistent with the character of surrounding lands.

Figure 4 – Proposed Hamilton Expansion Areas



Source: Appendix "C" to Report PED23144

3.0 ESTABLISHING MULTIMODAL LEVEL OF SERVICE

3.1. Definition and Methodology

The level of service definitions is specific to each area due to existing physical conditions, constraints and context. There are many desirable and inspirational requirements for each type of facility. However, the expectations must be realistic and suitable for the context of the area, especially in the City of Hamilton where there are many environmental constraints and other competing interests such as the Secondary Plan visions and objectives.

Given that the study area is going through significant changes, missing gaps and links are expected as these will be completed by the future secondary plan areas, background developments and the City's capital projects. In addition, as the developments are building in multiple phases, some of these gaps and missing links will be there for a longer period of time. This is beyond the control of one single development or area. Therefore, it is collectively the responsibilities of the City of Hamilton to include these missing links and gaps in future capital plan projects so that a larger network can be implemented on the external transportation road network.

For the purposes of this assessment, we consulted the following documents to provide guidance to the proposed White Church Urban Boundary Expansion Area:

- Ontario Traffic Council Multimodal Level of Service (MMLOS) methodology (**Figure 5A** and **5B**); and
- The City of Hamilton Complete Streets Design Guidelines

It should be noted that this Transportation Master Plan Study is a high-level study that is similar to the City of Hamilton Complete Streets Design Guidelines that will set target for each mode of transportation.

3.2. Setting Targets

It is our understanding that the Ontario Traffic Council Multimodal Level of Service (MMLOS) Guidelines provide a framework for practitioners to consider and document the context in which transportation projects occur, including, but not limited to, considerations of land-use, public realm, equity, climate change and other environmental considerations. However, these targets are often determined by the community needs and constrains, as well as engineering judgement as one size does not fit all.

It is also our understanding that Ontario Traffic Council Multimodal Level of Service (MMLOS) Guidelines also provide flexible tools so that majority of scenarios should result in scores approaching the middle of the range for each gradation as the maximum target is not always achievable due to many reasons, and life-cycle cost is one of the most important considerations. As such, the targets and scores of LOS of A and F should be infrequent due to the reasons noted above as LOS A is not always achievable and LOS F is not acceptable.

Similarly, it is our understanding of the City of Hamilton Complete Streets Design Guidelines is that the Complete Streets approach recognizes that there is no one-size-fits-all solution to street design, as different streets have different priorities, depending on the street's location, context, and role within the transportation system. Complete Streets takes an overall street typology approach that considers the needs of all road users and recognizes the importance of streets not only as conduits to move from one place to another, but also as public spaces and an integral component of the public realm.

The target for each mode of transportation will be discussed and established in the subsequent sections of this Study that provides recommendations for the Secondary Plan Area policies and provides guidance for each future individual development in the Secondary Plan Area:

- **Section 6.0** – Road Network Assessment
- **Section 7.0** – Pedestrian Network Assessment
- **Section 8.0** – Cycling Network Assessment
- **Section 9.0** – Transit Network Assessment

Figure 5A – Level of Service Definition

LOS Grade	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
	Provides the highest quality experience for a given mode	Provides a high-quality experience for a given mode	Provides a good-quality experience for a given mode	Provides a moderate-quality experience for a given mode	Provides just above the minimal targeted standard for a given mode	Provides the minimal targeted standard for a given mode
Pedestrians	• Pedestrians always have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is always optimized for pedestrians • Crossing locations are always located with sufficient frequency to minimize detour	• Pedestrians very often have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is very often optimized for pedestrians • Crossing locations are very often located with sufficient frequency to minimize detour	• Pedestrians often have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is often optimized for pedestrians • Crossing locations are often located with sufficient frequency to minimize detour	• Pedestrians occasionally have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is occasionally optimized for pedestrians • Crossing locations are occasionally located with sufficient frequency to minimize detour	• Pedestrians rarely have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is rarely optimized for pedestrians • Crossing locations are rarely located with sufficient frequency to minimize detour	• Pedestrians do not have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is not optimized for pedestrians • Crossing locations are not located with sufficient frequency to minimize detour
Cyclists	• Cyclists always have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is always optimized for cyclists • Exposure to conflict at intersections is always minimized	• Cyclists very often have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is very often optimized for cyclists • Exposure to conflict at intersections is very often minimized	• Cyclists often have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is often optimized for cyclists • Exposure to conflict at intersections is often minimized	• Cyclists occasionally have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is occasionally optimized for cyclists • Exposure to conflict at intersections is occasionally minimized	• Cyclists rarely have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is rarely optimized for cyclists • Exposure to conflict at intersections is rarely minimized	• Cyclists do not have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is not optimized for cyclists • Exposure to conflict at intersections is not minimized

LOS Grade	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Transit	• Transit riders' experience is always seamless and attractive • Transit vehicles are never impeded by other traffic • The pedestrian environment leading to transit stops provides the highest quality experience	• Transit riders' experience is very often seamless and attractive • Transit vehicles are rarely impeded by other traffic • The pedestrian environment leading to transit stops provides a high-quality experience	• Transit riders' experience is often seamless and attractive • Transit vehicles are occasionally impeded by other traffic • The pedestrian environment leading to transit stops provides a medium-quality experience	• Transit riders' experience is occasionally seamless and attractive • Transit vehicles are often impeded by other traffic • The pedestrian environment leading to transit stops provides a low-quality experience	• Transit riders' experience is rarely seamless and attractive • Transit vehicles are very often impeded by other traffic • The pedestrian environment leading to transit stops provides the minimal acceptable experience	• Transit riders' experience is not seamless or attractive • Transit vehicles are almost always impeded by other traffic • The pedestrian environment leading to transit stops is non-existent
Trucks	• Driver is always able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers never experience delay due to congestion	• Driver is very often able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers rarely experience delay due to congestion	• Driver is often able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers occasionally experience delay due to congestion	• Driver is occasionally able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers often experience delay due to congestion	• Driver is rarely able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers very often experience delay due to congestion	• Driver is not able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers almost always experience delay due to congestion
Cars	• Drivers never experience delay due to congestion • Parking and loading options are always available where appropriate • Dedicated turn lanes are always provided when warranted	• Drivers rarely experience delay due to congestion • Parking and loading options are very often available where appropriate • Dedicated turn lanes are very often provided when warranted	• Drivers occasionally experience delay due to congestion • Parking and loading options are often available where appropriate • Dedicated turn lanes are often provided when warranted	• Drivers often experience delay due to congestion • Parking and loading options are occasionally available where appropriate • Dedicated turn lanes are occasionally provided when warranted	• Drivers very often experience delay due to congestion • Parking and loading options are rarely available where appropriate • Dedicated turn lanes are rarely provided when warranted	• Drivers almost always experience delay due to congestion • Parking and loading options are not available • Dedicated turn lanes are not provided when warranted

Figure 5B – Level of Service Criteria

MODE	MEASURE	WEIGHT	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
PEDS[2]	Pedestrian Facility Width (m)	33%	> 3.0	2.6 - 3.0	2.1 - 2.5	1.8 - 2.0	1.5 - 1.7	< 1.5
	Pedestrian Buffer Width (m)	33%	> 2.5	2.1 - 2.5	1.6 - 2.0	1.3 - 1.5	1.0 - 1.2	< 1.0
	Max Distance between Controlled Crossings (m)	33%	200[3]	201 - 230	231 - 260	261 - 290	291 - 320	> 320
BIKES[2]	Bike Facility Width per Direction (m)	33%	> 2.4	2.2 - 2.4	1.9 - 2.1	1.6 - 1.8	1.2 - 1.5	< 1.2
	Bike Buffer Width (m)	33%	Has physical measures and buffer width > 1.0	Has physical measure and buffer width is 0.50 - 1.0	n/a[1]	Has physical measures and buffer width is 0.30 - 0.49 OR Has no physical measures and width is ≥ 0.50	n/a[1]	No physical measures and buffer width is < 0.50
	Conflicts with Other Modes (In-lane conflicts and crossing point conflicts)	33%	Two "Low" conflict indicators	One "Low" conflict indicator and one "Moderate" conflict indicator	Two "Moderate" conflict indicators	One "Low" conflict indicator and one "High" conflict indicator	One "Moderate" conflict indicator and one "High" conflict indicator	Two "High" conflict indicators
BUSES	Transit Facility Type	33%	Dedicated lanes	Intersection priority measures	n/a[1]	Mixed traffic with >1 lane/ direction	n/a[1]	Mixed traffic with 1 lane
	Transit Passenger Amenities	33%	Abundance of passenger amenities such as shelters, seating, shade trees, etc.	Moderate presence of passenger amenities such as shelters, seating, shade trees, etc.	n/a[1]	Low presence of passenger amenities such as shelters, seating, shade trees, etc.	n/a[1]	No presence of passenger amenities such as shelters, seating, shade trees, etc.
	Pedestrian Level of Service	33%	A	B	C	D	E	F
TRUCKS	Width of the Curb Lane (m)	50%	> 4.0	3.9 - 4.0	3.7 - 3.8	3.4 - 3.6	n/a[1]	< 3.4
	Car Level of Service	50%	A	B	C	D	E	F
CARS	Mid-Block V/C ratio	50%	< 0.60	0.60 - 0.69	0.70 - 0.79	0.80 - 0.89	0.90 - 0.99	> 1.0
	Curb Lane Conflicts (conflicts/km)	50%	None	1 - 2	3 - 4	5 - 6	7 - 8	9 +

4.0 SECONDARY PLAN TRIP GENERATION

4.1. Trip Generation Methodology

The high-level trip generation forecasts were estimated using the information contained in the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE). Given that this is the Secondary Plan Level Study, a high-level estimate is sufficient at this time. For the purposes of this assessment, the following ITE Land Use Codes (LUC) will be utilized in this Study.

- LUC 220 – Multifamily Housing Low-rise (assume all low-rise to be conservative)
- LUC 820 – Shopping Centre
- LUC 520 – Elementary School

In addition, for trip generation estimate purpose, it is assumed that for institution and commercial district, the useable gross floor area will be approximately 20% site coverage. The estimates are provided below:

- Institution Total Area – 7.32 hectares for all three sites, or 2.44 hectares per site. With 20% site coverage, the estimated gross floor area for each site will be approximately 52,530 ft^2.
- District Commercial Total Area – 16.78 hectares. With 20% site coverage (or 3.356 hectares), the estimated gross floor area will be 361,237 ft^2.

It should be noted that since fitted curve equations are utilized where available, otherwise average rates will be utilized.

4.2. Other Considerations

It should be noted that the proposed commercial district trip generation also includes the pass-by trips and synergy trips. Synergy trips are the internal trip interaction between different land uses located within the site. For example, the residents that are living close to the proposed commercial district (either existing residents or future residents) will be able to walk or bike to the proposed commercial district. For the purposes of this assessment, a 15% internal capture trip has been assumed in the analysis. This is based on our experience working on various secondary plan and major mixed-use development sites throughout the Greater Toronto and Hamilton Area.

Based on the ITE Trip Generation Handbook, pass-by trips are trips already on the road that are attracted to the commercial development while they pass by it, along their way from an origin to an ultimate destination.

It should also be noted that all elementary school trips are internal trips. It is expected that very little or no trips are from outside the proposed secondary plan.

4.3. Minimum Modal Split Target

It should be noted that the 15% modal split (for walking, cycling and transit) is the minimum target recommended for the proposed White Church Urban Boundary Expansion. This minimum target must be implemented through various policies, design and transportation demand management measures and incentives.

It is anticipated that in the ultimate build out of the proposed White Church Urban Boundary Expansion Area, transit service will be provided based on the recommendations of this Transportation Master Plan Study. Ideally, the minimum modal split target should be at least 50% to achieve all sustainable objectives and directions of the City's Official Plan. However, this will be achievable over time with policies and designs.

4.4. Secondary Plan Area Trip Generation

Based on the methodologies and considerations noted above, **Table 1** summarizes the estimated secondary plan trip generation (round off to nearest 5 trips).

Table 1 – Secondary Plan Area Trip Generation

ITE Land Use	Magnitude (units)	Parameters	Morning Peak Hour			Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise) LUC 220 Not Close to Rail Transit - General Urban/Suburban	7,629 units	Trip Rates AM - T = 0.31(X) + 22.85 PM - T = 0.43(X) + 20.55	0.07	0.24	0.31	0.27	0.16	0.43
		Sub-total trips	*573*	*1,815*	*2,388*	*2,080*	*1,221*	*3,301*
		Internal Capture Trips	*33*	*20*	*53*	*103*	*111*	*214*
		Modal Split Target (15%)	*86*	*272*	*358*	*312*	*183*	*495*
		New Auto Trips (External)	**454**	**1,523**	**1,977**	**1,665**	**927**	**2,592**
Site 1 - Elementary School LUC 520	52,530 ft^2	Average Rates	3.83	3.14	6.97	0.62	0.75	1.37
		New Internal Auto Trips	**201**	**165**	**366**	**32**	**40**	**72**
Site 2 - Elementary School LUC 520	52,530 ft^2	Average Rates	3.83	3.14	6.97	0.62	0.75	1.37
		New Internal Auto Trips	**201**	**165**	**366**	**32**	**40**	**72**
Site 3 - Elementary School LUC 520	52,530 ft^2	Average Rates	3.83	3.14	6.97	0.62	0.75	1.37
		New Internal Auto Trips	**201**	**165**	**366**	**32**	**40**	**72**
Shopping Centre LUC 820 - General Urban/Suburban	361,237 ft^2	Trip Rates AM - T = 0.59(X) + 133.55 PM - Ln(T) = 0.72 Ln(X) + 3.02	0.60	0.36	0.96	1.89	2.05	3.94
		Sub-Total Trips	*215*	*132*	*347*	*683*	*740*	*1,423*
		Pass-by Trips	*0*	*0*	*0*	*178*	*178*	*356*
		Internal Capture Trips	*33*	*20*	*53*	*103*	*111*	*214*
		Modal Split Target (15%)	*32*	*20*	*52*	*102*	*111*	*213*
		New Auto Trips (External)	**150**	**92**	**242**	**300**	**340**	**639**
Total Trips (Internal and External)			***1,391***	***2,442***	***3,833***	***2,859***	***2,081***	***4,940***
New Transit Trips (External)			**118**	**292**	**410**	**414**	**294**	**709**
New Auto Trips (External)			**604**	**1,615**	**2,218**	**1,965**	**1,267**	**3,231**

The proposed White Church Urban Boundary Expansion is expected to generate:

- 3,833 total two-way trips (1,391 inbound and 2,442 outbound) and 4,940 total two-way trips (2,859 inbound and 2,081 outbound) during the morning and afternoon peak hours, respectively;
- 410 total two-way transit trips (118 inbound and 292 outbound) and 709 total two-way trips (414 inbound and 294 outbound) during the morning and afternoon peak hours, respectively; and
- 2,218 total two-way auto trips (604 inbound and 1,615 outbound) and 3,231 total two-way auto trips (1,965 inbound and 1,267 outbound) during the morning and afternoon peak hours, respectively.

With the minimum 15% modal split target, the proposed White Church Urban Boundary Expansion Area is expected to generate a total of 410 two-way transit trips and 709 two-way transit trips during the morning and afternoon peak hours, respectively.

5.0 PROPOSED SECONDARY PLAN AREA TRIP ORIGIN AND DESTINATION

As the proposed White Church Urban Boundary Expansion Area consists of commercial district, schools and parks, as well as it is located adjacent to the existing and future Airport Employment Growth District (AEGD), there will be many internal trip interactions within this area. Most of these trips will be walking, cycling, public transit and drop-off/pick-up trips. The 2016 Transportation Tomorrow Survey (TTS) data was reviewed for Traffic Zones 5016, 5020, 5033 and 5038 in order to estimate the general trip distribution for the proposed development. The detailed 2016 TTS analysis is included in **Appendix B**.

5.1. Local Trip Origin and Destination

An analysis of the 2016 TTS data for the traffic zones located north of the proposed White Church Urban Boundary Expansion indicates that approximately 15% of the trips are attracted to Ward 11, which mainly consists of the Hamilton International Airport and Mount Hope settlement area. **Figures 6** and **7** illustrate the auto trip distribution based on the 2016 TTS data for near-by traffic zones.

Figure 6 – Internal Hamilton Auto and Transit Trip Distribution Percentage by Ward

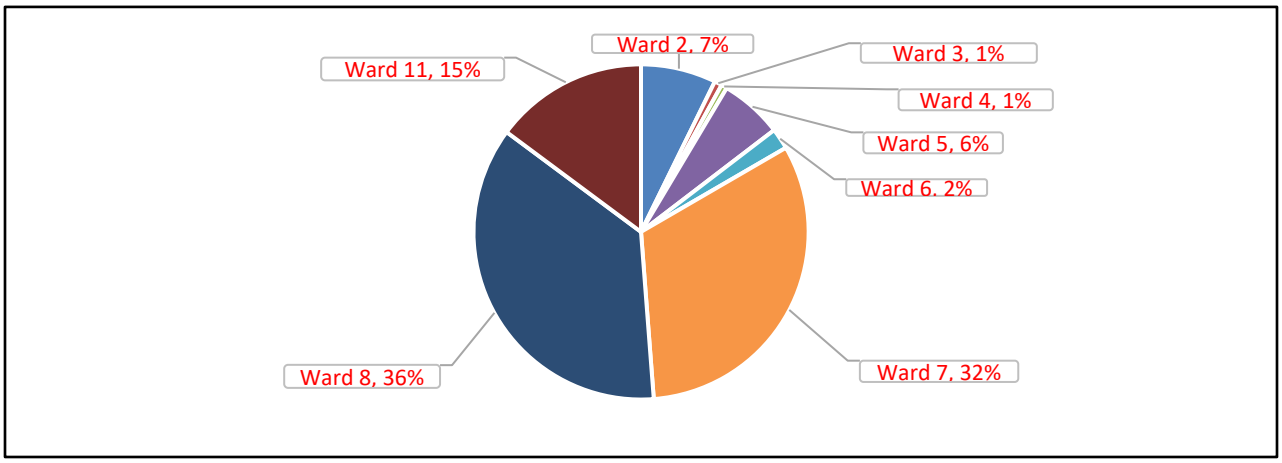
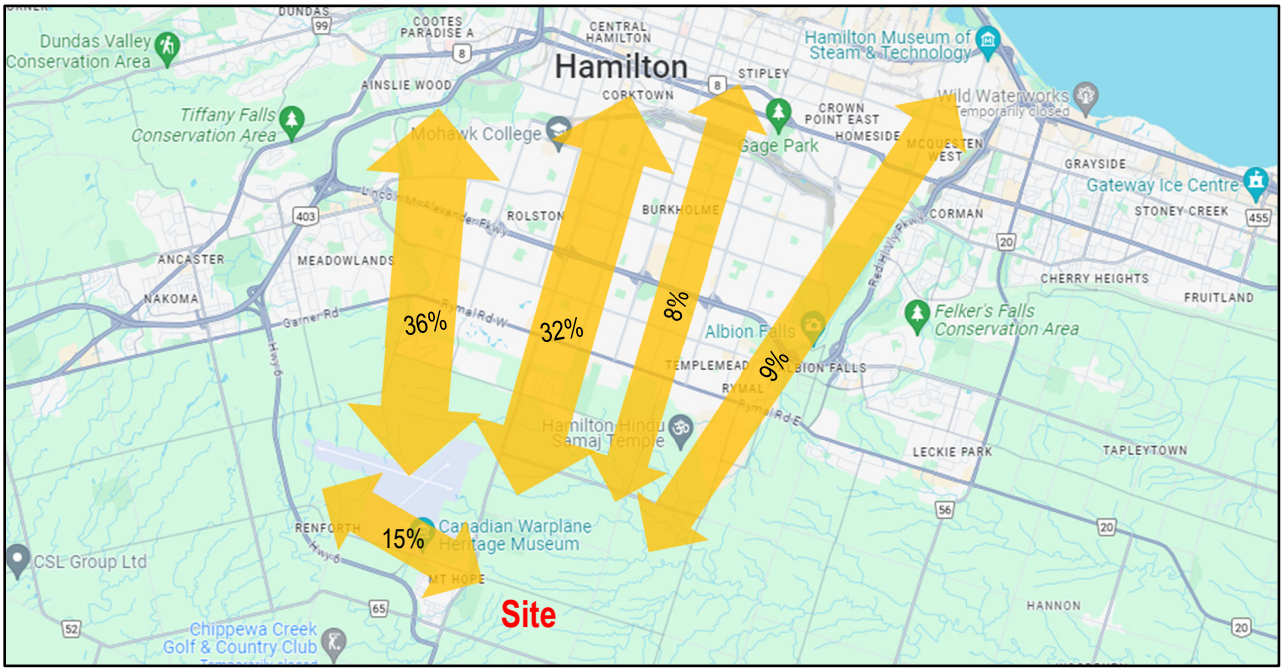


Figure 7 – Internal Hamilton Auto and Transit Trip Distribution General Direction



Source: Google Map

5.2. Regional Trip Origin and Destination

An analysis of the 2016 TTS data for the traffic zones located north of the proposed White Church Urban Boundary Expansion indicates that approximately 62% of the trips are internal to the City of Hamilton, only 38% of the trips are external to the City of Hamilton. This means that most of the residents who live in the City of Hamilton are working/travelling within the City's limits. **Figures 8** and **9** illustrate the auto trip distribution based on the 2016 TTS data for near-by traffic zones.

Figure 8 – External Auto Trip Distribution Percentage by Planning District

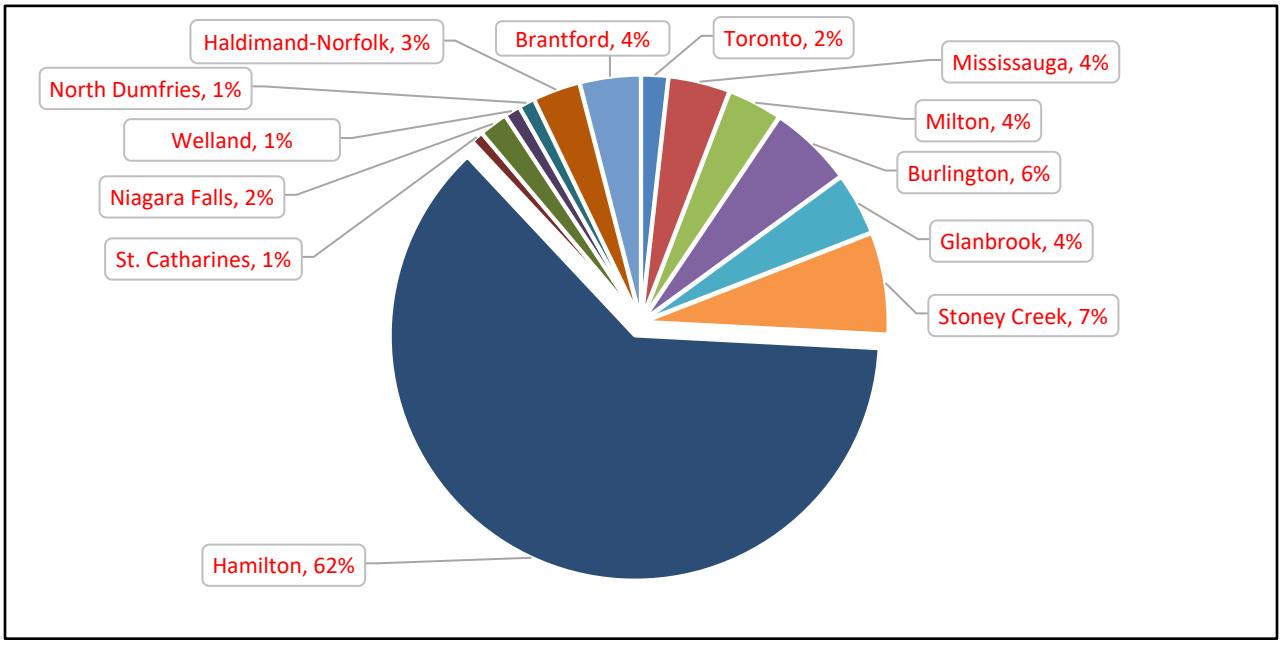
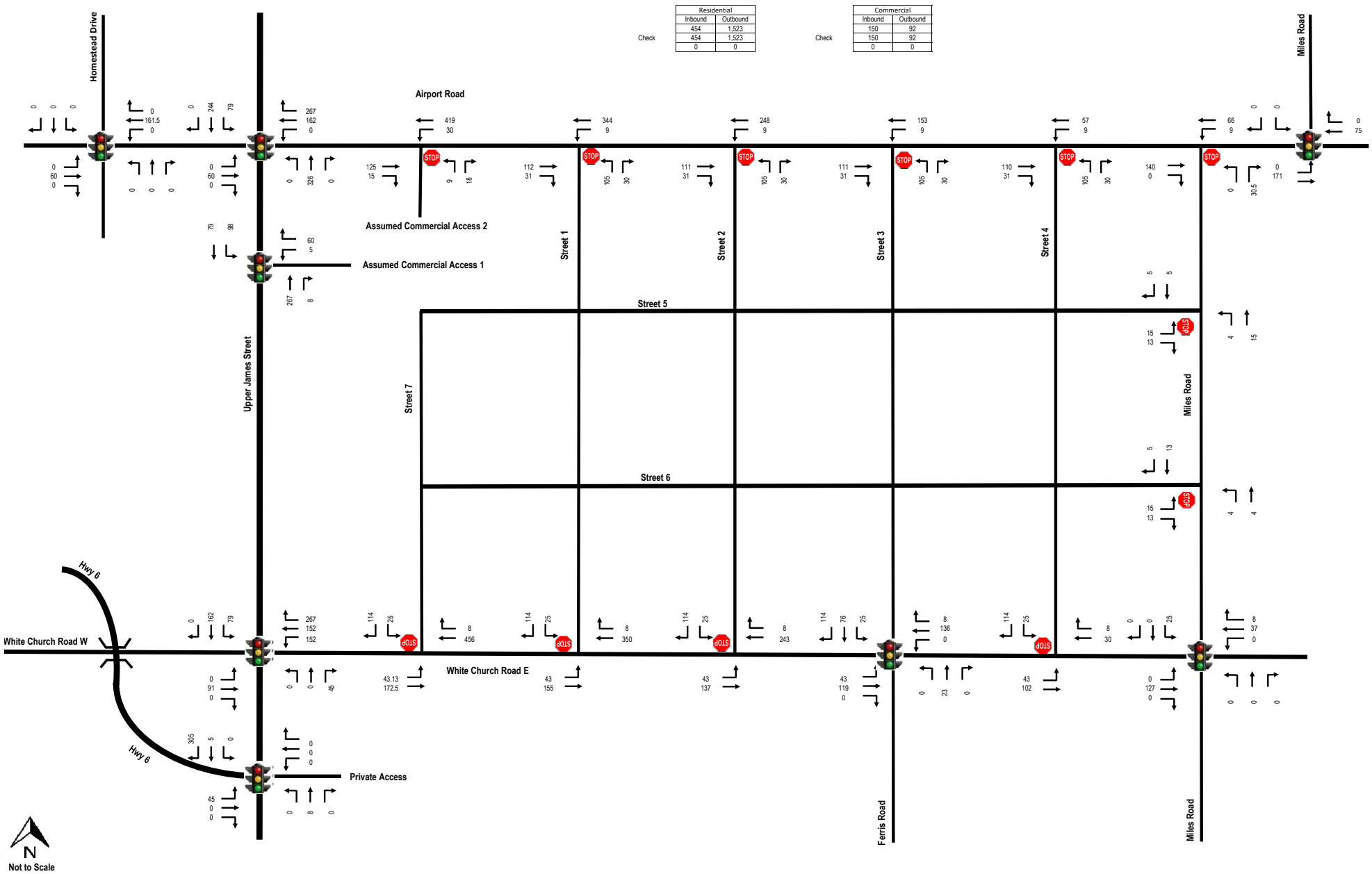


Figure 9 – Site Trip Distribution for Auto Trips

Source: Google Map

5.3. White Church Urban Boundary Expansion Traffic Assignment

Using the proposed White Church Urban Boundary Expansion Transportation Schedule as a base, **Figures 10A** and **10B** illustrate the proposed White Church Urban Boundary Expansion traffic assignment based on the internal and external trip distributions assessed in the previous sections. It should be noted that the auto site trip distribution and assignment have been taken into consideration the TTS information, existing intersection operations and logical routes, where appropriate.



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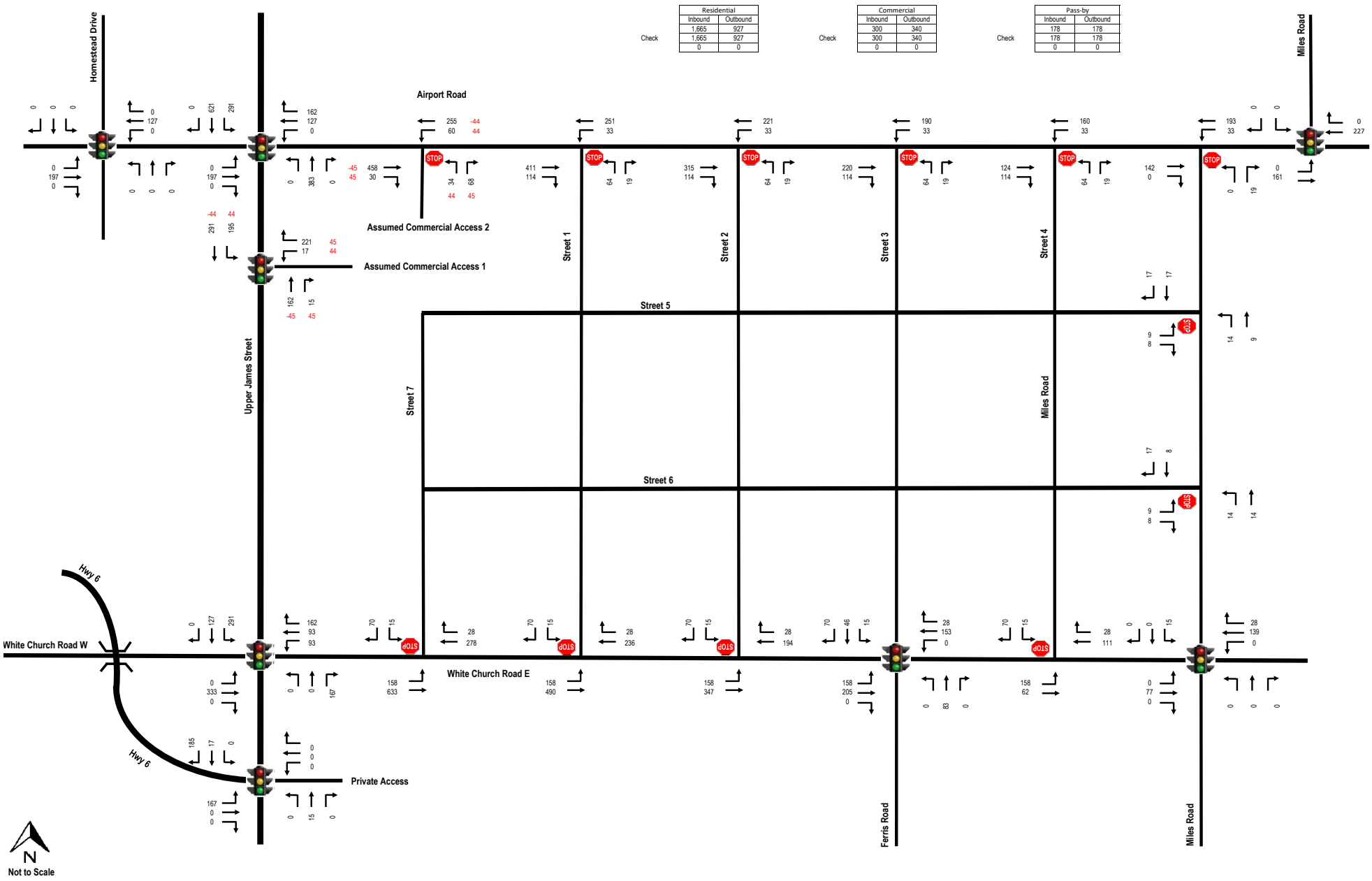
Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 10A - Site Traffic Volumes
AM Peak Hour



Legend:
XX Peak Hour Traffic Volumes

STOP Stop Sign

Signalized Intersection

Figure 10B - Site Traffic Volumes
PM Peak Hour

6.0 ROAD NETWORK ASSESSMENT

6.1. Design Element and Target

Road network and design element are still the most important considerations in any secondary plan area as a fine grid road network and appropriate design will support safe and efficient operations for cars, emergency vehicles, transit vehicles and active transportation. **Table 2** below set the target design for the proposed White Church Urban Boundary Expansion Area, based on the City of Hamilton Complete Street Design Guidelines.

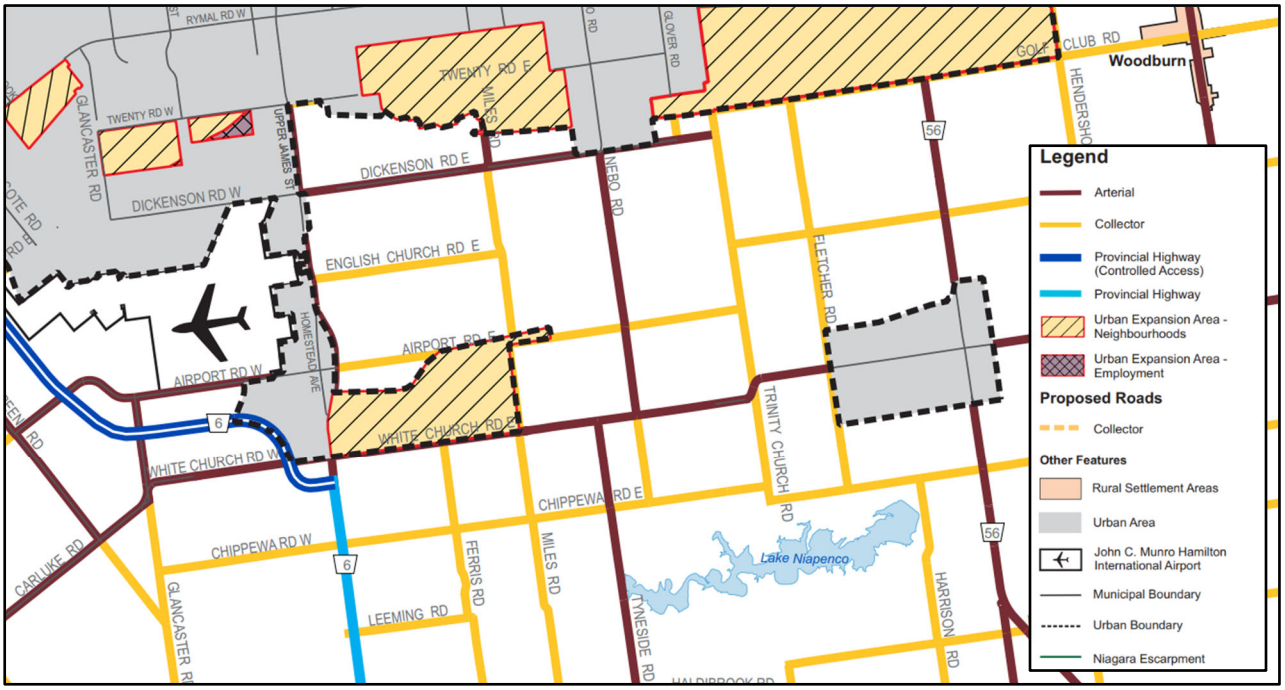
Table 2 – Road Design Parameters

Element	Target Value	Minimum Value
Through lanes and turn lanes	3.0 m	3.0 m
Curb lanes	3.0 m to 3.3 m	3.0 m
Parking lanes	2.2 m to 2.5 m	2.0 m
Median	Continuous medians should generally be avoided on compact urban streets. They should be considered at pedestrian crossing locations, and may be used continuously on higher-speed mobility-oriented streets to eliminate mid-block left-turn conflicts.	
On-Street parking width, inclusive of gutter	2.2 to 2.5 m	2.0 m
Roadway Typologies		
Urban avenue	Context: Urban Right-of-way: 20-26 m Number of lanes: 2-4 lanes Target speed: 40-50 km/h Cycling facility: cycle tracks Walkway zone width: 2.0 – 3.5m	
Neighbourhood streets	Context: Urban/Suburban Right-of-way: 15-20 m urban or 20-26 m suburban Number of lanes: 1-2 lanes Target speed: 30-40 km/h Cycling facility: mixed traffic or contraflow lane Walkway zone width: 1.8 m	
Connectors	Context: Urban/Suburban Right-of-way: 20-26 m Number of lanes: 2 lanes Target speed: 30-40 km/h Cycling facility: cycle tracks Walkway zone width: 1.8 – 2.0 m	
Transitioning avenues	Context: Urban/Suburban/Industrial Right-of-way: 36 m Number of lanes: 4 lanes Target speed: 50-60 km/h Cycling facility: cycle tracks or multi-use paths Walkway zone width: 1.8 – 2.5 m	
Main streets	Context: Urban Right-of-way: 18-20 m Number of lanes: 2 lanes Target speed: 30-40 km/h Cycling facility: shared lanes Walkway zone width: 2.0 – 3.5 m	

6.2. Existing Road Network

As indicated, the proposed White Church Urban Boundary Expansion is generally bounded by Upper James Street to the west, Miles Road to the east, Airport Road to the north and White Church Road E to the south. **Figure 11** illustrates the existing road classification in the White Church Urban Boundary Expansion and surrounding areas. This is based on the information obtained from City's Rural Hamilton Official Plan Schedule C – Rural Functional Road Classification. The description of the existing road network in the study area is summarizes in **Table 3** below.

Figure 11 – Rural Hamilton Road Classification



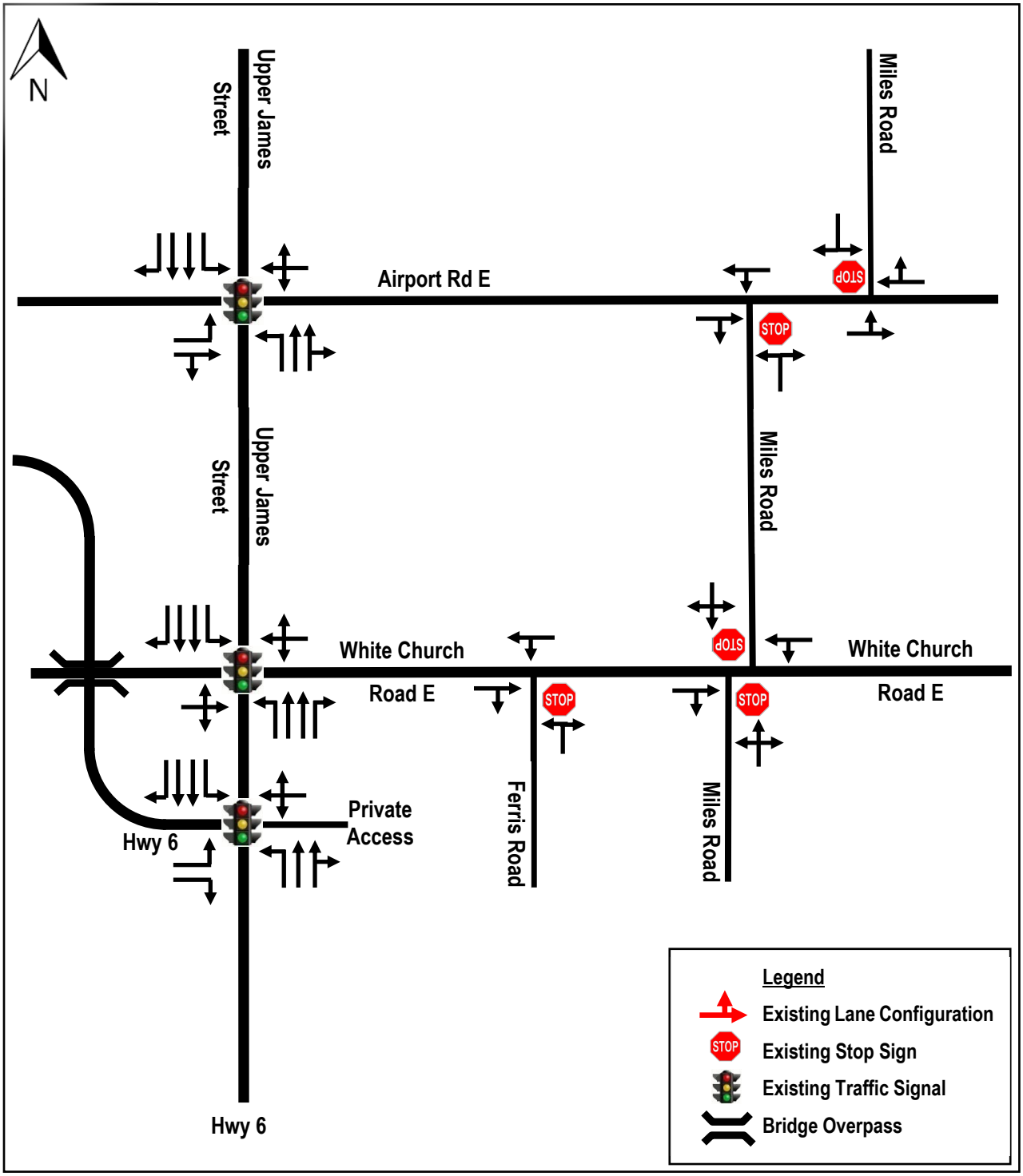
Source: Rural Hamilton Official Plan Schedule C – Rural Functional Road Classification

Table 3 – Summary of the Existing Road Network in the Study Area

Road Name	Jurisdiction	Number of Lanes	Speed	Road Type	Sidewalk/Cycling
Airport Road E	City of Hamilton	2	50 km/h (posted)	No sidewalk or cycling facility	No sidewalk or cycling facility
Airport Road W	City of Hamilton	2	50 km/h (posted)	Urban Minor Arterial	Sidewalk on south side only from Homestead Dr to Mt Hope Public School No cycling facility
Homestead Dr	City of Hamilton	2	50 km/h (posted)	Urban Collector	Sidewalk on east side north of Airport Rd, and on the west side south of Airport Rd No cycling facility
Upper James St	City of Hamilton	4	80 km/h (unposted)	Urban Major Arterial	No sidewalk or cycling facility
Hwy 6	MTO	2	80 km/h	Highway	No sidewalk or cycling facility
White Church Rd E	City of Hamilton	2	60 km/h	Rural Arterial Road	No sidewalk or cycling facility
Miles Rd	City of Hamilton	2	60 km/h	Rural Collector Road	No sidewalk or cycling facility
Ferris Road	City of Hamilton	2	60 km/h	Rural Collector Road	No sidewalk or cycling facility
Chippeward Rd W	City of Hamilton	2	60 km/h	Rural Collector Road	No sidewalk or cycling facility
English Church Rd E	City of Hamilton	2	60 km/h	Rural Collector Road	No sidewalk or cycling facility
Tyneside Road	City of Hamilton	2	60 km/h	Rural Arterial Road	No sidewalk or cycling facility
Nebo Road	City of Hamilton	2	60 km/h	Rural Arterial Road	No sidewalk or cycling facility

Figure 12 illustrates the existing road network, lane configurations and traffic control devices for the external intersections in the White Church Urban Boundary Expansion Area.

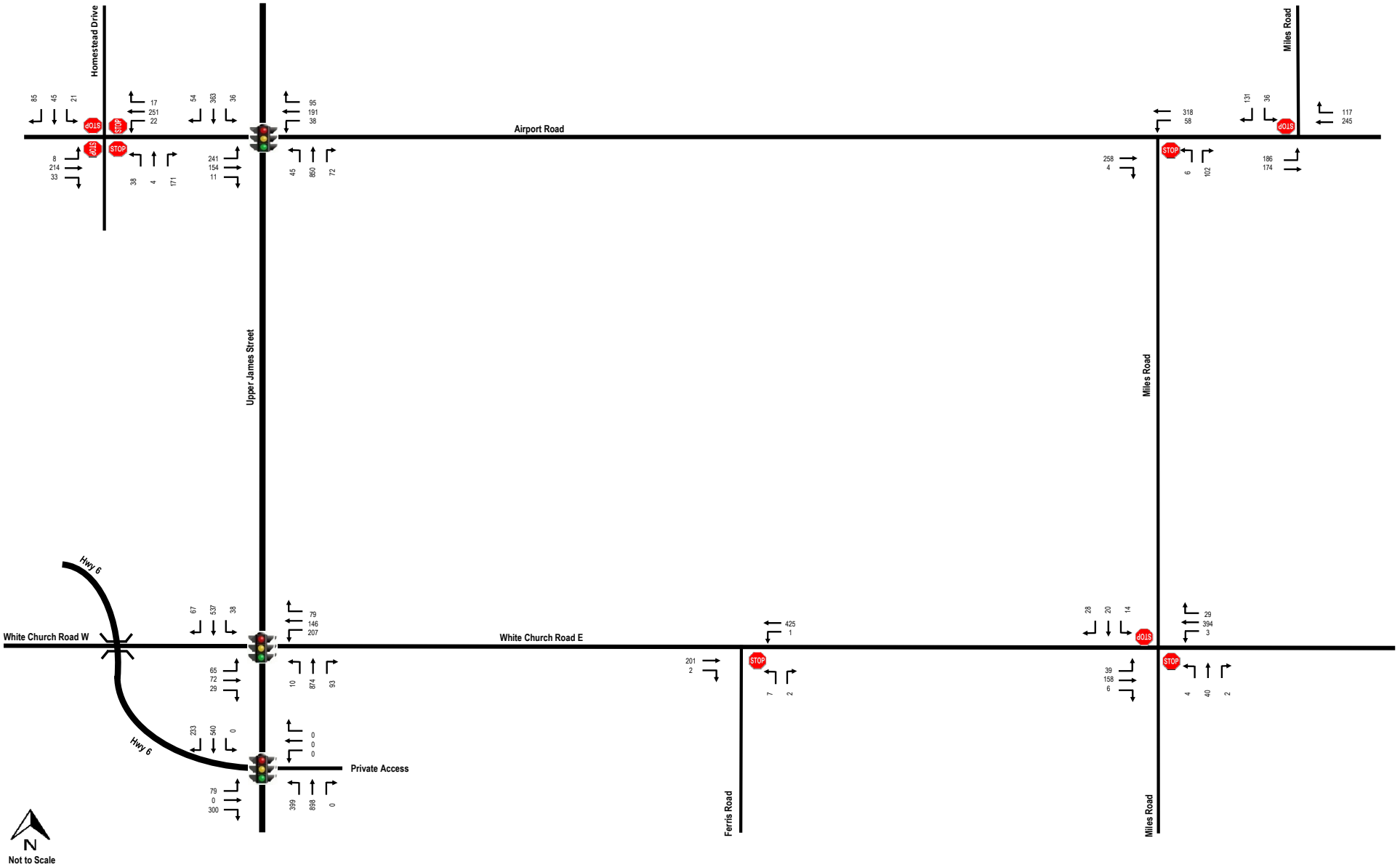
Figure 12 – Existing Road Network



6.3. Existing Road Network Performance

6.3.1. Existing Traffic Volumes

Figures 13A and **13B** illustrate the existing traffic volumes for the intersections considered in the transportation



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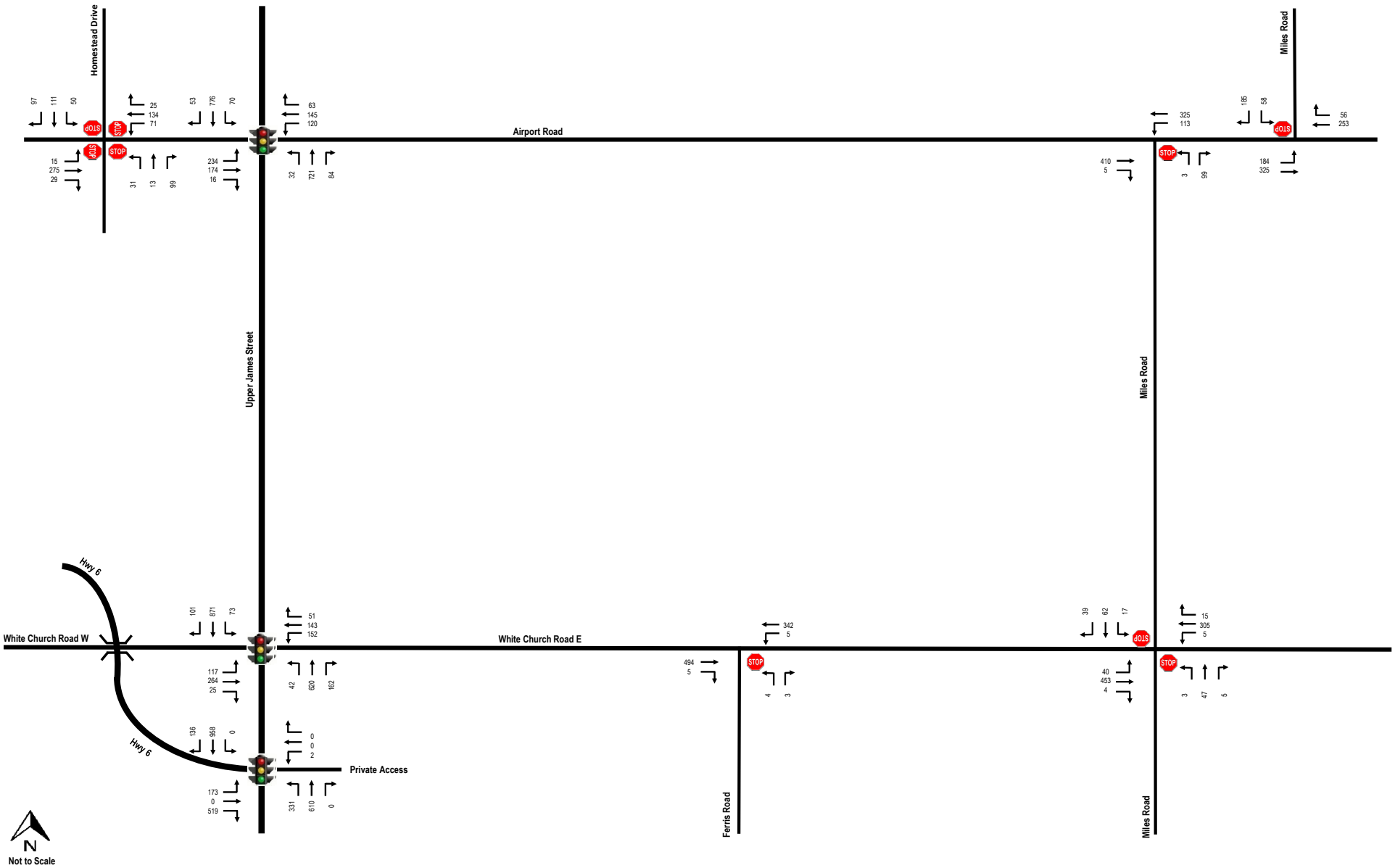
Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 13A - Existing Traffic Volumes
AM Peak Hour



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Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 13B - Existing Traffic Volumes
PM Peak Hour

analysis.

Existing traffic turning movement counts were conducted for the following intersections in the study area:

- Upper James Street and White Church Road E (signalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- Upper James and Hwy 6 (signalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- Airport Road and Miles Road North (unsignalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- Airport Road and Miles Road South (unsignalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- White Church Road E and Ferris Road (unsignalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- White Church Road E and Miles Road (unsignalized) – Count date Wednesday Sept 18, 2024 (Spectrum)
- Airport Road and Upper James St (signalized) – Count date Wednesday June 15, 2022 (Spectrum)
- Airport Road and Homestead Drive (unsignalized) – Count date Wednesday June 15, 2022 (Spectrum)

The turning movement counts were generally conducted during the morning (7:00 a.m. to 9:00 a.m.) and afternoon (4:00 p.m. to 6:00 p.m.) peak periods for all area intersections. Turning movement counts are summarized in **Appendix A.**

6.3.2. Existing Intersection Performance

The existing volumes in **Figures 13A** and **13B** were analyzed using Synchro Version 11 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. It should be noted that the printouts for unsignalized intersections are based on HCM. The results are provided in **Appendix C** and summarized in **Table 4**.

Table 4 – Existing Intersection Performance

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	95th Queue (m)	LOS (v/c)	Delay (s)	95th Queue (m)	
Upper James St/ Airport Rd W (Signalized)	**Overall**	**C (0.80)**	**28**		**C (0.85)**	**29**		
	EB – L	D (0.73)	35	58	C (0.58)	26	57	~35
	EB – TR	C (0.27)	23	42	C (0.28)	22	47	~235
	WB – LTR	D (0.80)	48	100	D (0.85)	54	109	~200
	NB – L	B (0.09)	13	12	B (0.10)	15	9	~140
	NB – TR	C (0.64)	25	131	C (0.59)	27	108	~335
	SB – L	B (0.14)	14	10	B (0.25)	16	17	~100
	SB – T	C (0.27)	21	46	C (0.54)	25	104	~400
	SB – R	A (0.09)	2	4	A (0.08)	2	4	~90
Upper James St/ White Church Rd (Signalized)	**Overall**	**C (0.90)**	**21**		**C (0.90)**	**23**		
	EB – LTR	C (0.36)	21	37	D (0.85)	42	115	~485
	WB – LTR	D (0.90)	48	128	D (0.90)	53	108	~500
	NB – L	B (0.03)	12	4	B (0.18)	15	11	~75
	NB – T	B (0.53)	16	76	B (0.36)	14	50	~450
	NB – R	A (0.12)	8	13	A (0.20)	5	16	~15
	SB – L	B (0.18)	15	11	B (0.21)	15	17	~75
	SB – T	B (0.35)	14	43	B (0.51)	15	74	~600
	SB – R	A (0.09)	5	8	A (0.12)	7	14	~15
Upper James St/ Hwy 6 (Signalized)	**Overall**	**B (0.82)**	**11**		**C (0.92)**	**26**		
	EB – L	C (0.37)	33	25	D (0.50)	39	56	~155
	EB – R	A (0.61)	10	23	D (0.92)	42	130	~460
	WB – LTR	A (0.00)	0	0	C (0.00)	28	2	~100
	NB – L	C (0.82)	26	115	D (0.92)	45	86	~270
	NB – TR	A (0.43)	7	47	A (0.29)	10	46	~350
	SB – L	A (0.00)	0	0	A (0.00)	0	0	~45
	SB – T	A (0.27)	6	26	C (0.56)	21	109	~450
	SB – R	A (0.22)	1	7	A (0.18)	3	11	~115

Airport Rd W/ Homestead Dr/ (Unsignalized)	EB – L	B (0.02)	9	-	C (0.03)	9	-	~30
	EB – TR	A (0.46)	13	-	A (0.57)	16	-	~800
	WB – L	B (0.05)	9	-	B (0.15)	10	-	~30
	WB – TR	A (0.50)	14	-	A (0.31)	11	-	~235
	NB – L	A (0.08)	9	-	A (0.07)	10	-	~30
	NB – TR	A (0.30)	10	-	A (0.21)	10	-	~720
	SB – L	A (0.05)	9	-	B (0.11)	10	-	~30
	SB – TR	A (0.24)	10	-	A (0.39)	12	-	~450
Airport Rd W/ Homestead Dr/ (Signalized)	**Overall**	**A (0.45)**	**8**		**A (0.50)**	**9**		
	EB – L	A (0.02)	6	2	A (0.04)	8	3	~30
	EB – TR	A (0.42)	9	21	B (0.50)	11	34	~800
	WB – L	A (0.06)	7	3	A (0.20)	9	10	~30
	WB – TR	A (0.45)	10	23	A (0.27)	9	17	~235
	NB – L	B (0.13)	10	6	B (0.10)	10	6	~30
	NB – TR	A (0.34)	4	9	A (0.22)	4	8	~720
	SB – L	A (0.08)	10	4	B (0.15)	11	9	~30
	SB – TR	A (0.28)	6	10	A (0.42)	10	22	~450
Airport Rd E/ Miles Road North (Unsignalized)	EB – TL	A (0.17)	5	-	A (0.18)	4	5	~95
	WB – TR	A (0.23)	0	-	A (0.19)	0	0	~500
	SB – LR	C (0.37)	17	-	C (0.55)	22	26	~750
White Church Rd E/ Miles Road S (Unsignalized)	EB – LTR	A (0.04)	2	1	A (0.04)	1	1	~1000
	WB – LTR	A (0.00)	0	0	A (0.00)	0	0	~900
	NB – LTR	C (0.17)	19	5	C (0.23)	23	7	~800
	SB – LTR	C (0.20)	17	6	D (0.43)	26	17	~1000
Airport Rd E/ Miles Road South (Unsignalized)	EB – TR	A (0.16)	0	0	A (0.27)	0	0	~500
	WB – TL	A (0.05)	2	1	A (0.11)	3	3	~95
	NB – LR	B (0.16)	11	5	B (0.20)	12	6	~500
White Church Rd E/ Ferris Road (Unsignalized)	EB – TR	A (0.13)	0	0	A (0.32)	0	0	~1000
	WB – TL	A (0.00)	0	0	A (0.00)	0	0	~1000
	NB – LR	B (0.02)	13	1	C (0.02)	16	1	~800

Based on the intersection capacity analysis, under the existing traffic conditions, all intersections considered in the analysis are operating at acceptable levels of service with no critical movements, minimum delay or queues. Therefore, no physical improvements are required under the existing conditions.

For sensitivity analysis, the existing unsignalized intersection of Homestead Road/Airport Road has been analyzed with traffic signal, using similar signal timing plans at the signalized intersection of the Airport Road/Upper James Street. The analysis indicates that this intersection is expected to operate well with new traffic signals.

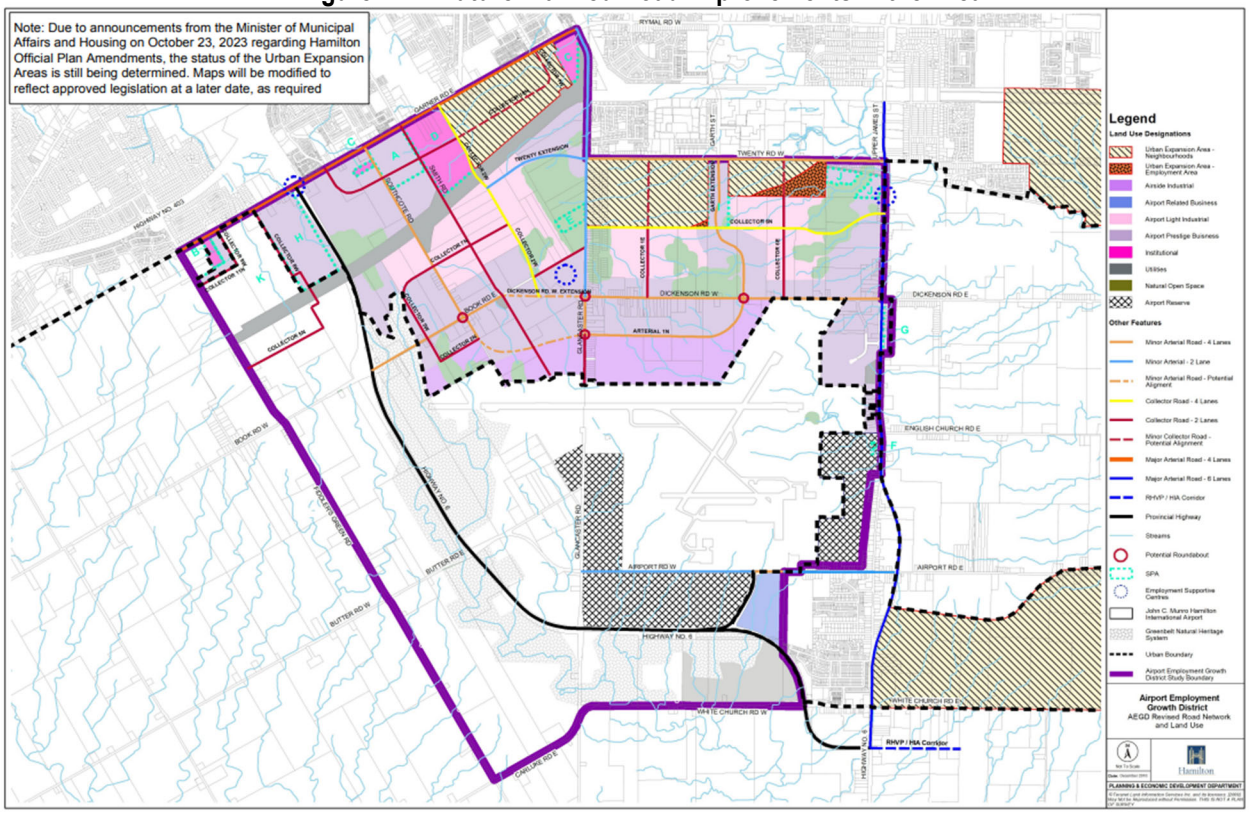
6.3. Planned Road Network Improvements

There are several road improvement projects identified in the area as part of the Airport Employment Growth District (AEGD) and the City of Hamilton Transportation Master Plan Update (2018). **Figure 14** illustrates the proposed and planned road improvements in the area as part of the AEGD, with **Figures 15** and **16** illustrating the road improvements in the area as part of the City of Hamilton Transportation Master Plan Update (2018). The following are the proposed/planned road improvements in the area:

1. Upper James Street — widening from 4 lanes to 6 lanes
2. Dickenson Road W – widening from existing 2-lane cross-section to 4-lane cross-section
3. Airport Road W (between Hwy 6 and East Cargo Road) – widening from existing 2-lane cross-section to 4-lane cross-section;
4. Airport to Red Hill Valley Parkway Link – conceptual at this time;
5. White Church Road W west of Hwy 6;
6. Fiddle's Green Road from Carluke Road E to Garner Road W;
7. Twenty Road W just to the east of Upper James Street o Glancaster Road;
8. Glancaster Road from White Church Road W to Southcote Road; and
9. There are several future road connections a shown in **Figure 15**

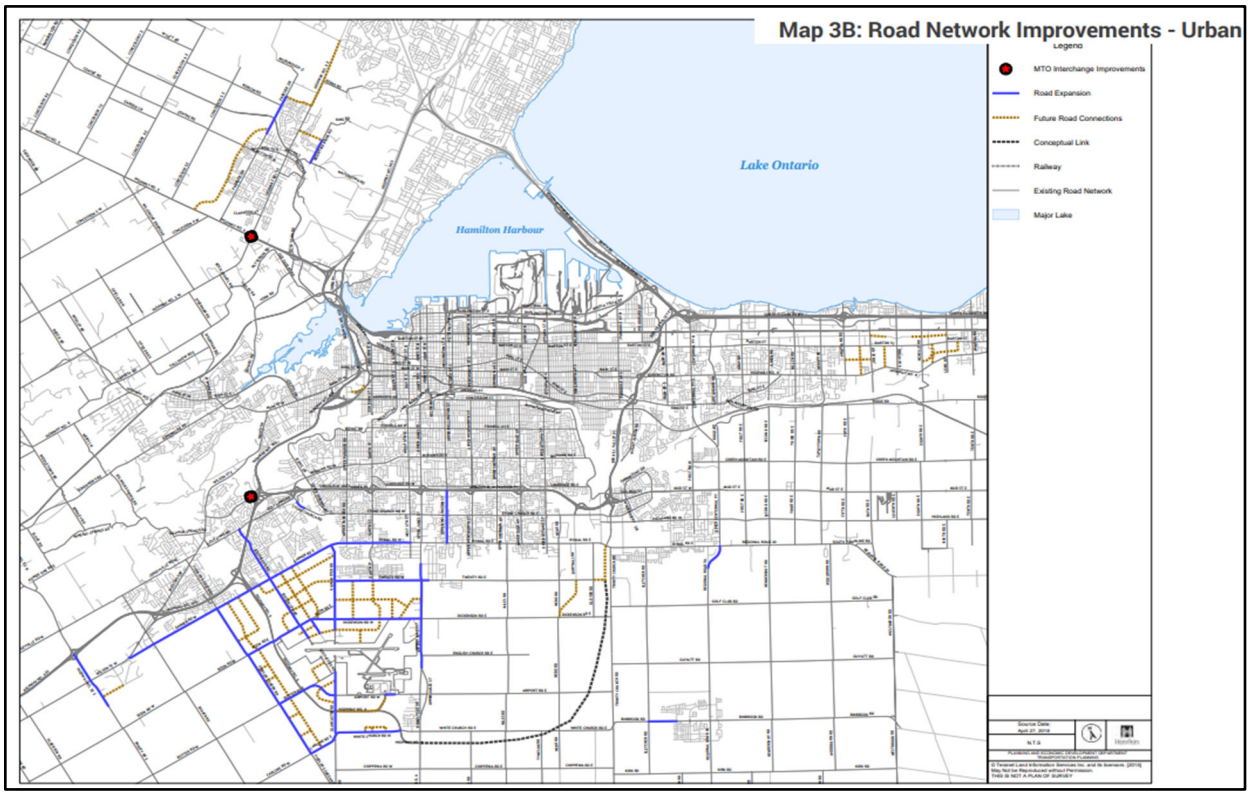
Therefore, there are a significant numbers of road improvements identified in this area in the future as part of various secondary plan and AEGD.

Figure 14 – Future Planned Road Improvements in the Area



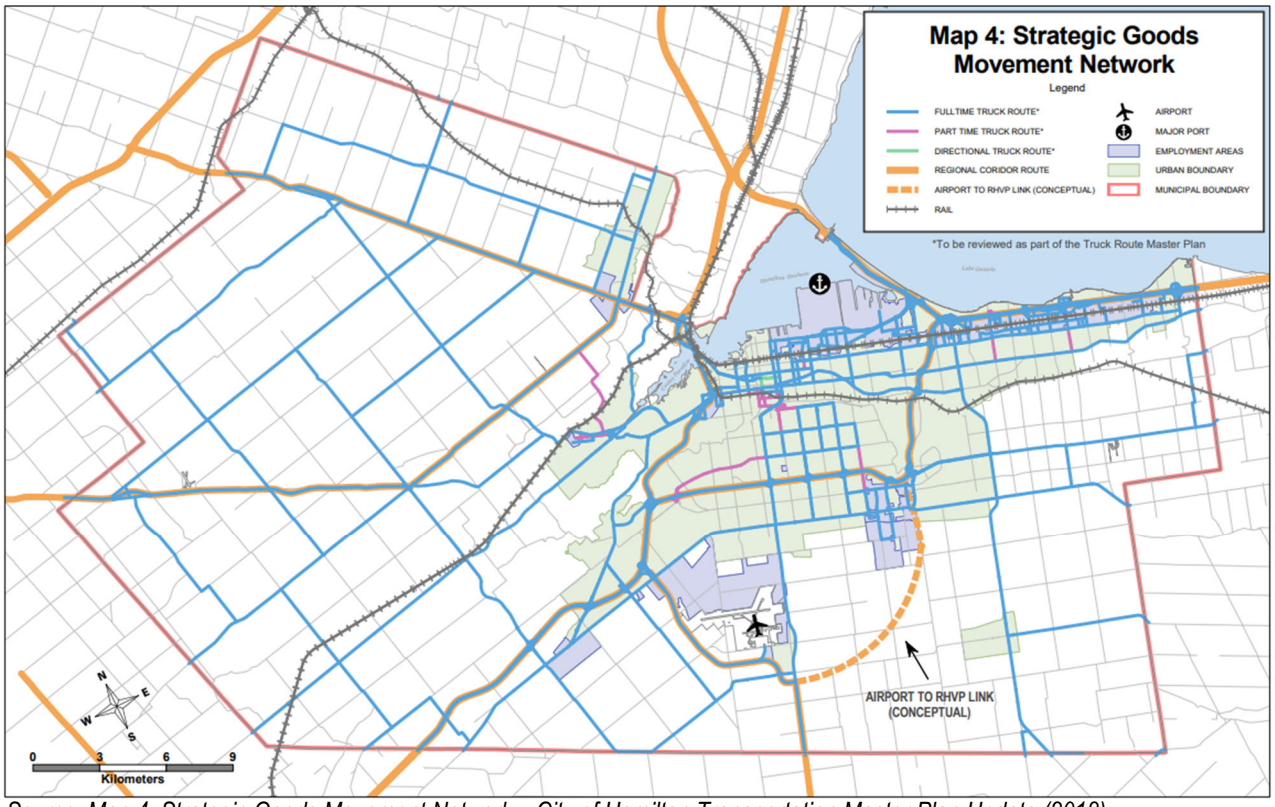
Source: Airport Employment Growth District – AEGD Revised Road Network and Land Use

Figure 15 – Road Network Improvements



Source: Map 3B: Road Network Improvements (Urban) - City of Hamilton Transportation Master Plan Update (2018)

Figure 16 – Strategic Goods Movement Network



Source: Map 4: Strategic Goods Movement Network – City of Hamilton Transportation Master Plan Update (2018)

One of the most significant connections for this area would be the conceptual Red Hill Business Park to Highway 6 South Conceptual Link because this will be an important goods movement corridor for the airport and Airport Employment Growth District development areas (as shown in **Figure 16** of this Study). NexTrans has reviewed the City of Hamilton Committee report dated December 4, 2023 entitled "Terms of Reference – Red Hill Business Park to Highway 6 South Conceptual Link). The report states that: *"During the Truck Route Master Plan review, the conceptual link was highlighted as part of the strategic goods movement network for further investigation to address network gaps in the rural community of Glanbrook. The creation of a new link between Highway 6 South and the Red Hill Valley Business Park has the potential to address a number of historical and on-going issues associated with goods movement in South Hamilton. At present, there is no suitable east-west route for goods movement between Rymal Road and the South Hamilton boundary. This has created difficulties for operators that provide goods and services to the rural community and has resulted in increased demands for enforcement. Several trip kilometres are added to good movement providers in order to comply with the existing truck route network."*

Based on our review of the existing and future transportation network in the area, we agree with this statement that this conceptual route is required for good movements, however, it is also required to move people on the south end of the City. In addition, with the proposed White Church Urban Boundary Expansion area, the proposed developments will support this route from a business case justification perspective because this route will be well-utilized by the future residents and business in the proposed White Church Urban Boundary Expansion. This route will also support more travel options and distances for some of the residents to access other parts of the City of Hamilton, as not all trips will be contained within the area.

6.3.1. 2034 Background Traffic Forecast

6.3.1.1 Analysis Horizon Year

A 10-year horizon has been selected for analysis purposes (2024 to 2034). This is consistent with the City of Hamilton requirement for transportation impact study assessment.

6.3.1.2 2034 Background Traffic Forecast

For the purpose of this assessment and to be consistent with the City of Hamilton requirements, an annual growth rate of 2% compounded has been applied to all turning movements. This is to account for:

- Through traffic from other secondary plan areas;
- Through traffic from other smaller developments that have not been captured in background development applications in the section below; and
- General growth in population and vehicular ownership in the area

Given that this growth is account for more than 20% along with the background development traffic volumes, it may be on the conservative side of the vehicular estimate. **Figures 17A** and **17B** illustrate the background traffic growth.

6.3.1.3 Background Developments

A comprehensive review of the active developments located within the study area was conducted based on the information extracted from the City of Hamilton development application portal (https://www.hamilton.ca/develop-property/planning-applications/development-applications-mapping). In addition, based on the previous work that NexTrans has conducted in the immediate area, the City has indicated that the following two background developments should be included in the analysis:

- 8521-8527 Airport Road W – the proposed development consists of 119 m^2 of convenience store together with an 87 m^2 drive-thru and take out restaurant, as well as a gas bar and carwash (based on DA-17-147)
- 9255 Airport Rd W – the proposed development consists of approximately 434 residential units, 58,244 ff^2 of commercial, as well as 60,000 ft^2 of an elementary school or 228 townhomes (Block 367) – Transportation Impact Study prepared by Paradigm Transportation Solutions Limited dated December 2016.
- 2876 Upper James Street – proposed 1,025,132 ft^2 of warehouse building – Transportation Impact Study prepared by Paradigm Transportation Solutions Limited dated October 2022.

Based on NexTrans' review of the proposed 8521-8527 Airport Road W development, the proposed development is contemplating a drive-thru restaurant and a convenient store with gas bar and carwash, therefore, the anticipated trips generated by this proposed development will be mostly pass-by traffic because these are not major destination such as sit-down restaurants or a supermarket.

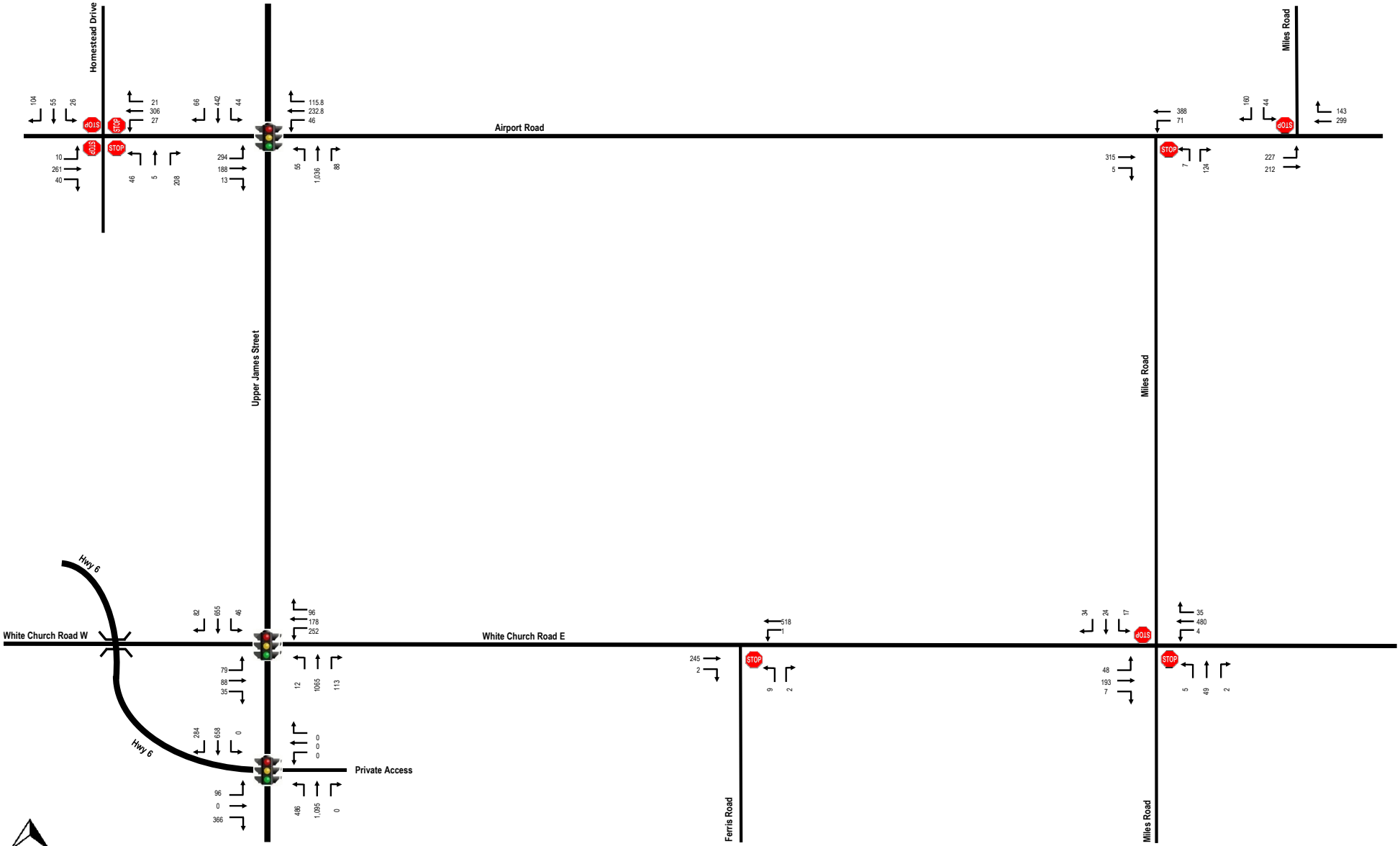
Therefore, the trips generated by this proposed development is already on the road, they just stopping by temporarily and continue on their ways and most likely the same direction of their original journey. The transportation analysis for this type of development is more appropriate when assessing the proposed development accesses, however, this type of development will have negligible impact on the existing road network as most if not all is related to by-pass trips.

To be consistent with the Paradigm TIS dated December 2016 and to be conservative, the 9255 Airport Road W site traffic will be included in the analysis. Based on NexTrans' review of the Transportation Impact Study prepared by Paradigm Transportation Solutions Limited dated December 2016 on behalf of Mountaingate development, it appears that this Study also include some of the background developments in the area up to 2026 horizon full build out. Therefore, other background developments will be included for the 2034 horizon.

As for the 2876 Upper James Street, the site traffic forecast from the Paradigm Traffic Impact Study dated October 2022 will be reflected in the future background traffic conditions. The background development site traffic volumes are illustrated in **Figures 17C** and **17D** for the 2034 background development traffic**.** The details background site traffic excerpts are included in **Appendix C**.

6.3.1.4 2034 Future Background Traffic Volumes

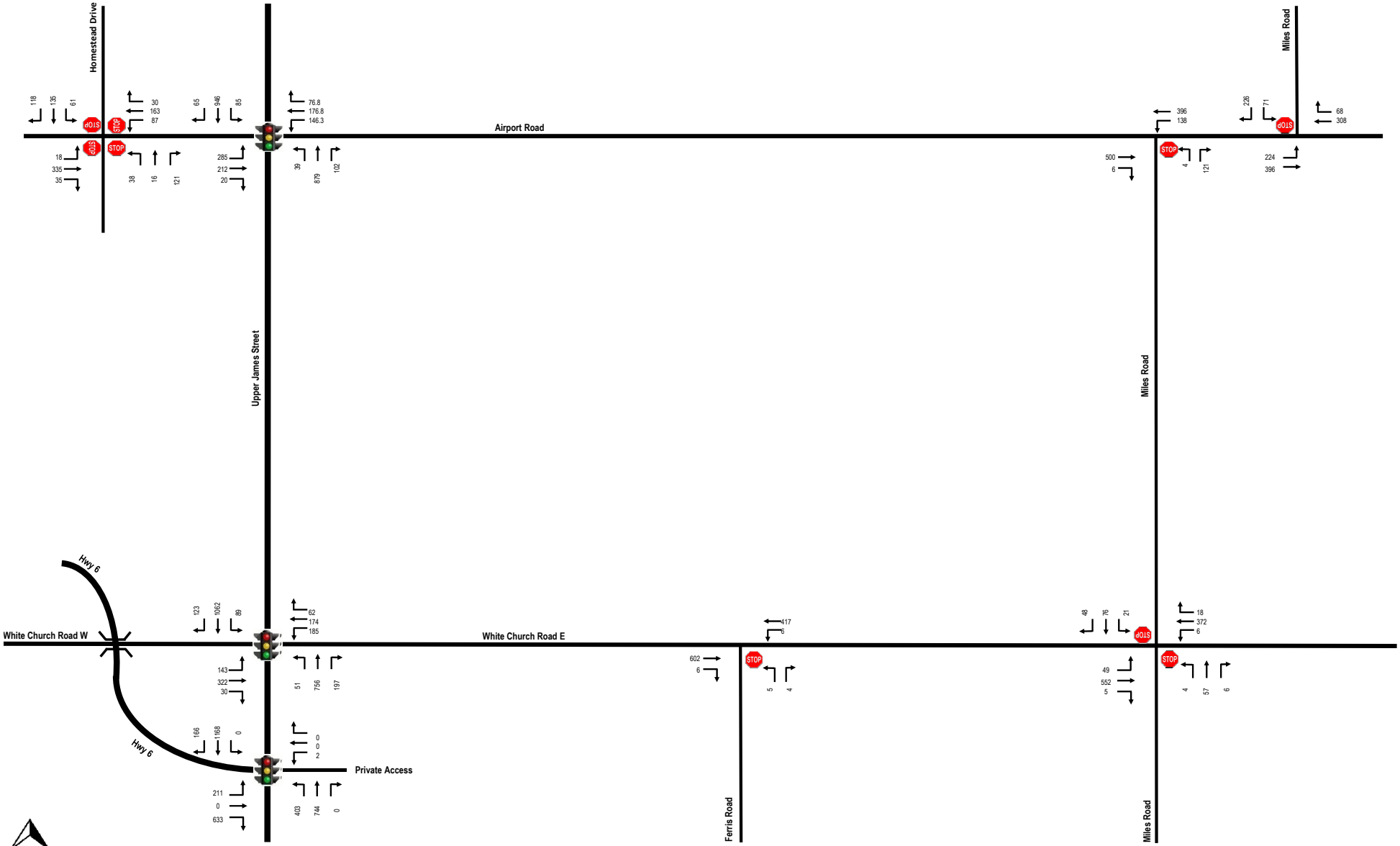
The 2034 future background traffic volumes were estimated by adding the existing traffic volumes with 2% growth per annum (compounded) with the background development application traffic volumes. The 2034 future background



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

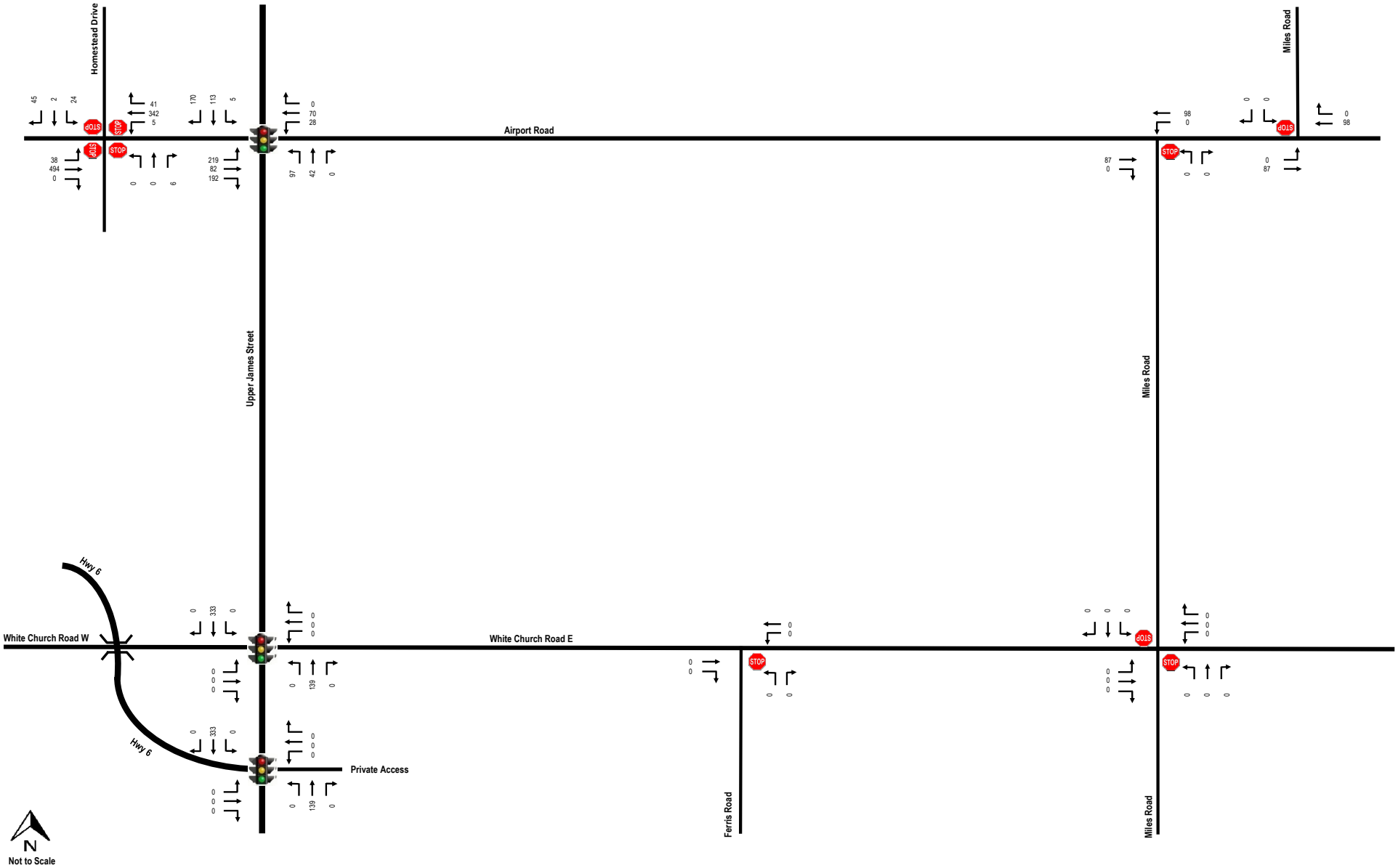
Figure 17A - 2034 Future Background Traffic Growth
AM Peak Hour



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

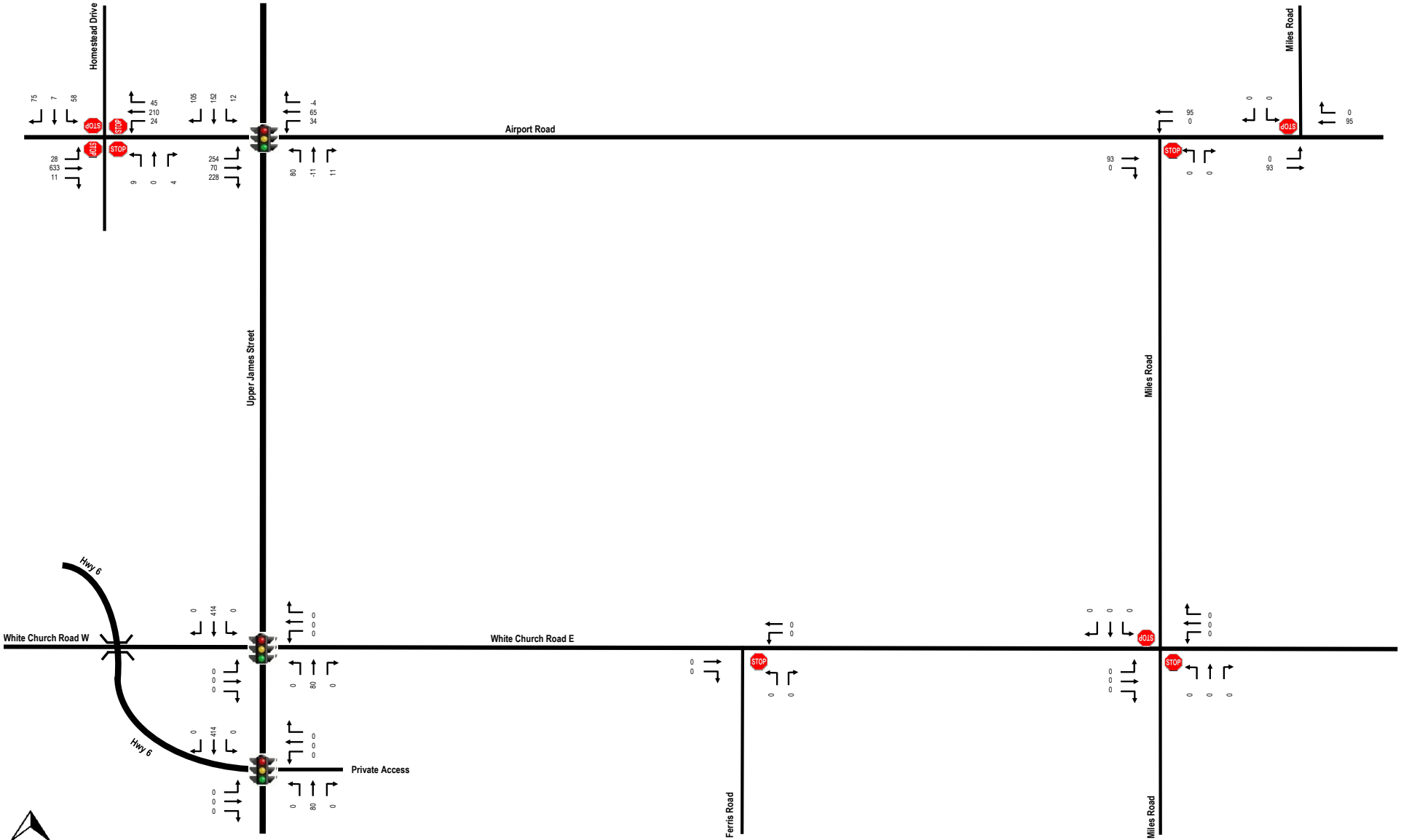
Figure 17B - 2034 Future Background Traffic Growth
PM Peak Hour



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

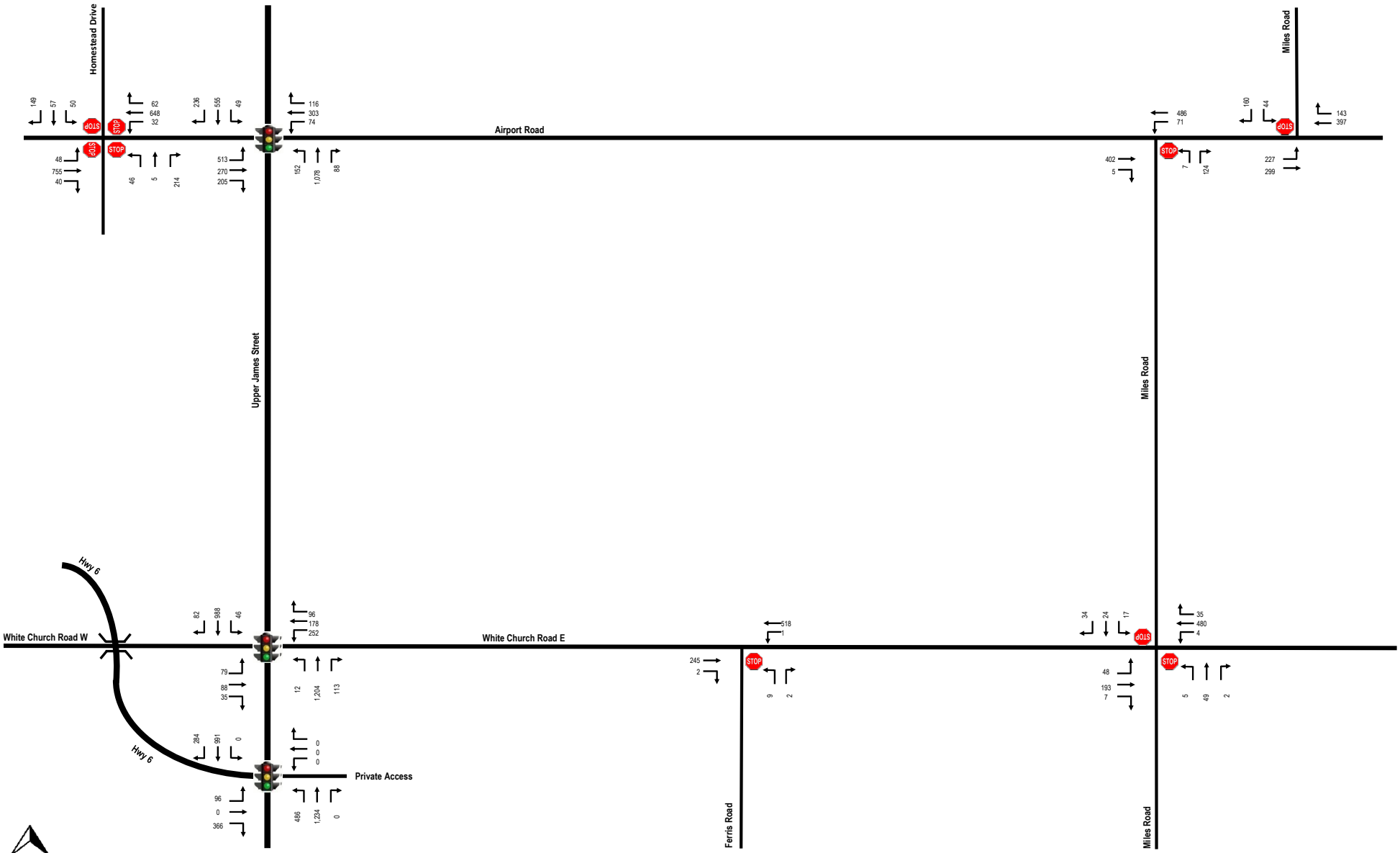
Figure 17C - Background Development Traffic Volumes
AM Peak Hour



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

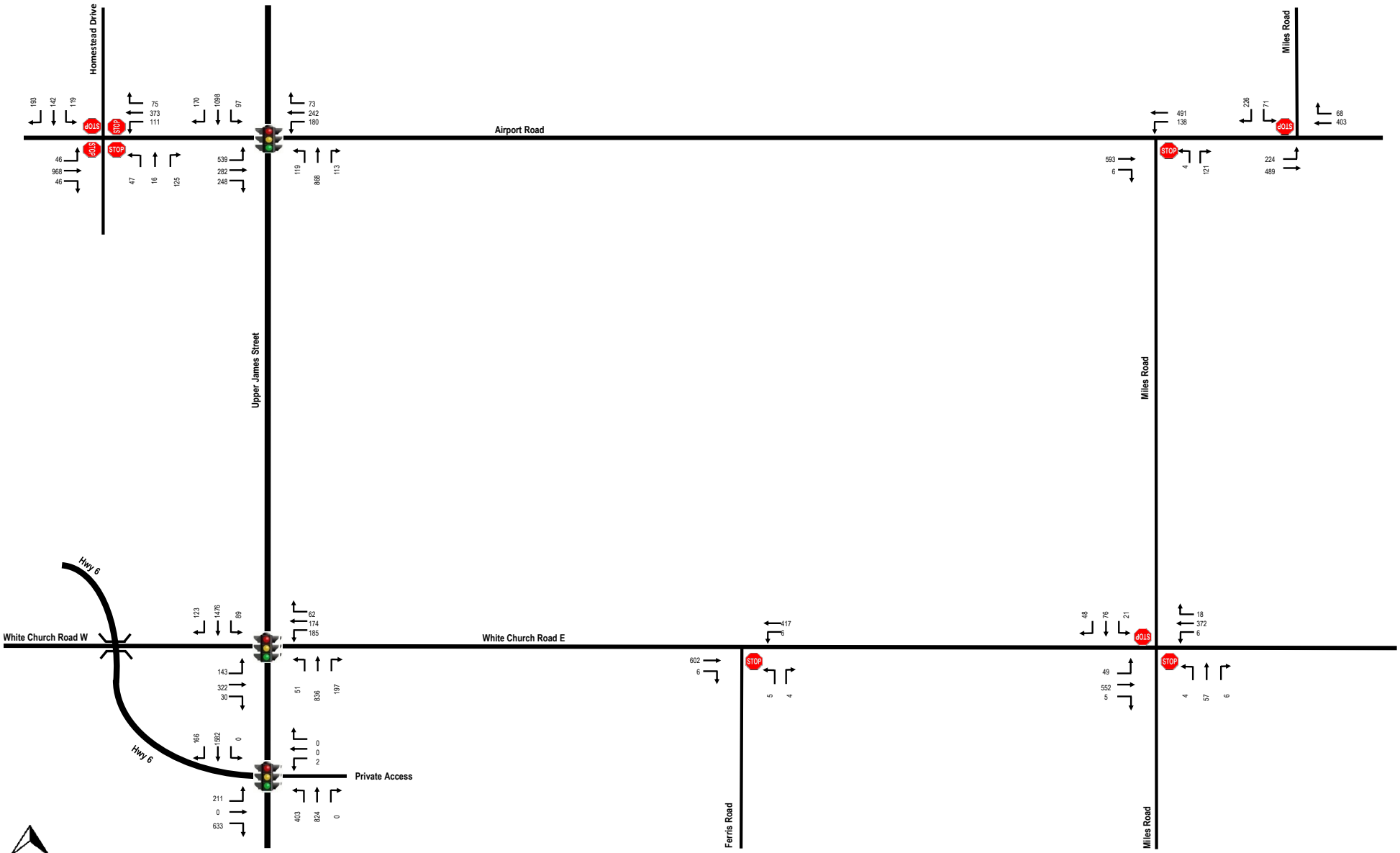
Figure 17D - Background Development Traffic Volumes
PM Peak Hour



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 18A - 2034 Future Background Traffic Volumes AM Peak Hour



nexTrans CONSULTING ENGINEERS

Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 18B - 2034 Future Background Traffic Volumes PM Peak Hour

development traffic volumes are illustrated in **Figures 18A** and **18B.**

6.3.2. 2034 Future Background Intersection Performance

As the area is undergoing significant transformation with various secondary plan areas and background developments, infrastructure improvements such as transportation network are required to accommodate growth. To avoid or eliminate throw away costs, it is important to identify the ultimate transportation improvements for the area where possible so that the phasing work will feed into the ultimate vision.

The 2034 future background traffic volumes as illustrated in **Figures 18A** and **18B** were analyzed using Synchro Version 11 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. It should be noted that the printouts for unsignalized intersections are based on HCM. The results are provided in **Appendix D** and summarized in **Table 5**.

Table 5 – 2034 Future Background Intersection Performance

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	95th Queue (m)	LOS (v/c)	Delay (s)	95th Queue (m)	
Upper James St/ Airport Rd W (Signalized)	**Overall**	**F (1.63)**	**94**		**F (1.96)**	**112**		
	EB – L	F (1.63)	319	257	F (1.36)	204	253	~35
	EB – TR	C (0.72)	31	133	C (0.72)	31	147	~235
	WB – LTR	F (1.30)	185	229	F (1.96)	469	267	~200
	NB – L	B (0.44)	20	34	C (0.65)	34	36	~140
	NB – TR	D (0.91)	44	199	D (0.81)	37	141	~335
	SB – L	B (0.31)	19	13	C (0.50)	24	22	~100
	SB – T	C (0.46)	28	72	D (0.90)	44	166	~400
	SB – R	A (0.37)	5	17	A (0.27)	4	14	~90
Upper James St/ Airport Rd W (Signalized)	**Overall**	**C (0.80)**	**29**		**D (0.89)**	**29**		253
	EB – LL	D (0.80)	47	89	E (0.87)	66	113	~35
	EB – TR	C (0.75)	30	114	C (0.66)	27	146	~235
	WB – L	D (0.59)	53	30	F (0.89)	85	96	~200
	WB – T	B (0.52)	38	44	D (0.27)	39	43	~140
	WB – R	A (0.33)	8	14	A (0.16)	8	13	~30
	NB – L	B (0.50)	20	33	D (0.70)	48	53	~335
	NB – TR	C (0.64)	26	103	D (0.64)	40	115	~100
	SB – L	B (0.24)	16	13	C (0.43)	29	31	~400
	SB – TR	C (0.40)	22	60	D (0.81)	44	154	~90
Upper James St/ White Church Rd (Signalized)	**Overall**	**C (0.97)**	**29**		**D (1.07)**	**37**		
	EB – LTR	B (0.39)	20	46	E (0.98)	65	159	~485
	WB – LTR	E (0.97)	59	173	F (1.07)	93	148	~500
	NB – L	B (0.12)	16	5	E (0.65)	57	29	~75
	NB – T	C (0.83)	25	119	B (0.52)	17	71	~450
	NB – R	A (0.17)	9	17	A (0.25)	7	22	~15
	SB – L	D (0.58)	48	24	C (0.40)	21	24	~75
	SB – T	C (0.72)	22	93	C (0.90)	30	181	~600
	SB – R	A (0.13)	9	12	A (0.16)	9	18	~15
Upper James St/ White Church Rd (Signalized)	**Overall**	**B (0.78)**	**16**		**B (0.65)**	**16**		
	EB – LTR	C (0.31)	31	26	C (0.44)	28	48	~485
	WB – LTR	B (0.14)	19	14	C (0.33)	21	46	~500
	NB – L	D (0.78)	50	78	D (0.64)	35	66	~75
	NB – T	C (0.31)	24	31	B (0.17)	17	28	~450
	NB – R	B (0.07)	12	5	C (0.34)	34	23	~15
	SB – L	B (0.46)	12	83	B (0.10)	10	53	~75
	SB – T	B (0.28)	17	16	B (0.19)	19	25	~600
	SB – R	B (0.40)	11	65	B (0.14)	**14**	100	~15
Upper James St/ Hwy 6 (Signalized)	**Overall**	**F (2.13)**	**90**		**E (1.71)**	**79**		
	EB – L	C (0.34)	29	29	D (0.52)	39	68	~155
	EB – R	D (0.90)	48	103	F (1.08)	89	211	~460
	WB – LTR	A (0.00)	0	0	C (0.00)	28	2	~100
	NB – L	F (2.13)	540	174	F (1.71)	264	195	~270
	NB – TR	B (0.64)	13	98	B (0.42)	13	66	~350
	SB – L	A (0.00)	0	0	A (0.00)	0	0	~45

	SB – T	A (0.54)	12	74	D (0.99)	50	254	~450
	SB – R	A (0.29)	2	10	A (0.23)	3	12	~115
Upper James St/ Hwy 6 (Signalized)	**Overall**	**B (0.75)**	**18**		**C (0.92)**	**31**		
	EB – L	D (0.47)	45	38	C (0.50)	34	64	~155
	EB – R	B (0.68)	11	30	D (0.92)	38	158	~460
	WB – LTR	A (0.00)	0	0	C (0.00)	25	2	~100
	NB – L	C (0.75)	24	116	D (0.77)	54	72	~270
	NB – TR	A (0.39)	6	48	A (0.30)	12	46	~350
	SB – L	A (0.00)	0	0	A (0.00)	0	0	~45
	SB – T	A (0.71)	32	95	D (0.85)	36	151	~450
	SB – R	A (0.43)	5	20	A (0.27)	5	14	~115
Airport Rd W/ Homestead Dr/ (Unsignalized)	EB – L	F (0.12)	11	-	F (0.12)	12	-	~30
	EB – TR	F (1.86)	412	-	F (2.53)	712	-	~800
	WB – L	F (0.08)	11	-	F (0.29)	14	-	~30
	WB – TR	F (1.66)	325	-	F (1.10)	100	-	~235
	NB – L	C (0.13)	12	-	B (0.14)	13	-	~30
	NB – TR	C (0.52)	18	-	B (0.37)	15	-	~720
	SB – L	C (0.14)	12	-	D (0.33)	15	-	~30
	SB – TR	C (0.51)	12	-	D (0.82)	38	-	~450
Airport Rd W/ Homestead Dr/ (Signalized)	**Overall**	**B (0.81)**	**16**		**D (0.98)**	**46**		
	EB – L	A (0.17)	7	8	B (0.09)	11	11	~30
	EB – TR	B (0.81)	17	144	D (0.98)	49	416	~800
	WB – L	A (0.17)	8	6	E (0.76)	56	51	~30
	WB – TR	B (0.74)	13	116	A (0.41)	9	72	~235
	NB – L	C (0.26)	30	19	F (0.95)	162	44	~30
	NB – TR	B (0.52)	14	33	B (0.34)	12	24	~720
	SB – L	C (0.31)	32	21	E (0.63)	64	59	~30
	SB – TR	B (0.54)	19	41	F (0.95)	82	160	~450
Airport Rd E/ Miles Road North (Unsignalized)	EB – TL	A (0.25)	6	8	A (0.22)	5	7	~95
	WB – TR	A (0.35)	0	0	A (0.29)	0	0	~500
	SB – LR	E (0.72)	42	42	F (1.08)	116	100	~750
White Church Rd E/ Miles Road S (Unsignalized)	EB – LTR	A (0.06)	2	2	A (0.05)	1	1	~1000
	WB – LTR	A (0.00)	0	0	A (0.01)	0	0	~900
	NB – LTR	D (0.27)	26	9	C (0.40)	37	14	~800
	SB – LTR	C (0.31)	24	10	F (0.73)	56	39	~1000
Airport Rd E/ Miles Road South (Unsignalized)	EB – TR	A (0.25)	0	0	A (0.39)	0	0	~500
	WB – TL	A (0.07)	2	2	A (0.16)	4	5	~95
	NB – LR	B (0.25)	14	8	C (0.32)	18	11	~500
White Church Rd E/ Ferris Road (Unsignalized)	EB – TR	A (0.16)	0	0	A (0.39)	0	0	~1000
	WB – TL	A (0.00)	0	0	A (0.01)	0	0	~1000
	NB – LR	C (0.03)	15	1	C (0.03)	19	1	~800

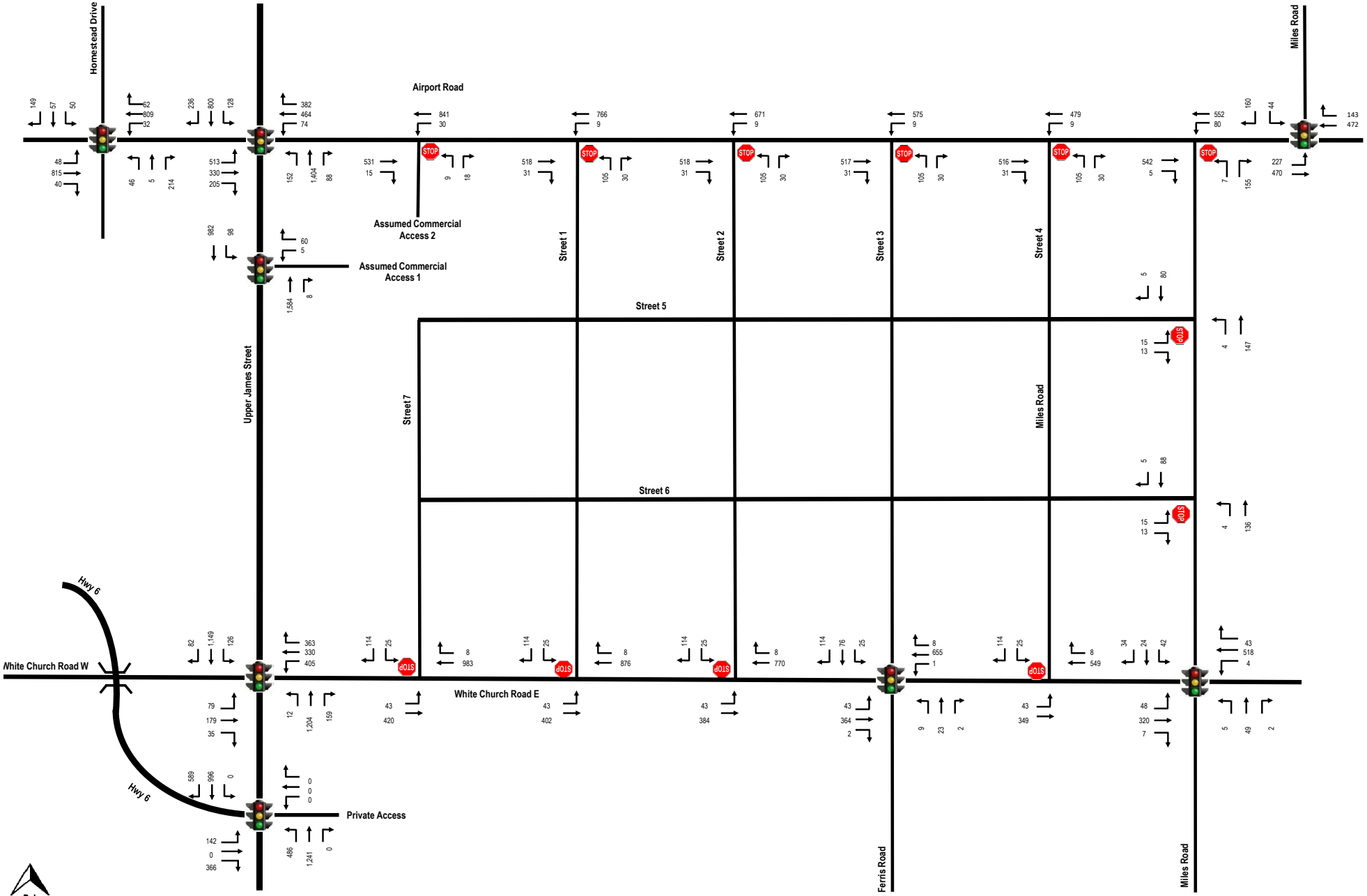
Based on the intersection capacity analysis, under the future background traffic conditions without improvements, all signalized intersections considered in the analysis are expected to operate at higher delays and queues due to heavy through and turning movement traffic volumes. However, the unsignalized intersections are expected to operate at acceptable levels of service. With the planned and proposed improvements noted in Section 6.3, these intersections are expected to operate at acceptable levels of service with no critical movements, minimum delay or queues.

6.3.3. 2034 Future Total Traffic Forecast

The 2034 future total traffic forecast estimated by adding the 2034 future background traffic volumes with the trip generation from the proposed White Church Urban Boundary Expansion. The 2034 future total traffic volumes are illustrated in **Figures 19A** and **19B.**

6.3.4. 2034 Horizon Intersection Performance

The estimated traffic volumes for 2034 horizon as illustrated in **Figures 19A** and **19B** were analyzed using Synchro Version 11 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. It should be noted that the printouts for unsignalized intersections are based on HCM. The results are provided in **Appendix E** and summarized in **Table 6**.



Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

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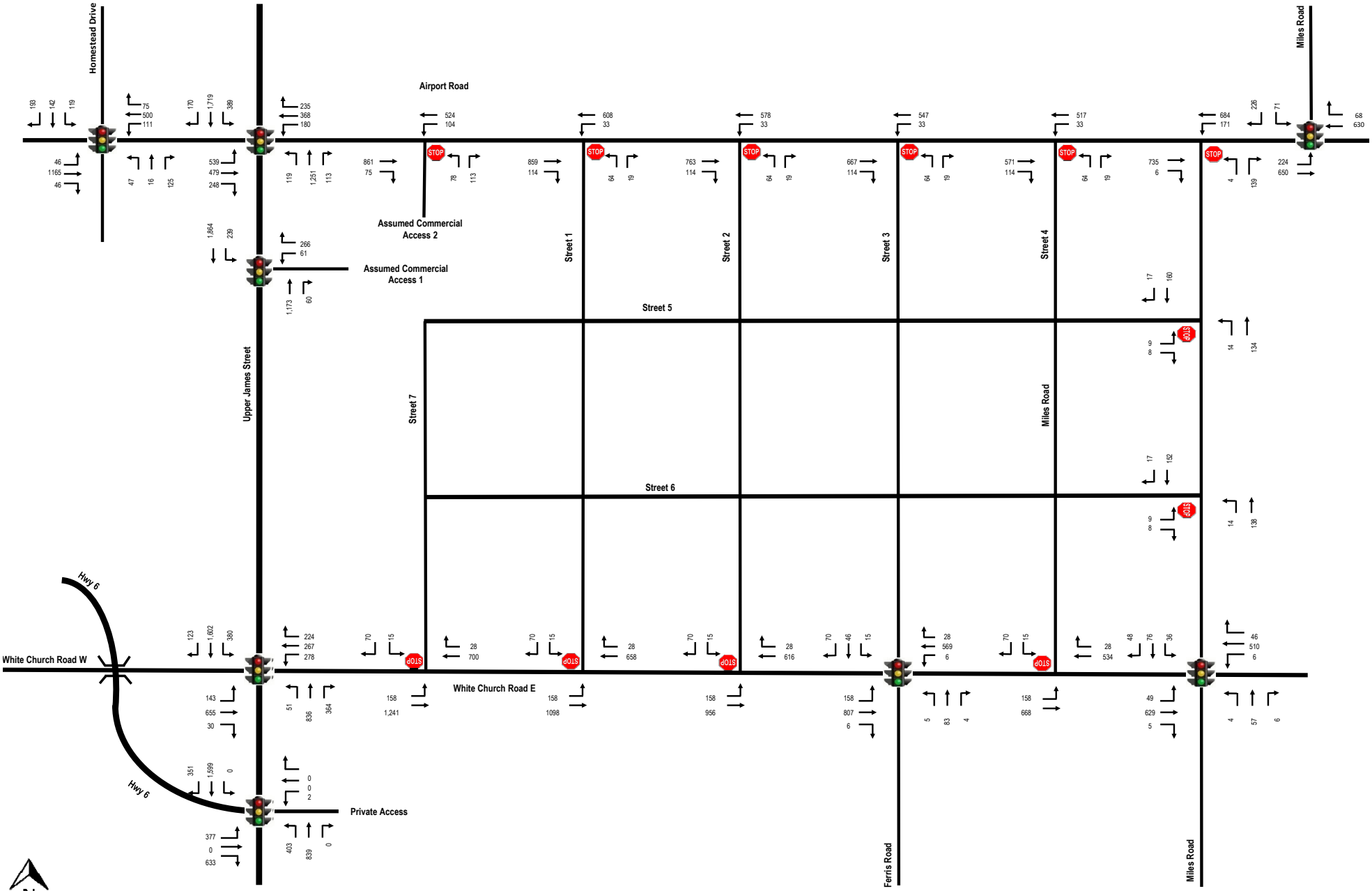
Figure 19A - 2034 Future Total Traffic Volumes
AM Peak Hour



Legend:
XX Peak Hour Traffic Volumes
STOP Stop Sign
Signalized Intersection

Figure 19B - 2034 Future Total Traffic Volumes
PM Peak Hour

Table 6 – 2034 Future Total Condition Intersection Performance

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	95th Queue (m)	LOS (v/c)	Delay (s)	95th Queue (m)	
Upper James St/ Airport Rd W (Signalized)	**Overall**	**C (0.81)**	**28**		**D (0.89)**	**37**		
	EB – LL	C (0.75)	30	52	D (0.81)	38	62	~35
	EB – TR	B (0.44)	18	46	D (0.79)	40	97	~235
	WB – L	D (0.43)	40	28	E (0.89)	69	64	~200
	WB – T	D (0.55)	36	61	C (0.42)	35	54	~140
	WB – R	D (0.81)	37	87	A (0.40)	6	18	~30
	NB – L	C (0.53)	20	32	C (0.59)	30	33	~335
	NB – TR	C (0.74)	29	137	D (0.86)	41	141	~100
	SB – L	C (0.61)	29	40	D (0.89)	52	141	~400
	SB – TR	C (0.52)	22	81	C (0.85)	31	180	~90
Upper James St/ White Church Rd (Signalized)	**Overall**	**C (0.98)**	**28**		**D (0.91)**	**39**		
	EB – LTR	D (0.46)	38	31	C (0.43)	27	39	~485
	WB – LTR	C (0.17)	22	25	E (0.89)	58	124	~500
	NB – L	E (0.97)	73	160	D (0.85)	51	102	~75
	NB – T	C (0.59)	29	84	C (0.47)	24	52	~450
	NB – R	B (0.10)	16	5	B (0.27)	17	11	~15
	SB – L	B (0.54)	18	87	D (0.82)	39	108	~75
	SB – T	F (0.98)	104	71	E (0.91)	57	134	~600
	SB – R	B (0.52)	18	79	C (0.79)	31	154	~15
Upper James St/ Hwy 6 (Signalized)	**Overall**	**B (0.75)**	**18**		**D (0.99)**	**36**		
	EB – L	D (0.62)	50	52	F (0.99)	89	161	~155
	EB – R	A (0.65)	10	28	C (0.87)	26	129	~460
	WB – LTR	A (0.00)	0	0	C (0.00)	32	3	~100
	NB – L	C (0.75)	25	115	E (0.90)	57	141	~270
	NB – TR	A (0.38)	7	51	A (0.28)	10	38	~350
	SB – L	A (0.00)	0	0	A (0.00)	0	0	~45
	SB – T	C (0.70)	33	95	D (0.88)	42	153	~450
	SB – R	A (0.68)	8	39	A (0.50)	5	21	~115
Airport Rd W/ Homestead Dr/ (Signalized)	**Overall**	**A (0.58)**	**9**		**B (0.74)**	**19**		
	EB – L	A (0.19)	8	7	B (0.12)	15	13	~30
	EB – TR	A (0.57)	9	38	C (0.74)	21	4141	~800
	WB – L	A (0.14)	8	5	B (0.36)	10	17	~30
	WB – TR	A (0.58)	9	39	A (0.30)	9	42	~235
	NB – L	B (0.16)	14	10	C (0.27)	32	19	~30
	NB – TR	A (0.42)	7	16	A (0.27)	8	18	~720
	SB – L	B (0.19)	15	11	C (0.38)	31	39	~30
	SB – TR	A (0.43)	10	20	C (0.69)	32	89	~450
White Church Rd E/ Miles Road South/ (Signalized)	**Overall**	**A (0.42)**	**8**		**A (0.46)**	**8**		
	EB – L	A (0.16)	8	5	A (0.15)	8	6	~30
	EB – TR	A (0.23)	7	10	A (0.46)	8	23	~95
	WB – L	A (0.01)	6	1	A (0.02)	6	1	~30
	WB – TR	A (0.42)	8	17	A (0.41)	8	19	~500
	NB – L	A (0.02)	9	2	A (0.01)	10	2	~30
	NB – TR	A (0.11)	9	7	A (0.13)	10	9	~750
	SB – L	A (0.12)	10	5	B (0.10)	10	6	~30
	SB – TR	A (0.14)	7	6	A (0.25)	9	13	~750
White Church Rd E/ Ferris Rd/Street 3 (Signalized)	**Overall**	**A (0.48)**	**9**		**A (0.51)**	**8**		
	EB – L	A (0.15)	8	6	B (0.45)	11	18	~30
	EB – TR	A (0.27)	8	15	A (0.51)	8	30	~1000
	WB – L	A (0.00)	6	1	A (0.02)	6	1	~30
	WB – TR	A (0.48)	9	27	A (0.38)	7	21	~900
	NB – L	A (0.03)	10	3	B (0.02)	13	2	~30
	NB – TR	A (0.05)	10	5	B (0.20)	13	15	~800
	SB – L	B (0.07)	11	5	B (0.05)	13	4	~30
	SB – TR	A (0.37)	10	19	A (0.26)	8	13	~1000
Upper James St/ Commercial Access (Signalized)	**Overall**	**A (0.46)**	**4**		**B (0.93)**	**14**		
	WB – L	C (0.02)	31	4	D (0.19)	36	23	~30
	WB – R	C (0.32)	34	19	D (0.76)	41	67	~30
	NB – TR	A (0.38)	3	39	A (0.35)	7	53	~500

	SB – L	B (0.46)	14	33	E (0.93)	59	110	~30
	SB – T	A (0.23)	3	21	A (0.52)	8	95	~250
Airport Rd E/ Miles Road North (Unsignalized)	EB – L	A (0.24)	10	8	A (0.25)	10	8	~30
	EB – T	A (0.14)	0	0	A (0.19)	0	0	~250
	WB – TR	A (0.19)	0	0	F (0.78)	120	32	~250
	SB – LR	F (0.39)	57	13	B (0.35)	14	13	~200
Airport Rd E/ Miles Road South (Unsignalized)	EB – TR	A (0.21)	0	0	A (0.29)	0	0	~250
	WB – L	A (0.09)	0	2	A (0.20)	10	6	~30
	WB – T	A (0.16)	9	0	A (0.20)	0	0	~250
	NB – L	C (0.04)	26	1	E (0.04)	42	1	~30
	NB – R	D (0.22)	11	7	B (0.22)	12	7	~30
Airport Rd E/ Street 3 (Unsignalized)	EB – TR	A (0.20)	0	0	A (0.26)	0	0	~250
	WB – L	A (0.01)	0	0	A (0.04)	0	0	~30
	WB – T	A (0.17)	9	0	A (0.16)	10	1	~250
	NB – L	C (0.35)	24	12	D (0.32)	30	10	~30
	NB – R	B (0.04)	10	1	B (0.03)	11	1	~30
Airport Rd E/ Street 1 (Unsignalized)	EB – TR	A (0.21)	0	0	A (0.34)	0	0	~250
	WB – L	A (0.01)	0	0	A (0.05)	0	0	~30
	WB – T	A (0.23)	9	0	A (0.18)	10	1	~250
	NB – L	D (0.41)	28	15	E (0.45)	48	16	~30
	NB – R	B (0.04)	10	1	B (0.04)	12	1	~30
Airport Rd E/ Street 2 (Unsignalized)	EB – TR	A (0.21)	0	0	A (0.30)	0	0	~250
	WB – L	A (0.01)	0	0	A (0.04)	0	0	~30
	WB – T	A (0.20)	9	0	A (0.17)	10	1	~250
	NB – L	D (0.38)	26	14	E (0.37)	38	13	~30
	NB – R	B (0.04)	10	1	B (0.03)	12	1	~30
Airport Rd E/ Street 4 (Unsignalized)	EB – TR	A (0.20)	0	0	A (0.23)	0	0	~250
	WB – L	A (0.01)	0	0	A (0.04)	0	0	~30
	WB – T	A (0.14)	9	0	A (0.15)	9	1	~250
	NB – L	C (0.33)	22	11	C (0.27)	25	8	~30
	NB – R	B (0.04)	10	1	B (0.03)	11	1	~30
White Church Rd E/ Street 7 (Unsignalized)	EB – L	A (0.06)	11	2	A (0.18)	10	5	~30
	EB – T	A (0.12)	0	0	A (0.37)	0	0	~250
	WB – TR	A (0.39)	0	0	A (0.28)	0	0	~250
	SB – L	E (0.17)	35	5	F (0.21)	69	6	~30
	SB – R	B (0.22)	14	7	B (0.11)	11	3	~30
White Church Rd E/ Street 1 (Unsignalized)	EB – L	A (0.06)	10	1	A (0.18)	10	5	~30
	EB – T	A (0.12)	0	0	A (0.33)	0	0	~250
	WB – TR	A (0.35)	0	0	A (0.26)	0	0	~250
	SB – L	D (0.14)	29	4	F (0.18)	56	5	~30
	SB – R	B (0.21)	13	6	B (0.11)	11	3	~30
White Church Rd E/ Street 2 (Unsignalized)	EB – L	A (0.05)	10	1	A (0.17)	10	5	~30
	EB – T	A (0.11)	0	0	A (0.28)	0	0	~250
	WB – TR	A (0.31)	0	0	A (0.24)	0	0	~250
	SB – L	C (0.12)	25	3	E (0.15)	46	4	~30
	SB – R	B (0.19)	12	6	B (0.11)	11	3	~30
White Church Rd E/ Street 4 (Unsignalized)	EB – L	A (0.04)	9	1	A (0.16)	9	5	~30
	EB – T	A (0.10)	0	0	A (0.20)	0	0	~250
	WB – TR	A (0.22)	0	0	A (0.21)	0	0	~250
	SB – L	C (0.08)	18	2	D (0.10)	32	3	~30
	SB – R	B (0.16)	11	5	B (0.10)	11	3	~30
Airport Rd E/ Commercial Access (Unsignalized)	EB – TR	A (0.21)	0	0	A (0.34)	0	0	~250
	WB – L	A (0.03)	0	0	B (0.14)	0	4	~30
	WB – T	A (0.25)	9	1	A (0.16)	11	0	~250
	NB – L	C (0.04)	22	1	F (0.62)	71	26	~30
	NB – R	B (0.02)	10	1	B (0.18)	12	5	~30
Miles Road South/ Street 5 (Unsignalized)	EB – LR	A (0.03)	9	1	A (0.02)	10	1	~200
	NB – TL	A (0.00)	0	0	A (0.01)	1	0	~200
	SB – TR	A (0.05)	0	0	A (0.11)	0	0	~200
Miles Road South/ Street 6 (Unsignalized)	EB – LR	A (0.03)	10	1	A (0.02)	10	1	~200
	NB – TL	A (0.00)	0	0	A (0.01)	1	0	~200
	SB – TR	A (0.06)	0	0	A (0.10)	0	0	~200

With the proposed road improvements noted for the area, all intersections considered in the analysis are expected to operate at acceptable levels of service. The required intersection improvements are summarized in the subsequent section of this Study.

6.4. Conceptual Red Hill Business Park to Highway 6 South Conceptual Link

As indicated, one of the most significant connections for this area would be the conceptual Red Hill Business Park to Highway 6 South Conceptual Link because this will be an important goods movement corridor for the airport and Airport Employment Growth District development areas (as shown in **Figure 16** of this Study).

NexTrans has reviewed the City of Hamilton Committee report dated December 4, 2023 entitled "Terms of Reference – Red Hill Business Park to Highway 6 South Conceptual Link). The report states that: *"During the Truck Route Master Plan review, the conceptual link was highlighted as part of the strategic goods movement network for further investigation to address network gaps in the rural community of Glanbrook. The creation of a new link between Highway 6 South and the Red Hill Valley Business Park has the potential to address a number of historical and on-going issues associated with goods movement in South Hamilton. At present, there is no suitable east-west route for goods movement between Rymal Road and the South Hamilton boundary. This has created difficulties for operators that provide goods and services to the rural community and has resulted in increased demands for enforcement. Several trip kilometres are added to good movement providers in order to comply with the existing truck route network."*

Based on our review of the existing and future transportation network in the area, we agree with this statement that this conceptual route is required for good movements, however, it is also required to move people on the south end of the City. In addition, with the proposed White Church Urban Boundary Expansion area, the proposed developments will support this route from a business case justification perspective because this route will be well-utilized by the future residents and business in the proposed White Church Urban Boundary Expansion. This route will also support more travel options and distances for some of the residents to access other parts of the City of Hamilton, as not all trips will be contained within the area.

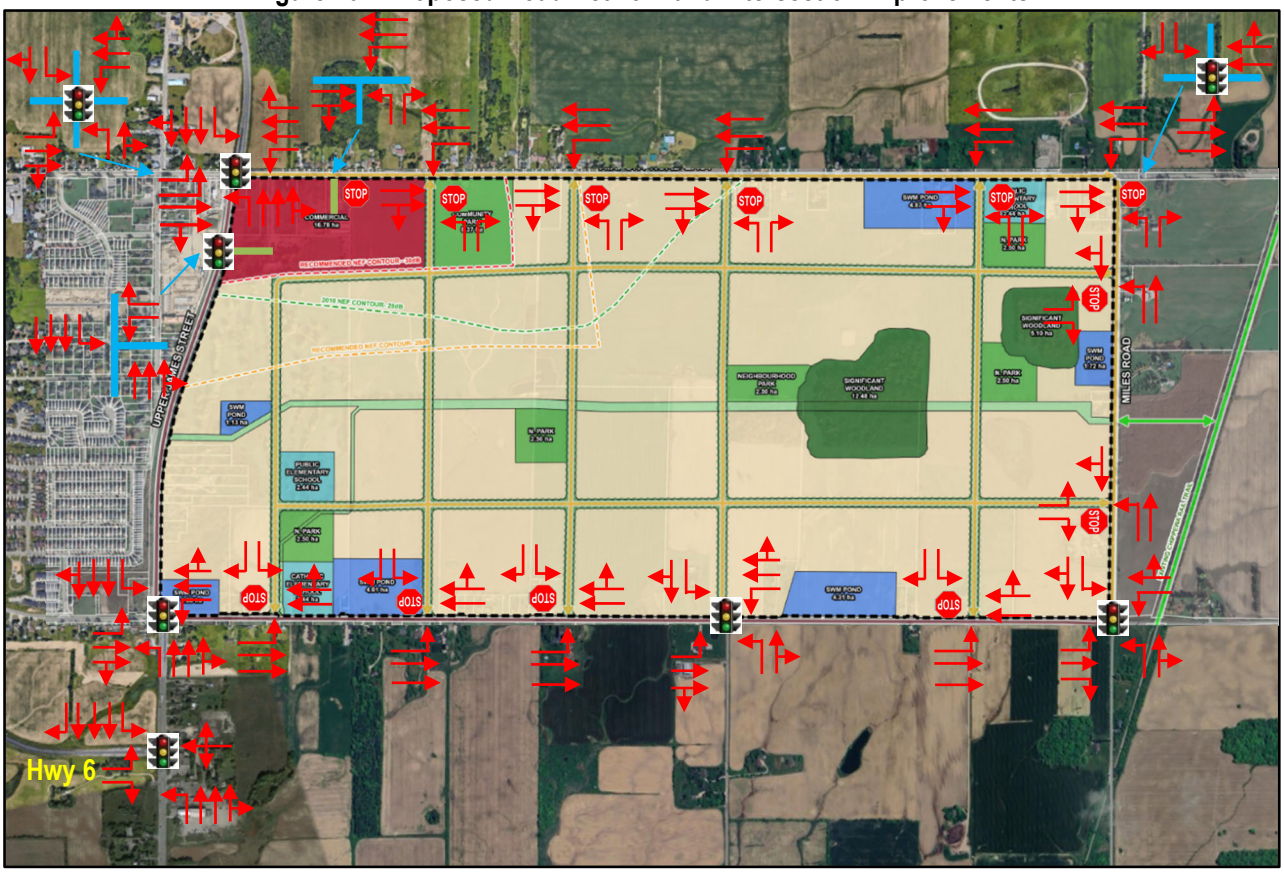
6.5. Required Road Network Improvements

Based on the high-level assessment noted above, the following recommendations are provided to accommodate the proposed White Church Urban Boundary Expansion:

1. Upper James Street — widening from 4 lanes to 6 lanes from south of Hwy 6 to north of Airport Road;
2. Eastbound double left turn at the Airport Road/Upper James Street intersection, one eastbound through lane and one eastbound shared through/right lane;
3. White Church Road W widening from 4 lanes to 6 lanes from west of Hwy 6 to Miles Road South;
4. Airport Road widening from 2 lanes to 4 lanes from Homestead Drive to Miles Road North;
5. Potential Jog elimination at the White Church Road E/Miles Road intersection, to be further studied;
6. New signalized intersection at the Upper James Street/Commercial Block potential access;
7. New signalized intersection or roundabout at the White Church Road/Miles Road South; and
8. New signalized intersection or roundabout at the White Church Road/Ferris Road

Figure 20 illustrates the proposed potential road network improvements for the proposed White Church Road Secondary Plan Area and intersection control type.

Figure 20 – Proposed Road Network and Intersection Improvements



6.5.1. Right-of-Way Requirements

The followings are the right-of-way requirements for the proposed White Church Urban Boundary Expansion:

- As per the City of Hamilton Council Approved Urban Official Plan Schedule C-2, the future right-of-way (ROW) requirement for Upper James Street is 45.72 metres. Based on the existing condition review, the existing ROW along Upper James Street in this area varies between 36 and 41 metres. Therefore, additional 2.36 (4.72m÷2) to 4.86 (9.72m÷2) metres will be conveyed to the City. These requirements will be addressed through legal survey plan and to be submitted at a later date.
- As per the Urban Hamilton Official Plan, all minor arterial roadways ROW requirements are 36.576 metres. The existing ROW on White Church Road long the frontage of the Secondary Plan area varies between 15 and 30 metres. Therefore, additional 1.625m (3.25m÷2) to 5.375 (10.75m÷2) metres will be conveyed to the City.
- Airport Road is classified as a collector road between Upper James Street and Miles Road. It is expected that the existing Minor Arterial designation of Airport Road at Upper James Street will be extended easterly to Miles Road prior to development of the Secondary Plan area. The existing ROW on Airport Road at the subject property varies between approximately 19.8 metres and 23.7 metres. Therefore, additional 3.2m (6.4m÷2) to 4.2m (8.4m÷2) will be conveyed to the City.
- Miles Road is classified as a collector road between Airport Road and White Church Road. It is expected that the road will be reclassified as a Minor Arterial Road prior to development of the Secondary Plan area. The existing ROW on Miles Road is approximately 20.5 metres. Therefore, additional 4.02m (8.04m÷2) will be conveyed to the City.
- All internal collector roads within the White Church Urban Boundary Expansion will have a ROW requirement of 26.0 metres.

6.5.2. Complete Street Cross-Section

The following examples are the complete street typical cross-section designs to be considered in the White Church Urban Boundary Expansion, based on the City of Hamilton Complete Streets Design Guidelines. **Figures 21** to **25** illustrate these typical cross-sections. It should be noted that these are guidelines and typical design only and subject to change based on the Secondary Plan needs. This information is for reference only.

Figure 21 – 36 m ROW Typical Transitioning Avenue Cross-Section with BRT

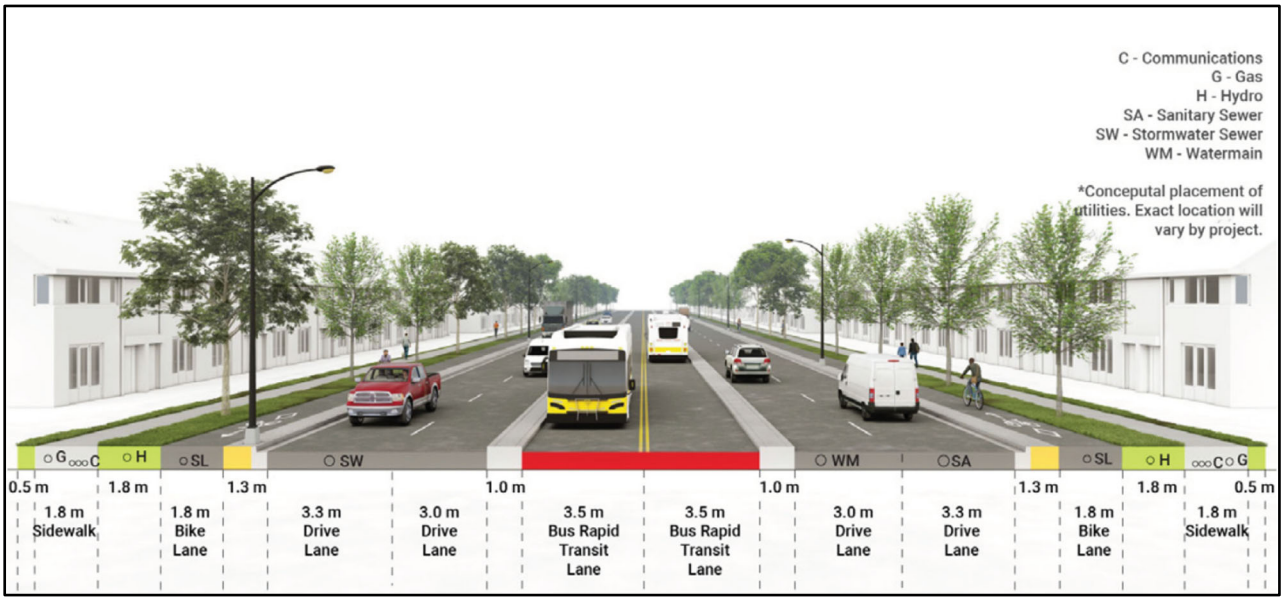


Figure 22 – 26 m ROW Urban Avenue Typical Cross-Section Design

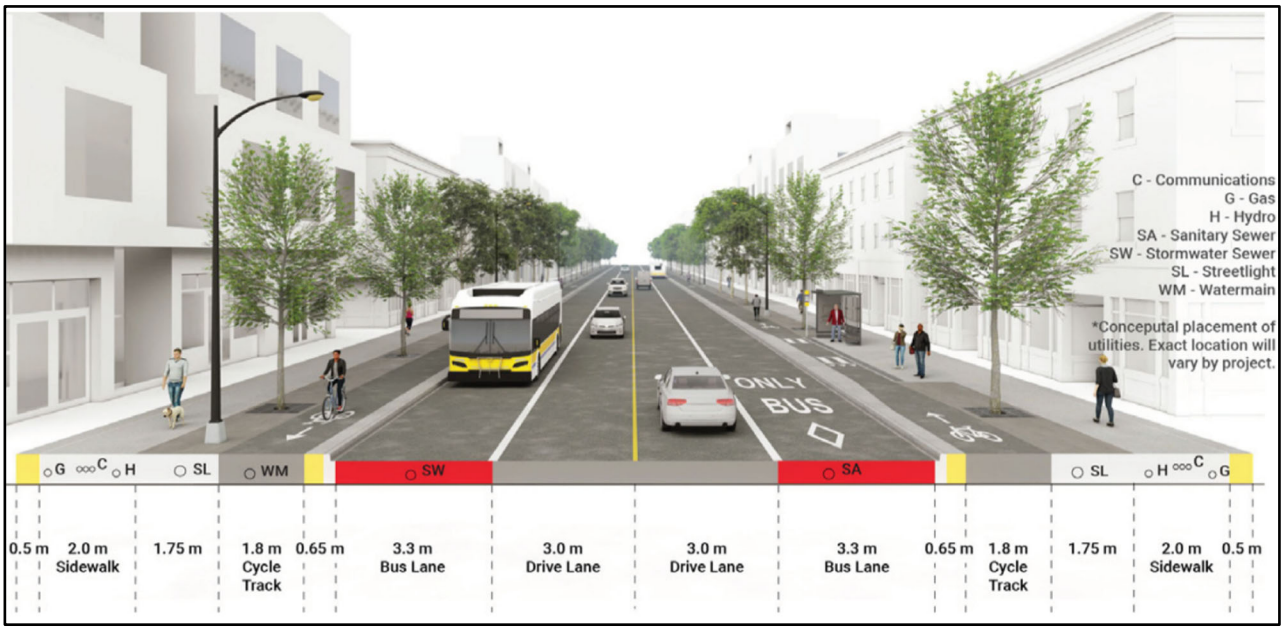


Figure 23 – 20 m ROW Urban Avenue Typical Cross-Section Design

Figure 24 – 26 m ROW Connectors Typical Cross-Section Design (New Construction)

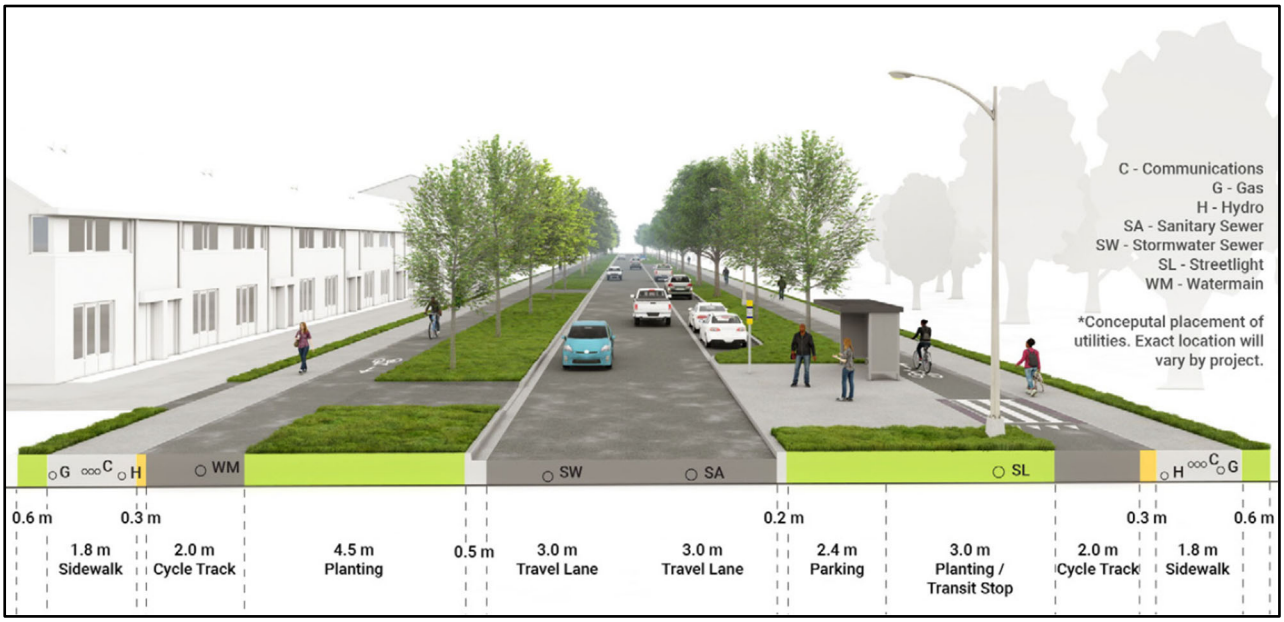
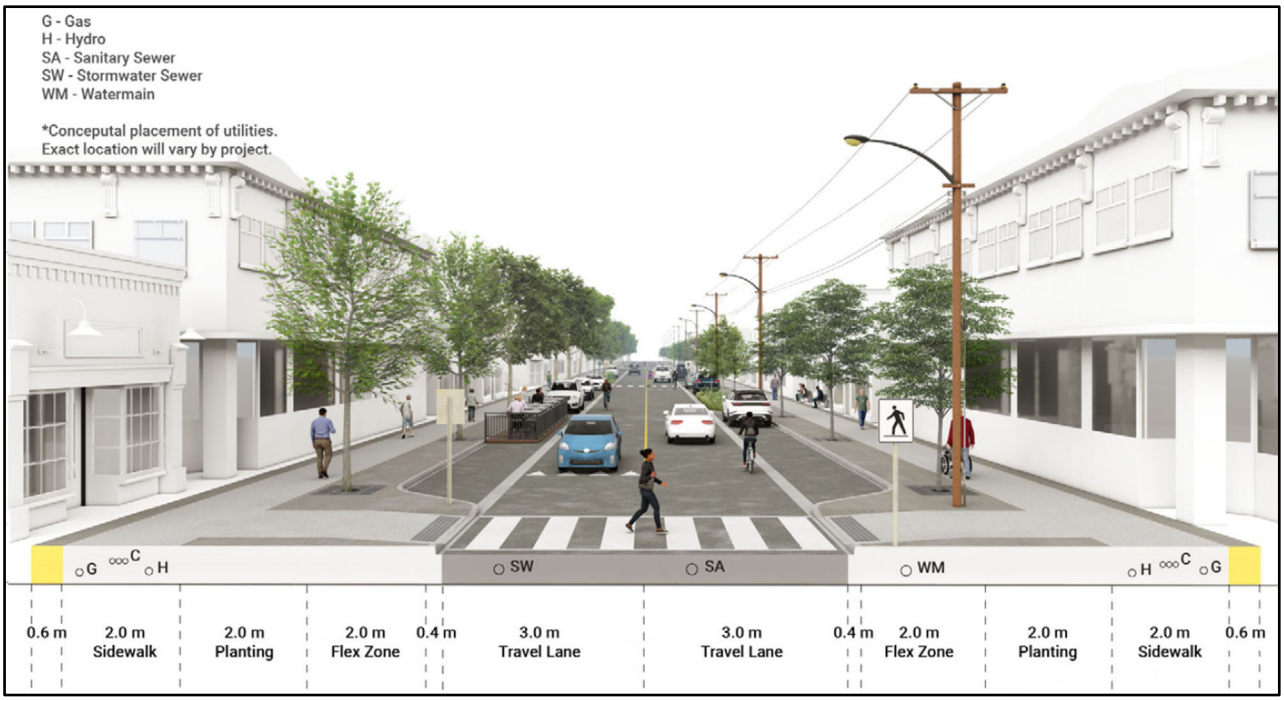


Figure 25 – 20 m ROW Main Street Typical Cross-Section Design



6.5.3. Safety and Daylight Triangle Considerations

As per the Urban Hamilton Official Plan Chapter C, the following daylight triangle size will be required for the following intersections:

1. White Church Road and Upper James Street: 12.19 m x 12.19 m
2. Airport Road and Upper James Street: 12.19 m x 12.19 m
3. White Church Road and Miles Road: 12.19 m x 12.19 m
4. Airport Road and Miles Road: 12.19 m x 12.19 m

As per the Urban Hamilton Official Plan Chapter C, the following daylight triangle size will be required for the following intersections that intersect with the proposed White Church Urban Boundary Expansion external roadway network:

1. Local Road to Local Road: 4.57 m x 4.57 m
2. Collector Road to Collector Road: 9.14 m x 9.14 m
3. Collector Road to Local Road: 9.14 m x 9.14 m
4. Arterial Road to Arterial Road: 12.19 m x 12.19 m
5. Arterial Road to Collector Road: 12.19 m x 12.19 m
6. Arterial Road to Local Road: 12.19 m x 12.19 m

The proposed White Church Urban Boundary Expansion will take these requirements into considerations. However, there will be adjustments and reduction of the daylight triangle sizes to accommodate the City's Complete Streets Design Guidelines and other requirements of the Secondary Plan Area.

6.5.4. Traffic Calming

6.5.5. Background Documents and Policies on Traffic Calming in Hamilton

6.5.5.1 City of Hamilton Vision Zero

It is NexTrans' understanding that on August 15, 2014, City Council approved report PW14090 to re-establish the Hamilton Strategic Road Safety Program. The Hamilton Strategic Road Safety Committee was formed to provide guidance, oversight, and direction to the Hamilton Strategic Road Safety Program. The Committee is formed of members from Roads and Traffic, Hamilton Public Health Services, and the Ministry of Transportation Road Safety Marketing Division. A road safety program to address transportation related injuries and fatalities, requires a multifaceted program that is coordinated with various stakeholders. The action items that are identified in this report, were developed through review of best practices, public survey, and public/stakeholder engagement. There are five main sections aligned with this Vision Zero Action Plan, Evaluation, Engineering, Enforcement, Education and Engagement (5 E's).

Source: Hamilton Strategic Road Safety Program and Vision Zero Action Plan 2019 – 2025 (PW19015) (City Wide)

6.5.5.2 City of Hamilton 2019 Traffic Calming Program Update

Based on NexTrans' review of the May 30, 2019 Traffic Calming Program Update (TOM1903) (City Wide) Staff Report, currently there are a total of 169 speed humps/speed cushions installed throughout the City of Hamilton (91 permanent installations and 78 temporary installations).

There is a total of 9 speed humps/speed cushions installed (1 permanent and 8 temporary) in Ward 4. However, there are none installed in the study area bounded by Parkdale Avenue/Queenston Road/Red Hill Valley Parkway and Roxborough Avenue.

6.5.5.3 City of Hamilton Speed Hump Policy (2000)

In May 2000, Council adopted a recommendation to support the general concept of the use of speed humps and speed tables to control speeds on two-lane residential streets with a posted speed of 50 km/h or less and a demonstrated speeding concern. In addition, 75% neighbourhood resident support is required for implementation. Speed humps were not recommended for routes that comprise primary emergency response or HSR routes.

6.5.6. Existing Area Context

Under the existing conditions, most of the streets included in the study area still have a rural or semi-rural cross-sections with ditches and gravel shoulders.

6.5.7. Future Traffic Calming Measure Consideration

As indicated in the assessment noted above, speeding through the neighbourhood is one of the major factors that contributed to collisions with pedestrians, cyclists and motor vehicles. There are several traffic calming measures that can be implemented to reduce speed through the neighbourhood. However, the traffic calming measures are context sensitive, which means one solution will not fit all scenarios. **Table 7** below summarizes the potential traffic calming measures, as well as the pros and cons for each measure. These measures will be considered in the subdivision and site plan design in the future for both internal and external roadways and intersections.

Table 7 – Traffic Calming Measure Comparison

Traffic Calming Measures	Pros	Cons
Speed hump	• Effective in slowing down traffic • Reasonable cost • Quick installation • Minimal modifications to existing road way	• Will slow down emergency vehicles and servicing vehicles
Speed cushion	• Effective in slowing down traffic • Reasonable cost • Quick installation • Minimal modifications to existing road way • It is a modified speed hump that can better accommodate emergency vehicle (i.e. it doesn't span the entire length of the lane)	• Will slow down emergency vehicles and servicing vehicles
Bump-out	• Effective in slowing down traffic	• Will slow down emergency vehicles and servicing vehicles • Difficult for winter maintenance and snow removal/storage • Challenges for cyclists • Modifications to existing roadway will be required (i.e. drainage)
Median island and knockdown stick	• Effective in slowing down traffic	• Will slow down emergency vehicles and servicing vehicles • Difficult for winter maintenance and snow removal/storage • Require pavement • May require additional lands • Modifications to existing roadway will be required (i.e. drainage)
Chicane	• Effective in slowing down traffic	• Will slow down emergency vehicles and servicing vehicles • Difficult for winter maintenance and snow removal/storage • Challenges for cyclists
Curb extension	• Effective in slowing down traffic	• Will slow down emergency vehicles and servicing vehicles • Challenges for cyclists
Traffic circle/mini roundabout	• Effective in slowing down traffic	• Requires additional lands • Will slow down emergency vehicles and servicing vehicles • Difficult for winter maintenance and snow removal if traffic circle is too small

6.5.8. Traffic Signal Warrant Analysis

NexTrans has conducted a traffic signal warrant analysis for all proposed unsignalized intersections along Airport Road E, White Church Road E and Upper James Street based on the future forecast volumes and Justification 7 of the Ontario Traffic Manual Book 12. The traffic signal warrant analysis as outlined in **Appendix G**, with **Table 8** summarizes the analysis results. The analysis indicates that:

- The intersection of Airport Rd W/Homestead Dr meets the traffic signal warrant based on overall warrant;
- The intersection of White Church Rd E/Ferris Road/Street 3 meets the traffic signal warrant based on overall warrant;
- The intersection of White Church Rd E/Miles Road South meets the traffic signal warrant based on overall warrant; and
- The intersection of Airport Rd E/Miles Road North meets the traffic signal warrant based on overall warrant

It is recommended that these intersections be signalized prior to or by 2034 horizon. The signal warrant analysis should be conducted at each phase of the proposed development.

Table 8 – Traffic Signal Warrant Results

Intersection	Minimum Vehicular Volume	Delay to Cross Traffic	Overall Warrant	Signalization
Airport Rd W/ Homestead Dr	156%	171%	150%	Yes
White Church Rd E/Ferris Road	105%	69%	80%	Yes
White Church Rd E/Miles Road South	87%	56%	80%	Yes
Upper James St/Commercial Access	58%	79%	<80%	No
Airport Rd E/Miles Road North	74%	113%	100%	Yes
Airport Rd E/Miles Road South	45%	45%	<80%	No
Airport Rd E/Street 3	64%	32%	<80%	No
Airport Rd E/Street 1	64%	32%	<80%	No
Airport Rd E/Street 2	64%	32%	<80%	No
Airport Rd E/Street 4	64%	32%	<80%	No
White Church Rd E/Street 7	47%	33%	<80%	No
White Church Rd E/Street 1	47%	33%	<80%	No
White Church Rd E/Street 2	47%	33%	<80%	No
White Church Rd E/Street 4	47%	33%	<80%	No
Airport Rd E/Commercial Access	52%	32%	<80%	No
Miles Road South/Street 5	11%	6%	<80%	No
Miles Road South/Street 6	11%	6%	<80%	No

6.5.9. Intersection Treatments and Controls

All internal and external roadway intersections should be designed to accommodate all modes of transportation, with the following requirements, but not limited to:

- Design to AODA requirements;
- Implement intersection treatments as per the City of Hamilton relevant standards, Ontario Traffic Manual Books 15 and 18 such as bike lane and cycle track cross-ride treatment, as well as ladder crossing at both signalized and unsignalized intersections;
- Minimize pedestrian and cyclist crossing distance by providing minimum lane width and turning lanes, where appropriate;
- Accommodate transit vehicle turnings and treatments such as mountable curb and painted color pavement markings;
- Provide appropriate bus shelter and stop locations so that they don't interfere with cycling and sidewalk facilities;
- Provide sufficient illumination at the intersections and midblock areas where there are potential conflicts between vehicle and pedestrians/cyclists; and
- When traffic signals are warranted at an intersection, roundabout treatment may be considered if appropriate for the intersection operations and user safety

7.0 PEDESTRIAN NETWORK ASSESSMENT

7.1. Target Design Element for Walking Mode

Walking is the most common mode of transportation. As soon as you get off a car or a bus, you are a pedestrian. Walking if affordable, accessible and most convenient form of transportation, if the network is complete and designed properly. Walking not only promotes physical activity and social interaction; it is also emissions-free and making it a climate-friendly and healthy mode of travel. There are several factors that can promote walking mode such as:

- Type of land use mix;
- Complete community and amenities;
- Limited vehicle traffic;
- Security and safety (i.e. illumination);
- Physical space (sidewalk size, street trees, buffer and street furniture); and
- Crossing distance and ease to cross intersections

There are other guidance and resource that available in the Design of Public Spaces Standards under the Ontario Integrated Accessibility Standards regulations, Ontario Traffic Manual (OTM) Book 15: Pedestrian Crossing Treatments, the National Association of City Transportation Officials' (NACTO) Urban Street Design Guide, and NACTO's Designing Streets for Kids Guide.

For the purpose of this assessment, the City of Hamilton Complete Streets Design Guidelines recommendations are utilized in this Study. **Table 9** summarizes the pedestrian facility design target. However, it is should be noted that these parameters and requirements may be modified at the appropriate stage of the Secondary Plan Study to accommodate the local context and design objectives.

Table 9 – Pedestrian Design Target

Element	Target Value	Minimum Value
Buffer Zone	1.0 m	0.5 m
Street Tree / Furniture Zone	2.0 m to 3.0 m	1.75 m
Walkway Zone	1.8 m to 2.0 or more	1.8 m
Frontage Zone	Varies	0.5 m

7.2. Existing Pedestrian Network

Currently, no sidewalks are available on all arterials and collector roads in the area for the following reasons:

- All arterial and collector roads in the area have rural cross-section with no curbs and gutters or platform to provide proper sidewalks;
- These roads have very narrow shoulders and boulevard spaces;
- Utilities are placed very close to the edge of the roadways

In order to provide proper sidewalks in the future, these roads will need to be urbanized or special treatments such as wider multi-use trails that can also accommodate pedestrians.

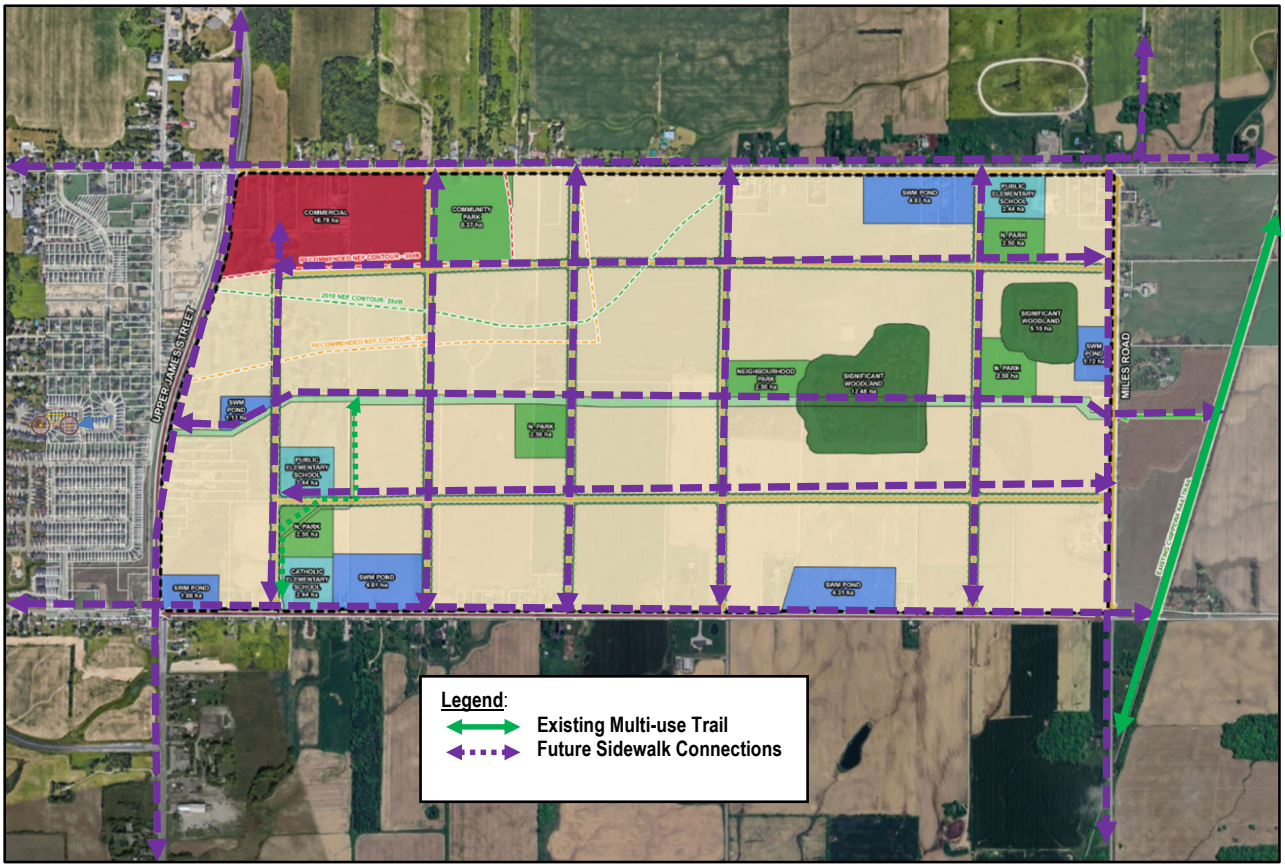
7.3. Pedestrian Network Assessment

Within the proposed White Church Urban Boundary Expansion and the general area, there are several key origin and destination areas:

- Origin – from the proposed White Church Urban Boundary Expansion residential developments and existing residential development areas in Mount Hope Community;
- Destination – proposed schools, commercial district, parks and Chippewa Rail Trail; and
- Other destinations – Hamilton International Airport and AEGD areas and other areas of the City of Hamilton

Figure 26 illustrates the main pedestrian and cycling connections from origins to destinations.

Figure 26 – Main Pedestrian Connections and Network



8.0 CYCLING NETWORK ASSESSMENT

8.1. Target Design Element for Cycling Mode

Similar to walking mode, cycling mode is also one of the most affordable and accessible form of transportation. It promotes physical activity and social interaction, and is emissions-free, making it a climate-friendly and healthy mode of travel. There are several factors that can promote cycling mode such as:

- Type of land use mix;
- Complete community and amenities;
- Limited vehicle traffic;
- Security and safety (i.e. physical facilities and illumination);
- Physical space (facility types); and
- Physical treatments at the intersections

For the purpose of this assessment, the City of Hamilton Complete Streets Design Guidelines recommendations are utilized in this Study. **Table 10** summarizes the cycling facility design target. However, it is should be noted that these parameters and requirements may be modified at the appropriate stage of the Secondary Plan Study to accommodate the local context and design objectives.

Table 10 – Cycling Facility Design Target

Element	Target Value	Minimum Value
Design Parameters for In-boulevard Cycling Facilities		
Buffer Zone	1.0 m	0.5 m
Cycle track (one-way)	2.0 m	1.5 to 1.8 m
Cycle track (two-way)	3.5 m	2.4 to 3.0 m
Multi-use path	3.5 to 4.0 m	3.0 m
Pedestrian walkway	See pedestrian realm section. When abutting a cycle track, apply shorelines (see Urban Braille standards) or separate with a short height curb.	
Design Parameters for On-street Cycling Facilities		
Painted buffer	1.0 m	0.3 m
Bike lane	1.8 m	1.2 to 15 m
Contraflow bike lane	2.0 m	1.5 -1.8 m
Advisory bike lane	1.8 to 2.0 m	1.5 m
Two-way travel lane	3.0 to 4.0 or 4.0 to 5.7 m	2.7 m
Rural paved shoulder	1.5 to 2.0 m plus 0.5 to 1.5 m buffer	1..2 m

8.2. Existing Cycling Network

Currently, given the existing rural road cross-sections, there are no dedicated bike lanes or multi-use path on all arterial and collector roads in the area. There is only one main trail, which is the Chippewa Rail Trail is located east of Miles Road, which is also to the east of the White Church Urban Boundary Expansion. This trail will be the main north-south spine in this area. In the future, a trail network would be complete in this area if an east-west trail can be constructed to connect this main north-south spine trail to the Mount Hope/John C. Munro Hamilton International Airport areas. **Figure 27** illustrates the existing active transportation network in the study area.

8.3. Proposed Planned Cycling Network

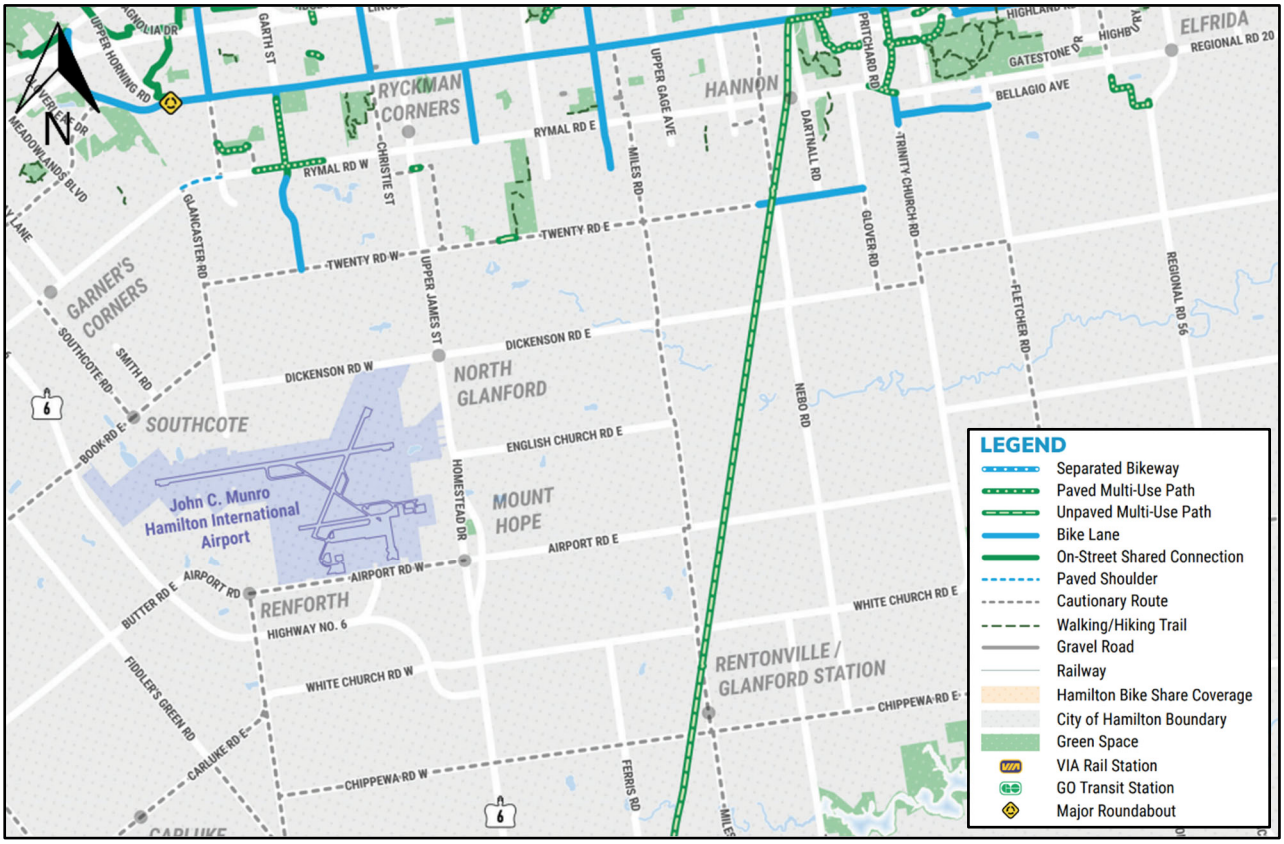
NexTrans has reviewed both the City of Hamilton Transportation Master Plan Update (2018) and the City of Hamilton Cycling Master Plan Review and Update (2022). **Figure 27** illustrates the future planned cycling network improvements

in the area. As indicated in **Figure 28**, there are five significant planned cycling network improvements for the area:

- Planned multi-use trail along Upper James Street;
- Planned multi-use trail along White Church Road W, west of Upper James Street
- Planned bike lane along Airport Road E from Miles Road to Butter Road E;
- Dickenson Road E from Miles Road to Garner Road;
- A midblock east-west bike lane between White Church Rd E and Airport Rd E, east of Upper James St; and
- Paved shoulder on Miles Road and White Church Road E, east of Upper James Street

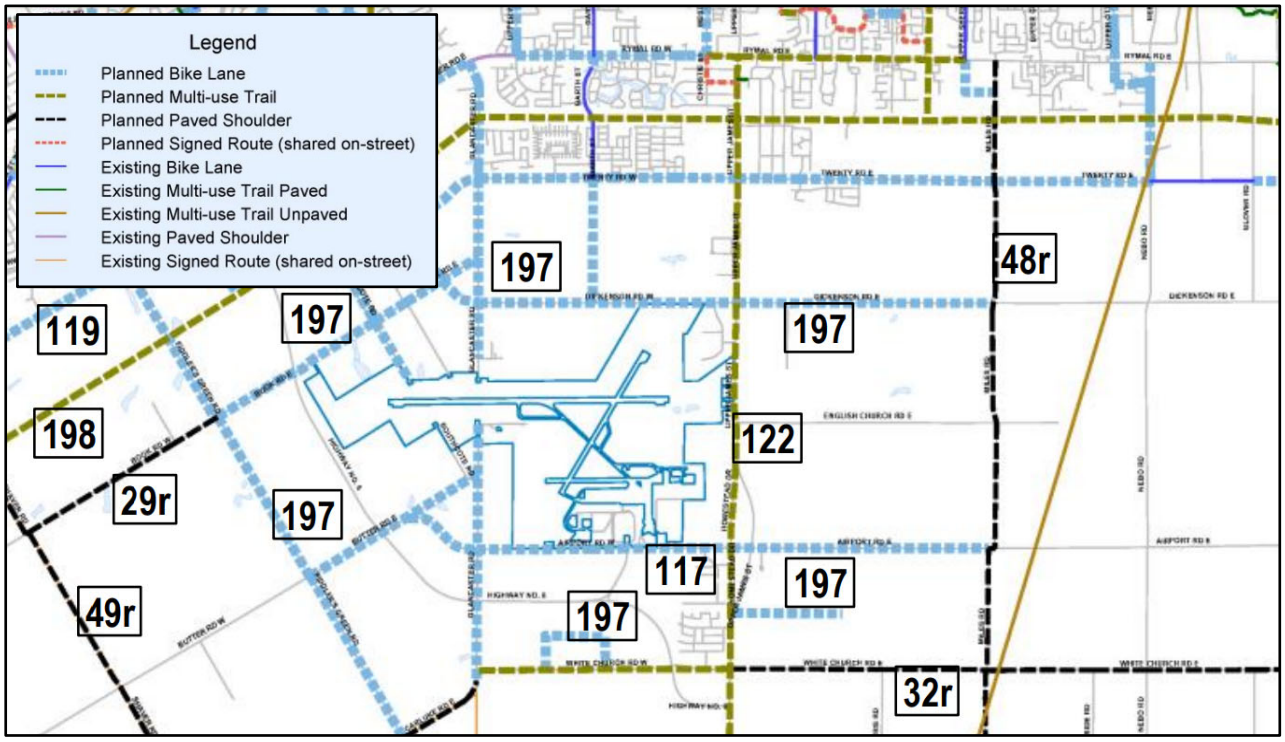
These are the main spine network, which will be connected by the proposed future active transportation network within the White Church Urban Boundary Expansion to form a fine grid active transportation network for the area.

Figure 27 – Existing Cycling Network in the Study Area



Source: Google Map/City of Hamilton Cycling Map

Figure 28 – 2018 Future Planned Cycling Network by the City of Hamilton



Source: City of Hamilton Transportation Master Plan Review and Update Report

8.4. Cycling Network Assessment

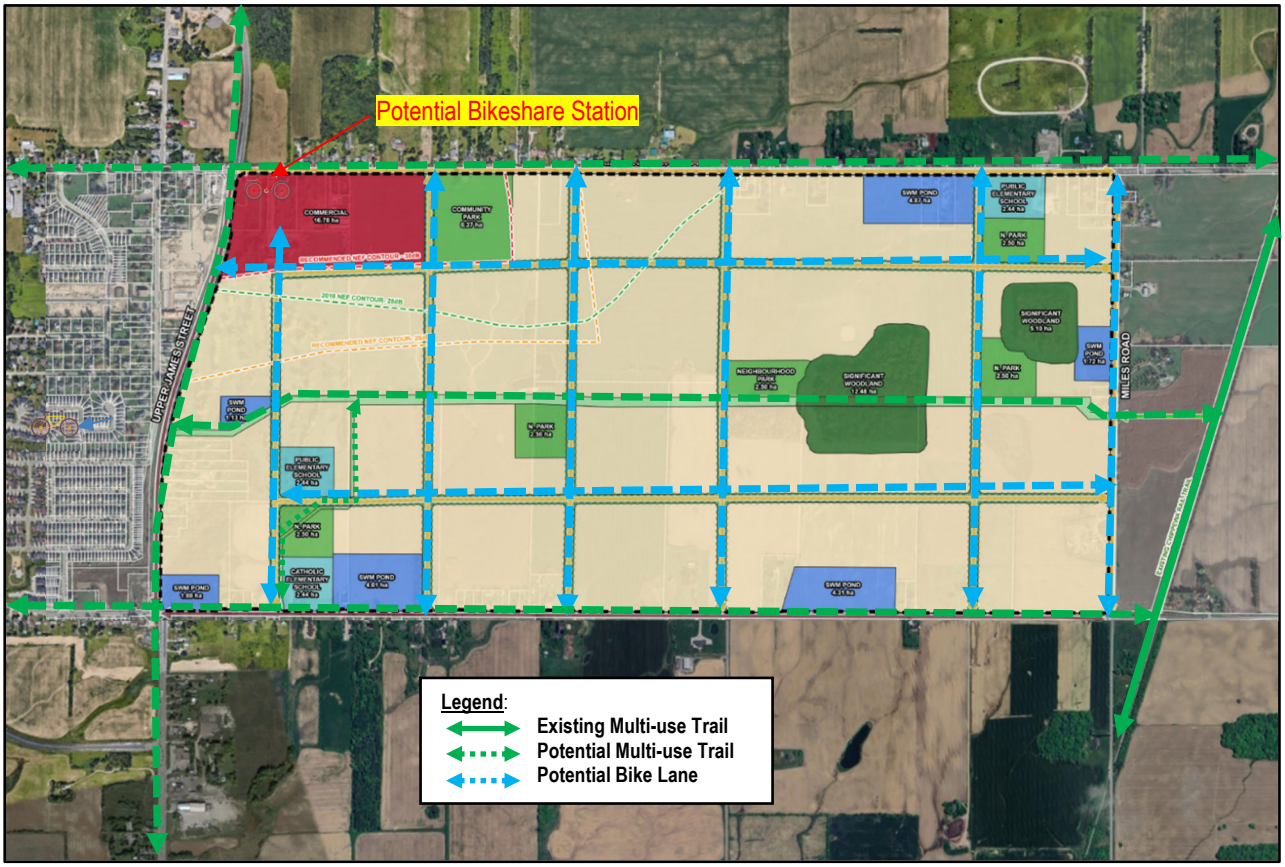
Within the proposed White Church Urban Boundary Expansion and the general area, there are several key origin and destination areas:

- Origin – from the proposed White Church Urban Boundary Expansion residential developments and existing residential development areas in Mount Hope Community;
- Destination – proposed schools, commercial district, parks and Chippewa Rail Trail; and
- Other destinations – Hamilton International Airport and AEGD areas and other areas of the City of Hamilton

Unlike the pedestrian network, the cycling network can reach a longer commute distance from the proposed White Church Urban Boundary Expansion to other areas in the City. For this reason, the cycling network needs to be planned and designed more comprehensively by both the City and the proposed Secondary Plan/development areas.

On this basis, **Figure 29** illustrates the proposed cycling network for the proposed White Church Urban Boundary Expansion.

Figure 29 – Proposed Cycling Network



9.0 TRANSIT NETWORK ASSESSMENT

9.1. Target Design Element for Transit Mode

Unlike walking and cycling modes, transit mode can reach much longer distance to and from the proposed White Church Urban Boundary Expansion. It is still more affordable than driving a private vehicle and relative easier to plan and implement, depending on the type of transit facility. However, in order to make transit more attractive mode of transportation, transit should be efficient, reliable, user friendly, and provide access to all major destinations in Hamilton.

Currently, the existing Hamilton Street Railway (HSR) provides efficient, sustainable and affordable access to employment, essential services and recreational destinations for all residents. However, the area currently has limited HSR services.

There are several factors that can promote transit mode, such as:

- Type of land use mix;
- Complete community and amenities;
- The transit user experience;
- First mile and last mile;
- Comfort and safety while waiting for transit; and
- The efficiency of movement between destinations

For the purpose of this assessment, the City of Hamilton Complete Streets Design Guidelines recommendations are utilized in this Study. **Table 11** summarizes the transit amenity design target. However, it is should be noted that these parameters and requirements may be modified at the appropriate stage of the Secondary Plan Study to accommodate the local context and design objectives.

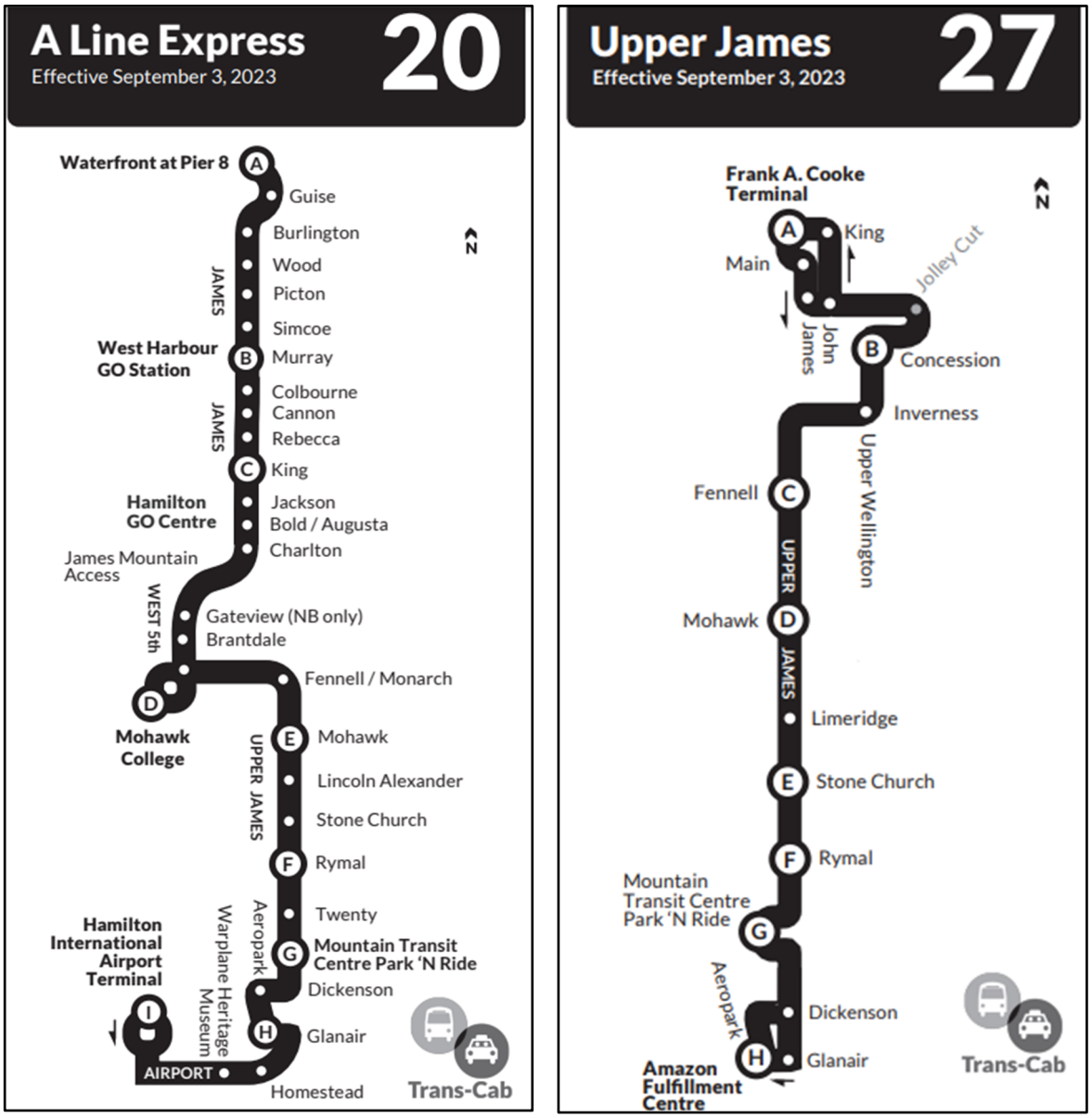
Table 11 – Transit Amenity Design Target

Element	Target Value	Minimum Value
Platform length	9.0 to 15.0 m	9.0 m
Centre median stop width	3.2 to 3.5 m	1.5 m (plus ramp) 2.0 m (where level boarding is provided)
Island boarding stop width	3.0 to 3.5 m	2.5 m
Transit shelter and street furniture clearance from bikeway	0.5 m	0.3 m
Clearance width along traffic curb edge	1.8 m	0.5 m
Curbside transit stop width	3.0 m	2.5 m

9.2. Existing Transit Network

There are limited transit services in this area at this time given that the area is mostly rural east of Upper James Street with limited ridership. However, the west of the White Church Urban Boundary Expansion is current serviced by two existing HSR Transit Bus Routes, Route 20 - A Line Express and Route 27 Upper James. **Figure 30** illustrates the two existing HSR Transit Bus Routes in the study area.

Figure 30 – Existing Hamilton Transit Network in the Study Area



Source: Hamilton Transit website

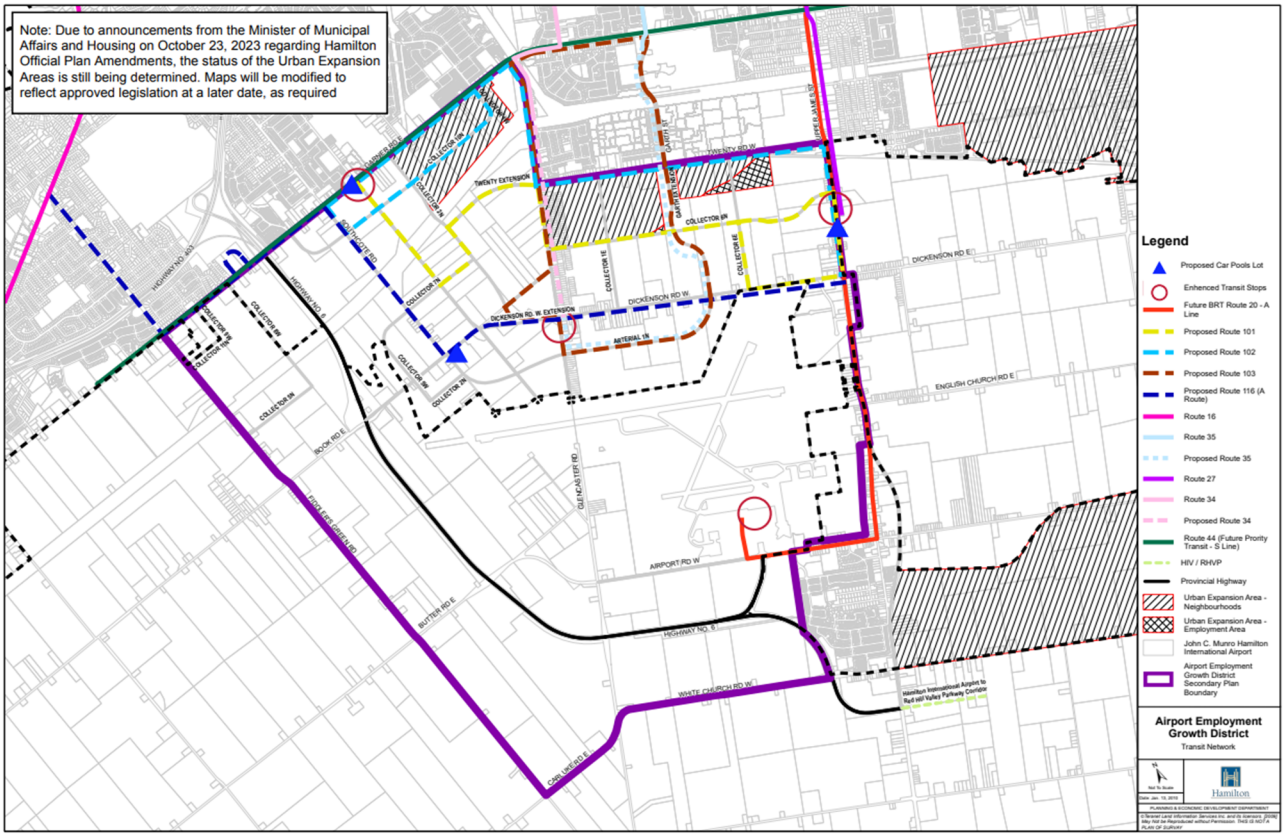
Below are the bus route descriptions based on the information provided on the Hamilton Transit Website (https://www.hamilton.ca/hsr-bus-schedules-fares):

- **Route 20 – A Line Express**: is a north-south express route that travels from downtown Hamilton to the Hamilton International Airport. The route also stops on the Fennell campus of Mohawk College. Service runs weekdays only from early morning to early evenings. This service is not available on the weekend or holiday service. The service frequency is about 15-25 minutes during the morning and afternoon peak periods.
- **Route 27 – Upper James**: this route generally travels in the north-south direction from the MacNab Terminal Platform #5 to the Mountain Transit Centre in Glanbrook. This route is interlined with Route 35 - COLLEGE. Glanbrook Trans-Cab service operates Weekdays, Saturdays and Sundays as an extension of Route 27 when in service. Park N' Ride: HSR Mountain Transit Centre on Upper James, with platforms for Route 20 - A LINE and Route 27 - UPPER JAMES. This route runs 7 days a week from the early morning until after midnight.

9.3. Proposed Future Transit Network

There are several transit network improvement projects identified in the area as part of the Airport Employment Growth District (AEGD) and the City of Hamilton Transportation Master Plan Update (2018). **Figure 31** illustrates the proposed and planned transit network improvements in the area as part of the AEGD, with **Figure 32** illustrating the road improvements in the area as part of the City of Hamilton Transportation Master Plan Update (2018).

Figure 31 – Future Planned Transit Network Improvements (AEGD)



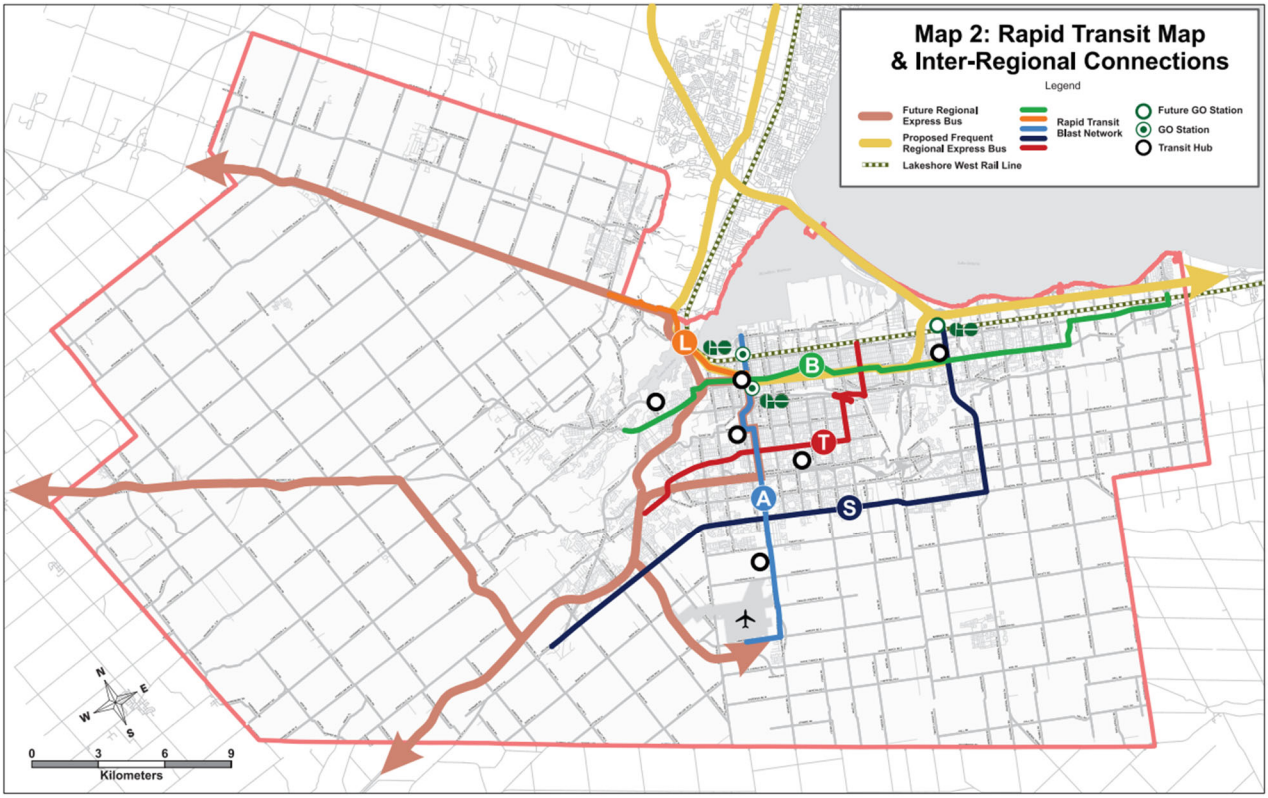
Source: Airport Employment Growth District – Transit Network

As indicated in **Figure 32**, there several significant planned transit network improvements for the area:

- Future Bus Rapid Transit (BRT) Route 20 – A Line along Upper James Street from Downtown Hamilton to Hamilton Airport;
- Future Regional Express Bus connecting the Hamilton Airport to other parts of the City and surrounding regions;
- Proposed Route 101
- Proposed Route 102
- Proposed Route 103
- Proposed Route 116 (A Route)
- Proposed Route 35
- Proposed Route 34; and
- Future Hamilton International Airport to Red Hill Valley Parkway Corridor future transit route

To accommodate the future White Church Urban Boundary Expansion, proposed Route 116 (A Line), proposed Route 102 and/or proposed Route 101 can be extended further to the east of Upper James Street to service the Secondary Plan Area.

Figure 32 – Future Planned Transit Network Improvements (Hamilton TMP)



Source: City of Hamilton Transportation Master Plan Review and Update Report

9.4. Proposed Transit Network Assessment

The analysis below will review and provide potential recommendations for both external and internal transit network to accommodate the proposed White Church Road Urban Boundary Expansion.

9.4.1. Hamilton Transit

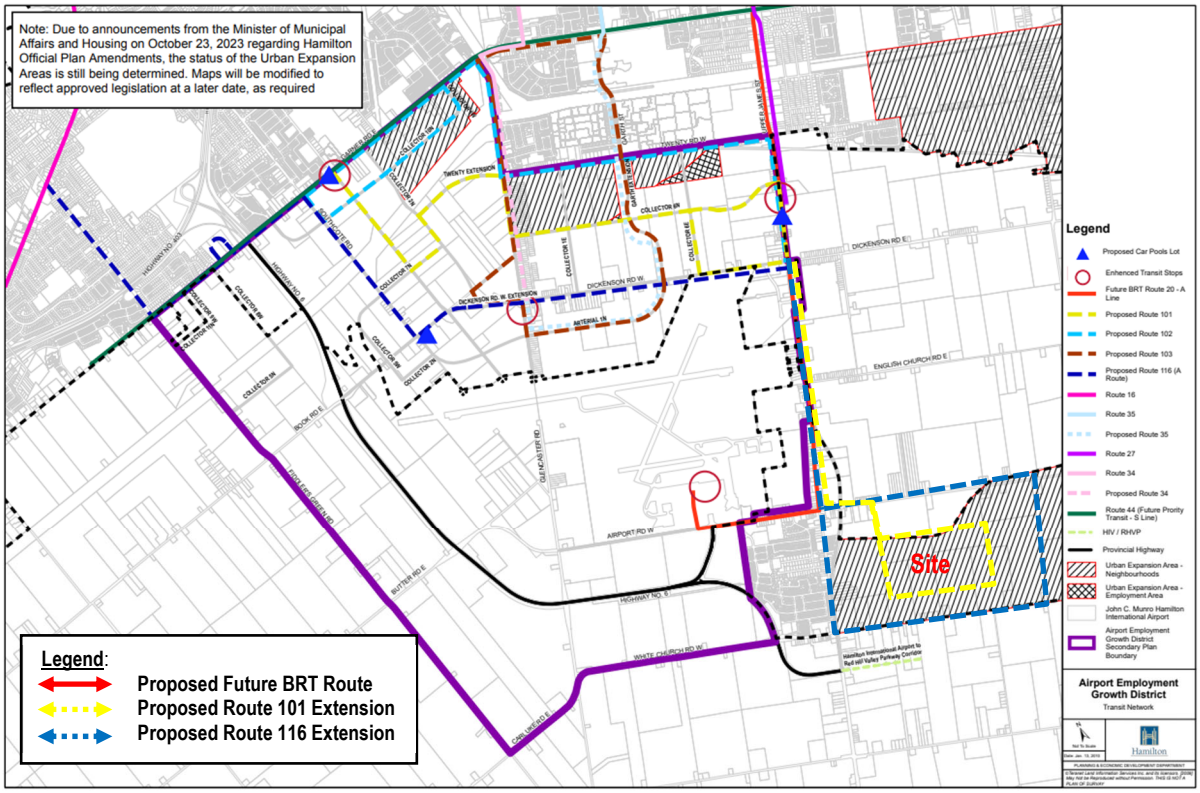
As indicated Section 4.5 of this Study, there are several transit network improvement projects identified in the area as part of the Airport Employment Growth District (AEGD) and the City of Hamilton Transportation Master Plan Update (2018). From the external connectivity perspective, no further improvements beyond the proposed network illustrated in **Figure 33** are required, however, some of these routes are required to be extended to serve the proposed White Church Urban Boundary Extension. The external extensions to routes 101 and 116 are illustrated in **Figure 33**.

9.4.2. White Church Urban Boundary Expansion Transit Network

In order to serve and connect the proposed White Church Urban Boundary Expansion to AEGD and to the rest of the City of Hamilton, the following internal transit network and route extensions are recommended:

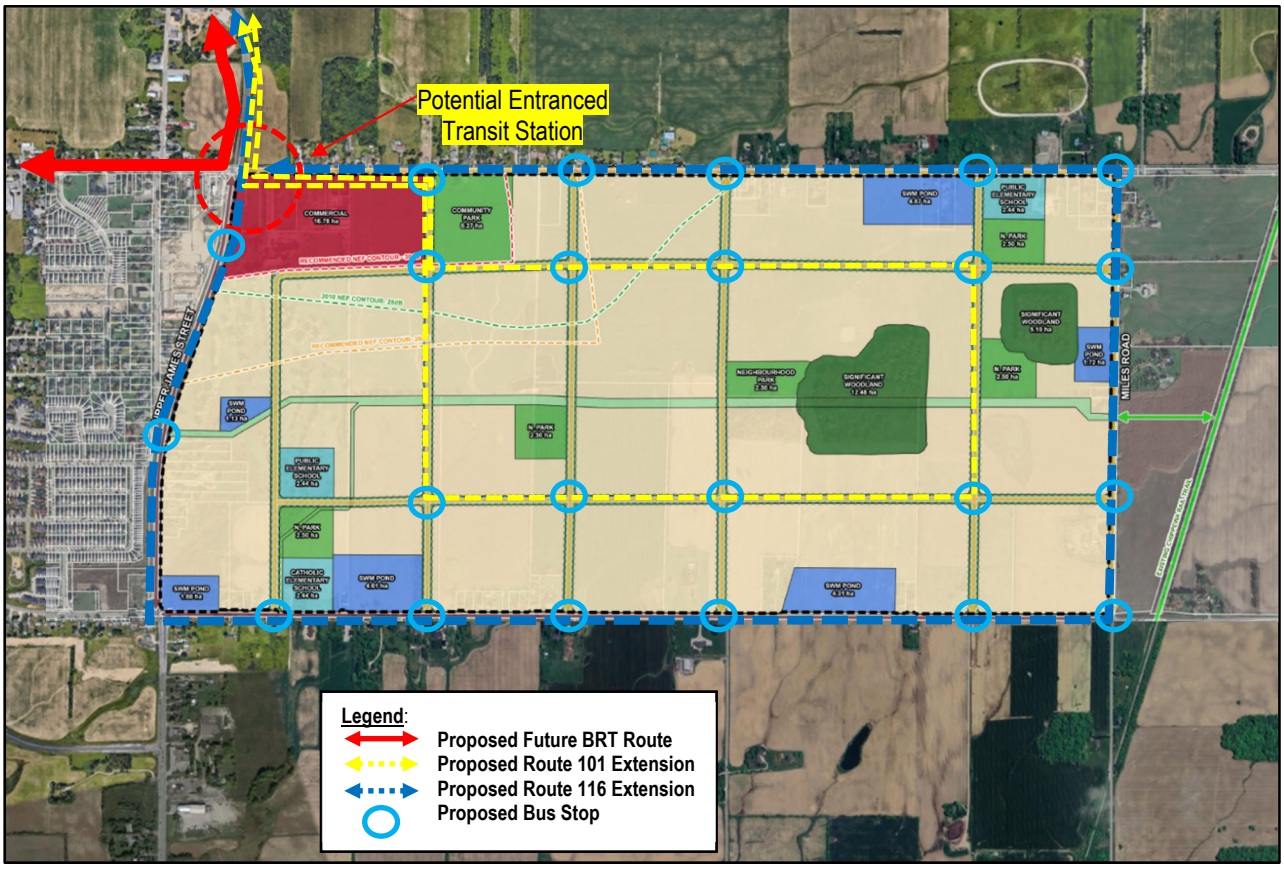
- Extend proposed Route 101 (i.e. 101 B Route) to serve the proposed White Church Urban Boundary Expansion as illustrated in **Figure 34** below;
- Extend Route 116 (i.e. 116 B Route) to serve the proposed White Church Urban Boundary Expansion as illustrated in **Figure 34** below; and
- Potential enhanced bus stop at the intersection of Airport Road E/Upper James Street

Figure 33 – White Church Urban Boundary Expansion Proposed Transit Extension (External)



Source: Airport Employment Growth District – Transit Network

Figure 34 – White Church Urban Boundary Expansion Proposed Transit Extension (Internal)



9.4.3. First and Last Mile Service Consideration

With the future transportation technology such as electric bus, scooters, electric bicycles and autonomous vehicle capability, this could be a potential first and last mile options to be provided in the area, as part of AEGD or the proposed White Church Urban Boundary Expansion.

Although, this is not required for the proposed White Church Urban Boundary Expansion, however, there will be many short trips internal to the White Church Urban Boundary Expansion to the Hamilton International Airport and AEGD area, any first and last mile service technology will be a great travel options for residents, employees or students that are not able to walk far distance or cannot use bicycles for various reasons. Given the cold weather during the winter time in Ontario, this is also an option to consider that will take residents further away from the proposed transit hub, retail/commercial or employments areas in the AEGD and Hamilton International Airport. The technology will continue to improve and become more affordable in the future to implement in the White Church Urban Boundary Expansion by the City or Province.

9.4.4. Transit Oriented Development Design

Transit Oriented Development (TOD) is generally defined as compact, mixed-use development near transit facilities with high-quality walking environments. In a transit-oriented development community, there is an increased emphasis on providing access to transit through mixed-use areas with higher density, degree of activity and amenities. TOD encourages transit supportive land use with the intent to provide more balanced transportation choices so that travel by transit or active transportation such as walking and cycling is encouraged instead of driving a private vehicle.

It is recommended that the proposed developments within the proposed White Church Urban Boundary Expansion follows the recommendations and objectives outlined in the Transit Oriented Development Guidelines for Hamilton (Volume 2 – Council Adopted August 2010).

10.0 PARKING ASSESSMENT

10.1. City Wide Vehicle Parking Rate

The proposed White Church Urban Boundary Expansion will be subject to the City-wide Zoning By-law No. 05-200 Section 5.6 vehicle parking requirements. However, the parking requirements for the proposed White Church Urban Boundary Expansion should take into consideration of the following provisions, to support alternative modes of transportation and transportation demand management measures.

10.1.1. Appropriate Parking Management is the best TDM Measure

Appropriate parking demand management is the best transportation demand management measure at this time because:

- Limited available parking spaces will encourage residents not to own a car
- It encourages residents to take other sustainable modes of transportation available in the area such as walking, cycling and public transit
- It maximizes transit ridership and therefore maximizes the impact of major transit infrastructure improvements

10.1.2. Support Alternative Modes of Transportation

Public Transit is an important mode of transportation for both short and longer distance trips to and from the proposed development. Based on the overall transportation network identified in the area, it is evident that the transportation network will be significantly transformed in the future with the following improvements:

- Future Bus Rapid Transit (BRT) Route 20 – A Line along Upper James Street from Downtown Hamilton to Hamilton Airport;
- Future Regional Express Bus connecting the Hamilton Airport to other parts of the City and surrounding regions;
- Proposed Route 101
- Proposed Route 102
- Proposed Route 103
- Proposed Route 116 (A Route)
- Proposed Route 35
- Proposed Route 34; and
- Future Hamilton International Airport to Red Hill Valley Parkway Corridor future transit route

With the recent gas price increases and capital cost of owning a vehicle (new vehicle shortage due to supply chain problem), more residents will choose to use more convenient and effective mode of transportation such as public transit, walking and cycling.

Therefore, it is recommended that lower parking rates should be considered for the proposed White Church Urban Boundary Expansion. Specific rates will be site and land use specific.

10.2. City Wide Zoning By-law Bicycle Parking Rates

For bicycle parking rate requirements, the proposed White Church Urban Boundary Expansion will be subject to the City-wide Zoning By-law No. 05-200 bicycle parking requirements. It is recommended that all site-specific developments meet or exceed the Zoning By-law minimum vehicle parking requirements to support active modes of transportation and transportation demand management plan.

11.0 TRANSPORTATION DEMAND MANAGEMENT ASSESSMENT

11.1. City of Hamilton's TDM for Development (June, 2015)

The City of Hamilton's TDM for Development Report (June, 2015) has been reviewed and consulted to prepare the TDM requirement for the proposed development. In order to address the City's requirements, the following TDM recommendations are provided to support the proposed White Church Urban Boundary Expansion.

Transportation Demand Management (TDM) is a coordinated series of actions aimed at maximizing the people moving capability of the transportation system. According to the City's TDM Report, the main objectives of TDM are:

- Shifting travel modes (e.g. walking, cycling, taking transit or carpooling instead of driving alone);
- Reducing the number of trips people must make (e.g. destinations and activities such as work and shopping, near each other); and,
- Travelling more efficiently (e.g. making trips outside of peak hours).

Potential TDM measures may include but not limited to: TDM supportive land use, bicycle and pedestrian programs and facilities, public transit improvements, preferential treatments for buses and high occupancy vehicles (if applicable), ridesharing, and employee incentives.

11.1.1. Increase Density and Compact Site Design

It is recommended that the proposed developments within the proposed White Church Urban Boundary Expansion follows the recommendations and objectives outlined in the Transit Oriented Development Guidelines for Hamilton (Volume 2 – Council Adopted August 2010).

11.1.2. Site Design Elements

Although, the proposed White Church Urban Boundary Expansion will be subject to the urban design guideline recommendations as provided by the City of Hamilton, the proposed developments within the proposed White Church Urban Boundary Expansion include the following design elements, where appropriate:

- The proposed development will provide a comprehensive network of internal sidewalk and connections to all internal and external collector roads;
- For the mid-rise to high-rise components, provide bicycle parking spaces for both residents and visitors at convenient locations as per the City's requirements;
- Minimize vehicle parking supply, where appropriate; and
- Only provide private accesses directly to internal local and collector roads

11.1.3. Sidewalks and Pathways

The proposed developments within the proposed White Church Urban Boundary Expansion include sidewalks and walkways on all local roads and private condominium road, where appropriate.

11.1.4. Bicycle Parking (Long-term and Short-term)

Please refer to Section 7 above.

11.1.5. Direct Connections to Transit

Direct connections to transit stops are recommended for the proposed developments located adjacent to the proposed bus routes, as identified in **Figure 34**.

11.1.6. Opportunities for Reduced Parking Requirements

Please refer to **Section 10** above.

11.1.7. Unbundle Parking

As parking is the best TDM incentive for resident to take alternative mode of transportation, it is recommended that the proposed mid-rise and high-rise developments within the proposed White Church Urban Boundary Expansion unbundle the parking sale from the unit sale, where appropriate.

11.1.8. On-Site Carshare Vehicle(s) and Parking Spot(s)

Depending on the proposed development height and density, these requirements will be determined at a later time as it is premature under the Secondary Plan stage. These measures are recommended, if appropriate and economically viable.

11.1.9. Bikeshare

Two potential bikeshare locations are identified in **Figure 29** above.

11.1.10. Wayfinding Signage

Wayfinding signage for multi-use trail such as the Chippewa Rail Trail should be identified throughout the proposed White Church Urban Boundary Expansion.

11.1.11. Travel Planning Tools and Support for Development of a School Travel Plan

It is recommended that the proposed developments within the proposed White Church Urban Boundary Expansion contact and coordinate with the Hamilton-Wentworth District School Board for any potential school travel plan in the area once the proposed elementary and high schools are constructed within the Secondary Plan Area.

11.1.12. Opportunities for Transit Passes, Carshare Memberships, or Bikeshare Memberships

These incentives will be reviewed at the subsequent stage of the Secondary Plan Area or Block Plan.

11.1.13. Proposed Monitoring Evaluation of TDM Measures

Based on our previous experience, monitoring and evaluation of TDM measure are important but very onerous for the Applicant. When project is completed and the Applicant transfers the ownership to Condominium Board, the Board will have the full control of the proposed development and there are certain conditions and requirements the Condominium Board may not agree with. Therefore, monitoring for the proposed developments that are located within the proposed White Church Urban Boundary Expansion is not required.

11.2. Recommended TDM Measures and Incentives for the Proposed Development

Based on the review of the context of the proposed White Church Urban Boundary Expansion in relation to the TDM requirements by the City of Hamilton, a number of TDM measures and incentives are identified for the proposed Secondary Plan to consider. **Table 12** summarizes the recommended TDM measures and incentives to be considered.

Table 12 – Recommended TDM Measures for the Proposed White Church Urban Boundary Expansion

Category	TDM Initiative	Recommended Actions	Responsibility
Cycling	• Visible, well-lit, short-term bicycle parking for visitors (above minimum provisions or recommendations) • Secure, indoor bicycle parking storage spaces for tenants/residents • Ensure development connects to bicycle network	• Applicable to the mid-rise and high-rise developments	Applicant
Walking	• Safe, attractive and direct walkways for pedestrians linking building entrances with public sidewalks and with key destinations such as schools • Enhanced pedestrian amenities on-site (benches, landscaping, lighting)	• Applicable to all development applications in the proposed Secondary Plan Area	Applicant
Transit	• Enhance walking routes between main building entrance(s) and transit stops/stations • Bicycle parking located at or near transit stops • Implement transit priority measures (queue jump lanes, traffic signal priority, bus only lanes)	• Applicable to all development applications in the proposed Secondary Plan Area	Applicant
Parking	• Reduced minimum parking requirements based on proximity to transit • Shared parking with nearby developments or on-street spaces • Unbundle parking costs from unit costs	• Applicable to all mid-rise and high-rise development applications in the proposed Secondary Plan Area	Applicant
Information Brochure/ Letter	• Provide an information brochure/letter for each residential unit that include HSR Transit System schedules, GO Transit schedules, cycling maps and community maps.	• Provide a brochure (or a letter) to new residents that include all website links to Hamilton Transit System schedules, community maps and cycling maps. The information package can be distributed at the sale office.	Applicant
Transit Incentive	• Provide transit incentives	• To be determined at the late stage	Applicant

12.0 IMPLEMENTATION PLAN

12.1. Development Phasing

As part of the proposed White Church Urban Boundary Expansion, a development phasing plan or development areas should be developed to guide the infrastructure improvements to accommodate each phase or development area. Given that the development phasing plan or development area is dependent on servicing allocations and infrastructures, among other requirements such as grading and drainage, this will be developed as part of the consultation process with the City, land developers and approval agencies.

12.2. Infrastructure Phasing

Once the development phasing plan or development area plan has been developed, an infrastructure phasing plan will be developed to efficiently and sufficient accommodating the proposed developments within the proposed White Church Urban Boundary Expansion.

Several action items can be considered advancing prior the approval of the Secondary Plan, such as:

- Develop terms of reference for Class Environmental Assessment Studies for Airport Road E, White Church Road E, Miles Road and Upper James Street;
- Develop terms of reference for Class Environmental Assessment Studies for all internal collector roads, where required by the Municipal Class Environmental Assessment Act (if still applicable at that time);
- A development of the Block Plan within the proposed Secondary Plan Area; and
- Completion of the Secondary Plan Transportation Master Plan for the proposed White Church Urban Boundary Expansion

Appendix A
Existing Data

CITY OF HAMILTON

Traffic Signal Timing Plan

Database Date:	Tuesday, June 4, 2024		Prepared Date:	Thursday, October 17, 2024
			Completed By:	NY
			Checked By:	AK
Location:	**Upper James Street @ Airport Road**			

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	Time Period (s) MAX = Green only, SPLITS = G+A+R		
			WALK	PED CLR			AM MAX	OFF MAX	PM MAX
1	Upper James Street - SB LT	5			3		10	10	10
2	Upper James Street - NB (East X-Walk)	30	18	17	4.6	1.7	50	35	50
3	Airport Road - EB LT	5			3		12	10	12
4	Airport Road - WB (North X-Walk)	10	11	24	3.7	2.6	35	35	35
5	Upper James Street - NB LT	5			3		10	10	10
6	Upper James Street - SB (West X-Walk)	30	18	17	4.6	1.7	50	35	50
8	Airport Road - EB (South X-Walk)	10	11	24	3.7	2.6	35	35	35

Notes/Remarks
Signal operation type - Fixed Time with all LT Actuated

Time (Weekdays)	Operation	Peak	Cycle (s)	Offset (s)
6:30 - 10:00	FREE	AM	-	-
10:00-14:30, 18:00-6:30	FREE	OFF	-	-
15:00 - 19:00	FREE	PM	-	-

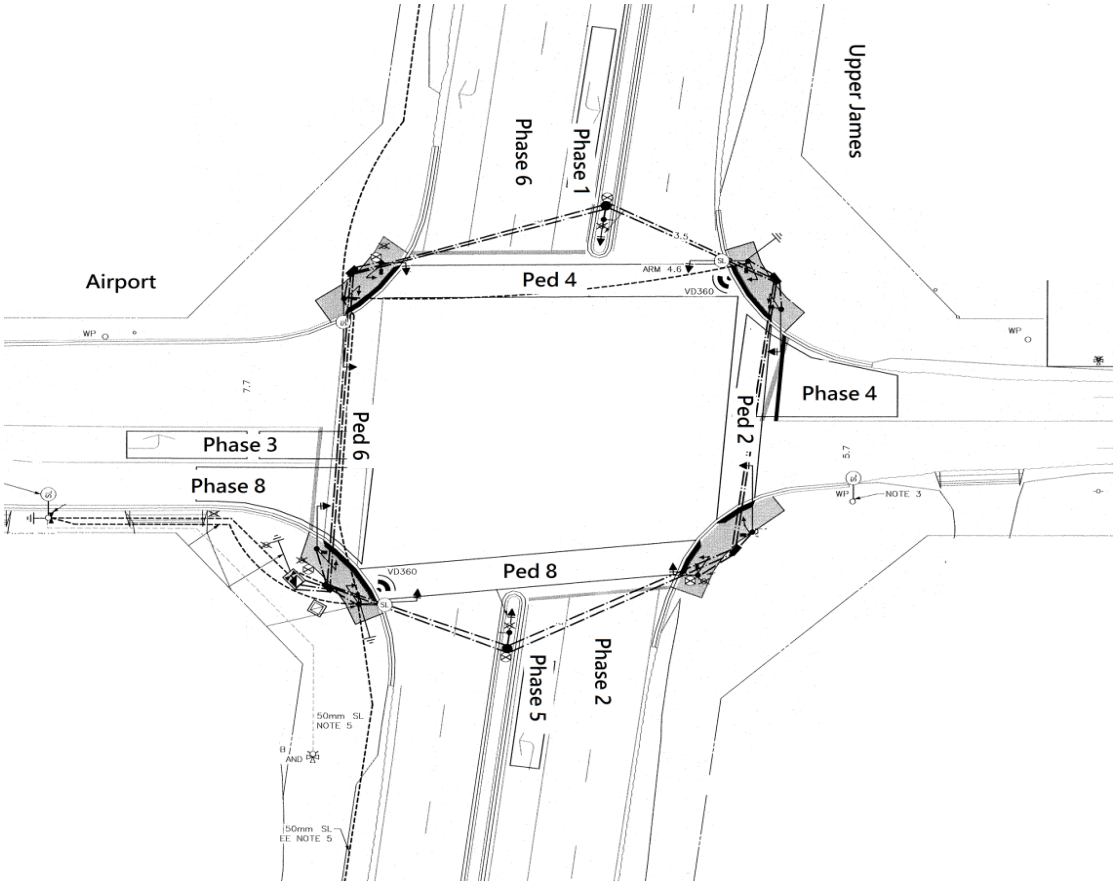
City of Hamilton - Traffic
Traffic Signal Controller Timing Data

Intersection: **Upper James St @ Airport Rd**

Controller Type: **3000E** Page **1** of

Programmed By: **MF** Installed By:

Date: Date:



ϕ1: **Upper Jame - SBLT**
ϕ2: **Upper James - NB, East Xwalk**
ϕ3: **Airport - EBLT**
ϕ4: **Airport - WB, North Xwalk**
ϕ5: **Upper James - NBLT**
ϕ6: **Upper James - SB, West Xwalk**
ϕ7:
ϕ8: **Airport - EB, South Xwalk**

Flash Operation: **Red: Upper James**
Red: Airport

SEQUENCE/START-UP (MM-3-1-1)

START-UP PHASES/INTERVAL/SEQUENCE

(X = Enable for start-up phases. Must be compatible if more than one)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
START-UP	Phases				X				X								
	Interval	0	(0=Red, 1=Yel, 2= Grn, determines color of selected phases above on start-up)														
	Flash	10	(0-255 seconds start-up flash time)														
	Red	5.0	(0-25.5 secs = length of first red after start-up if start-up in yellow or red)														
	Sequence	3	(2=single ring, 3=dual ring, 4=123/567+48, 5=12/56+3478, 6=1234/56+78, 7=1234/5678, 8=dual quad, 9=12ph														

PHASE RING ASSIGNMENTS

X = Phase assigned to ring (if used). Phases in different rings but same co-phase group can time together.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RING	Ring 1	X	X	X	X												
	Ring 2					X	X		X								
	Ring 3																
	Ring 4																

CO-PHASE GRP 1-4 ASSIGNMENTS

X = phase assigned to co-phase group. All ph's assigned to rings must be assigned to co-phase group.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CO-PHASE	CO PH 1	X	X			X	X										
	CO PH 2			X	X				X								
	CO PH 3																
	CO PH 4																

CONTROLLER DATA

PHASE RECALLS/MODES; MIN, MAX, etc. (MM-3-1-2-1-PGDN, etc.) USE 1 TO ALL 4 TIMING PLANS

TP1 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL		X				X										
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK	X		X	X	X			X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

TP2 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL		X				X										
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK	X		X	X	X			X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

TP3 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL		X				X										
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK	X		X	X	X			X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

PHASE RECALLS/MODES; CNA, INH MAX, PED OPTIONS, etc. (MM-3-1-2-2) ONLY 1 PLAN PER UNIT

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	CNA 1																
	CNA 2																
	CNA 3																
	CNA 4																
	WRM																
	INH MAX																
	PED RECY																
	FL WALK																
	FDW->YEL																
	FDW->RED																
	COND PED																

Upper James St @ Airport Rd

PHASE TIMES (MM-3-1-3-PGDN, etc.)

CONTROLLER DATA

USE 1 TO ALL 4 TIMING PLANS

3/23/2020

TP1

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial	5	30	5	10	5	30		10								
	Passage	1.0	5.9	1.0	3.0	1.0	5.9		3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0	4.6		3.7								
	Red		1.7		2.6		1.7		2.6								
	Walk		10		7		10		7								
	Ped Clr		17		24		17		24								
	Max 1	10	35	10	20	10	35		20								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
	Max In																

TP2

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial	5	35	5	10	5	35		10								
	Passage	1.0	5.9	1.0	3.0	1.0	5.9		3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0	4.6		3.7								
	Red		1.7		2.6		1.7		2.6								
	Walk		12		12		12		12								
	Ped Clr		17		24		17		24								
	Max 1	10	50	10	20	10	50		20								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
	Max In																

		TP3															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial	5	35	5	10	5	35		10								
	Passage	1.0	5.9	1.0	3.0	1.0	5.9		3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0	4.6		3.7								
	Red		1.7		2.6		1.7		2.6								
	Walk		12		12		12		12								
	Ped Clr		17		24		17		24								
	Max 1	10	50	10	20	10	50		20								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
	Max In																

VEHICLE DETECTOR ASSIGNMENTS (MM-3-1-4-1, PGDN etc.)

(X = ASSIGN VEH DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH DET ASSIGN-MENTS	1	X															
	2		X														
	3			X													
	4				X												
	5					X											
	6						X										
	7																
	8								X								

PED DETECTOR ASSIGNMENTS (MM-3-1-4-2)

(X = ASSIGN PED DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED	1																
DET	2																
ASSIGN-	3																
MENTS	4				X												
	5																
	6																
	7																
	8								X								

DUAL ENTRY (MM-3-1-6)

DUAL ENTRY ENABLE:	**Y**	Y/N: Y=Enable Dual Entry. Note this is only one setting even though it appears on each controller screen.

PG1	PH/CALLS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DUAL	1						X										
ENTRY	2						X										
ASSIGN-	3								X								
MENTS	4								X								
	5		X														
	6		X														
	7				X												
	8				X												

ENHANCED OPTIONS

DYNAMIC OMITS (MM-3-1-9-1-1)

DYNAM OMITS GP1 ENABLE:	**Y**	Y/N: Y=Enable. Note: This is one setting but appears on each screen. No input rquired for GP1.

(X = ENABLE)

GRP1-1	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS	**X**															
OMITS	IF PH ON		**X**				**X**										
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

Select phases to be dynamically omitted from OMIT PHS row. Select the PH-ONs and/or O/L GRNs that will cause those omits. Phases are omitted when controller state matches IF PH ON row or O/L GRN row.

Note that there are 2 groups of dynamic omits, each with 8 patterns. Group 1 is the default group and group 2 can be selected by input or TOD ckt 96. When a group is active, any one or all of the pattterns within that group may be true depending on the controller state.

GRP1-2	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS					**X**											
OMITS	IF PH ON		**X**				**X**										
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

GRP1-3	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS			**X**													
OMITS	IF PH ON				**X**				**X**								
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

DYNAMIC RECALLS (MM-3-1-9-1-2)

DYN. RECALL GP1 ENABLE:	**Y**	Y/N: Y=Enable. Note: This is one setting but appears on each screen. No input rquired for GP1.

(X = ENABLE)

GRP1-1	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS		**X**				**X**										
RECALLS	IF PH ON	**X**															
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

Select phases to be dynamically recalled from RCL PHS row. Select the PH-ONs and/or O/L GRNs that will cause those recalls. Phases are recalled when controller state matches PH ON row or O/L GRN row.

Note that there are 2 groups of dynamic recalls, each with 8 patterns. Group 1 is the default group and group 2 can be selected by input or TOD ckt 96. When a group is active, any one or all of the pattterns within that group may be true depending on the controller state.

GRP1-2	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS		**X**				**X**										
RECALLS	IF PH ON					**X**											
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

GRP1-3	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS				**X**				**X**								
RECALLS	IF PH ON			**X**													
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

DETECTOR SWITCH AND COPY (MM-3-1-4-6-PGDN, etc.)

Detector Switching Enable	**Y**	Y/N; Y= Enable, detector switching per plans 1-16 is enabled
Detector Copy Group 1 Enable	**N**	Y/N; Y = Enable, detector copy per plans 1-16 is enabled
Detector Copy Group 2 Input Eneble	**N**	Y/N; Y = Enable, the goupr 2 input is enabled. GP2 will then become selected copy group if input is active

Detector switching disconnects calls from the "From" phase and transfers them to the "To" phase when "To" phase is green.
Detector copy simply copies calls from the "From" phase to the "To" phase, still retaining calls on "From" phase

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DET	Ph Grns																
SWITCH	Switch (TS1)																
& COPY	G1 Copy																
1 of 16	G2 Copy																

	Swtch	G1C	G2C
From Ph:	**1**		
To Ph:	**6**		

Notes: 1. Phase greens on "Switch" row apply to TS1 only, do not use for TS2
TS2 Det Switching requires "From" and "To" phases only -->
2. Det switch and copy operates at phase level and applies all calls from all detectors assigned to "From" phase

From/To phases = Specify the phases from which and to which calls get switched or copied for Switch, Group 1, and Group 2 copy.

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DET	Ph Grns																
SWITCH	Switch (TS1)																
& COPY	G1 Copy																
5 of 16	G2 Copy																

	Swtch	G1C	G2C
From Ph:	**5**		
To Ph:	**2**		

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DET	Ph Grns																
SWITCH	Switch (TS1)																
& COPY	G1 Copy																
3 of 16	G2 Copy																

	Swtch	G1C	G2C
From Ph:	**3**		
To Ph:	**8**		

DAY PLANS (MM-3-3-1-#)

	HH	MM	CIRCUIT PLAN	C	O	S	CKT	ON/OFF
1	00	00					11(FRE)	ON
2	00	00					11(FRE)	ON
	06	30					14(TP2)	ON
	10	00					14(TP2)	OFF
	14	30					15(TP3)	ON
	18	00					15(TP3)	OFF

WEEK PLANS (MM-3-3-3)

Plan	SUN	MON	TUE	WED	THU	FRI	SAT
1	1	2	2	2	2	2	1
2							
3							
4							
5							

CIRCUIT OVERRIDES (MM-3-3-6)

For each ciruit specify TOD (time of day controlled), or manually ON or OFF. Default = TOD

CIRCUIT OVER-RIDES	Circuit	65	66	67	68	69	70	71	72
	Function	LL1	LL2	LL3	LL4	LL5	LL6	LL7	LL8
	State								
	Circuit	73	74	75	76	77	78	79	80
	Function	CN1	CN2	CN3	CN4	WRM	MIN	DIM	CVS
	State								
CIRCUIT OVER-RIDES	Circuit	81	82	83	84	85	86	87	88
	Function							PR1	PR2
	State							**ON**	**ON**
	Circuit	121	122	123	124	**125**	**126**	127	128
	Function	PH2	DP2	DP3	3CD	**EVL**	**EML**	ASC	DCP
	State					**ON**	**ON**		

DAYLIGHT SAVINGS (MM-3-3-7)

DAY LIGHT SAVINGS	Spring		Fall	
	(0-12)	(0-5)	(0-12)	(0-5)
	Month	WOM	Month	WOM
	3	**2**	**11**	**1**

Enter Month and Week of Month for Spring Forward and Fall Back days (typical 4 - 1 and 10 - 5). Unit will adjust at 2AM on Sunday of week specified. Enter zero (or leave blank) if Daylight Savings not used.

SYNC REFERENCE MODE (MM-3-3-8)

Mode:	**0**	0 = Time dependent, 1 = C/O/S Event

	HH	MM	
Time Clock Reset:	**00**	**00**	TOD clock reset to by TBC input
Interrupter:		**N**	Y/N; Y = Interrupter pulses provided
Pulses:		**0**	0-6 = Number of interrupter pulses

TIME DEPENDENT CYCLE REFERENCES		HH	MM
	CYC 1:	**00**	**00**
	CYC 2:	**00**	**00**
	CYC 3:	**00**	**00**
	CYC 4:	**00**	**00**
	CYC 5:	**00**	**00**
	CYC 6:	**00**	**00**

When mode = Time dependent, enter reference times of day for each cycle. Default = 00:00 = midnight = most commonly used reference.
When mode = C/O/S Event, cycle restarts on each COS change. Only use this mode for specific reasons. Time dependent most common used mode.

CLOSED LOOP ID (MM-3-5-1)

CLOSED LOOP ID	Master Type:		0 = None, 1 = 3000 Series Master, 2 = 3800 EL master
	Intersection ID		0-255
	Master Identification		0-255
	Allow Comm Xfer Between Ports 2 & 3		Y/N: Y = Incoming signal on Master port (2 or 3), gets echo'd on other port

COMM SET-UP (MM-3-5-2)

PG1 PORT ASSIGN	Master (CL) Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used to receive Master Comm)
	Monitor Port		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Monitor Data Upload)
	Central Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Direct Dial-up Modem)

PG2 PORT 2 SETUP	Data Rate:		1200, 2400, 4800, 9600, 14400, 19200
	Parity		0 = None, 1 = Odd, 2=Even
	Data bits		0 = 7 bits, 1 = 8 bits

PG3 PORT 3 SETUP	Data Rate:		1200, 2400, 4800, 9600, 14400, 19200
	Parity		0 = None, 1 = Odd, 2=Even
	Data bits		0 = 7 bits, 1 = 8 bits

PG4	Modem Set-up String:		Up to 40 charaters; A-Z, or # @ = , ! ; % \ &

PHONE NUMBERS (MM-3-5-3)

PHONE NUM-BERS	Tone:		Y/N
	Phone 1:		Number & control characters (W , ; # ' / T P) if used
	Phone 2:		Number & control characters (W , ; # ' / T P) if used

LOG DATA (MM-3-5-5)

PG1 SAMPLE	Volume Log Sample period:	**60**	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 125 (EVL)
	MOE Log Sample period:	**60**	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 126 (EML)

CITY OF HAMILTON

Traffic Signal Timing Plan

Database Date:	Monday, September 19, 2016		Prepared Date:	Thursday, October 17, 2024
			Completed By:	NY
			Checked By:	AK
Location:	**Upper James Street @ White Church Road**			

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	Time Period (s) MAX = Green only, SPLITS = G+A+R		
			WALK	PED CLR			AM MAX	OFF MAX	PM MAX
1									
2	Upper James Street - NB (East X-Walk)	25	14	11	4.6	1.7	50	50	50
3									
4	White Church Road - WB (North X-Walk)	15	10	15	3.7	2.3	40	35	40
5									
6	Upper James Street - SB (West X-Walk)	25	14	11	4.6	1.7	50	50	50
7									
8	White Church Road - EB (South X-Walk)	15	10	15	3.7	2.3	40	35	40

Notes/Remarks
Signal operation type - Semi Actuated

Time (Weekdays)	Operation	Peak	Cycle (s)	Offset (s)
6:30 - 9:00	FREE	AM	90	0
9:00-15:30, 18:00-6:30	FREE	OFF	85	0
15:30 - 18:00	FREE	PM	90	0

Spectrum

Turning Movement Count
Location Name: AIRPORT RD W & HOMESTEAD DR
Date: Wed, Jun 15, 2022 Deployment Lead: Tasos Issaaakidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (3 . AIRPORT RD W & HOMESTEAD DR) MioID: 965246

Start Time	Southbound HOMESTEAD DR						Westbound AIRPORT RD						Northbound HOMESTEAD DR						Eastbound AIRPORT RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	16	14	6	0	3	36	1	38	6	0	0	45	22	0	3	0	1	25	5	40	1	0	3	46	152	
07:15:00	12	8	3	0	0	23	2	39	5	0	0	46	38	2	8	0	1	48	0	43	1	0	0	44	161	
07:30:00	24	8	6	0	0	38	1	25	3	0	0	29	45	1	14	0	0	60	5	56	3	0	0	64	191	
07:45:00	28	11	2	0	0	41	4	54	4	0	0	62	41	0	7	0	0	48	11	53	2	0	0	66	217	721
08:00:00	16	11	4	0	0	31	7	35	5	0	0	47	48	2	9	0	0	59	7	43	1	0	0	51	188	757
08:15:00	17	15	9	0	0	41	5	38	10	0	0	53	37	1	8	0	0	46	10	45	2	0	0	57	197	793
08:30:00	15	14	15	0	0	44	5	27	5	0	0	37	36	2	5	0	0	43	1	44	0	0	1	45	169	771
08:45:00	26	10	9	0	1	45	5	44	7	0	0	56	50	1	8	0	0	59	3	39	3	0	9	45	205	759
09:00:00	17	16	14	0	1	47	4	32	16	0	0	52	41	2	14	0	1	57	9	45	2	0	2	56	212	783
09:15:00	16	21	9	0	0	46	0	19	10	0	2	29	18	0	9	0	0	27	15	35	5	0	0	55	157	743
09:30:00	16	5	7	0	0	28	3	33	9	0	0	45	19	0	4	0	1	23	6	53	5	0	0	64	160	734
09:45:00	20	5	9	0	0	34	1	20	9	0	0	30	22	2	6	0	0	30	0	46	3	0	1	49	143	672
BREAK																										
16:00:00	21	27	10	0	8	58	6	27	18	0	0	51	14	1	7	0	4	22	10	78	5	0	8	93	224	
16:15:00	28	25	10	0	0	63	10	39	16	0	0	65	27	4	4	0	3	35	7	61	3	0	0	71	234	
16:30:00	28	33	10	0	1	71	6	40	11	0	0	57	34	4	12	0	3	50	11	80	4	0	1	95	273	
16:45:00	20	26	20	0	0	66	3	28	26	0	0	57	24	4	8	0	0	36	11	56	3	0	1	70	229	960
17:00:00	20	21	11	0	2	52	2	25	11	0	0	38	26	1	6	0	0	33	8	64	0	0	2	72	195	931
17:15:00	17	25	10	0	2	52	2	26	16	0	0	44	27	4	5	0	0	36	15	36	3	0	3	54	186	883
17:30:00	16	28	11	0	1	55	8	19	16	0	0	43	28	1	1	0	0	30	14	95	8	0	6	117	245	855
17:45:00	18	22	10	0	0	50	4	20	12	0	1	36	38	4	5	0	3	47	7	52	4	0	3	63	196	822
18:00:00	12	34	11	0	3	57	5	23	21	0	0	49	30	4	4	0	0	38	12	54	1	0	4	67	211	838
18:15:00	14	20	11	0	2	45	2	20	10	0	0	32	31	5	5	0	0	41	6	31	2	0	5	39	157	809
18:30:00	8	21	16	0	4	45	3	12	13	0	2	28	24	5	1	0	0	30	2	49	4	0	5	55	158	722
18:45:00	10	24	6	0	4	40	4	20	12	0	0	36	19	3	1	0	0	23	3	55	1	0	1	59	158	684
Grand Total	435	444	229	0	32	1108	93	703	271	0	5	1067	739	53	154	0	17	946	178	1253	66	0	55	1497	**4618**	-
Approach%	39.3%	40.1%	20.7%	0%		-	8.7%	65.9%	25.4%	0%		-	78.1%	5.6%	16.3%	0%		-	11.9%	83.7%	4.4%	0%		-	**-**	-
Totals %	9.4%	9.6%	5%	0%		24%	2%	15.2%	5.9%	0%		23.1%	16%	1.1%	3.3%	0%		20.5%	3.9%	27.1%	1.4%	0%		32.4%	**-**	-
Heavy	11	18	16	0		-	4	61	14	0		-	11	3	8	0		-	9	74	4	0		-	**-**	-
Heavy %	2.5%	4.1%	7%	0%		-	4.3%	8.7%	5.2%	0%		-	1.5%	5.7%	5.2%	0%		-	5.1%	5.9%	6.1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: AIRPORT RD W & HOMESTEAD DR
Date: Wed, Jun 15, 2022 Deployment Lead: Tasos Issaaakidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (17.39 °C)

Start Time	Southbound HOMESTEAD DR						Westbound AIRPORT RD						Northbound HOMESTEAD DR						Eastbound AIRPORT RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	24	8	6	0	0	38	1	25	3	0	0	29	45	1	14	0	0	60	5	56	3	0	0	64	191
07:45:00	28	11	2	0	0	41	4	54	4	0	0	62	41	0	7	0	0	48	11	53	2	0	0	66	217
08:00:00	16	11	4	0	0	31	7	35	5	0	0	47	48	2	9	0	0	59	7	43	1	0	0	51	188
08:15:00	17	15	9	0	0	41	5	38	10	0	0	53	37	1	8	0	0	46	10	45	2	0	0	57	197
Grand Total	85	45	21	0	0	151	17	152	22	0	0	191	171	4	38	0	0	213	33	197	8	0	0	238	**793**
Approach%	56.3%	29.8%	13.9%	0%		-	8.9%	79.6%	11.5%	0%		-	80.3%	1.9%	17.8%	0%		-	13.9%	82.8%	3.4%	0%		-	**-**
Totals %	10.7%	5.7%	2.6%	0%		19%	2.1%	19.2%	2.8%	0%		24.1%	21.6%	0.5%	4.8%	0%		26.9%	4.2%	24.8%	1%	0%		30%	**-**
PHF	0.76	0.75	0.58	0		0.92	0.61	0.7	0.55	0		0.77	0.89	0.5	0.68	0		0.89	0.75	0.88	0.67	0		0.9	**-**
Heavy	2	4	1	0		7	3	13	3	0		19	0	0	1	0		1	6	15	0	0		21	**-**
Heavy %	2.4%	8.9%	4.8%	0%		4.6%	17.6%	8.6%	13.6%	0%		9.9%	0%	0%	2.6%	0%		0.5%	18.2%	7.6%	0%	0%		8.8%	**-**
Lights	83	41	20	0		144	14	139	19	0		172	171	4	37	0		212	27	182	8	0		217	**-**
Lights %	97.6%	91.1%	95.2%	0%		95.4%	82.4%	91.4%	86.4%	0%		90.1%	100%	100%	97.4%	0%		99.5%	81.8%	92.4%	100%	0%		91.2%	**-**
Single-Unit Trucks	1	2	0	0		3	2	7	2	0		11	0	0	1	0		1	3	7	0	0		10	**-**
Single-Unit Trucks %	1.2%	4.4%	0%	0%		2%	11.8%	4.6%	9.1%	0%		5.8%	0%	0%	2.6%	0%		0.5%	9.1%	3.6%	0%	0%		4.2%	**-**
Buses	1	2	1	0		4	1	6	1	0		8	0	0	0	0		0	2	6	0	0		8	**-**
Buses %	1.2%	4.4%	4.8%	0%		2.6%	5.9%	3.9%	4.5%	0%		4.2%	0%	0%	0%	0%		0%	6.1%	3%	0%	0%		3.4%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	2	0	0		3	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	3%	1%	0%	0%		1.3%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: AIRPORT RD W & HOMESTEAD DR
Date: Wed, Jun 15, 2022 Deployment Lead: Tasos Issaaakidis

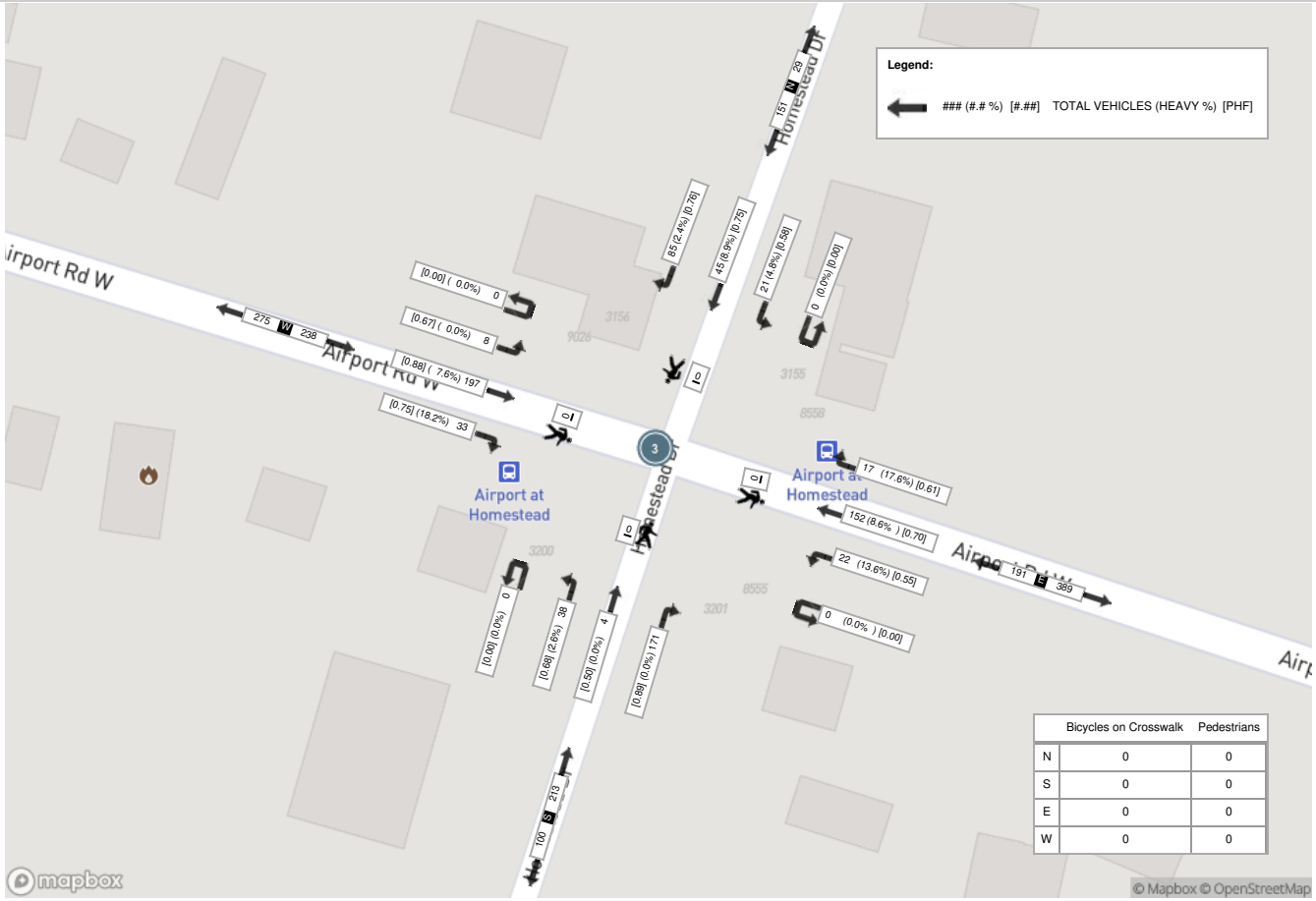
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Overcast Clouds (26.6 °C)

Start Time	Southbound HOMESTEAD DR						Westbound AIRPORT RD						Northbound HOMESTEAD DR						Eastbound AIRPORT RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:00:00	21	27	10	0	8	58	6	27	18	0	0	51	14	1	7	0	4	22	10	78	5	0	8	93	224
16:15:00	28	25	10	0	0	63	10	39	16	0	0	65	27	4	4	0	3	35	7	61	3	0	0	71	234
16:30:00	28	33	10	0	1	71	6	40	11	0	0	57	34	4	12	0	3	50	11	80	4	0	1	95	273
16:45:00	20	26	20	0	0	66	3	28	26	0	0	57	24	4	8	0	0	36	11	56	3	0	1	70	229
Grand Total	97	111	50	0	9	258	25	134	71	0	0	230	99	13	31	0	10	143	39	275	15	0	10	329	**960**
Approach%	37.6%	43%	19.4%	0%		-	10.9%	58.3%	30.9%	0%		-	69.2%	9.1%	21.7%	0%		-	11.9%	83.6%	4.6%	0%		-	**-**
Totals %	10.1%	11.6%	5.2%	0%		26.9%	2.6%	14%	7.4%	0%		24%	10.3%	1.4%	3.2%	0%		14.9%	4.1%	28.6%	1.6%	0%		34.3%	**-**
PHF	0.87	0.84	0.63	0		0.91	0.63	0.84	0.68	0		0.88	0.73	0.81	0.65	0		0.72	0.89	0.86	0.75	0		0.87	**-**
Heavy	4	4	4	0		12	0	11	0	0		11	1	0	1	0		2	2	11	0	0		13	**-**
Heavy %	4.1%	3.6%	8%	0%		4.7%	0%	8.2%	0%	0%		4.8%	1%	0%	3.2%	0%		1.4%	5.1%	4%	0%	0%		4%	**-**
Lights	93	107	46	0		246	25	123	71	0		219	97	13	30	0		140	37	264	15	0		316	**-**
Lights %	95.9%	96.4%	92%	0%		95.3%	100%	91.8%	100%	0%		95.2%	98%	100%	96.8%	0%		97.9%	94.9%	96%	100%	0%		96%	**-**
Single-Unit Trucks	2	0	0	0		2	0	5	0	0		5	0	0	0	0		0	0	5	0	0		5	**-**
Single-Unit Trucks %	2.1%	0%	0%	0%		0.8%	0%	3.7%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.5%	**-**
Buses	1	4	4	0		9	0	6	0	0		6	0	0	1	0		1	2	6	0	0		8	**-**
Buses %	1%	3.6%	8%	0%		3.5%	0%	4.5%	0%	0%		2.6%	0%	0%	3.2%	0%		0.7%	5.1%	2.2%	0%	0%		2.4%	**-**
Articulated Trucks	1	0	0	0		1	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	1%	0%	0%	0%		0.4%	0%	0%	0%	0%		0%	1%	0%	0%	0%		0.7%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	1%	0%	0%	0%		0.7%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	9	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	10	-	**-**
Pedestrians%	-	-	-	-	31%		-	-	-	-	0%		-	-	-	-	13.8%		-	-	-	-	34.5%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	20.7%		-	-	-	-	0%		**-**

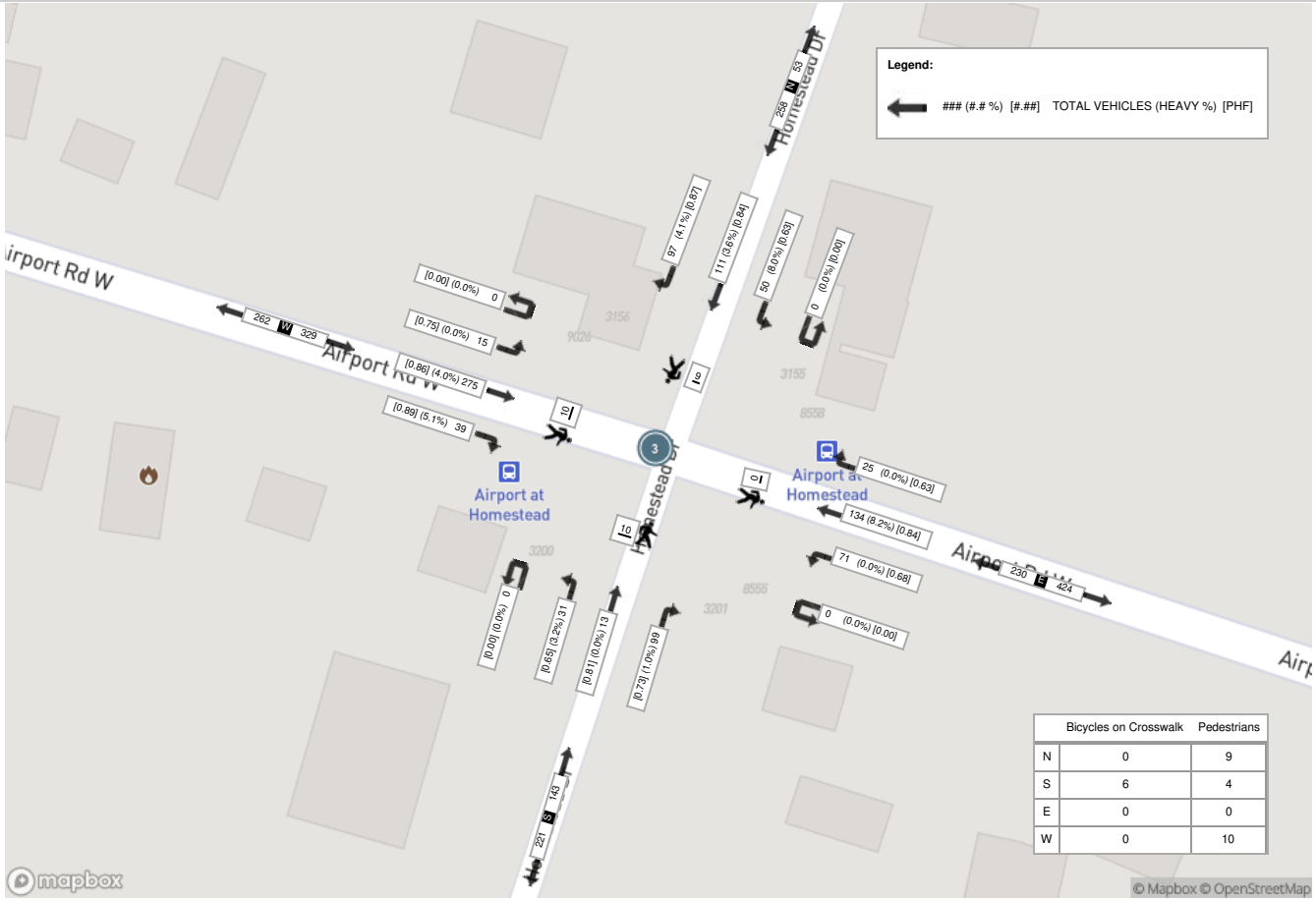
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (17.39 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Overcast Clouds (26.6 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (4 . AIRPORT RD W & UPPER JAMES ST) MioID: 965248

Start Time	Southbound UPPER JAMES ST						Westbound AIRPORT RD						Northbound UPPER JAMES ST						Eastbound AIRPORT RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	22	79	7	0	0	108	14	15	10	0	0	39	13	176	9	0	0	198	3	14	46	0	0	63	408	
07:15:00	12	87	9	0	0	108	25	25	9	0	0	59	10	212	12	0	0	234	5	31	51	0	0	87	488	
07:30:00	10	93	9	0	0	112	22	20	11	0	0	53	23	226	6	0	0	255	2	38	63	0	0	103	523	
07:45:00	19	95	10	0	0	124	20	38	7	0	0	65	23	228	14	0	0	265	2	22	65	0	0	89	543	1962
08:00:00	13	88	8	0	0	109	28	25	11	0	0	64	16	184	13	0	0	213	2	25	62	0	0	89	475	2029
08:15:00	16	95	11	0	0	122	18	31	13	0	0	62	8	191	11	0	0	210	2	18	65	0	0	85	479	2020
08:30:00	11	88	11	0	0	110	22	16	17	0	0	55	13	191	13	0	0	217	13	35	48	0	0	96	478	1975
08:45:00	20	63	11	0	0	94	15	25	12	0	0	52	21	162	11	0	0	194	3	20	58	0	0	81	421	1853
09:00:00	12	91	10	0	0	113	15	25	9	0	0	49	5	114	11	0	1	130	8	23	76	0	0	107	399	1777
09:15:00	15	98	9	0	0	122	10	14	2	0	0	26	13	113	3	0	0	129	4	11	44	0	0	59	336	1634
09:30:00	19	89	12	0	0	120	9	12	8	0	0	29	13	133	15	0	0	161	1	17	51	1	1	70	380	1536
09:45:00	15	105	3	0	0	123	13	11	10	0	0	34	5	138	12	0	0	155	4	24	51	0	0	79	391	1506
BREAK																										
16:00:00	14	169	12	0	0	195	7	29	23	0	0	59	17	159	13	0	0	189	10	40	53	0	0	103	546	
16:15:00	27	195	19	0	0	241	15	37	18	0	0	70	10	161	3	0	0	174	12	38	49	0	0	99	584	
16:30:00	18	161	26	0	0	205	11	36	20	0	0	67	18	159	11	0	0	188	4	47	63	0	0	114	574	
16:45:00	12	231	24	0	0	267	12	32	27	0	0	71	24	162	6	0	0	192	3	42	53	0	0	98	628	2332
17:00:00	13	180	21	0	0	214	11	25	18	0	0	54	25	195	5	0	0	225	2	47	56	0	0	105	598	2384
17:15:00	15	184	6	0	0	205	21	30	21	0	0	72	21	195	9	0	0	225	6	18	47	0	0	71	573	2373
17:30:00	13	181	19	0	0	213	19	28	17	0	0	64	14	169	12	0	0	195	5	51	78	0	0	134	606	2405
17:45:00	10	148	18	0	0	176	14	21	13	0	0	48	21	174	11	0	0	206	6	32	62	0	0	100	530	2307
18:00:00	17	155	24	0	0	196	15	31	18	0	0	64	17	175	11	0	0	203	8	30	55	0	0	93	556	2265
18:15:00	11	143	9	0	0	163	13	16	7	0	0	36	8	154	9	0	1	171	7	20	54	0	0	81	451	2143
18:30:00	8	96	13	0	0	117	10	10	7	0	0	27	9	115	8	0	0	132	4	26	47	0	0	77	353	1890
18:45:00	11	116	16	0	0	143	9	16	11	0	0	36	15	92	9	0	0	116	2	27	49	0	0	78	373	1733
Grand Total	353	3030	317	0	0	3700	368	568	319	0	0	1255	362	3978	237	0	2	4577	118	696	1346	1	1	2161	**11693**	-
Approach%	9.5%	81.9%	8.6%	0%		-	29.3%	45.3%	25.4%	0%		-	7.9%	86.9%	5.2%	0%		-	5.5%	32.2%	62.3%	0%		-	**-**	-
Totals %	3%	25.9%	2.7%	0%		31.6%	3.1%	4.9%	2.7%	0%		10.7%	3.1%	34%	2%	0%		39.1%	1%	6%	11.5%	0%		18.5%	**-**	-
Heavy	53	192	11	0		-	12	12	19	0		-	12	233	15	0		-	9	19	77	0		-	**-**	-
Heavy %	15%	6.3%	3.5%	0%		-	3.3%	2.1%	6%	0%		-	3.3%	5.9%	6.3%	0%		-	7.6%	2.7%	5.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: AIRPORT RD W & UPPER JAMES ST
Date: Wed, Jun 15, 2022 Deployment Lead: Tasos Issaaakidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:15 AM - 08:15 AM Weather: Clear Sky (17.39 °C)

Start Time	Southbound UPPER JAMES ST						Westbound AIRPORT RD						Northbound UPPER JAMES ST						Eastbound AIRPORT RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	12	87	9	0	0	108	25	25	9	0	0	59	10	212	12	0	0	234	5	31	51	0	0	87	488
07:30:00	10	93	9	0	0	112	22	20	11	0	0	53	23	226	6	0	0	255	2	38	63	0	0	103	523
07:45:00	19	95	10	0	0	124	20	38	7	0	0	65	23	228	14	0	0	265	2	22	65	0	0	89	543
08:00:00	13	88	8	0	0	109	28	25	11	0	0	64	16	184	13	0	0	213	2	25	62	0	0	89	475
Grand Total	54	363	36	0	0	453	95	108	38	0	0	241	72	850	45	0	0	967	11	116	241	0	0	368	**2029**
Approach%	11.9%	80.1%	7.9%	0%		-	39.4%	44.8%	15.8%	0%		-	7.4%	87.9%	4.7%	0%		-	3%	31.5%	65.5%	0%		-	**-**
Totals %	2.7%	17.9%	1.8%	0%		22.3%	4.7%	5.3%	1.9%	0%		11.9%	3.5%	41.9%	2.2%	0%		47.7%	0.5%	5.7%	11.9%	0%		18.1%	**-**
PHF	0.71	0.96	0.9	0		0.91	0.85	0.71	0.86	0		0.93	0.78	0.93	0.8	0		0.91	0.55	0.76	0.93	0		0.89	**-**
Heavy	9	29	3	0		41	3	3	7	0		13	4	45	2	0		51	2	6	10	0		18	**-**
Heavy %	16.7%	8%	8.3%	0%		9.1%	3.2%	2.8%	18.4%	0%		5.4%	5.6%	5.3%	4.4%	0%		5.3%	18.2%	5.2%	4.1%	0%		4.9%	**-**
Lights	45	334	33	0		412	92	104	31	0		227	68	805	43	0		916	9	110	231	0		350	**-**
Lights %	83.3%	92%	91.7%	0%		90.9%	96.8%	96.3%	81.6%	0%		94.2%	94.4%	94.7%	95.6%	0%		94.7%	81.8%	94.8%	95.9%	0%		95.1%	**-**
Single-Unit Trucks	5	18	3	0		26	3	0	7	0		10	2	20	1	0		23	2	5	3	0		10	**-**
Single-Unit Trucks %	9.3%	5%	8.3%	0%		5.7%	3.2%	0%	18.4%	0%		4.1%	2.8%	2.4%	2.2%	0%		2.4%	18.2%	4.3%	1.2%	0%		2.7%	**-**
Buses	3	1	0	0		4	0	1	0	0		1	2	4	1	0		7	0	1	6	0		7	**-**
Buses %	5.6%	0.3%	0%	0%		0.9%	0%	0.9%	0%	0%		0.4%	2.8%	0.5%	2.2%	0%		0.7%	0%	0.9%	2.5%	0%		1.9%	**-**
Articulated Trucks	1	10	0	0		11	0	2	0	0		2	0	21	0	0		21	0	0	1	0		1	**-**
Articulated Trucks %	1.9%	2.8%	0%	0%		2.4%	0%	1.9%	0%	0%		0.8%	0%	2.5%	0%	0%		2.2%	0%	0%	0.4%	0%		0.3%	**-**
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

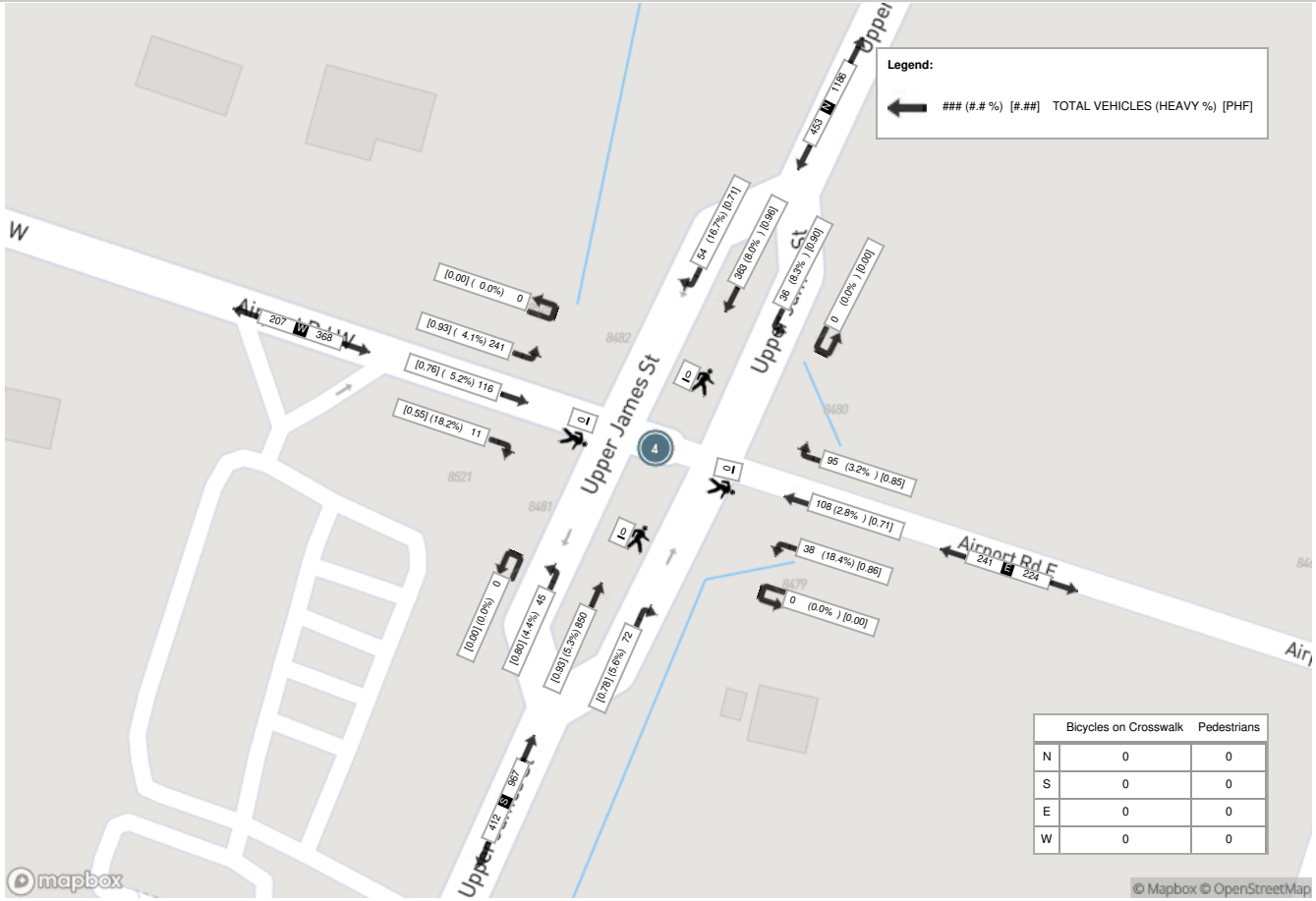
Turning Movement Count
Location Name: AIRPORT RD W & UPPER JAMES ST
Date: Wed, Jun 15, 2022 Deployment Lead: Tasos Issaaakidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

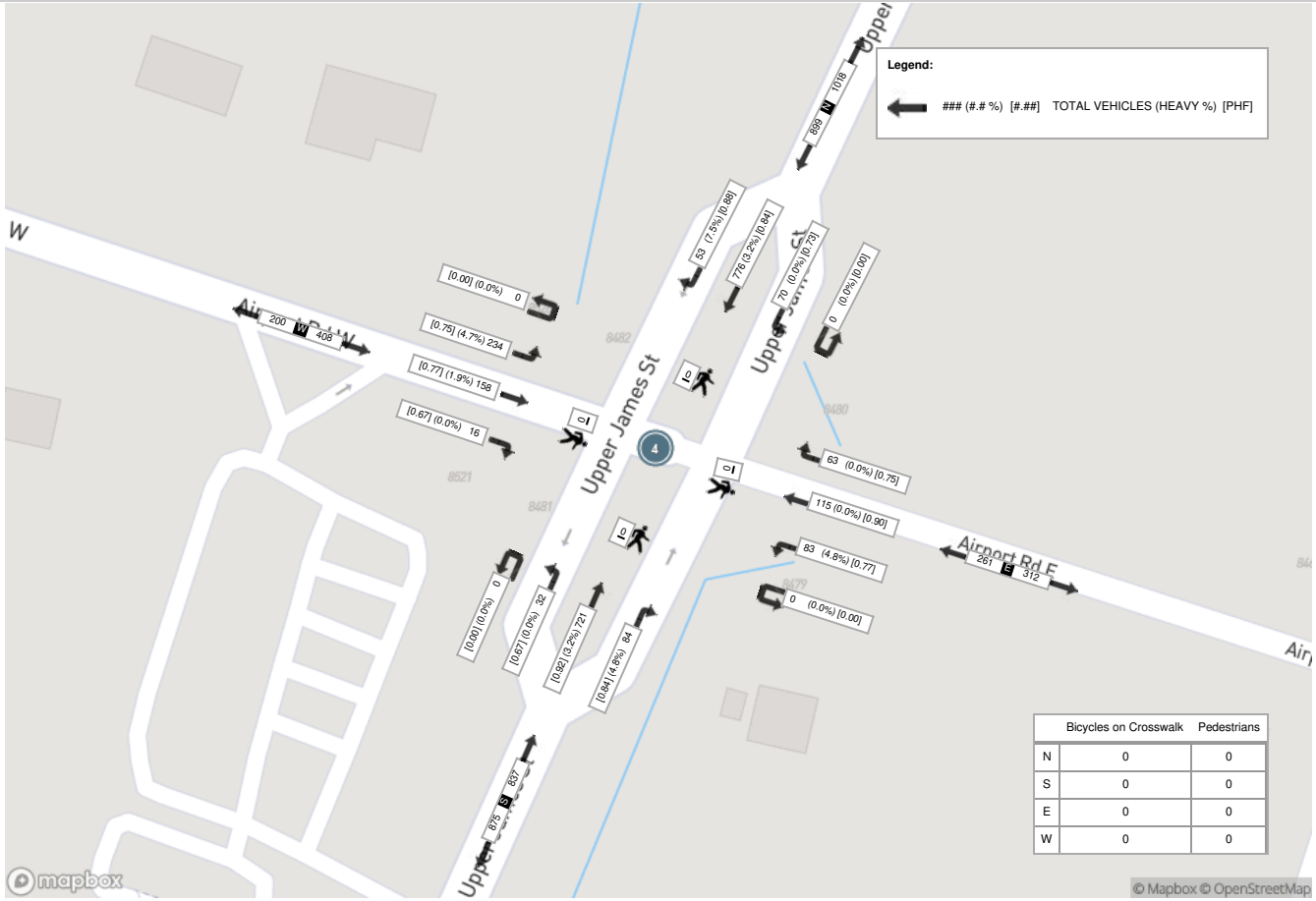
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (26.6 °C)

Start Time	Southbound UPPER JAMES ST						Westbound AIRPORT RD						Northbound UPPER JAMES ST						Eastbound AIRPORT RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	12	231	24	0	0	267	12	32	27	0	0	71	24	162	6	0	0	192	3	42	53	0	0	98	628
17:00:00	13	180	21	0	0	214	11	25	18	0	0	54	25	195	5	0	0	225	2	47	56	0	0	105	598
17:15:00	15	184	6	0	0	205	21	30	21	0	0	72	21	195	9	0	0	225	6	18	47	0	0	71	573
17:30:00	13	181	19	0	0	213	19	28	17	0	0	64	14	169	12	0	0	195	5	51	78	0	0	134	606
Grand Total	53	776	70	0	0	899	63	115	83	0	0	261	84	721	32	0	0	837	16	158	234	0	0	408	**2405**
Approach%	5.9%	86.3%	7.8%	0%		-	24.1%	44.1%	31.8%	0%		-	10%	86.1%	3.8%	0%		-	3.9%	38.7%	57.4%	0%		-	**-**
Totals %	2.2%	32.3%	2.9%	0%		37.4%	2.6%	4.8%	3.5%	0%		10.9%	3.5%	30%	1.3%	0%		34.8%	0.7%	6.6%	9.7%	0%		17%	**-**
PHF	0.88	0.84	0.73	0		0.84	0.75	0.9	0.77	0		0.91	0.84	0.92	0.67	0		0.93	0.67	0.77	0.75	0		0.76	**-**
Heavy	4	25	0	0		29	0	0	4	0		4	4	23	0	0		27	0	3	11	0		14	**-**
Heavy %	7.5%	3.2%	0%	0%		3.2%	0%	0%	4.8%	0%		1.5%	4.8%	3.2%	0%	0%		3.2%	0%	1.9%	4.7%	0%		3.4%	**-**
Lights	49	751	70	0		870	63	115	79	0		257	80	698	32	0		810	16	155	223	0		394	**-**
Lights %	92.5%	96.8%	100%	0%		96.8%	100%	100%	95.2%	0%		98.5%	95.2%	96.8%	100%	0%		96.8%	100%	98.1%	95.3%	0%		96.6%	**-**
Single-Unit Trucks	1	13	0	0		14	0	0	4	0		4	4	9	0	0		13	0	1	2	0		3	**-**
Single-Unit Trucks %	1.9%	1.7%	0%	0%		1.6%	0%	0%	4.8%	0%		1.5%	4.8%	1.2%	0%	0%		1.6%	0%	0.6%	0.9%	0%		0.7%	**-**
Buses	3	1	0	0		4	0	0	0	0		0	0	2	0	0		2	0	1	7	0		8	**-**
Buses %	5.7%	0.1%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0.6%	3%	0%		2%	**-**
Articulated Trucks	0	11	0	0		11	0	0	0	0		0	0	12	0	0		12	0	1	2	0		3	**-**
Articulated Trucks %	0%	1.4%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.4%	0%	0.6%	0.9%	0%		0.7%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:15 AM - 08:15 AM **Weather: Clear Sky (17.39 °C)**



Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (26.6 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (5 . AIRPORT ROAD & MILES RD NORTH)

Start Time	Southbound MILES ROAD NORTH					Westbound AIRPORT ROAD					Eastbound AIRPORT ROAD					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	17	1	0	0	18	6	38	0	0	44	36	18	0	0	54	116	
07:15:00	28	5	0	0	33	22	65	0	0	87	27	38	0	0	65	185	
07:30:00	27	4	0	0	31	33	53	0	0	86	47	53	0	0	100	217	
07:45:00	41	12	0	0	53	32	55	0	0	87	45	43	0	0	88	228	746
08:00:00	35	8	0	0	43	26	71	0	0	97	39	48	0	0	87	227	857
08:15:00	28	12	0	0	40	26	62	0	0	88	37	42	0	0	79	207	879
08:30:00	33	8	0	0	41	16	58	0	0	74	35	34	0	0	69	184	846
08:45:00	30	6	0	0	36	12	51	0	0	63	35	32	0	0	67	166	784
09:00:00	25	3	0	0	28	12	34	0	0	46	30	29	0	0	59	133	690
09:15:00	24	8	0	0	32	9	42	0	0	51	31	27	0	0	58	141	624
09:30:00	25	3	0	0	28	8	50	0	0	58	28	24	0	0	52	138	578
09:45:00	21	9	0	0	30	8	33	0	0	41	22	14	0	0	36	107	519
BREAK																	
16:00:00	46	15	0	0	61	24	63	0	0	87	75	48	0	0	123	271	
16:15:00	50	18	0	0	68	15	57	0	0	72	81	39	0	0	120	260	
16:30:00	42	16	0	0	58	13	52	0	0	65	76	48	0	0	124	247	
16:45:00	56	13	0	0	69	18	44	0	0	62	93	42	0	0	135	266	1044
17:00:00	43	19	0	0	62	13	58	0	0	71	73	44	0	0	117	250	1023
17:15:00	39	15	0	0	54	12	72	0	0	84	89	43	0	0	132	270	1033
17:30:00	47	11	0	0	58	13	79	0	0	92	70	55	0	0	125	275	1061
17:45:00	30	12	0	0	42	17	54	0	0	71	74	43	0	0	117	230	1025
18:00:00	32	8	0	0	40	9	42	0	0	51	69	42	0	0	111	202	977
18:15:00	29	6	0	0	35	9	49	0	0	58	40	28	0	0	68	161	868
18:30:00	21	7	0	0	28	5	38	0	0	43	38	25	0	0	63	134	727
18:45:00	21	8	0	0	29	7	35	0	0	42	42	24	0	0	66	137	634
Grand Total	790	227	0	0	1017	365	1255	0	0	1620	1232	883	0	0	2115	**4752**	-
Approach%	77.7%	22.3%	0%		-	22.5%	77.5%	0%		-	58.3%	41.7%	0%		-	**-**	-
Totals %	16.6%	4.8%	0%		21.4%	7.7%	26.4%	0%		34.1%	25.9%	18.6%	0%		44.5%	**-**	-
Heavy	37	10	0		-	8	34	0		-	54	15	0		-	**-**	-
Heavy %	4.7%	4.4%	0%		-	2.2%	2.7%	0%		-	4.4%	1.7%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (18 °C)

Start Time	Southbound MILES ROAD NORTH					Westbound AIRPORT ROAD					Eastbound AIRPORT ROAD					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	27	4	0	0	31	33	53	0	0	86	47	53	0	0	100	217
07:45:00	41	12	0	0	53	32	55	0	0	87	45	43	0	0	88	228
08:00:00	35	8	0	0	43	26	71	0	0	97	39	48	0	0	87	227
08:15:00	28	12	0	0	40	26	62	0	0	88	37	42	0	0	79	207
Grand Total	131	36	0	0	167	117	241	0	0	358	168	186	0	0	354	**879**
Approach%	78.4%	21.6%	0%		-	32.7%	67.3%	0%		-	47.5%	52.5%	0%		-	**-**
Totals %	14.9%	4.1%	0%		19%	13.3%	27.4%	0%		40.7%	19.1%	21.2%	0%		40.3%	**-**
PHF	0.8	0.75	0		0.79	0.89	0.85	0		0.92	0.89	0.88	0		0.89	**-**
Heavy	13	6	0		19	1	10	0		11	7	3	0		10	**-**
Heavy %	9.9%	16.7%	0%		11.4%	0.9%	4.1%	0%		3.1%	4.2%	1.6%	0%		2.8%	**-**
Lights	118	30	0		148	114	231	0		345	161	183	0		344	**-**
Lights %	90.1%	83.3%	0%		88.6%	97.4%	95.9%	0%		96.4%	95.8%	98.4%	0%		97.2%	**-**
Single-Unit Trucks	10	1	0		11	0	3	0		3	2	2	0		4	**-**
Single-Unit Trucks %	7.6%	2.8%	0%		6.6%	0%	1.2%	0%		0.8%	1.2%	1.1%	0%		1.1%	**-**
Buses	0	3	0		3	0	4	0		4	3	0	0		3	**-**
Buses %	0%	8.3%	0%		1.8%	0%	1.7%	0%		1.1%	1.8%	0%	0%		0.8%	**-**
Articulated Trucks	3	2	0		5	1	3	0		4	2	1	0		3	**-**
Articulated Trucks %	2.3%	5.6%	0%		3%	0.9%	1.2%	0%		1.1%	1.2%	0.5%	0%		0.8%	**-**
Bicycles on Road	0	0	0		0	2	0	0		2	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	1.7%	0%	0%		0.6%	0%	0%	0%		0%	**-**

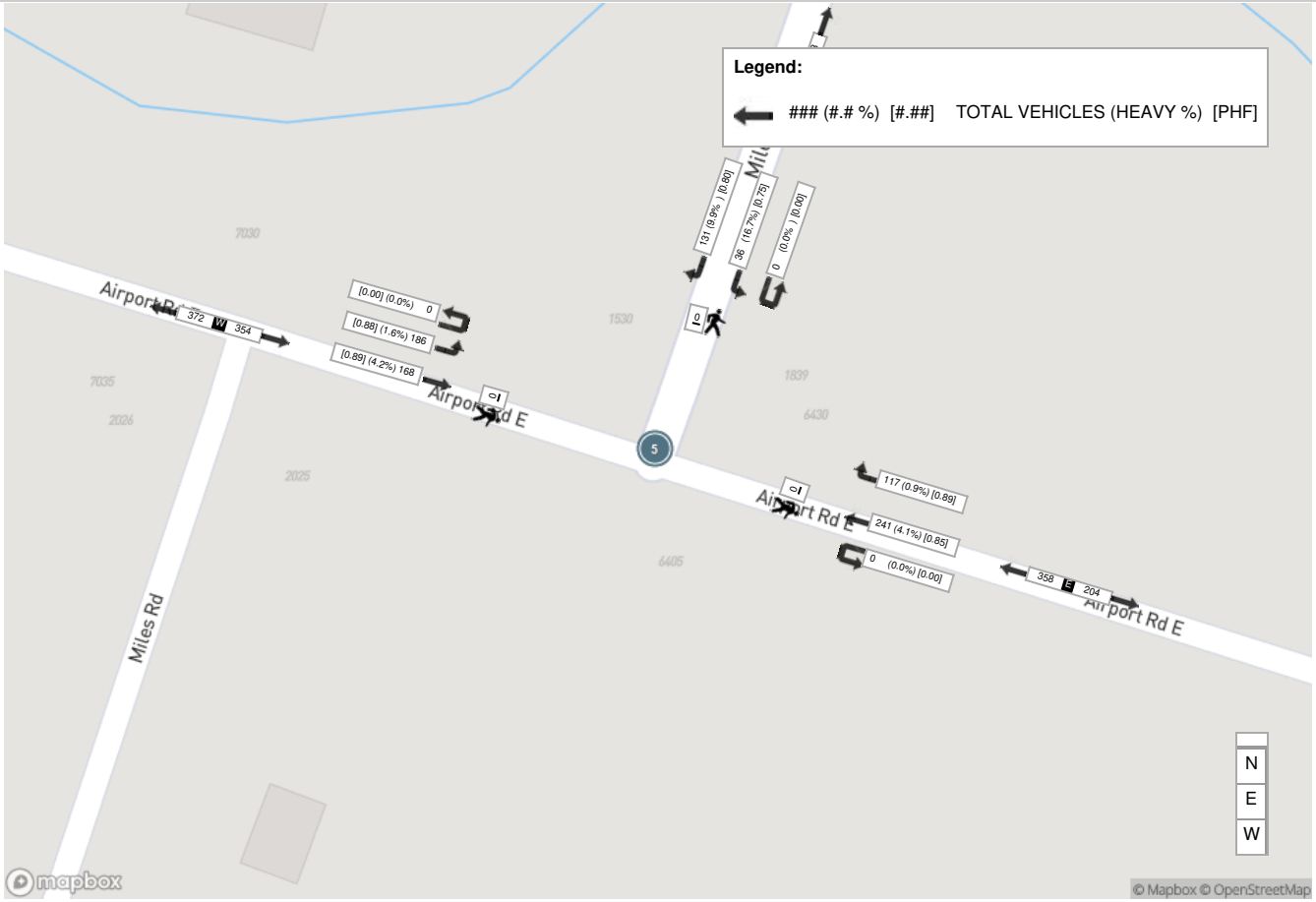
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (21.87 °C)

Start Time	Southbound MILES ROAD NORTH					Westbound AIRPORT ROAD					Eastbound AIRPORT ROAD					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	56	13	0	0	69	18	44	0	0	62	93	42	0	0	135	266
17:00:00	43	19	0	0	62	13	58	0	0	71	73	44	0	0	117	250
17:15:00	39	15	0	0	54	12	72	0	0	84	89	43	0	0	132	270
17:30:00	47	11	0	0	58	13	79	0	0	92	70	55	0	0	125	275
Grand Total	185	58	0	0	243	56	253	0	0	309	325	184	0	0	509	**1061**
Approach%	76.1%	23.9%	0%		-	18.1%	81.9%	0%		-	63.9%	36.1%	0%		-	**-**
Totals %	17.4%	5.5%	0%		22.9%	5.3%	23.8%	0%		29.1%	30.6%	17.3%	0%		48%	**-**
PHF	0.83	0.76	0		0.88	0.78	0.8	0		0.84	0.87	0.84	0		0.94	**-**
Heavy	3	0	0		3	0	6	0		6	15	0	0		15	**-**
Heavy %	1.6%	0%	0%		1.2%	0%	2.4%	0%		1.9%	4.6%	0%	0%		2.9%	**-**
Lights	181	58	0		239	56	247	0		303	310	184	0		494	**-**
Lights %	97.8%	100%	0%		98.4%	100%	97.6%	0%		98.1%	95.4%	100%	0%		97.1%	**-**
Single-Unit Trucks	2	0	0		2	0	5	0		5	9	0	0		9	**-**
Single-Unit Trucks %	1.1%	0%	0%		0.8%	0%	2%	0%		1.6%	2.8%	0%	0%		1.8%	**-**
Buses	1	0	0		1	0	1	0		1	3	0	0		3	**-**
Buses %	0.5%	0%	0%		0.4%	0%	0.4%	0%		0.3%	0.9%	0%	0%		0.6%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	3	0	0		3	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0.9%	0%	0%		0.6%	**-**
Bicycles on Road	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0.5%	0%	0%		0.4%	0%	0%	0%		0%	0%	0%	0%		0%	**-**

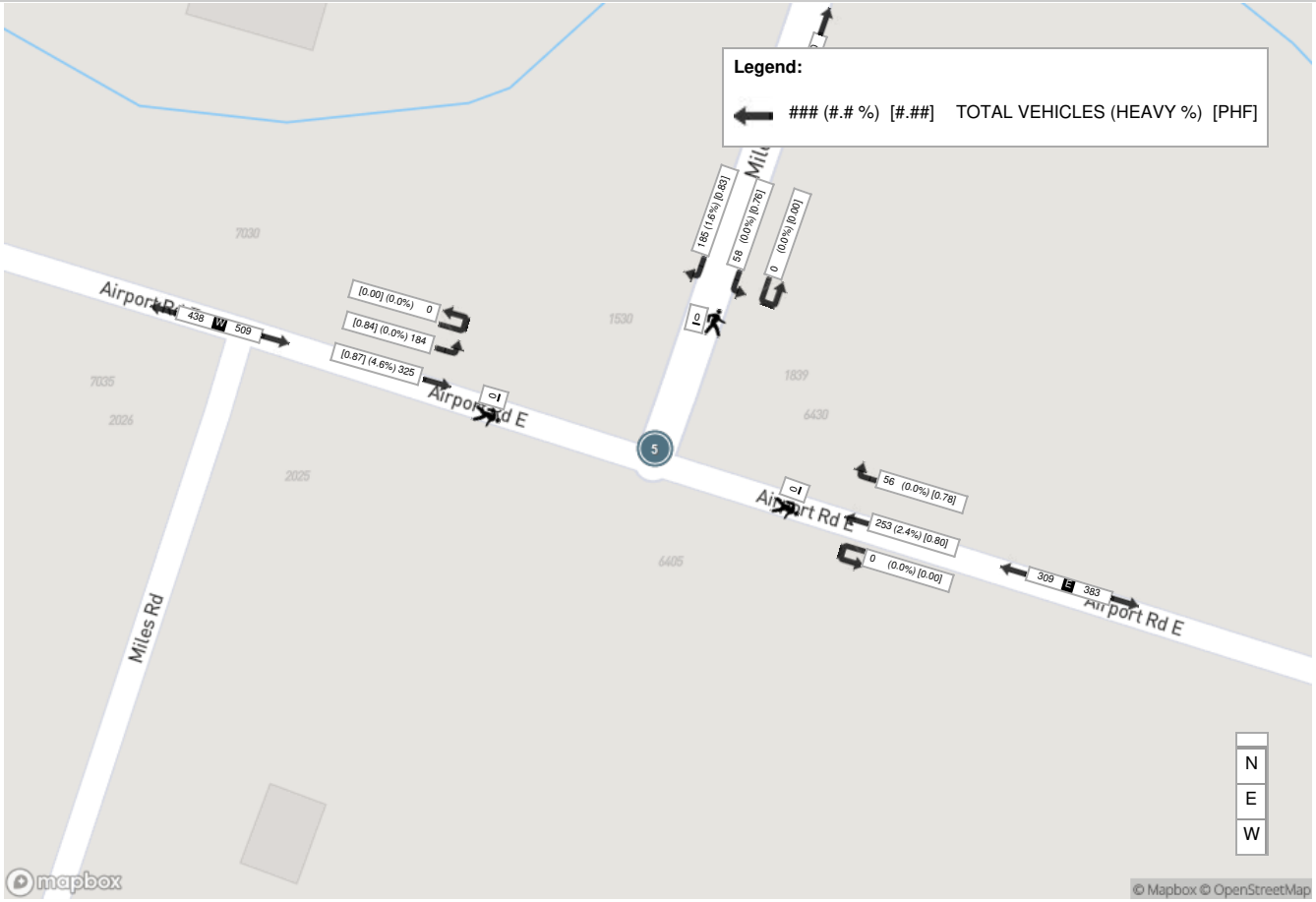
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (18 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (21.87 °C)



Spectrum

Turning Movement Count
Location Name: AIRPORT ROAD & MILES RD SOUTH
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (8 . AIRPORT ROAD & MILES RD SOUTH)

Start Time	Southbound NORTH DRIVEWAY						Westbound AIRPORT ROAD						Northbound MILES RD SOUTH						Eastbound AIRPORT ROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	0	0	0	0	0	0	47	6	0	0	53	9	0	1	0	0	10	1	46	0	0	0	47	110	
07:15:00	0	0	0	0	0	0	0	85	11	0	0	96	26	0	0	0	0	26	0	41	0	0	0	41	163	
07:30:00	0	0	0	0	0	0	0	70	9	0	0	79	31	0	0	0	0	31	1	69	0	0	0	70	180	
07:45:00	0	0	0	0	0	0	0	83	21	0	0	104	20	0	5	0	0	25	0	69	0	0	0	69	198	651
08:00:00	0	0	0	0	0	0	0	83	17	1	0	101	23	0	1	0	0	24	2	60	0	0	0	62	187	728
08:15:00	0	0	0	0	0	0	0	82	11	0	0	93	28	0	0	0	0	28	1	60	0	0	0	61	182	747
08:30:00	0	0	0	0	0	0	0	76	14	0	0	90	16	0	2	0	0	18	1	43	0	0	0	44	152	719
08:45:00	0	0	0	0	0	0	0	67	11	0	0	78	16	0	2	0	0	18	1	55	0	0	0	56	152	673
09:00:00	0	0	0	0	0	0	0	54	8	0	0	62	17	0	3	0	0	20	0	39	0	0	0	39	121	607
09:15:00	0	0	0	0	0	0	0	53	12	0	0	65	17	0	2	0	0	19	4	43	0	0	0	47	131	556
09:30:00	0	0	1	0	0	1	0	57	13	0	0	70	18	0	2	0	0	20	2	33	0	0	0	35	126	530
09:45:00	0	0	0	0	0	0	0	47	12	0	0	59	12	0	3	0	0	15	0	22	0	0	0	22	96	474
BREAK																										
16:00:00	0	0	1	0	0	1	0	79	27	0	0	106	19	0	0	0	0	19	3	104	0	0	0	107	233	
16:15:00	0	0	0	0	0	0	0	78	37	0	0	115	21	0	4	0	0	25	1	99	0	0	0	100	240	
16:30:00	0	0	0	0	0	0	0	61	30	0	0	91	25	0	1	0	0	26	0	104	0	0	0	104	221	
16:45:00	0	0	0	0	0	0	0	63	36	0	0	99	30	0	1	0	0	31	0	99	0	0	0	99	229	923
17:00:00	0	0	0	0	0	0	0	74	23	0	0	97	19	0	1	0	0	20	2	100	0	0	0	102	219	909
17:15:00	0	0	0	0	0	0	0	86	27	0	0	113	20	0	0	0	0	20	3	112	0	0	0	115	248	917
17:30:00	0	0	0	0	0	0	2	98	27	0	0	127	30	0	1	0	0	31	0	98	0	0	0	98	256	952
17:45:00	0	0	0	0	0	0	0	68	20	0	0	88	16	0	0	0	0	16	1	94	0	0	0	95	199	922
18:00:00	0	0	0	0	0	0	0	42	24	0	0	66	24	0	0	0	0	24	0	81	0	0	0	81	171	874
18:15:00	0	0	0	0	0	0	0	59	16	0	0	75	21	0	0	0	0	21	1	54	0	0	0	55	151	777
18:30:00	0	0	0	0	0	0	0	49	12	0	0	61	14	0	0	0	0	14	2	45	0	0	0	47	122	643
18:45:00	0	0	0	0	0	0	0	47	11	0	0	58	24	0	1	0	0	25	0	46	0	0	0	46	129	573
Grand Total	0	0	2	0	0	2	2	1608	435	1	0	2046	496	0	30	0	0	526	26	1616	0	0	0	1642	**4216**	-
Approach%	0%	0%	100%	0%		-	0.1%	78.6%	21.3%	0%		-	94.3%	0%	5.7%	0%		-	1.6%	98.4%	0%	0%		-	**-**	-
Totals %	0%	0%	0%	0%		0%	0%	38.1%	10.3%	0%		48.5%	11.8%	0%	0.7%	0%		12.5%	0.6%	38.3%	0%	0%		38.9%	**-**	-
Heavy	0	0	0	0		-	0	52	22	0		-	12	0	5	0		-	4	53	0	0		-	**-**	-
Heavy %	0%	0%	0%	0%		-	0%	3.2%	5.1%	0%		-	2.4%	0%	16.7%	0%		-	15.4%	3.3%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**

Start Time	Southbound NORTH DRIVEWAY						Westbound AIRPORT ROAD						Northbound MILES RD SOUTH						Eastbound AIRPORT ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	0	0	0	0	0	0	0	70	9	0	0	79	31	0	0	0	0	31	1	69	0	0	0	70	180
07:45:00	0	0	0	0	0	0	0	83	21	0	0	104	20	0	5	0	0	25	0	69	0	0	0	69	198
08:00:00	0	0	0	0	0	0	0	83	17	1	0	101	23	0	1	0	0	24	2	60	0	0	0	62	187
08:15:00	0	0	0	0	0	0	0	82	11	0	0	93	28	0	0	0	0	28	1	60	0	0	0	61	182
Grand Total	0	0	0	0	0	0	0	318	58	1	0	377	102	0	6	0	0	108	4	258	0	0	0	262	**747**
Approach%	0%	0%	0%	0%		-	0%	84.4%	15.4%	0.3%		-	94.4%	0%	5.6%	0%		-	1.5%	98.5%	0%	0%		-	-
Totals %	0%	0%	0%	0%		0%	0%	42.6%	7.8%	0.1%		50.5%	13.7%	0%	0.8%	0%		14.5%	0.5%	34.5%	0%	0%		35.1%	-
PHF	0	0	0	0		0	0	0.96	0.69	0.25		0.91	0.82	0	0.3	0		0.87	0.5	0.93	0	0		0.94	-
Heavy	0	0	0	0		0	0	14	9	0		23	2	0	2	0		4	2	8	0	0		10	-
Heavy %	0%	0%	0%	0%		0%	0%	4.4%	15.5%	0%		6.1%	2%	0%	33.3%	0%		3.7%	50%	3.1%	0%	0%		3.8%	-
Lights	0	0	0	0		0	0	304	49	1		354	100	0	4	0		104	2	250	0	0		252	-
Lights %	0%	0%	0%	0%		0%	0%	95.6%	84.5%	100%		93.9%	98%	0%	66.7%	0%		96.3%	50%	96.9%	0%	0%		96.2%	-
Single-Unit Trucks	0	0	0	0		0	0	5	8	0		13	1	0	1	0		2	1	3	0	0		4	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.6%	13.8%	0%		3.4%	1%	0%	16.7%	0%		1.9%	25%	1.2%	0%	0%		1.5%	-
Buses	0	0	0	0		0	0	3	1	0		4	0	0	1	0		1	1	3	0	0		4	-
Buses %	0%	0%	0%	0%		0%	0%	0.9%	1.7%	0%		1.1%	0%	0%	16.7%	0%		0.9%	25%	1.2%	0%	0%		1.5%	-
Articulated Trucks	0	0	0	0		0	0	6	0	0		6	1	0	0	0		1	0	2	0	0		2	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.6%	1%	0%	0%	0%		0.9%	0%	0.8%	0%	0%		0.8%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-

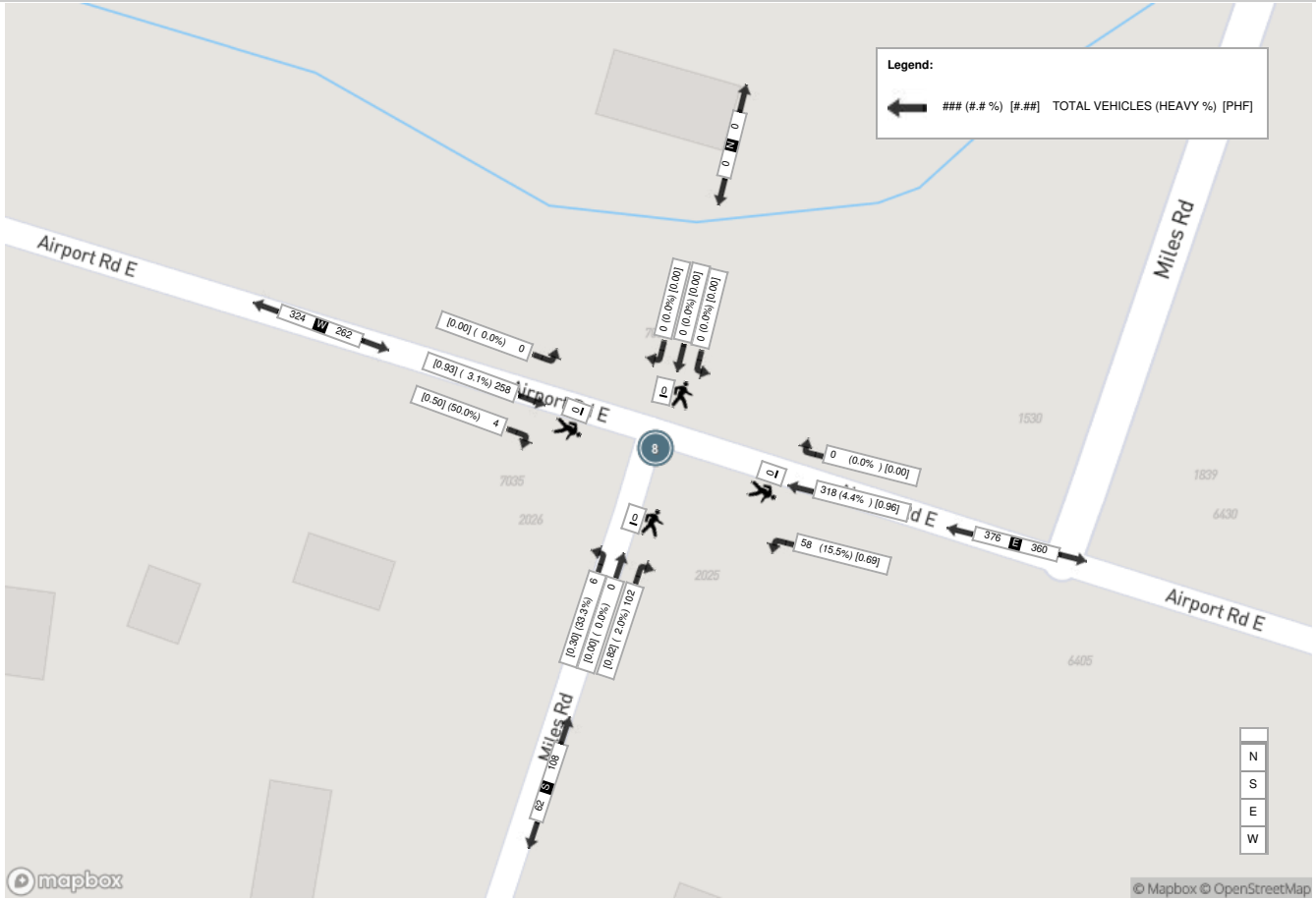
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM **Weather: Broken Clouds (21.87 °C)**

Start Time	Southbound NORTH DRIVEWAY						Westbound AIRPORT ROAD						Northbound MILES RD SOUTH						Eastbound AIRPORT ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	0	0	0	0	0	0	0	63	36	0	0	99	30	0	1	0	0	31	0	99	0	0	0	99	229
17:00:00	0	0	0	0	0	0	0	74	23	0	0	97	19	0	1	0	0	20	2	100	0	0	0	102	219
17:15:00	0	0	0	0	0	0	0	86	27	0	0	113	20	0	0	0	0	20	3	112	0	0	0	115	248
17:30:00	0	0	0	0	0	0	2	98	27	0	0	127	30	0	1	0	0	31	0	98	0	0	0	98	256
Grand Total	0	0	0	0	0	0	2	321	113	0	0	436	99	0	3	0	0	102	5	409	0	0	0	414	**952**
Approach%	0%	0%	0%	0%		-	0.5%	73.6%	25.9%	0%		-	97.1%	0%	2.9%	0%		-	1.2%	98.8%	0%	0%		-	**-**
Totals %	0%	0%	0%	0%		0%	0.2%	33.7%	11.9%	0%		45.8%	10.4%	0%	0.3%	0%		10.7%	0.5%	43%	0%	0%		43.5%	**-**
PHF	0	0	0	0		0	0.25	0.82	0.78	0		0.86	0.83	0	0.75	0		0.82	0.42	0.91	0	0		0.9	**-**
Heavy	0	0	0	0		0	0	8	1	0		9	0	0	0	0		0	0	15	0	0		15	**-**
Heavy %	0%	0%	0%	0%		0%	0%	2.5%	0.9%	0%		2.1%	0%	0%	0%	0%		0%	0%	3.7%	0%	0%		3.6%	**-**
Lights	0	0	0	0		0	2	313	111	0		426	99	0	3	0		102	5	394	0	0		399	**-**
Lights %	0%	0%	0%	0%		0%	100%	97.5%	98.2%	0%		97.7%	100%	0%	100%	0%		100%	100%	96.3%	0%	0%		96.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	0	9	0	0		9	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		2.2%	**-**
Buses	0	0	0	0		0	0	1	1	0		2	0	0	0	0		0	0	3	0	0		3	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.3%	0.9%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	3	0	0		3	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	**-**
Bicycles on Road	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0.9%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

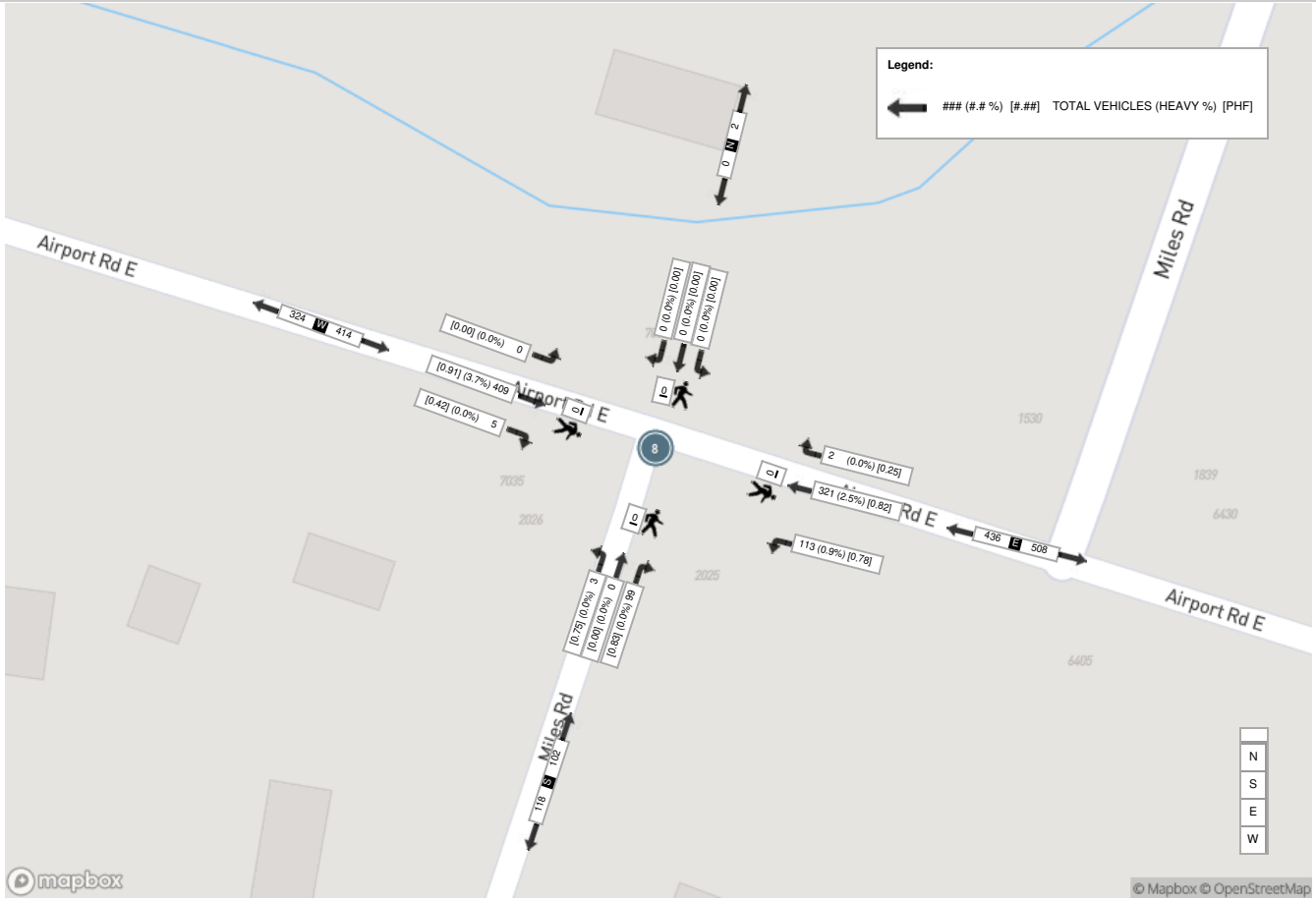
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM **Weather: Broken Clouds (21.87 °C)**



Spectrum

Turning Movement Count
Location Name: UPPER JAMES STREET & HIGHWAY 6
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (2 . UPPER JAMES STREET & HIGHWAY 6)

Start Time	Southbound UPPER JAMES STREET						Westbound DRIVEWAY						Northbound HIGHWAY 6						Eastbound HIGHWAY 6						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	32	82	0	0	0	114	0	0	0	0	0	0	0	164	116	0	0	280	69	0	16	0	0	85	479	
07:15:00	39	89	0	0	0	128	0	0	0	0	0	0	0	231	121	0	0	352	68	0	22	0	0	90	570	
07:30:00	63	137	0	0	0	200	0	0	0	0	0	0	0	257	106	0	0	363	78	0	16	0	0	94	657	
07:45:00	61	132	0	0	0	193	0	0	0	0	0	0	0	207	112	0	0	319	75	0	20	0	0	95	607	2313
08:00:00	52	122	0	0	0	174	0	0	0	0	0	0	0	202	83	0	0	285	72	0	14	0	0	86	545	2379
08:15:00	57	149	0	0	0	206	0	0	0	0	0	0	0	205	98	0	0	303	75	0	29	0	0	104	613	2422
08:30:00	43	116	0	0	0	159	0	0	0	0	0	0	0	201	114	0	0	315	63	0	28	0	0	91	565	2330
08:45:00	38	105	0	0	0	143	0	0	0	0	0	0	0	192	113	0	0	305	52	0	14	0	0	66	514	2237
09:00:00	47	120	0	0	0	167	0	0	0	0	0	0	0	165	96	0	0	261	66	0	19	0	0	85	513	2205
09:15:00	55	130	0	0	0	185	0	0	0	0	0	0	0	139	115	0	0	254	58	0	16	0	0	74	513	2105
09:30:00	40	123	0	0	0	163	0	0	0	0	0	0	0	143	89	0	0	232	73	0	11	0	0	84	479	2019
09:45:00	28	120	0	0	0	148	0	0	0	0	0	0	0	126	85	0	0	211	84	0	18	0	0	102	461	1966
BREAK																										
16:00:00	36	225	0	0	0	261	0	0	0	0	0	0	0	165	74	0	0	239	136	0	42	0	0	178	678	
16:15:00	31	252	0	0	0	283	0	0	0	0	0	0	0	143	100	0	0	243	130	0	47	0	0	177	703	
16:30:00	40	266	0	0	0	306	0	0	1	0	0	1	0	156	73	0	0	229	129	0	40	0	0	169	705	
16:45:00	29	215	0	0	0	244	0	0	1	0	0	1	0	146	84	0	0	230	124	0	44	0	0	168	643	2729
17:00:00	24	235	0	0	0	259	0	0	0	0	0	0	0	160	97	0	0	257	111	0	50	0	0	161	677	2728
17:15:00	37	207	0	0	0	244	0	0	0	0	0	0	0	186	93	0	0	279	121	0	34	0	0	155	678	2703
17:30:00	32	184	0	0	0	216	0	0	0	0	0	0	0	176	91	0	0	267	104	0	34	0	1	138	621	2619
17:45:00	29	201	1	0	0	231	0	0	0	0	0	0	0	160	102	0	0	262	132	0	34	0	0	166	659	2635
18:00:00	26	163	1	0	0	190	0	0	0	0	2	0	0	168	88	0	0	256	100	0	29	0	0	129	575	2533
18:15:00	27	169	0	0	0	196	0	0	0	0	1	0	0	150	76	0	0	226	88	0	26	0	0	114	536	2391
18:30:00	24	144	0	0	0	168	0	0	0	0	0	0	0	139	52	0	0	191	92	0	17	0	1	109	468	2238
18:45:00	14	119	0	0	0	133	0	0	0	0	0	0	0	113	38	0	0	151	99	0	18	0	0	117	401	1980
Grand Total	904	3805	2	0	0	4711	0	0	2	0	3	2	0	4094	2216	0	0	6310	2199	0	638	0	2	2837	**13860**	-
Approach%	19.2%	80.8%	0%	0%		-	0%	0%	100%	0%		-	0%	64.9%	35.1%	0%		-	77.5%	0%	22.5%	0%		-	**-**	-
Totals %	6.5%	27.5%	0%	0%		34%	0%	0%	0%	0%		0%	0%	29.5%	16%	0%		45.5%	15.9%	0%	4.6%	0%		20.5%	**-**	-
Heavy	83	239	0	0		-	0	0	0	0		-	0	231	231	0		-	227	0	94	0		-	**-**	-
Heavy %	9.2%	6.3%	0%	0%		-	0%	0%	0%	0%		-	0%	5.6%	10.4%	0%		-	10.3%	0%	14.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: UPPER JAMES STREET & HIGHWAY 6
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**

Start Time	Southbound UPPER JAMES STREET						Westbound DRIVEWAY						Northbound HIGHWAY 6						Eastbound HIGHWAY 6						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	63	137	0	0	0	200	0	0	0	0	0	0	0	257	106	0	0	363	78	0	16	0	0	94	657
07:45:00	61	132	0	0	0	193	0	0	0	0	0	0	0	207	112	0	0	319	75	0	20	0	0	95	607
08:00:00	52	122	0	0	0	174	0	0	0	0	0	0	0	202	83	0	0	285	72	0	14	0	0	86	545
08:15:00	57	149	0	0	0	206	0	0	0	0	0	0	0	205	98	0	0	303	75	0	29	0	0	104	613
Grand Total	233	540	0	0	0	773	0	0	0	0	0	0	0	871	399	0	0	1270	300	0	79	0	0	379	**2422**
Approach%	30.1%	69.9%	0%	0%		-	0%	0%	0%	0%		-	0%	68.6%	31.4%	0%		-	79.2%	0%	20.8%	0%		-	**-**
Totals %	9.6%	22.3%	0%	0%		31.9%	0%	0%	0%	0%		0%	0%	36%	16.5%	0%		52.4%	12.4%	0%	3.3%	0%		15.6%	**-**
PHF	0.92	0.91	0	0		0.94	0	0	0	0		0	0	0.85	0.89	0		0.87	0.96	0	0.68	0		0.91	**-**
Heavy	10	68	0	0		78	0	0	0	0		0	0	52	21	0		73	64	0	21	0		85	**-**
Heavy %	4.3%	12.6%	0%	0%		10.1%	0%	0%	0%	0%		0%	0%	6%	5.3%	0%		5.7%	21.3%	0%	26.6%	0%		22.4%	**-**
Lights	223	472	0	0		695	0	0	0	0		0	0	819	378	0		1197	236	0	58	0		294	**-**
Lights %	95.7%	87.4%	0%	0%		89.9%	0%	0%	0%	0%		0%	0%	94%	94.7%	0%		94.3%	78.7%	0%	73.4%	0%		77.6%	**-**
Single-Unit Trucks	0	44	0	0		44	0	0	0	0		0	0	30	4	0		34	38	0	18	0		56	**-**
Single-Unit Trucks %	0%	8.1%	0%	0%		5.7%	0%	0%	0%	0%		0%	0%	3.4%	1%	0%		2.7%	12.7%	0%	22.8%	0%		14.8%	**-**
Buses	0	8	0	0		8	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	**-**
Buses %	0%	1.5%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	10	16	0	0		26	0	0	0	0		0	0	16	17	0		33	26	0	3	0		29	**-**
Articulated Trucks %	4.3%	3%	0%	0%		3.4%	0%	0%	0%	0%		0%	0%	1.8%	4.3%	0%		2.6%	8.7%	0%	3.8%	0%		7.7%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

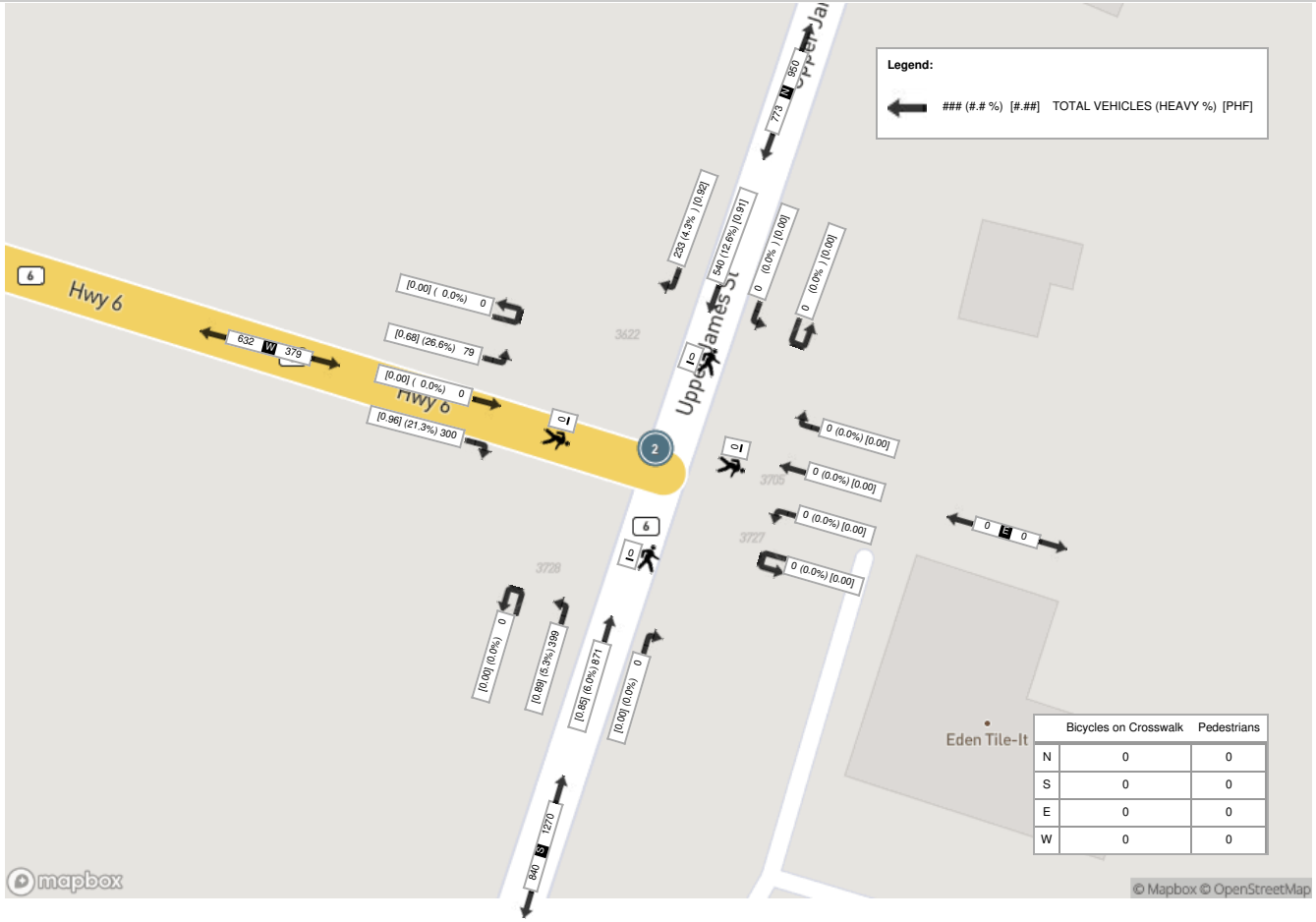
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Broken Clouds (21.87 °C)**

Start Time	Southbound UPPER JAMES STREET						Westbound DRIVEWAY						Northbound HIGHWAY 6						Eastbound HIGHWAY 6						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	36	225	0	0	0	261	0	0	0	0	0	0	0	165	74	0	0	239	136	0	42	0	0	178	678
16:15:00	31	252	0	0	0	283	0	0	0	0	0	0	0	143	100	0	0	243	130	0	47	0	0	177	703
16:30:00	40	266	0	0	0	306	0	0	1	0	0	1	0	156	73	0	0	229	129	0	40	0	0	169	705
16:45:00	29	215	0	0	0	244	0	0	1	0	0	1	0	146	84	0	0	230	124	0	44	0	0	168	643
Grand Total	136	958	0	0	0	1094	0	0	2	0	0	2	0	610	331	0	0	941	519	0	173	0	0	692	**2729**
Approach%	12.4%	87.6%	0%	0%		-	0%	0%	100%	0%		-	0%	64.8%	35.2%	0%		-	75%	0%	25%	0%		-	**-**
Totals %	5%	35.1%	0%	0%		40.1%	0%	0%	0.1%	0%		0.1%	0%	22.4%	12.1%	0%		34.5%	19%	0%	6.3%	0%		25.4%	**-**
PHF	0.85	0.9	0	0		0.89	0	0	0.5	0		0.5	0	0.92	0.83	0		0.97	0.95	0	0.92	0		0.97	**-**
Heavy	23	29	0	0		52	0	0	0	0		0	0	39	38	0		77	33	0	7	0		40	**-**
Heavy %	16.9%	3%	0%	0%		4.8%	0%	0%	0%	0%		0%	0%	6.4%	11.5%	0%		8.2%	6.4%	0%	4%	0%		5.8%	**-**
Lights	113	929	0	0		1042	0	0	2	0		2	0	571	293	0		864	486	0	166	0		652	**-**
Lights %	83.1%	97%	0%	0%		95.2%	0%	0%	100%	0%		100%	0%	93.6%	88.5%	0%		91.8%	93.6%	0%	96%	0%		94.2%	**-**
Single-Unit Trucks	21	15	0	0		36	0	0	0	0		0	0	19	32	0		51	19	0	3	0		22	**-**
Single-Unit Trucks %	15.4%	1.6%	0%	0%		3.3%	0%	0%	0%	0%		0%	0%	3.1%	9.7%	0%		5.4%	3.7%	0%	1.7%	0%		3.2%	**-**
Buses	0	5	0	0		5	0	0	0	0		0	0	7	0	0		7	1	0	0	0		1	**-**
Buses %	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.7%	0.2%	0%	0%	0%		0.1%	**-**
Articulated Trucks	2	9	0	0		11	0	0	0	0		0	0	13	6	0		19	13	0	4	0		17	**-**
Articulated Trucks %	1.5%	0.9%	0%	0%		1%	0%	0%	0%	0%		0%	0%	2.1%	1.8%	0%		2%	2.5%	0%	2.3%	0%		2.5%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

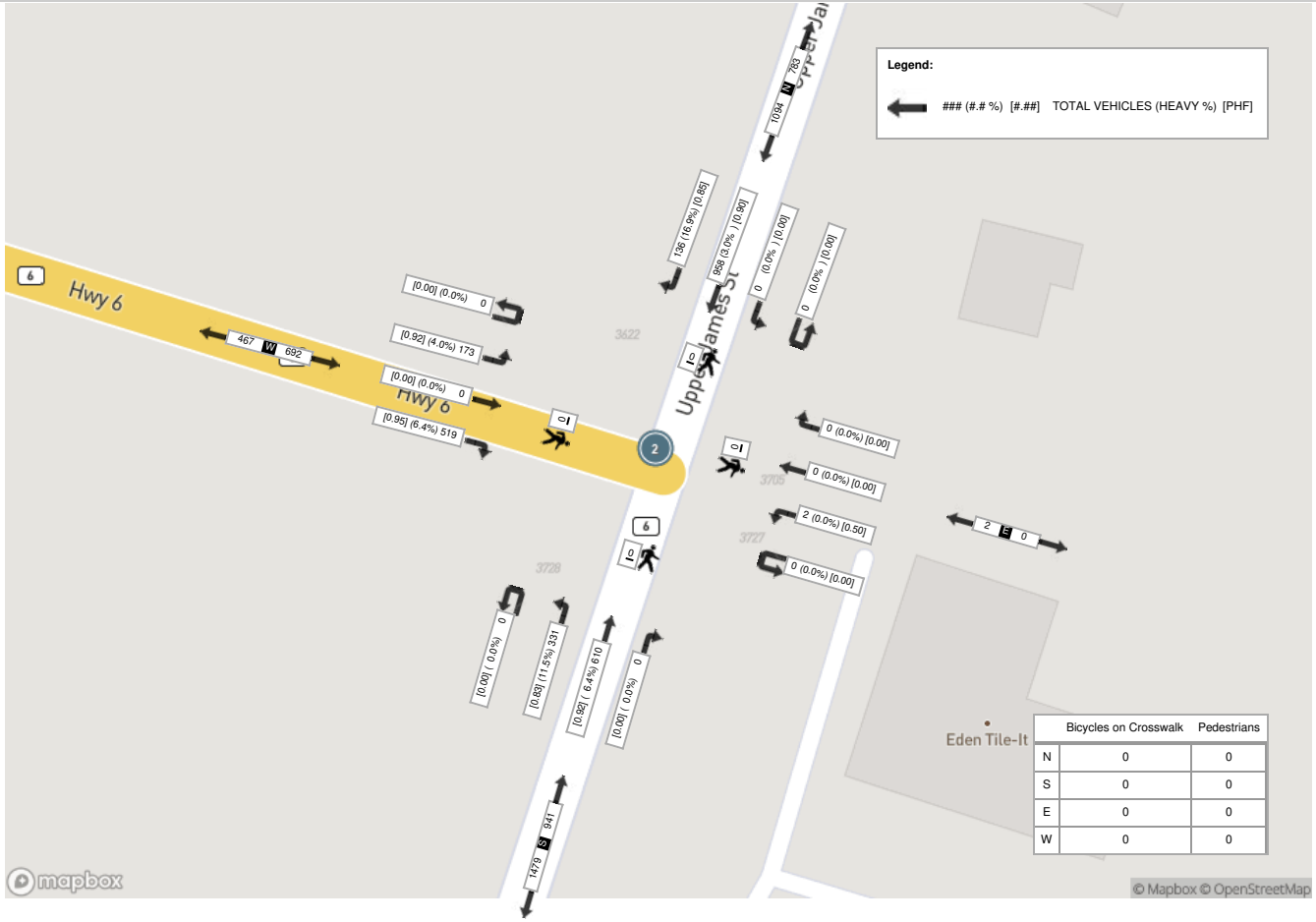
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Broken Clouds (21.87 °C)**



Spectrum

Turning Movement Count
Location Name: UPPER JAMES STREET & WHITE CHURCH ROAD E
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (1 . UPPER JAMES STREET & WHITE CHURCH ROAD E)

Start Time	Southbound UPPER JAMES STREET						Westbound WHITE CHURCH ROAD						Northbound UPPER JAMES STREET						Eastbound WHITE CHURCH ROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	13	87	4	0	0	104	5	28	26	0	0	59	22	160	3	0	0	185	5	12	22	0	0	39	387	
07:15:00	16	96	8	0	1	120	14	32	40	0	0	86	20	210	5	0	0	235	4	18	23	0	0	45	486	
07:30:00	10	132	7	0	0	149	14	41	51	0	0	106	25	250	3	0	0	278	7	14	15	0	0	36	569	
07:45:00	11	135	10	0	0	156	24	35	53	0	0	112	23	205	4	0	0	232	9	17	20	0	0	46	546	1988
08:00:00	28	121	11	0	0	160	25	35	44	0	0	104	18	213	2	0	0	233	4	19	9	0	0	32	529	2130
08:15:00	18	135	10	0	1	163	16	35	59	0	0	110	27	206	1	0	0	234	9	22	21	0	0	52	559	2203
08:30:00	18	116	6	0	0	140	9	25	43	0	0	77	21	220	4	0	0	245	6	32	22	0	0	60	522	2156
08:45:00	9	94	6	0	0	109	11	23	41	0	0	75	18	183	1	0	0	202	4	14	18	0	0	36	422	2032
09:00:00	12	120	2	0	0	134	8	22	54	0	0	84	22	164	6	0	0	192	10	14	8	0	0	32	442	1945
09:15:00	16	119	12	0	0	147	10	22	44	0	0	76	12	138	7	0	0	157	5	18	8	0	0	31	411	1797
09:30:00	10	130	5	0	0	145	11	16	33	0	0	60	13	130	3	0	0	146	4	14	12	0	0	30	381	1656
09:45:00	14	118	4	0	0	136	10	10	30	0	0	50	19	129	4	0	0	152	4	13	5	0	0	22	360	1594
BREAK																										
16:00:00	29	212	16	0	0	257	16	26	52	0	0	94	39	150	9	0	0	198	5	33	22	0	0	60	609	
16:15:00	21	247	15	0	0	283	11	22	47	0	0	80	49	151	10	0	0	210	4	58	26	0	0	88	661	
16:30:00	23	252	19	0	0	294	10	40	40	0	0	90	43	142	13	0	0	198	7	61	26	0	0	94	676	
16:45:00	30	213	16	0	0	259	12	28	44	0	0	84	43	145	7	0	0	195	4	42	26	0	0	72	610	2556
17:00:00	23	212	15	0	0	250	12	46	23	0	0	81	43	160	11	0	0	214	12	82	27	0	0	121	666	2613
17:15:00	25	194	23	0	0	242	17	28	45	0	0	90	33	173	11	0	0	217	2	79	38	0	0	119	668	2620
17:30:00	16	179	18	0	0	213	10	32	40	0	0	82	35	170	12	0	0	217	6	51	33	0	0	90	602	2546
17:45:00	16	179	14	0	0	209	17	21	33	0	0	71	31	156	8	0	0	195	10	57	38	0	0	105	580	2516
18:00:00	8	156	6	1	0	171	12	25	34	0	0	71	35	160	2	0	0	197	4	35	25	0	0	64	503	2353
18:15:00	12	156	7	0	0	175	3	18	30	0	0	51	33	142	6	0	0	181	7	27	17	0	0	51	458	2143
18:30:00	14	137	9	0	0	160	14	14	18	0	0	46	16	140	2	0	0	158	7	23	16	0	0	46	410	1951
18:45:00	9	122	12	0	0	143	8	11	13	0	0	32	16	111	5	0	0	132	5	23	7	0	0	35	342	1713
Grand Total	401	3662	255	1	2	4319	299	635	937	0	0	1871	656	4008	139	0	0	4803	144	778	484	0	0	1406	**12399**	-
Approach%	9.3%	84.8%	5.9%	0%		-	16%	33.9%	50.1%	0%		-	13.7%	83.4%	2.9%	0%		-	10.2%	55.3%	34.4%	0%		-	**-**	-
Totals %	3.2%	29.5%	2.1%	0%		34.8%	2.4%	5.1%	7.6%	0%		15.1%	5.3%	32.3%	1.1%	0%		38.7%	1.2%	6.3%	3.9%	0%		11.3%	**-**	-
Heavy	30	284	10	0		-	18	28	45	0		-	38	299	12	0		-	11	18	30	0		-	**-**	-
Heavy %	7.5%	7.8%	3.9%	0%		-	6%	4.4%	4.8%	0%		-	5.8%	7.5%	8.6%	0%		-	7.6%	2.3%	6.2%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**

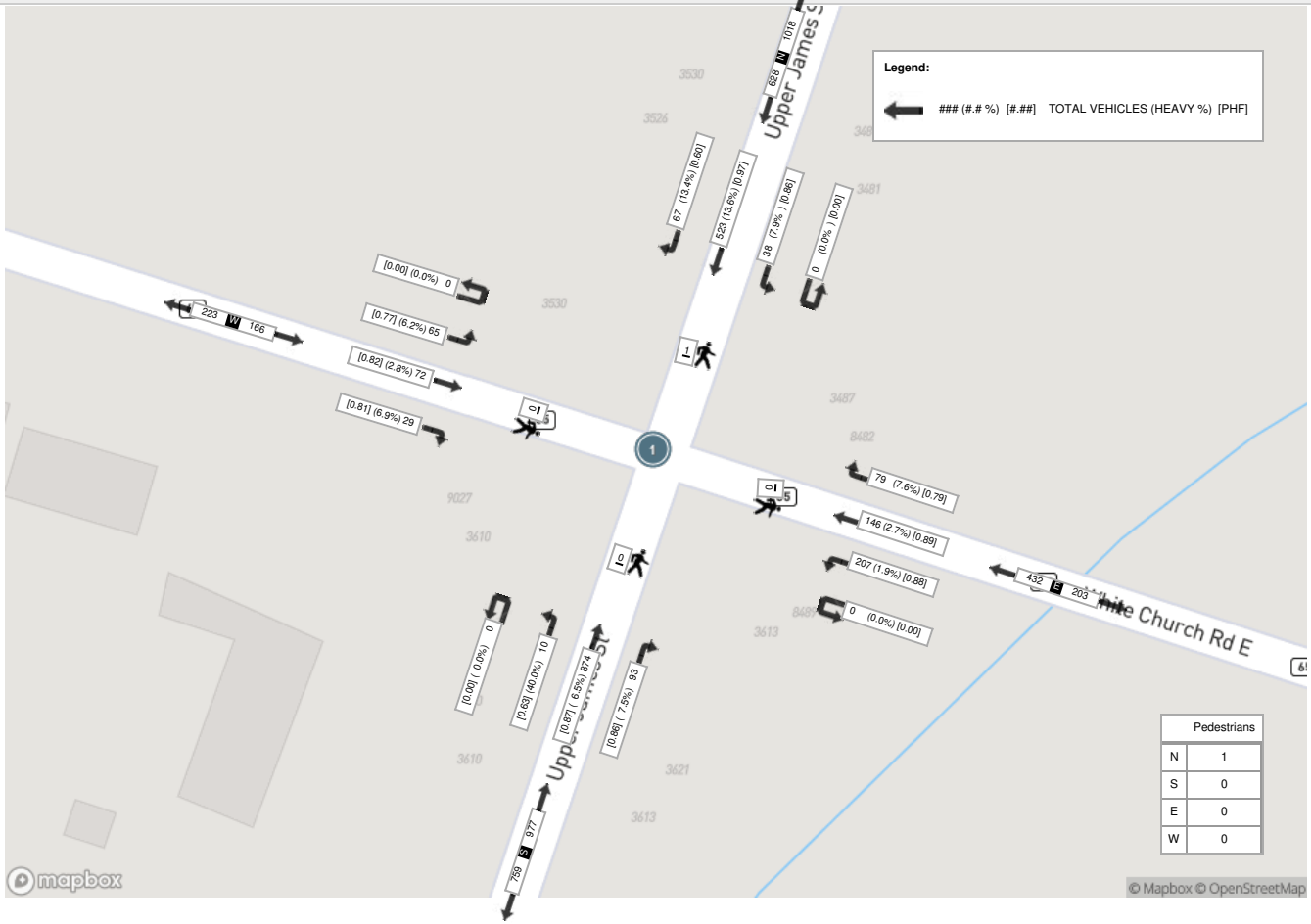
Start Time	Southbound UPPER JAMES STREET						Westbound WHITE CHURCH ROAD						Northbound UPPER JAMES STREET						Eastbound WHITE CHURCH ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	10	132	7	0	0	149	14	41	51	0	0	106	25	250	3	0	0	278	7	14	15	0	0	36	569
07:45:00	11	135	10	0	0	156	24	35	53	0	0	112	23	205	4	0	0	232	9	17	20	0	0	46	546
08:00:00	28	121	11	0	0	160	25	35	44	0	0	104	18	213	2	0	0	233	4	19	9	0	0	32	529
08:15:00	18	135	10	0	1	163	16	35	59	0	0	110	27	206	1	0	0	234	9	22	21	0	0	52	559
Grand Total	67	523	38	0	1	628	79	146	207	0	0	432	93	874	10	0	0	977	29	72	65	0	0	166	**2203**
Approach%	10.7%	83.3%	6.1%	0%		-	18.3%	33.8%	47.9%	0%		-	9.5%	89.5%	1%	0%		-	17.5%	43.4%	39.2%	0%		-	**-**
Totals %	3%	23.7%	1.7%	0%		28.5%	3.6%	6.6%	9.4%	0%		19.6%	4.2%	39.7%	0.5%	0%		44.3%	1.3%	3.3%	3%	0%		7.5%	**-**
PHF	0.6	0.97	0.86	0		0.96	0.79	0.89	0.88	0		0.96	0.86	0.87	0.63	0		0.88	0.81	0.82	0.77	0		0.8	**-**
Heavy	9	71	3	0		83	6	4	4	0		14	7	57	4	0		68	2	2	4	0		8	**-**
Heavy %	13.4%	13.6%	7.9%	0%		13.2%	7.6%	2.7%	1.9%	0%		3.2%	7.5%	6.5%	40%	0%		7%	6.9%	2.8%	6.2%	0%		4.8%	**-**
Lights	58	452	35	0		545	73	142	203	0		418	86	817	6	0		909	27	70	61	0		158	**-**
Lights %	86.6%	86.4%	92.1%	0%		86.8%	92.4%	97.3%	98.1%	0%		96.8%	92.5%	93.5%	60%	0%		93%	93.1%	97.2%	93.8%	0%		95.2%	**-**
Single-Unit Trucks	7	41	1	0		49	6	2	1	0		9	5	37	1	0		43	2	1	2	0		5	**-**
Single-Unit Trucks %	10.4%	7.8%	2.6%	0%		7.8%	7.6%	1.4%	0.5%	0%		2.1%	5.4%	4.2%	10%	0%		4.4%	6.9%	1.4%	3.1%	0%		3%	**-**
Buses	1	6	1	0		8	0	2	2	0		4	1	3	2	0		6	0	1	1	0		2	**-**
Buses %	1.5%	1.1%	2.6%	0%		1.3%	0%	1.4%	1%	0%		0.9%	1.1%	0.3%	20%	0%		0.6%	0%	1.4%	1.5%	0%		1.2%	**-**
Articulated Trucks	1	24	1	0		26	0	0	1	0		1	1	17	1	0		19	0	0	1	0		1	**-**
Articulated Trucks %	1.5%	4.6%	2.6%	0%		4.1%	0%	0%	0.5%	0%		0.2%	1.1%	1.9%	10%	0%		1.9%	0%	0%	1.5%	0%		0.6%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

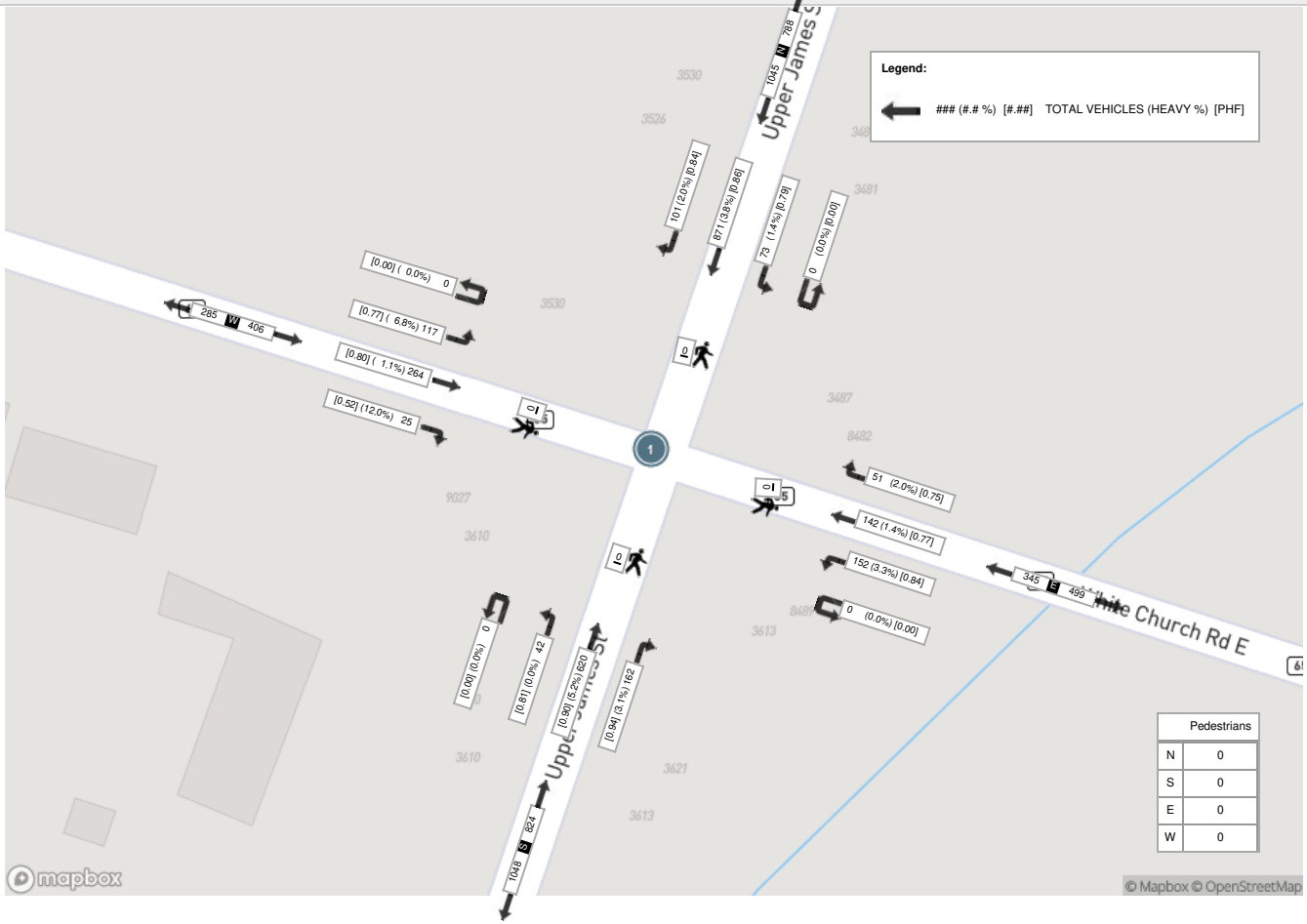
Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (21.87 °C)

Start Time	Southbound UPPER JAMES STREET						Westbound WHITE CHURCH ROAD						Northbound UPPER JAMES STREET						Eastbound WHITE CHURCH ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	23	252	19	0	0	294	10	40	40	0	0	90	43	142	13	0	0	198	7	61	26	0	0	94	676
16:45:00	30	213	16	0	0	259	12	28	44	0	0	84	43	145	7	0	0	195	4	42	26	0	0	72	610
17:00:00	23	212	15	0	0	250	12	46	23	0	0	81	43	160	11	0	0	214	12	82	27	0	0	121	666
17:15:00	25	194	23	0	0	242	17	28	45	0	0	90	33	173	11	0	0	217	2	79	38	0	0	119	668
Grand Total	101	871	73	0	0	1045	51	142	152	0	0	345	162	620	42	0	0	824	25	264	117	0	0	406	**2620**
Approach%	9.7%	83.3%	7%	0%		-	14.8%	41.2%	44.1%	0%		-	19.7%	75.2%	5.1%	0%		-	6.2%	65%	28.8%	0%		-	**-**
Totals %	3.9%	33.2%	2.8%	0%		39.9%	1.9%	5.4%	5.8%	0%		13.2%	6.2%	23.7%	1.6%	0%		31.5%	1%	10.1%	4.5%	0%		15.5%	**-**
PHF	0.84	0.86	0.79	0		0.89	0.75	0.77	0.84	0		0.96	0.94	0.9	0.81	0		0.95	0.52	0.8	0.77	0		0.84	**-**
Heavy	2	33	1	0		36	1	2	5	0		8	5	32	0	0		37	3	3	8	0		14	**-**
Heavy %	2%	3.8%	1.4%	0%		3.4%	2%	1.4%	3.3%	0%		2.3%	3.1%	5.2%	0%	0%		4.5%	12%	1.1%	6.8%	0%		3.4%	**-**
Lights	99	838	72	0		1009	50	140	147	0		337	157	588	42	0		787	22	260	109	0		391	**-**
Lights %	98%	96.2%	98.6%	0%		96.6%	98%	98.6%	96.7%	0%		97.7%	96.9%	94.8%	100%	0%		95.5%	88%	98.5%	93.2%	0%		96.3%	**-**
Single-Unit Trucks	1	18	1	0		20	0	2	5	0		7	3	15	0	0		18	2	2	5	0		9	**-**
Single-Unit Trucks %	1%	2.1%	1.4%	0%		1.9%	0%	1.4%	3.3%	0%		2%	1.9%	2.4%	0%	0%		2.2%	8%	0.8%	4.3%	0%		2.2%	**-**
Buses	0	2	0	0		2	1	0	0	0		1	1	1	0	0		2	1	1	2	0		4	**-**
Buses %	0%	0.2%	0%	0%		0.2%	2%	0%	0%	0%		0.3%	0.6%	0.2%	0%	0%		0.2%	4%	0.4%	1.7%	0%		1%	**-**
Articulated Trucks	1	13	0	0		14	0	0	0	0		0	1	16	0	0		17	0	0	1	0		1	**-**
Articulated Trucks %	1%	1.5%	0%	0%		1.3%	0%	0%	0%	0%		0%	0.6%	2.6%	0%	0%		2.1%	0%	0%	0.9%	0%		0.2%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.2%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Broken Clouds (21.87 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (6 . WHITE CHURCH ROAD E & FERRIS ROAD)

Start Time	Westbound WHITE CHURCH ROAD E					Northbound FERRIS ROAD					Eastbound WHITE CHURCH ROAD E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
07:00:00	60	0	0	0	60	1	1	0	0	2	3	32	0	0	35	97	
07:15:00	80	0	0	0	80	1	4	0	0	5	3	43	0	0	46	131	
07:30:00	99	1	0	0	100	1	3	0	0	4	0	42	0	0	42	146	
07:45:00	114	0	0	0	114	0	1	0	0	1	1	47	0	0	48	163	537
08:00:00	94	0	0	0	94	0	3	0	0	3	1	48	0	0	49	146	586
08:15:00	101	0	0	0	101	1	0	0	0	1	0	59	0	0	59	161	616
08:30:00	82	0	0	0	82	0	2	0	0	2	3	47	0	0	50	134	604
08:45:00	78	1	0	0	79	1	1	0	0	2	0	46	0	0	46	127	568
09:00:00	78	1	0	0	79	0	1	0	0	1	1	39	0	0	40	120	542
09:15:00	71	0	0	0	71	0	0	0	0	0	2	40	0	0	42	113	494
09:30:00	57	0	0	0	57	0	1	0	0	1	1	28	0	0	29	87	447
09:45:00	42	0	0	0	42	1	1	0	0	2	0	40	0	0	40	84	404
BREAK																	
16:00:00	85	1	0	0	86	2	2	0	0	4	1	96	0	0	97	187	
16:15:00	73	0	0	0	73	0	1	0	0	1	2	115	0	0	117	191	
16:30:00	100	1	0	0	101	1	3	0	0	4	0	121	0	0	121	226	
16:45:00	71	1	0	0	72	1	0	0	0	1	1	102	0	0	103	176	780
17:00:00	84	3	0	0	87	1	1	0	0	2	3	126	0	0	129	218	811
17:15:00	87	0	0	0	87	0	0	0	0	0	1	133	0	0	134	221	841
17:30:00	81	0	0	0	81	2	0	0	0	2	1	116	0	0	117	200	815
17:45:00	62	1	0	0	63	0	3	0	0	3	2	92	0	0	94	160	799
18:00:00	66	0	0	0	66	0	0	0	0	0	0	79	0	0	79	145	726
18:15:00	54	1	0	0	55	1	1	0	0	2	0	67	0	0	67	124	629
18:30:00	41	0	0	0	41	0	1	0	0	1	0	48	0	0	48	90	519
18:45:00	33	1	0	0	34	0	0	0	0	0	3	50	0	0	53	87	446
Grand Total	1793	12	0	0	1805	14	30	0	0	44	29	1656	0	0	1685	**3534**	-
Approach%	99.3%	0.7%	0%		-	31.8%	68.2%	0%		-	1.7%	98.3%	0%		-	**-**	-
Totals %	50.7%	0.3%	0%		51.1%	0.4%	0.8%	0%		1.2%	0.8%	46.9%	0%		47.7%	**-**	-
Heavy	57	2	0		-	1	4	0		-	1	46	0		-	**-**	-
Heavy %	3.2%	16.7%	0%		-	7.1%	13.3%	0%		-	3.4%	2.8%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (18 °C)

Start Time	Westbound WHITE CHURCH ROAD E					Northbound FERRIS ROAD					Eastbound WHITE CHURCH ROAD E					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:30:00	99	1	0	0	100	1	3	0	0	4	0	42	0	0	42	146
07:45:00	114	0	0	0	114	0	1	0	0	1	1	47	0	0	48	163
08:00:00	94	0	0	0	94	0	3	0	0	3	1	48	0	0	49	146
08:15:00	101	0	0	0	101	1	0	0	0	1	0	59	0	0	59	161
Grand Total	408	1	0	0	409	2	7	0	0	9	2	196	0	0	198	**616**
Approach%	99.8%	0.2%	0%		-	22.2%	77.8%	0%		-	1%	99%	0%		-	**-**
Totals %	66.2%	0.2%	0%		66.4%	0.3%	1.1%	0%		1.5%	0.3%	31.8%	0%		32.1%	**-**
PHF	0.89	0.25	0		0.9	0.5	0.58	0		0.56	0.5	0.83	0		0.84	**-**
Heavy	13	1	0		14	0	0	0		0	0	11	0		11	**-**
Heavy %	3.2%	100%	0%		3.4%	0%	0%	0%		0%	0%	5.6%	0%		5.6%	**-**
Lights	395	0	0		395	2	7	0		9	2	185	0		187	**-**
Lights %	96.8%	0%	0%		96.6%	100%	100%	0%		100%	100%	94.4%	0%		94.4%	**-**
Single-Unit Trucks	8	0	0		8	0	0	0		0	0	5	0		5	**-**
Single-Unit Trucks %	2%	0%	0%		2%	0%	0%	0%		0%	0%	2.6%	0%		2.5%	**-**
Buses	4	1	0		5	0	0	0		0	0	3	0		3	**-**
Buses %	1%	100%	0%		1.2%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (21.87 °C)

Start Time	Westbound WHITE CHURCH ROAD E					Northbound FERRIS ROAD					Eastbound WHITE CHURCH ROAD E					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:30:00	100	1	0	0	101	1	3	0	0	4	0	121	0	0	121	226
16:45:00	71	1	0	0	72	1	0	0	0	1	1	102	0	0	103	176
17:00:00	84	3	0	0	87	1	1	0	0	2	3	126	0	0	129	218
17:15:00	87	0	0	0	87	0	0	0	0	0	1	133	0	0	134	221
Grand Total	342	5	0	0	347	3	4	0	0	7	5	482	0	0	487	**841**
Approach%	98.6%	1.4%	0%		-	42.9%	57.1%	0%		-	1%	99%	0%		-	-
Totals %	40.7%	0.6%	0%		41.3%	0.4%	0.5%	0%		0.8%	0.6%	57.3%	0%		57.9%	-
PHF	0.86	0.42	0		0.86	0.75	0.33	0		0.44	0.42	0.91	0		0.91	-
Heavy	6	0	0		6	0	1	0		1	0	9	0		9	-
Heavy %	1.8%	0%	0%		1.7%	0%	25%	0%		14.3%	0%	1.9%	0%		1.8%	-
Lights	336	5	0		341	3	3	0		6	5	473	0		478	-
Lights %	98.2%	100%	0%		98.3%	100%	75%	0%		85.7%	100%	98.1%	0%		98.2%	-
Single-Unit Trucks	6	0	0		6	0	0	0		0	0	6	0		6	-
Single-Unit Trucks %	1.8%	0%	0%		1.7%	0%	0%	0%		0%	0%	1.2%	0%		1.2%	-
Buses	0	0	0		0	0	1	0		1	0	2	0		2	-
Buses %	0%	0%	0%		0%	0%	25%	0%		14.3%	0%	0.4%	0%		0.4%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (18 °C)

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (21.87 °C)

Spectrum

Turning Movement Count
Location Name: WHITE CHURCH ROAD E & MILES ROAD
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (7 . WHITE CHURCH ROAD E & MILES ROAD)

Start Time	Southbound MILES ROAD						Westbound WHITE CHURCH ROAD E						Northbound MILES ROAD						Eastbound WHITE CHURCH ROAD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	1	4	0	0	0	5	3	64	0	0	0	67	0	2	0	0	0	2	0	30	5	0	0	35	109	
07:15:00	2	6	2	0	0	10	8	81	0	0	0	89	1	9	0	0	0	10	1	33	7	0	0	41	150	
07:30:00	3	3	4	0	0	10	5	93	0	0	0	98	0	15	2	0	0	17	1	32	12	0	0	45	170	
07:45:00	8	7	3	0	0	18	8	109	1	0	0	118	1	9	0	0	0	10	1	39	6	0	0	46	192	621
08:00:00	9	7	5	0	0	21	8	78	0	0	0	86	1	6	1	0	0	8	2	30	10	0	0	42	157	669
08:15:00	8	1	2	0	0	11	8	96	2	0	0	106	0	10	1	0	0	11	2	50	11	0	0	63	191	710
08:30:00	5	7	2	0	0	14	6	72	0	0	0	78	0	10	0	0	0	10	0	43	2	0	0	45	147	687
08:45:00	6	6	1	0	0	13	4	80	2	0	0	86	0	7	0	0	0	7	0	43	6	0	0	49	155	650
09:00:00	5	2	1	0	0	8	5	62	1	0	0	68	0	9	1	0	0	10	1	35	3	0	0	39	125	618
09:15:00	3	5	4	0	0	12	6	68	2	0	0	76	1	11	0	0	0	12	1	34	5	0	0	40	140	567
09:30:00	5	10	2	0	0	17	6	50	0	0	0	56	1	8	1	0	0	10	0	24	5	0	0	29	112	532
09:45:00	3	8	3	0	0	14	1	41	0	0	0	42	0	4	0	0	0	4	1	33	6	0	0	40	100	477
BREAK																										
16:00:00	9	15	6	0	0	30	2	73	0	0	0	75	0	9	1	0	0	10	0	85	8	0	0	93	208	
16:15:00	14	19	4	0	0	37	2	66	0	0	0	68	0	14	0	0	0	14	2	108	8	0	0	118	237	
16:30:00	9	10	4	0	0	23	4	84	0	0	0	88	2	9	1	0	0	12	1	110	13	0	0	124	247	
16:45:00	14	20	4	0	0	38	6	61	0	0	0	67	1	14	1	0	0	16	1	91	9	0	0	101	222	914
17:00:00	8	13	3	0	0	24	1	82	1	0	0	84	2	9	1	0	0	12	2	117	9	0	0	128	248	954
17:15:00	8	18	6	0	0	32	4	71	4	0	0	79	0	6	0	0	0	6	0	124	9	0	0	133	250	967
17:30:00	10	13	5	0	0	28	8	73	3	0	0	84	0	12	0	0	0	12	0	107	13	0	0	120	244	964
17:45:00	7	13	2	0	0	22	1	63	2	0	0	66	1	8	0	0	0	9	0	86	5	0	0	91	188	930
18:00:00	6	14	2	0	0	22	4	50	0	0	0	54	0	10	1	0	0	11	0	74	10	0	0	84	171	853
18:15:00	8	10	0	0	0	18	6	50	0	0	0	56	0	8	0	0	0	8	0	57	9	0	0	66	148	751
18:30:00	4	6	2	0	0	12	2	31	0	0	0	33	0	6	0	0	0	6	0	44	5	0	0	49	100	607
18:45:00	2	7	1	0	0	10	4	31	0	0	0	35	0	15	1	0	0	16	0	45	4	0	0	49	110	529
Grand Total	157	224	68	0	0	449	112	1629	18	0	0	1759	11	220	12	0	0	243	16	1474	180	0	0	1670	**4121**	-
Approach%	35%	49.9%	15.1%	0%		-	6.4%	92.6%	1%	0%		-	4.5%	90.5%	4.9%	0%		-	1%	88.3%	10.8%	0%		-	**-**	-
Totals %	3.8%	5.4%	1.7%	0%		10.9%	2.7%	39.5%	0.4%	0%		42.7%	0.3%	5.3%	0.3%	0%		5.9%	0.4%	35.8%	4.4%	0%		40.5%	**-**	-
Heavy	20	2	6	0		-	3	40	1	0		-	1	5	3	0		-	3	43	11	0		-	**-**	-
Heavy %	12.7%	0.9%	8.8%	0%		-	2.7%	2.5%	5.6%	0%		-	9.1%	2.3%	25%	0%		-	18.8%	2.9%	6.1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**

Start Time	Southbound MILES ROAD						Westbound WHITE CHURCH ROAD E						Northbound MILES ROAD						Eastbound WHITE CHURCH ROAD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	3	3	4	0	0	10	5	93	0	0	0	98	0	15	2	0	0	17	1	32	12	0	0	45	170
07:45:00	8	7	3	0	0	18	8	109	1	0	0	118	1	9	0	0	0	10	1	39	6	0	0	46	192
08:00:00	9	7	5	0	0	21	8	78	0	0	0	86	1	6	1	0	0	8	2	30	10	0	0	42	157
08:15:00	8	1	2	0	0	11	8	96	2	0	0	106	0	10	1	0	0	11	2	50	11	0	0	63	191
Grand Total	28	18	14	0	0	60	29	376	3	0	0	408	2	40	4	0	0	46	6	151	39	0	0	196	**710**
Approach%	46.7%	30%	23.3%	0%		-	7.1%	92.2%	0.7%	0%		-	4.3%	87%	8.7%	0%		-	3.1%	77%	19.9%	0%		-	**-**
Totals %	3.9%	2.5%	2%	0%		8.5%	4.1%	53%	0.4%	0%		57.5%	0.3%	5.6%	0.6%	0%		6.5%	0.8%	21.3%	5.5%	0%		27.6%	**-**
PHF	0.78	0.64	0.7	0		0.71	0.91	0.86	0.38	0		0.86	0.5	0.67	0.5	0		0.68	0.75	0.76	0.81	0		0.78	**-**
Heavy	6	1	3	0		10	1	8	0	0		9	0	1	1	0		2	2	8	2	0		12	**-**
Heavy %	21.4%	5.6%	21.4%	0%		16.7%	3.4%	2.1%	0%	0%		2.2%	0%	2.5%	25%	0%		4.3%	33.3%	5.3%	5.1%	0%		6.1%	**-**
Lights	22	17	11	0		50	28	368	3	0		399	2	39	3	0		44	4	143	37	0		184	**-**
Lights %	78.6%	94.4%	78.6%	0%		83.3%	96.6%	97.9%	100%	0%		97.8%	100%	97.5%	75%	0%		95.7%	66.7%	94.7%	94.9%	0%		93.9%	**-**
Single-Unit Trucks	6	0	2	0		8	1	3	0	0		4	0	1	0	0		1	0	7	0	0		7	**-**
Single-Unit Trucks %	21.4%	0%	14.3%	0%		13.3%	3.4%	0.8%	0%	0%		1%	0%	2.5%	0%	0%		2.2%	0%	4.6%	0%	0%		3.6%	**-**
Buses	0	1	1	0		2	0	4	0	0		4	0	0	1	0		1	1	1	1	0		3	**-**
Buses %	0%	5.6%	7.1%	0%		3.3%	0%	1.1%	0%	0%		1%	0%	0%	25%	0%		2.2%	16.7%	0.7%	2.6%	0%		1.5%	**-**
Articulated Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1	0	1	0		2	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	16.7%	0%	2.6%	0%		1%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

Spectrum

Turning Movement Count
Location Name: WHITE CHURCH ROAD E & MILES ROAD
Date: Wed, Sep 18, 2024 Deployment Lead: Rey Fernandez

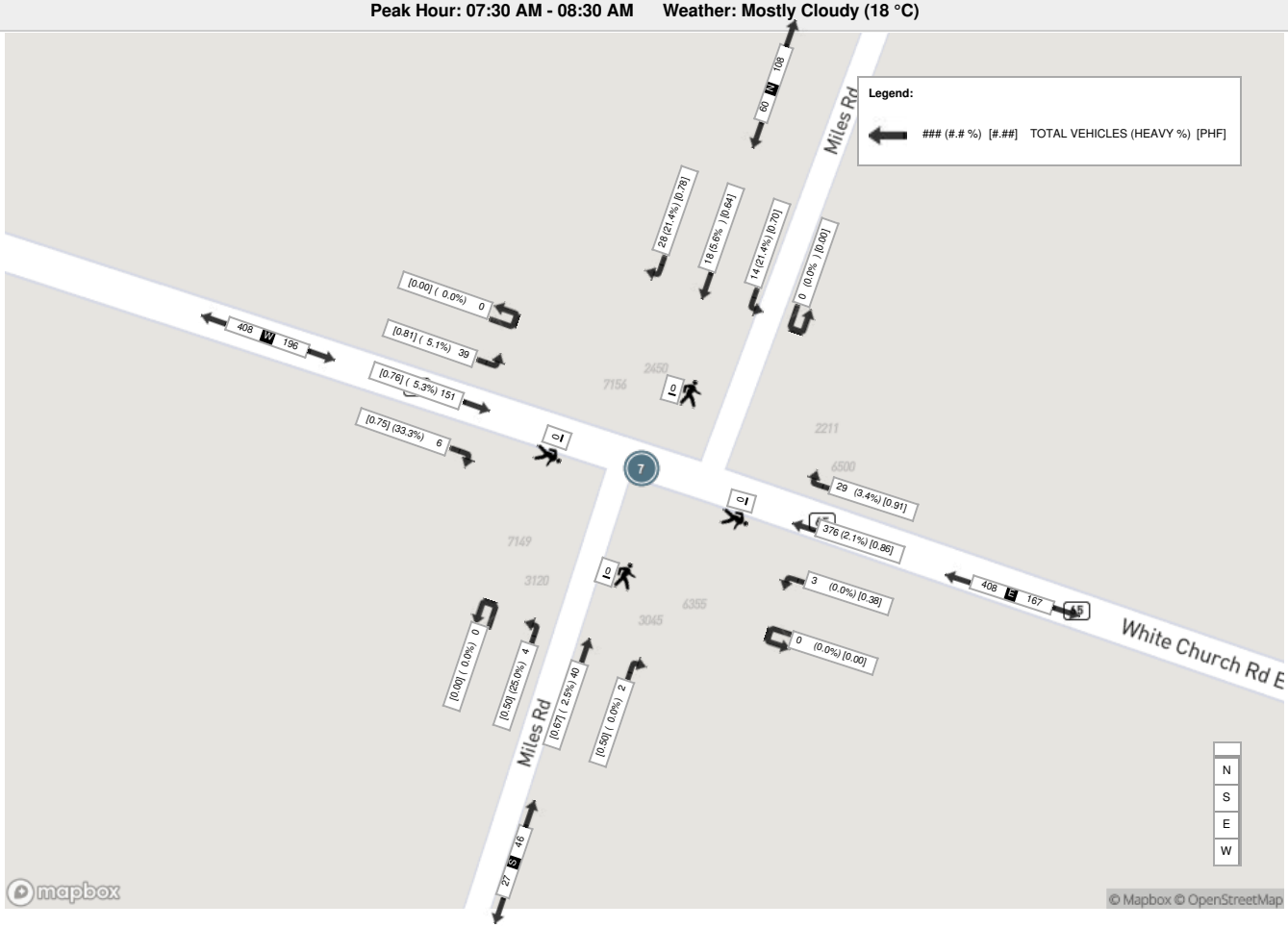
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Broken Clouds (21.87 °C)

Start Time	Southbound MILES ROAD						Westbound WHITE CHURCH ROAD E						Northbound MILES ROAD						Eastbound WHITE CHURCH ROAD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	9	10	4	0	0	23	4	84	0	0	0	88	2	9	1	0	0	12	1	110	13	0	0	124	247
16:45:00	14	20	4	0	0	38	6	61	0	0	0	67	1	14	1	0	0	16	1	91	9	0	0	101	222
17:00:00	8	13	3	0	0	24	1	82	1	0	0	84	2	9	1	0	0	12	2	117	9	0	0	128	248
17:15:00	8	18	6	0	0	32	4	71	4	0	0	79	0	6	0	0	0	6	0	124	9	0	0	133	250
Grand Total	39	61	17	0	0	117	15	298	5	0	0	318	5	38	3	0	0	46	4	442	40	0	0	486	**967**
Approach%	33.3%	52.1%	14.5%	0%		-	4.7%	93.7%	1.6%	0%		-	10.9%	82.6%	6.5%	0%		-	0.8%	90.9%	8.2%	0%		-	**-**
Totals %	4%	6.3%	1.8%	0%		12.1%	1.6%	30.8%	0.5%	0%		32.9%	0.5%	3.9%	0.3%	0%		4.8%	0.4%	45.7%	4.1%	0%		50.3%	**-**
PHF	0.7	0.76	0.71	0		0.77	0.63	0.89	0.31	0		0.9	0.63	0.68	0.75	0		0.72	0.5	0.89	0.77	0		0.91	**-**
Heavy	0	0	0	0		0	2	6	0	0		8	0	0	0	0		0	0	9	1	0		10	**-**
Heavy %	0%	0%	0%	0%		0%	13.3%	2%	0%	0%		2.5%	0%	0%	0%	0%		0%	0%	2%	2.5%	0%		2.1%	**-**
Lights	39	60	17	0		116	13	292	5	0		310	5	38	3	0		46	4	433	39	0		476	**-**
Lights %	100%	98.4%	100%	0%		99.1%	86.7%	98%	100%	0%		97.5%	100%	100%	100%	0%		100%	100%	98%	97.5%	0%		97.9%	**-**
Single-Unit Trucks	0	0	0	0		0	1	6	0	0		7	0	0	0	0		0	0	7	1	0		8	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	6.7%	2%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	1.6%	2.5%	0%		1.6%	**-**
Buses	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	2	0	0		2	**-**
Buses %	0%	0%	0%	0%		0%	6.7%	0%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	1.6%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

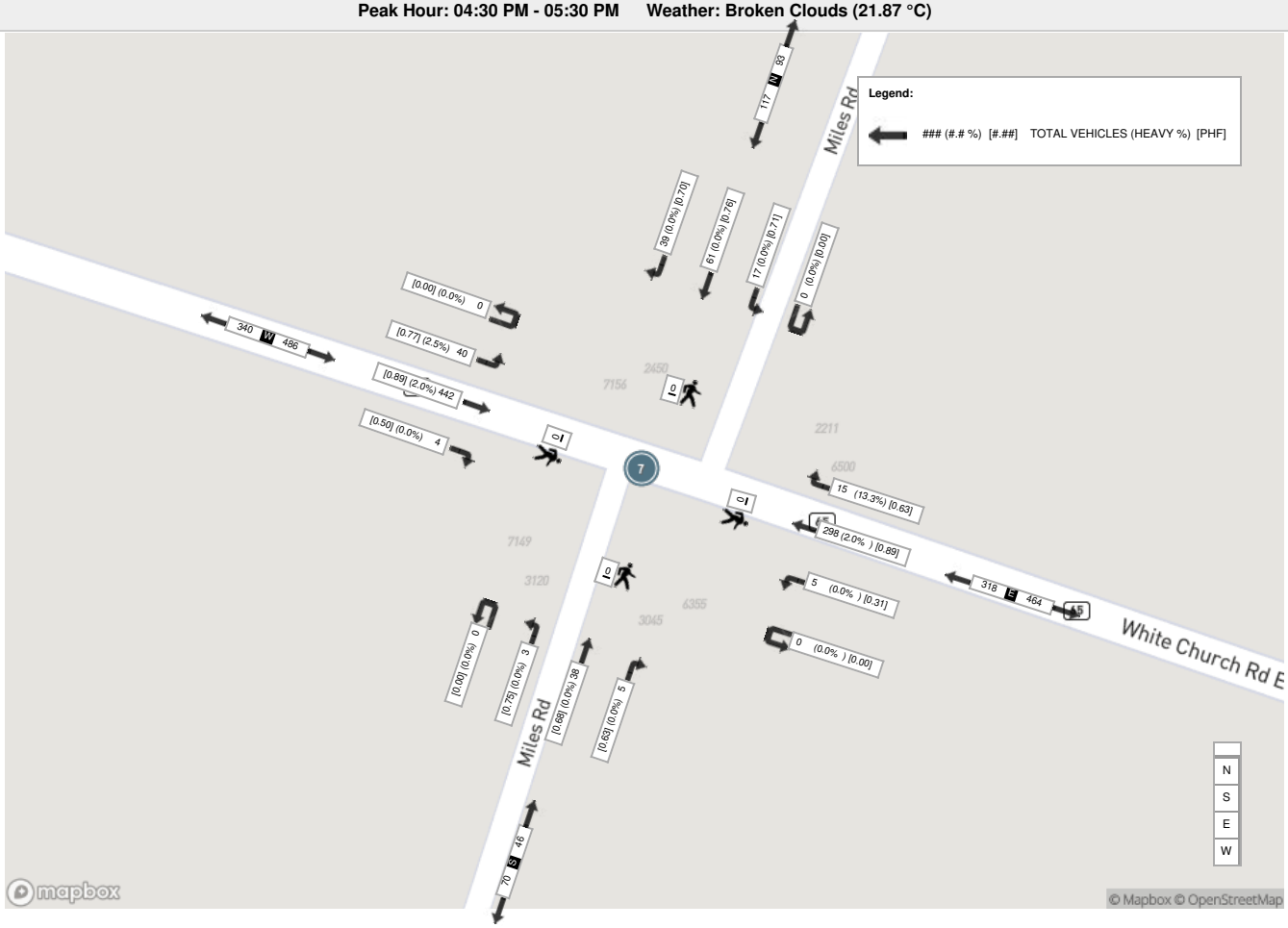
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Mostly Cloudy (18 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:30 PM - 05:30 PM **Weather: Broken Clouds (21.87 °C)**



Appendix B
2016 TTS Data Analysis

Residential Auto Trip Distribution - External Hamilton

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest

Filters:
Primary travel mode of trip - mode_prime In D M P T U
and
2006 GTA zone of origin - gta06_orig In 5016 5020 5033 5038
and
Start time of trip - start_time In 600-900

Trip 2016
Table:

	PD 16 of Toronto	Mississauga	Milton	Burlington	Glanbrook	Stoney Creek	Hamilton	St. Catharines	Niagara Falls	Welland	North Dumfries	Haldimand-Norfolk	Brantford	
5016	0	0	0	0	0	0	58	0	0	0	0	0	58	
5020	30	69	61	94	31	0	380	14	32	18	18	53	10	
5033	0	0	0	0	39	114	577	0	0	0	0	0	0	
5038	0	0	0	0	0	0	40	0	0	0	0	0	0	
	30	69	61	94	70	114	1055	14	32	18	18	53	68	1696
	2%	4%	4%	6%	4%	7%	62%	1%	2%	1%	1%	3%	4%	100%

Toronto	2%
Peel	4%
Halton	9%
Hamilton	62%
Niagara Region	7%
Hamilton Area	12%
Glanbrook	4%
	100%

Residential Auto Trip Distribution - Internal Hamilton

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Ward number of destination - ward_dest

Filters:
Primary travel mode of trip - mode_prime In D M P T U
and
2006 GTA zone of origin - gta06_orig In 5016 5020 5033 5038
and
Start time of trip - start_time In 600-900
and
Ward number of destination - ward_dest In 171-185

Trip 2016
Table:

	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 11	
	172	173	174	175	176	177	178	181	
5016	0	0	0	0	0	58	0	0	
5020	90	9	0	0	25	168	88	31	
5033	0	0	0	75	0	139	363	153	
5038	0	0	7	0	0	34	0	0	
	90	9	7	75	25	399	451	184	1240
	7%	1%	1%	6%	2%	32%	36%	15%	100%

Hamilton			62%
North		18%	11%
South		24%	15%
East		49%	31%
West		9%	6%
		100%	62%

Transit Trip Distribution - External Hamilton

Cross Tabulation Query Form - Trip - 2016 v1.1

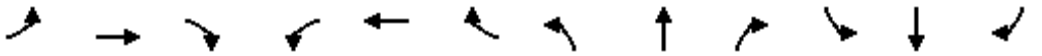
Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest

Filters:
Primary travel mode of trip - mode_prime In B C G J W
and
2006 GTA zone of origin - gta06_orig In 5016 5020 5033 5038
and
Start time of trip - start_time In 600-900

Trip 2016
Table:

	Glanbrook
5020	64

Appendix C
Existing Intersection Performance Analysis



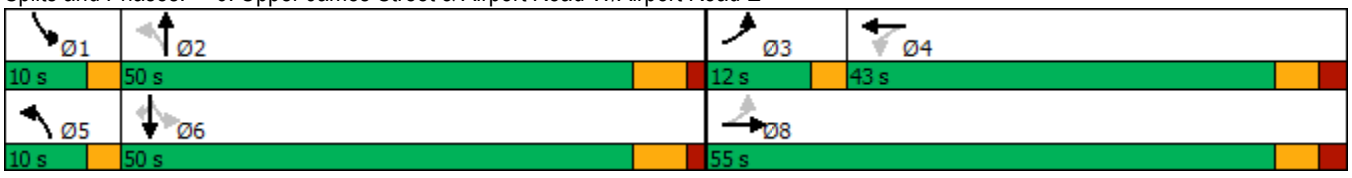
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	154	11	38	191	95	45	850	72	36	363	54
Future Volume (vph)	241	154	11	38	191	95	45	850	72	36	363	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	140.0		0.0	100.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	1757	0	0	1711	0	1716	3357	0	1653	3305	1365
Flt Permitted	0.324				0.940		0.484			0.186		
Satd. Flow (perm)	585	1757	0	0	1618	0	874	3357	0	324	3305	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			19			9				88
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	5%	18%	18%	3%	3%	4%	5%	6%	8%	8%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	178	0	0	348	0	48	991	0	39	390	58
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases	8			4			2			6		6
Detector Phase	3	8		4	4		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		5.0	30.0		5.0	30.0	30.0
Minimum Split (s)	9.5	42.3		42.3	42.3		9.5	41.3		9.5	41.3	41.3
Total Split (s)	12.0	55.0		43.0	43.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	10.4%	47.8%		37.4%	37.4%		8.7%	43.5%		8.7%	43.5%	43.5%
Maximum Green (s)	9.0	48.7		36.7	36.7		7.0	43.7		7.0	43.7	43.7
Yellow Time (s)	3.0	3.7		3.7	3.7		3.0	4.6		3.0	4.6	4.6
All-Red Time (s)	0.0	2.6		2.6	2.6		0.0	1.7		0.0	1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.3			5.3		2.0	5.3		2.0	5.3	5.3

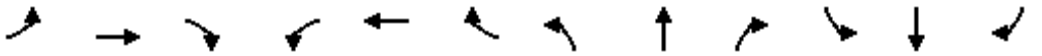
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		11.0		11.0	11.0			18.0			18.0	18.0
Flash Dont Walk (s)		24.0		24.0	24.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		0		0	0			0			0	0
Act Effct Green (s)	42.2	38.9			26.7		55.0	47.2		54.4	45.2	45.2
Actuated g/C Ratio	0.41	0.38			0.26		0.54	0.46		0.53	0.44	0.44
v/c Ratio	0.73	0.27			0.80		0.09	0.64		0.14	0.27	0.09
Control Delay	35.4	22.5			47.5		13.1	25.4		13.9	20.6	2.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	35.4	22.5			47.5		13.1	25.4		13.9	20.6	2.2
LOS	D	C			D		B	C		B	C	A
Approach Delay		30.1			47.5			24.9			17.9	
Approach LOS		C			D			C			B	
Queue Length 50th (m)	37.8	25.4			65.9		4.5	87.0		3.6	27.7	0.0
Queue Length 95th (m)	58.0	41.5			99.8		12.2	130.9		10.3	45.8	4.0
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0						140.0			100.0		90.0
Base Capacity (vph)	353	865			615		536	1552		278	1461	652
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.73	0.21			0.57		0.09	0.64		0.14	0.27	0.09

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 102.3
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 27.8 Intersection LOS: C
Intersection Capacity Utilization 77.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





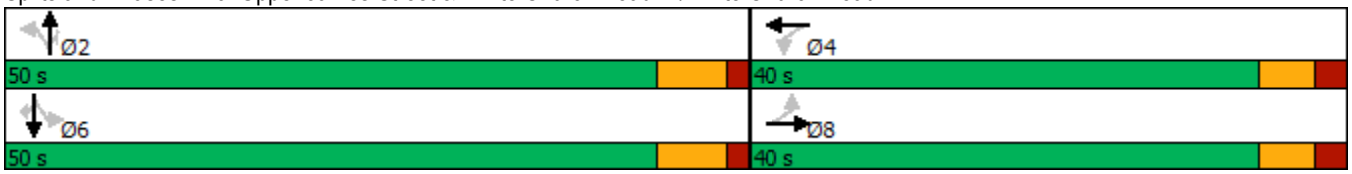
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	72	29	207	146	79	10	874	93	38	537	67
Future Volume (vph)	65	72	29	207	146	79	10	874	93	38	537	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		15.0	75.0		15.0
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1717	0	0	1726	0	1275	3336	1479	1653	3131	1413
Flt Permitted		0.738			0.763		0.414			0.244		
Satd. Flow (perm)	0	1292	0	0	1348	0	556	3336	1479	424	3131	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			15				46			54
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	3%	7%	2%	3%	8%	40%	7%	8%	8%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	450	0	10	910	97	40	559	70
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		6
Detector Phase	8	8		4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0	25.0	25.0	25.0	25.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3	31.3	31.3	31.3	31.3
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	34.0	34.0		34.0	34.0		43.7	43.7	43.7	43.7	43.7	43.7
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7	1.7	1.7	1.7	1.7
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0			5.0		5.3	5.3	5.3	5.3	5.3	5.3

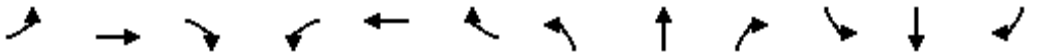
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	14.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		31.6			31.6		44.8	44.8	44.8	44.8	44.8	44.8
Actuated g/C Ratio		0.36			0.36		0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio		0.36			0.90		0.03	0.53	0.12	0.18	0.35	0.09
Control Delay		20.6			48.2		12.2	16.0	7.5	15.3	13.7	5.2
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.6			48.2		12.2	16.0	7.5	15.3	13.7	5.2
LOS		C			D		B	B	A	B	B	A
Approach Delay		20.6			48.2			15.1			12.9	
Approach LOS		C			D			B			B	
Queue Length 50th (m)		19.8			70.8		0.9	57.5	4.6	3.9	31.2	1.4
Queue Length 95th (m)		36.6			#127.8		3.7	75.7	12.8	10.7	43.3	8.1
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)							75.0		15.0	75.0		15.0
Base Capacity (vph)		531			554		287	1724	786	219	1618	756
Starvation Cap Reductn		0			0		0	0	0	0	0	0
Spillback Cap Reductn		0			0		0	0	0	0	0	0
Storage Cap Reductn		0			0		0	0	0	0	0	0
Reduced v/c Ratio		0.33			0.81		0.03	0.53	0.12	0.18	0.35	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.7			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E



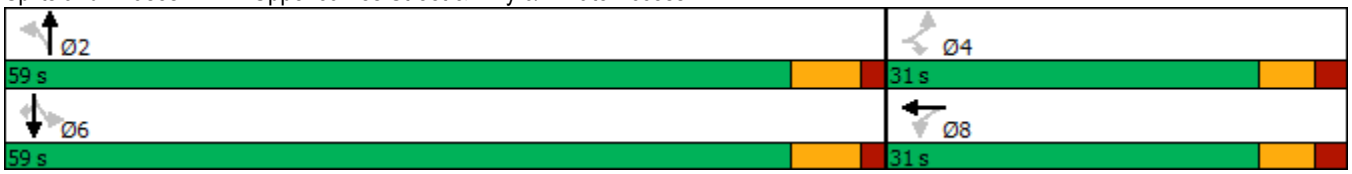


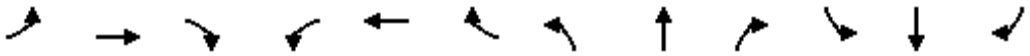
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	0	300	0	0	0	399	898	0	0	540	233
Future Volume (vph)	79	0	300	0	0	0	399	898	0	0	540	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1405	0	1320	0	1879	0	1700	3368	0	1879	3159	1536
Flt Permitted	0.757						0.435					
Satd. Flow (perm)	1120	0	1320	0	1879	0	778	3368	0	1879	3159	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313									248
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	27%	0%	21%	0%	0%	0%	5%	6%	0%	0%	13%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	0	319	0	0	0	424	955	0	0	574	248
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm				Perm	NA		Perm	NA	Perm
Protected Phases					8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		25.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		31.3	31.3		31.3	31.3	31.3
Total Split (s)	31.0		31.0	31.0	31.0		59.0	59.0		59.0	59.0	59.0
Total Split (%)	34.4%		34.4%	34.4%	34.4%		65.6%	65.6%		65.6%	65.6%	65.6%
Maximum Green (s)	25.0		25.0	25.0	25.0		52.7	52.7		52.7	52.7	52.7
Yellow Time (s)	3.7		3.7	3.7	3.7		4.6	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		5.3	5.3		5.3	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		Max	Max		Max	Max	Max
Walk Time (s)	10.0		10.0	10.0	10.0		14.0	14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0		0	0		0	0	0
Act Effct Green (s)	16.5		16.5				53.7	53.7			53.7	53.7
Actuated g/C Ratio	0.20		0.20				0.67	0.67			0.67	0.67
v/c Ratio	0.37		0.61				0.82	0.43			0.27	0.22
Control Delay	32.8		9.6				26.1	7.0			5.9	1.3
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	32.8		9.6				26.1	7.0			5.9	1.3
LOS	C		A				C	A			A	A
Approach Delay		14.4						12.9			4.5	
Approach LOS		B						B			A	
Queue Length 50th (m)	11.7		0.8				42.2	31.7			16.6	0.0
Queue Length 95th (m)	25.1		23.2				#114.9	47.2			26.2	7.1
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	362		638				519	2247			2108	1107
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	0.23		0.50				0.82	0.43			0.27	0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access

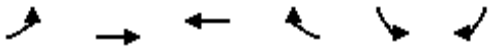




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	214	33	22	251	17	38	4	171	21	45	85
Future Volume (vph)	8	214	33	22	251	17	38	4	171	21	45	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	233	36	24	273	18	41	4	186	23	49	92

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	9	269	24	291	41	190	23	141
Volume Left (vph)	9	0	24	0	41	0	23	0
Volume Right (vph)	0	36	0	18	0	186	0	92
Hadj (s)	0.50	0.07	0.74	0.12	0.55	-0.69	0.58	-0.38
Departure Headway (s)	6.6	6.1	6.8	6.1	7.0	5.8	7.1	6.2
Degree Utilization, x	0.02	0.46	0.05	0.50	0.08	0.30	0.05	0.24
Capacity (veh/h)	513	560	505	563	479	579	464	537
Control Delay (s)	8.5	13.0	8.9	13.8	9.4	10.1	9.3	9.9
Approach Delay (s)	12.9		13.4		9.9		9.8	
Approach LOS	B		B		A		A	

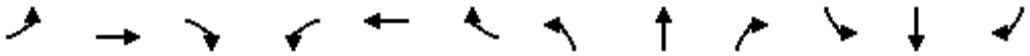
Intersection Summary				
Delay	11.9			
Level of Service	B			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	186	174	245	117	36	131
Future Volume (Veh/h)	186	174	245	117	36	131
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)	202	189	266	127	39	142
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	393				922	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	393				922	330
tC, single (s)	4.1				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.4
p0 queue free %	83				83	80
cM capacity (veh/h)	1166				233	694

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	391	393	181
Volume Left	202	0	39
Volume Right	0	127	142
cSH	1166	1700	487
Volume to Capacity	0.17	0.23	0.37
Queue Length 95th (m)	5.0	0.0	13.6
Control Delay (s)	5.3	0.0	16.7
Lane LOS	A		C
Approach Delay (s)	5.3	0.0	16.7
Approach LOS			C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	158	6	3	394	29	4	40	2	14	20	28
Future Volume (Veh/h)	39	158	6	3	394	29	4	40	2	14	20	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	45	184	7	3	458	34	5	47	2	16	23	33
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	492			191			803	776	188	784	762	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	492			191			803	776	188	784	762	475
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.3	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.3	3.7	4.1	3.5
p0 queue free %	96			100			98	85	100	94	93	94
cM capacity (veh/h)	1056			1395			237	313	860	247	315	553

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	236	495	54	72
Volume Left	45	3	5	16
Volume Right	7	34	2	33
cSH	1056	1395	311	364
Volume to Capacity	0.04	0.00	0.17	0.20
Queue Length 95th (m)	1.1	0.1	4.9	5.8
Control Delay (s)	2.0	0.1	19.0	17.3
Lane LOS	A	A	C	C
Approach Delay (s)	2.0	0.1	19.0	17.3
Approach LOS			C	C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	258	4	58	318	6	102
Future Volume (Veh/h)	258	4	58	318	6	102
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	274	4	62	338	6	109
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			278		738	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			278		738	276
tC, single (s)			4.3		6.7	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.8	3.3
p0 queue free %			95		98	86
cM capacity (veh/h)			1208		326	763

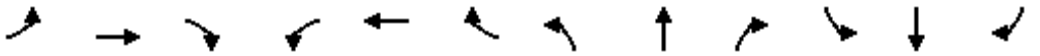
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	278	400	115
Volume Left	0	62	6
Volume Right	4	0	109
cSH	1700	1208	713
Volume to Capacity	0.16	0.05	0.16
Queue Length 95th (m)	0.0	1.3	4.6
Control Delay (s)	0.0	1.7	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.7	11.0
Approach LOS			B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	201	2	1	425	7	2
Future Volume (Veh/h)	201	2	1	425	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	223	2	1	472	8	2
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			225		698	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		698	224
tC, single (s)			5.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			3.1		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			929		409	820

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	225	473	10
Volume Left	0	1	8
Volume Right	2	0	2
cSH	1700	929	455
Volume to Capacity	0.13	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		33.2%	ICU Level of Service A
Analysis Period (min)		15	

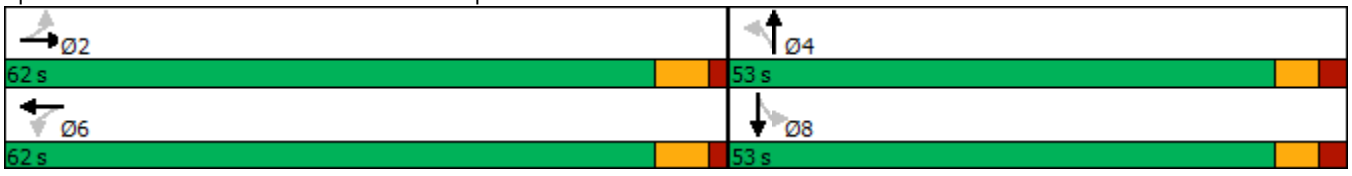


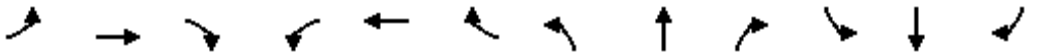
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	214	33	22	251	17	38	4	171	21	45	85
Future Volume (vph)	8	214	33	22	251	17	38	4	171	21	45	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	1684	0	1566	1700	0	1733	1603	0	1700	1623	0
Flt Permitted	0.582			0.594			0.667			0.638		
Satd. Flow (perm)	1094	1684	0	979	1700	0	1217	1603	0	1142	1623	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			4			186			92	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	18%	14%	9%	18%	3%	0%	0%	5%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	269	0	24	291	0	41	190	0	23	141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	62.0	62.0		62.0	62.0		53.0	53.0		53.0	53.0	
Total Split (%)	53.9%	53.9%		53.9%	53.9%		46.1%	46.1%		46.1%	46.1%	
Maximum Green (s)	55.7	55.7		55.7	55.7		46.7	46.7		46.7	46.7	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	11.4	11.4		11.4	11.4		7.9	7.9		7.9	7.9	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.26	0.26		0.26	0.26	
v/c Ratio	0.02	0.42		0.06	0.45		0.13	0.34		0.08	0.28	
Control Delay	6.1	9.0		6.6	9.6		10.2	4.3		9.8	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.1	9.0		6.6	9.6		10.2	4.3		9.8	6.3	
LOS	A	A		A	A		B	A		A	A	
Approach Delay		8.9			9.4			5.3			6.8	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	0.3	8.3		0.7	9.4		1.5	0.2		0.8	1.8	
Queue Length 95th (m)	1.7	21.2		3.3	23.3		6.2	8.9		4.2	10.0	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	1094	1684		979	1700		1217	1603		1142	1623	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.16		0.02	0.17		0.03	0.12		0.02	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 30.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 46.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Homestead Drive & Airport Road W



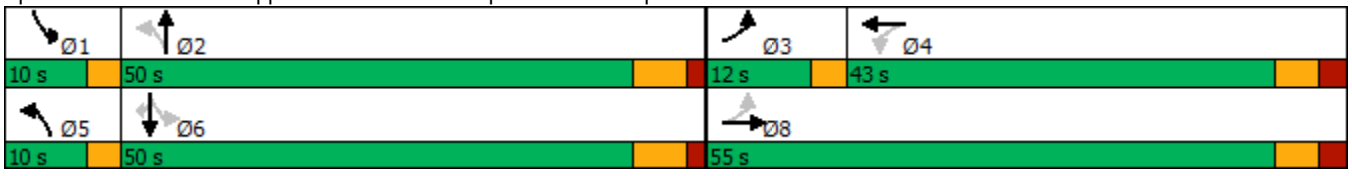


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	174	16	120	145	63	32	721	84	70	776	53
Future Volume (vph)	234	174	16	120	145	63	32	721	84	70	776	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	140.0		0.0	100.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	1821	0	0	1765	0	1785	3404	0	1785	3466	1479
Flt Permitted	0.454				0.795		0.245			0.210		
Satd. Flow (perm)	812	1821	0	0	1429	0	460	3404	0	395	3466	1479
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			11			13				88
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	0%	5%	0%	0%	0%	3%	5%	0%	3%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	204	0	0	353	0	34	865	0	75	834	57
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases	8			4			2			6		6
Detector Phase	3	8		4	4		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		5.0	30.0		5.0	30.0	30.0
Minimum Split (s)	9.5	42.3		42.3	42.3		9.5	41.3		9.5	41.3	41.3
Total Split (s)	12.0	55.0		43.0	43.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	10.4%	47.8%		37.4%	37.4%		8.7%	43.5%		8.7%	43.5%	43.5%
Maximum Green (s)	9.0	48.7		36.7	36.7		7.0	43.7		7.0	43.7	43.7
Yellow Time (s)	3.0	3.7		3.7	3.7		3.0	4.6		3.0	4.6	4.6
All-Red Time (s)	0.0	2.6		2.6	2.6		0.0	1.7		0.0	1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.3			5.3		2.0	5.3		2.0	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		11.0		11.0	11.0			18.0			18.0	18.0
Flash Dont Walk (s)		24.0		24.0	24.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		0		0	0			0			0	0
Act Effct Green (s)	45.9	42.5			30.4		54.4	45.2		55.2	47.3	47.3
Actuated g/C Ratio	0.43	0.40			0.29		0.51	0.43		0.52	0.45	0.45
v/c Ratio	0.58	0.28			0.85		0.10	0.59		0.25	0.54	0.08
Control Delay	26.4	22.0			53.9		14.5	26.8		15.9	25.1	2.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	26.4	22.0			53.9		14.5	26.8		15.9	25.1	2.0
LOS	C	C			D		B	C		B	C	A
Approach Delay		24.5			53.9			26.3			23.0	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	36.8	29.5			71.7		3.5	78.8		8.0	75.2	0.0
Queue Length 95th (m)	56.5	46.8			109.3		9.4	108.3		17.2	104.2	3.6
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0						140.0			100.0		90.0
Base Capacity (vph)	435	865			520		338	1458		311	1545	708
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.58	0.24			0.68		0.10	0.59		0.24	0.54	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 106.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E



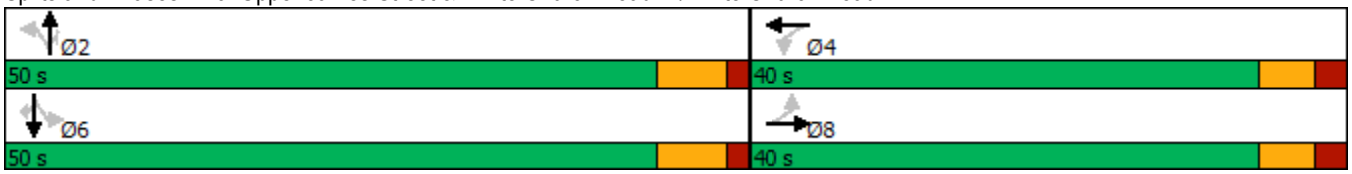
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	264	25	152	143	51	42	620	162	73	871	101
Future Volume (vph)	117	264	25	152	143	51	42	620	162	73	871	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		15.0	75.0		15.0
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1777	0	0	1763	0	1785	3400	1551	1767	3433	1566
Flt Permitted		0.771			0.607		0.248			0.368		
Satd. Flow (perm)	0	1389	0	0	1093	0	466	3400	1551	685	3433	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			11				114			50
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	1%	12%	3%	1%	2%	0%	5%	3%	1%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	423	0	0	360	0	44	646	169	76	907	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		6
Detector Phase	8	8		4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0	25.0	25.0	25.0	25.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3	31.3	31.3	31.3	31.3
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	34.0	34.0		34.0	34.0		43.7	43.7	43.7	43.7	43.7	43.7
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7	1.7	1.7	1.7	1.7
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0			5.0		5.3	5.3	5.3	5.3	5.3	5.3

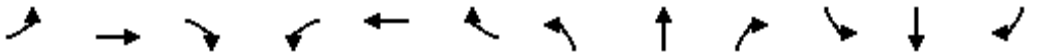
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	14.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		30.8			30.8		44.9	44.9	44.9	44.9	44.9	44.9
Actuated g/C Ratio		0.36			0.36		0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio		0.85			0.90		0.18	0.36	0.20	0.21	0.51	0.12
Control Delay		42.0			53.1		14.9	13.7	5.3	14.7	15.4	7.4
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		42.0			53.1		14.9	13.7	5.3	14.7	15.4	7.4
LOS		D			D		B	B	A	B	B	A
Approach Delay		42.0			53.1			12.1			14.6	
Approach LOS		D			D			B			B	
Queue Length 50th (m)		65.6			56.5		4.3	36.6	5.0	7.5	56.6	5.0
Queue Length 95th (m)		#115.2			#108.3		11.4	49.5	15.6	16.8	74.3	13.6
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)							75.0		15.0	75.0		15.0
Base Capacity (vph)		569			452		243	1773	863	357	1790	840
Starvation Cap Reductn		0			0		0	0	0	0	0	0
Spillback Cap Reductn		0			0		0	0	0	0	0	0
Storage Cap Reductn		0			0		0	0	0	0	0	0
Reduced v/c Ratio		0.74			0.80		0.18	0.36	0.20	0.21	0.51	0.13

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 88.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E





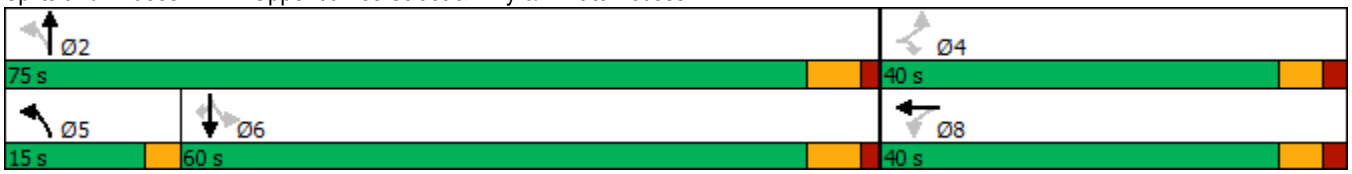
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	0	519	2	0	0	331	610	0	0	958	136
Future Volume (vph)	173	0	519	2	0	0	331	610	0	0	958	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	0	1507	0	1785	0	1594	3368	0	1879	3466	1365
Flt Permitted	0.757				0.950		0.195					
Satd. Flow (perm)	1368	0	1507	0	1785	0	327	3368	0	1879	3466	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255									140
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	6%	0%	0%	0%	12%	6%	0%	0%	3%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	0	535	0	2	0	341	629	0	0	988	140
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	40.0		40.0	40.0	40.0		15.0	75.0		60.0	60.0	60.0
Total Split (%)	34.8%		34.8%	34.8%	34.8%		13.0%	65.2%		52.2%	52.2%	52.2%
Maximum Green (s)	34.0		34.0	34.0	34.0		12.0	68.7		53.7	53.7	53.7
Yellow Time (s)	3.7		3.7	3.7	3.7		3.0	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		0.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		2.0	5.3		5.3	5.3	5.3

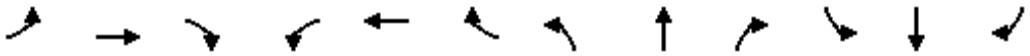
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Max		Max	Max	Max
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	28.5		28.5		28.5		73.3	70.0			54.9	54.9
Actuated g/C Ratio	0.26		0.26		0.26		0.67	0.64			0.50	0.50
v/c Ratio	0.50		0.92		0.00		0.92	0.29			0.56	0.18
Control Delay	38.7		42.2		28.0		44.5	9.8			21.2	3.4
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	38.7		42.2		28.0		44.5	9.8			21.2	3.4
LOS	D		D		C		D	A			C	A
Approach Delay		41.3			28.0			22.0			19.0	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	33.7		66.3		0.4		34.6	33.2			83.6	0.0
Queue Length 95th (m)	55.6		#130.2		2.3		#85.5	46.2			109.3	10.8
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	441		659		576		372	2166			1749	758
Starvation Cap Reductn	0		0		0		0	0			0	0
Spillback Cap Reductn	0		0		0		0	0			0	0
Storage Cap Reductn	0		0		0		0	0			0	0
Reduced v/c Ratio	0.40		0.81		0.00		0.92	0.29			0.56	0.18

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 108.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 25.7 Intersection LOS: C
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access

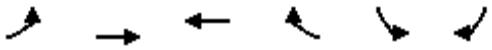




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	275	29	71	134	25	31	13	99	50	111	97
Future Volume (vph)	15	275	29	71	134	25	31	13	99	50	111	97
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	16	302	32	78	147	27	34	14	109	55	122	107

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	16	334	78	174	34	123	55	229
Volume Left (vph)	16	0	78	0	34	0	55	0
Volume Right (vph)	0	32	0	27	0	109	0	107
Hadj (s)	0.50	0.00	0.50	0.01	0.55	-0.61	0.64	-0.26
Departure Headway (s)	6.7	6.2	6.8	6.3	7.2	6.1	7.1	6.2
Degree Utilization, x	0.03	0.57	0.15	0.31	0.07	0.21	0.11	0.39
Capacity (veh/h)	511	553	498	539	460	543	474	547
Control Delay (s)	8.7	15.9	9.8	10.9	9.6	9.5	9.8	12.0
Approach Delay (s)	15.5		10.5		9.5		11.5	
Approach LOS	C		B		A		B	

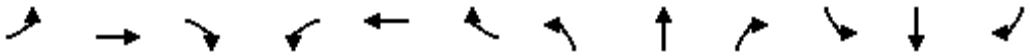
Intersection Summary				
Delay	12.3			
Level of Service	B			
Intersection Capacity Utilization	49.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	184	325	253	56	58	185
Future Volume (Veh/h)	184	325	253	56	58	185
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	196	346	269	60	62	197
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	329				1037	299
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329				1037	299
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				72	73
cM capacity (veh/h)	1242				218	741

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	542	329	259
Volume Left	196	0	62
Volume Right	0	60	197
cSH	1242	1700	470
Volume to Capacity	0.16	0.19	0.55
Queue Length 95th (m)	4.5	0.0	26.2
Control Delay (s)	4.1	0.0	21.7
Lane LOS	A		C
Approach Delay (s)	4.1	0.0	21.7
Approach LOS			C

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	453	4	5	305	15	3	47	5	17	62	39
Future Volume (Veh/h)	40	453	4	5	305	15	3	47	5	17	62	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	44	498	4	5	335	16	3	52	5	19	68	43
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	351			502			1018	949	500	972	943	343
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	351			502			1018	949	500	972	943	343
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			98	79	99	90	73	94
cM capacity (veh/h)	1202			1073			157	252	575	189	254	704

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	546	356	60	130
Volume Left	44	5	3	19
Volume Right	4	16	5	43
cSH	1202	1073	256	303
Volume to Capacity	0.04	0.00	0.23	0.43
Queue Length 95th (m)	0.9	0.1	7.1	16.5
Control Delay (s)	1.0	0.2	23.3	25.6
Lane LOS	A	A	C	D
Approach Delay (s)	1.0	0.2	23.3	25.6
Approach LOS			C	D

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	410	5	113	325	3	99
Future Volume (Veh/h)	410	5	113	325	3	99
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	456	6	126	361	3	110
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		1072	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			462		1072	459
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		99	82
cM capacity (veh/h)			1104		218	606

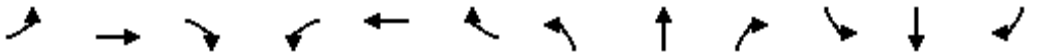
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	462	487	113
Volume Left	0	126	3
Volume Right	6	0	110
cSH	1700	1104	579
Volume to Capacity	0.27	0.11	0.20
Queue Length 95th (m)	0.0	3.1	5.8
Control Delay (s)	0.0	3.2	12.7
Lane LOS		A	B
Approach Delay (s)	0.0	3.2	12.7
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	494	5	5	342	4	3
Future Volume (Veh/h)	494	5	5	342	4	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	543	5	5	376	4	3
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		932	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			548		932	546
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1032		268	542

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	548	381	7
Volume Left	0	5	4
Volume Right	5	0	3
cSH	1700	1032	342
Volume to Capacity	0.32	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.5
Control Delay (s)	0.0	0.2	15.7
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	15.7
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



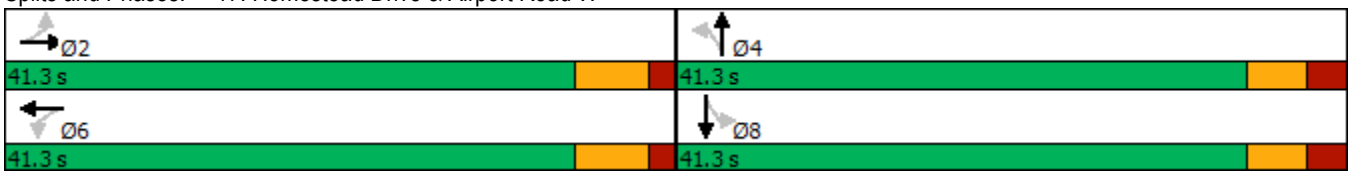
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	275	29	71	134	25	31	13	99	50	111	97
Future Volume (vph)	15	275	29	71	134	25	31	13	99	50	111	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	1774	0	1785	1711	0	1733	1615	0	1653	1655	0
Flt Permitted	0.647			0.559			0.616			0.678		
Satd. Flow (perm)	1206	1774	0	1043	1711	0	1114	1615	0	1180	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			14			109			68	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)	9		10	10		9	10					10
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	5%	0%	8%	0%	3%	0%	1%	8%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	334	0	78	174	0	34	123	0	55	229	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	12.8	12.8		12.8	12.8		10.4	10.4		10.4	10.4	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.30	0.30		0.30	0.30	
v/c Ratio	0.04	0.50		0.20	0.27		0.10	0.22		0.15	0.42	
Control Delay	7.6	11.4		9.2	8.5		10.1	4.4		10.6	9.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.6	11.4		9.2	8.5		10.1	4.4		10.6	9.8	
LOS	A	B		A	A		B	A		B	A	
Approach Delay		11.2			8.7			5.7			9.9	
Approach LOS		B			A			A			A	
Queue Length 50th (m)	0.5	13.1		2.8	5.8		1.3	0.5		2.2	6.7	
Queue Length 95th (m)	3.2	34.0		10.1	17.3		6.2	8.4		8.7	21.9	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	1156	1701		1000	1641		1068	1553		1131	1590	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.20		0.08	0.11		0.03	0.08		0.05	0.14	

Intersection Summary

Area Type: Other
Cycle Length: 82.6
Actuated Cycle Length: 34.1
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 9.4 Intersection LOS: A
Intersection Capacity Utilization 63.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 17: Homestead Drive & Airport Road W



Appendix D
Background Developments

nextrans
CONSULTING ENGINEERS

nextrans.ca

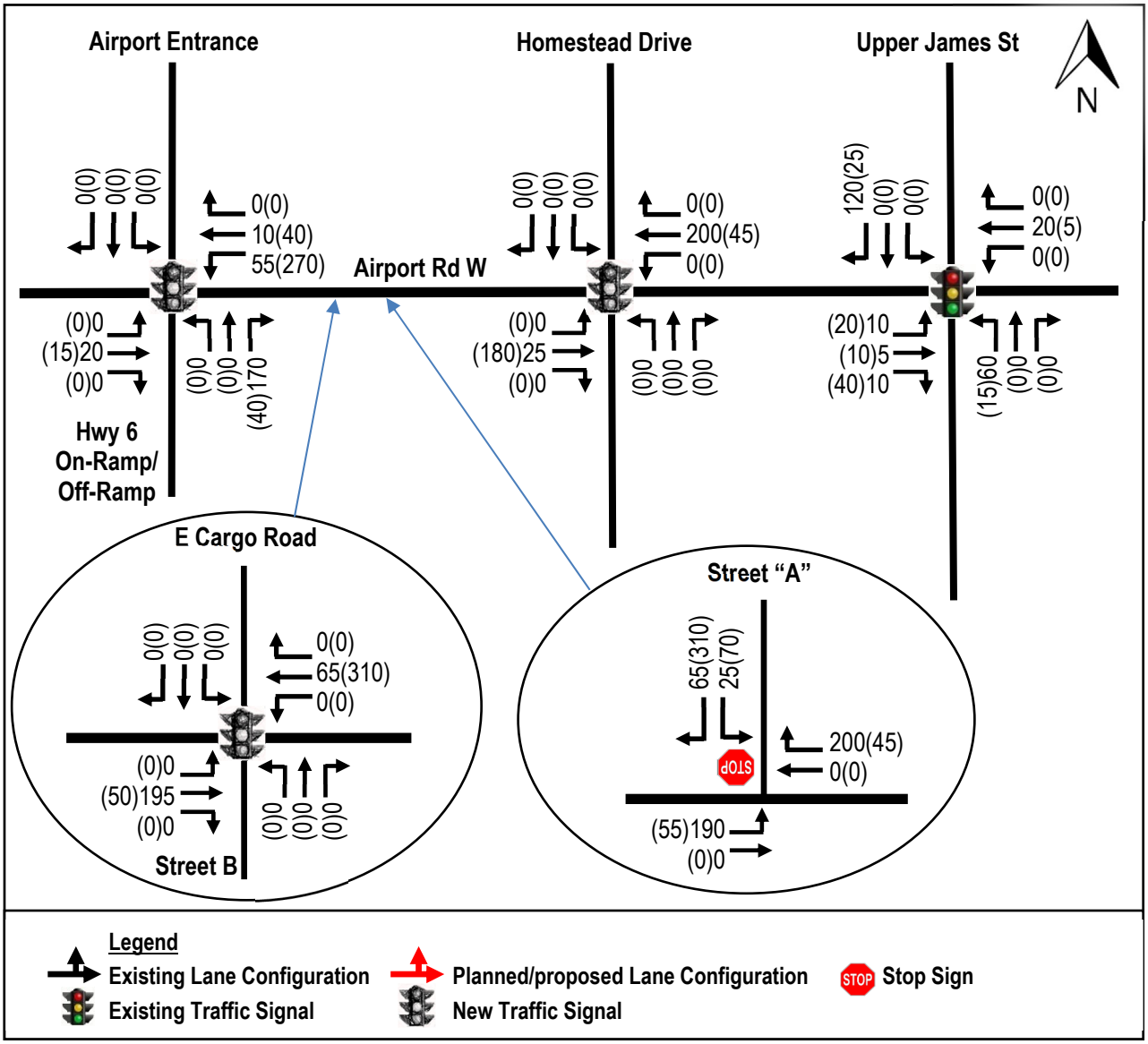
Transportation Impact Study Addendum

PROPOSED INDUSTRIAL DEVELOPMENT

3054 Homestead Drive
HAMILTON, ONTARIO

February 2023
Project No: NT-21-087

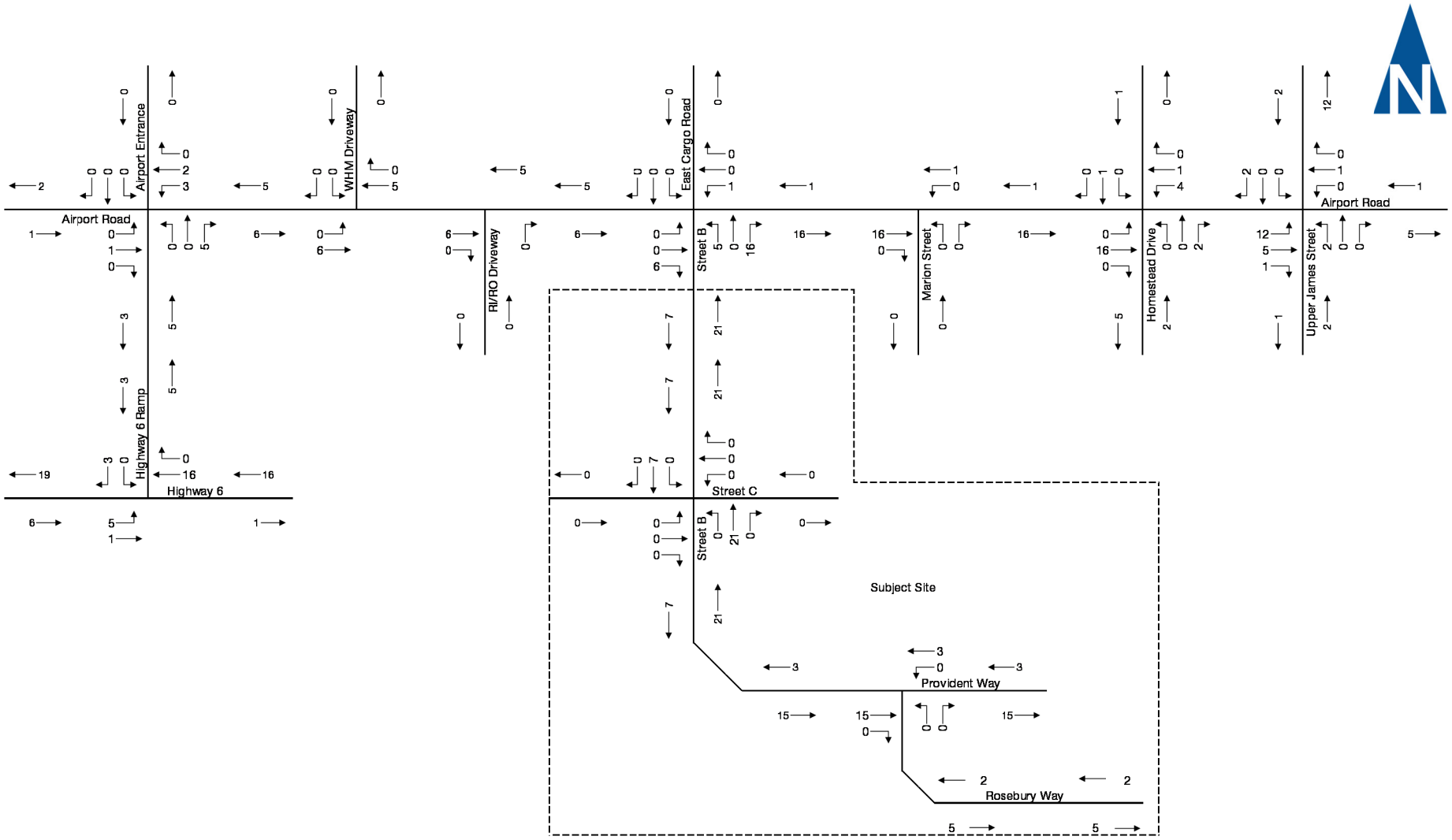
Figure 11 – Site Traffic Volumes



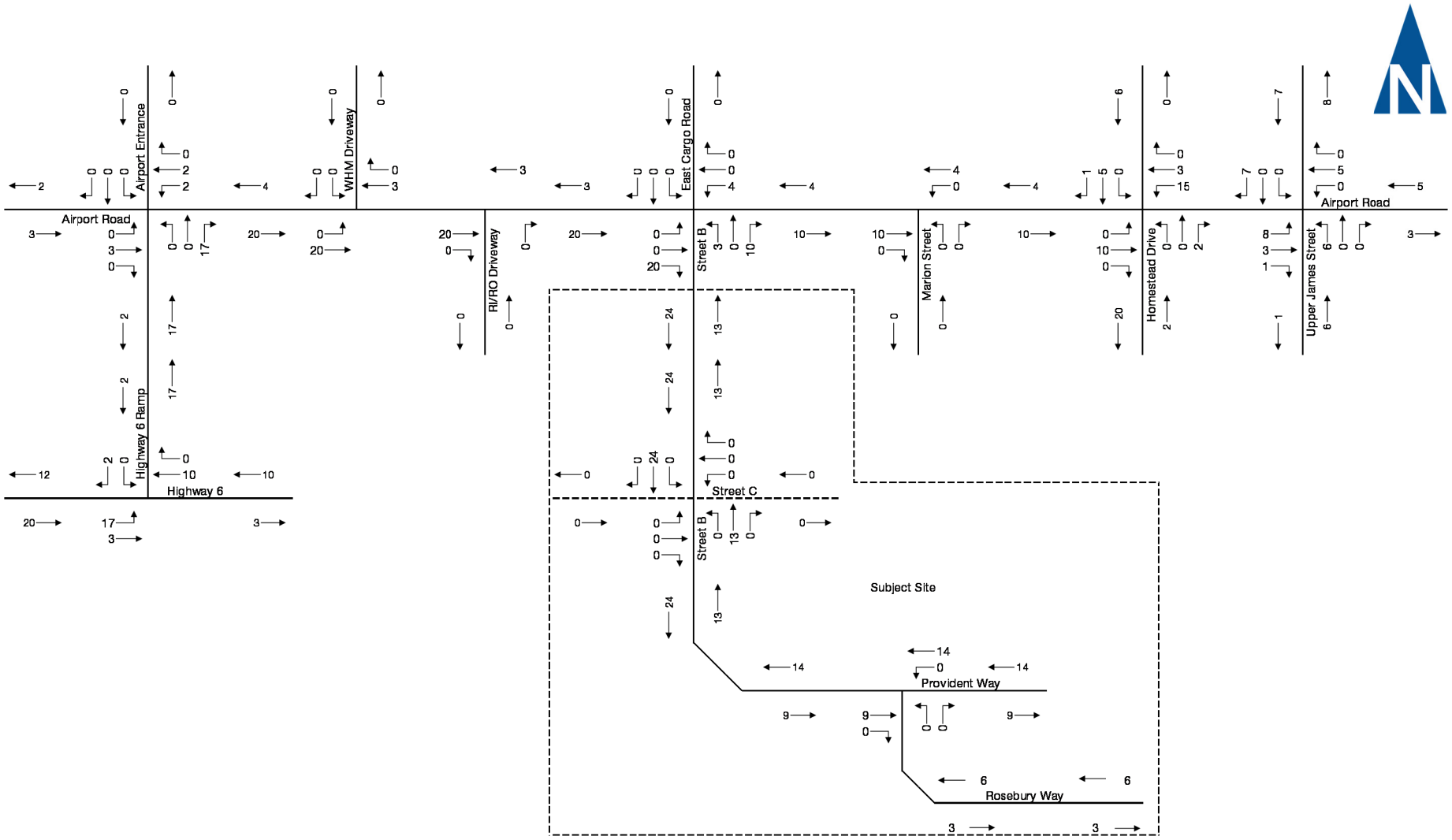
6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future Total Traffic Assessment for Auto Mode

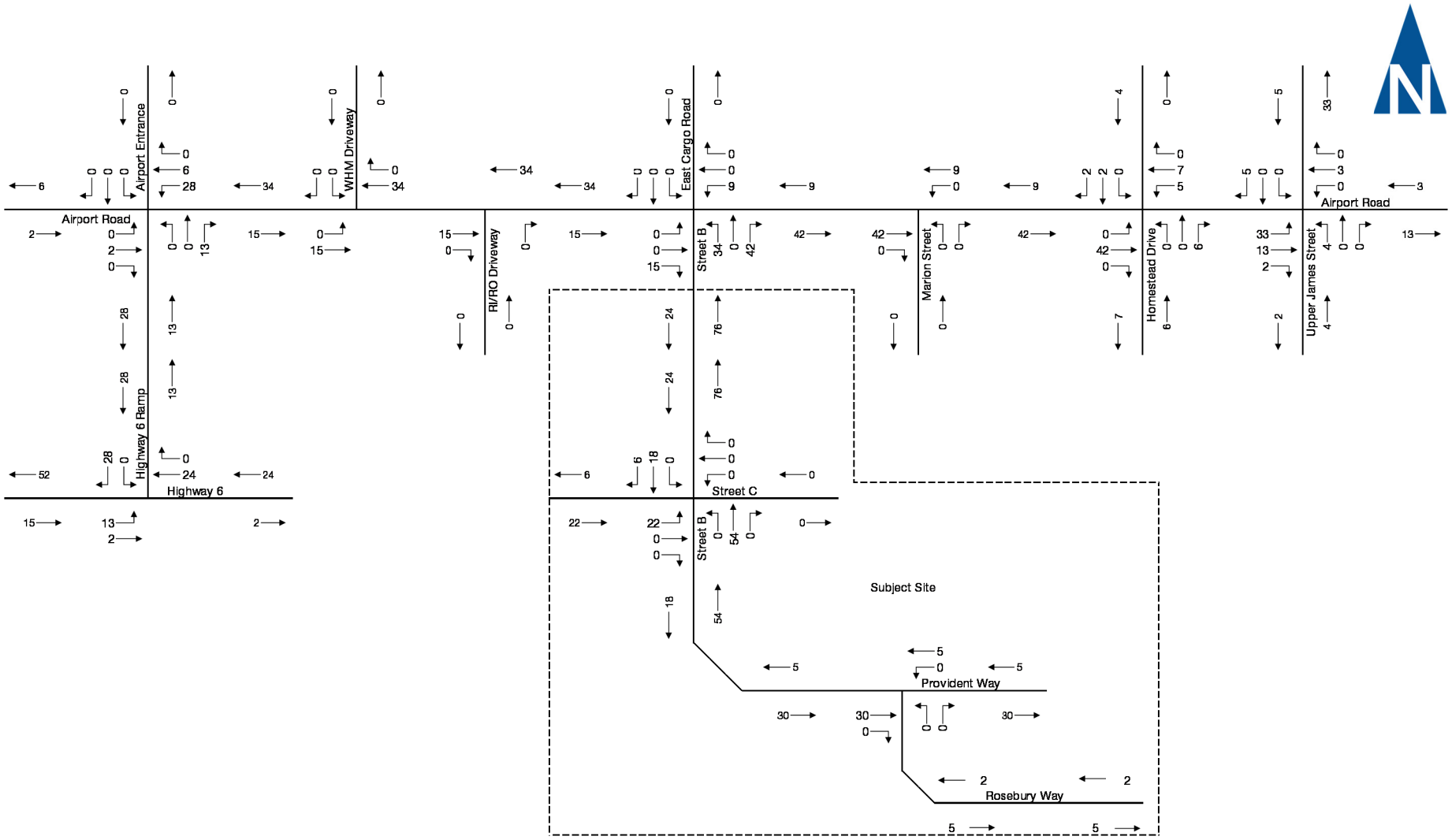
The estimated future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 12** and were analyzed using Synchro Version 10 software. The detailed calculations are provided in **Appendix G** and summarized in **Table 9**.



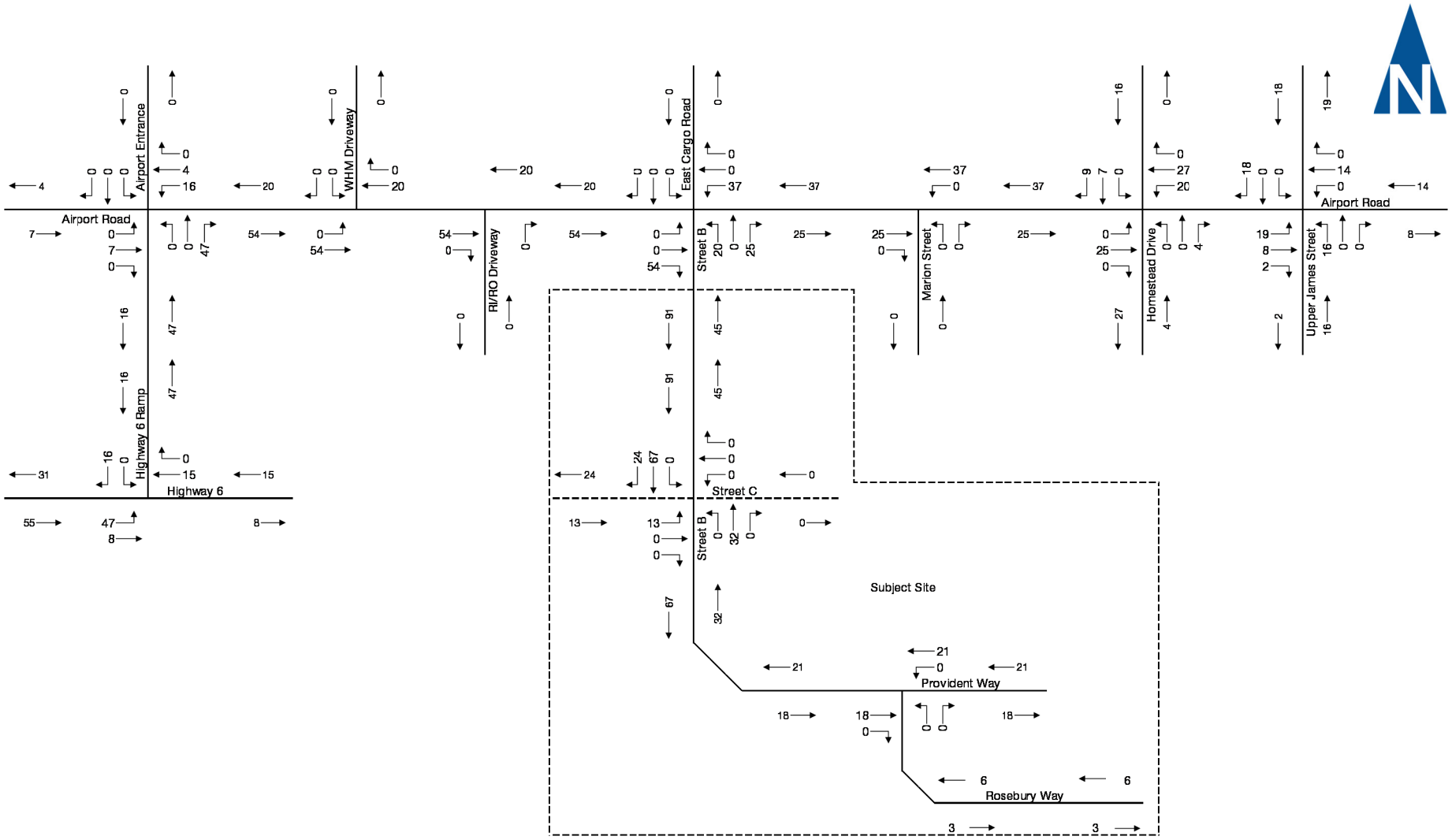
2017 Site Generated AM Peak Hour Traffic Volumes



2017 Site Generated PM Peak Hour Traffic Volumes

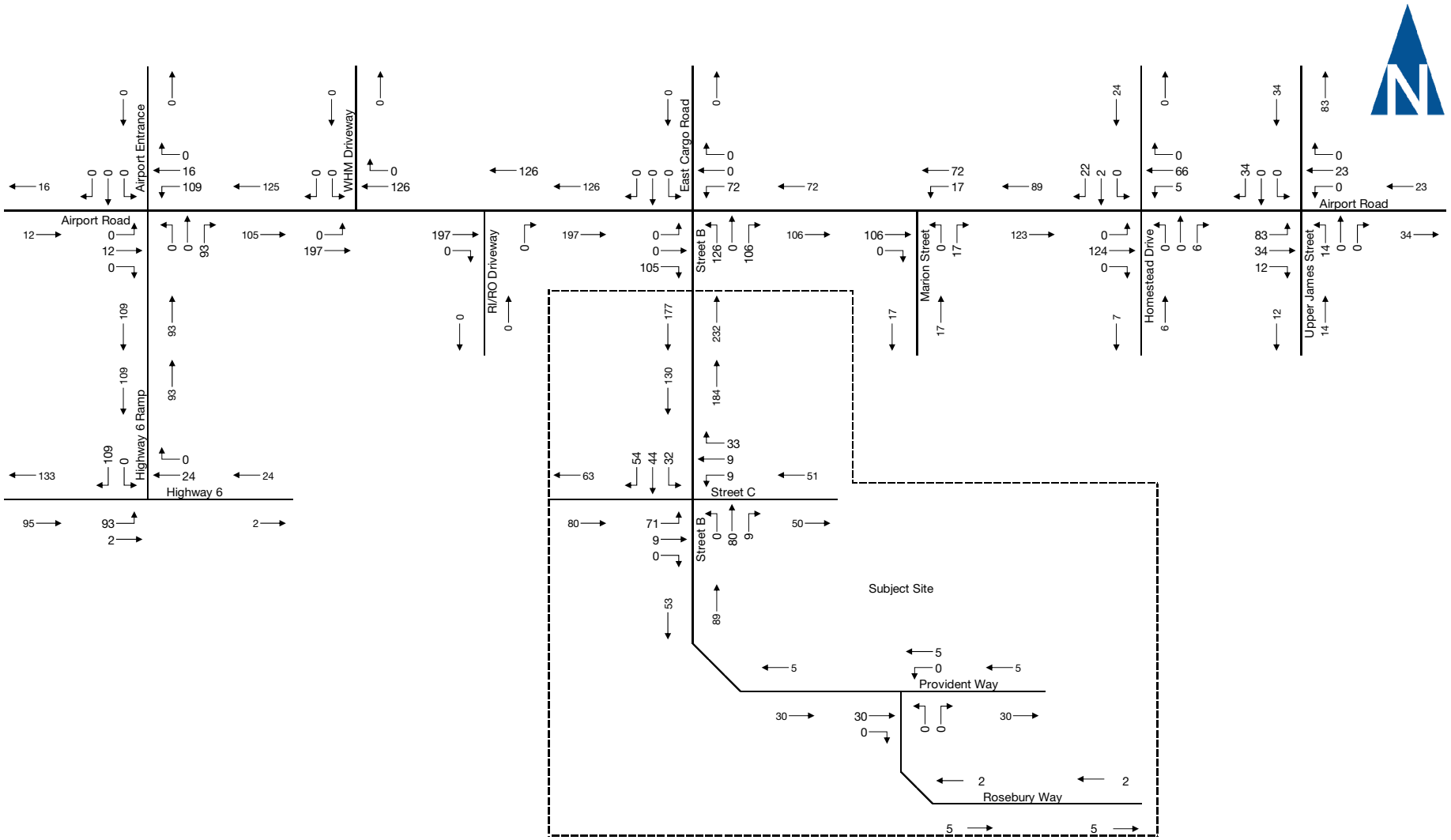


2019 Site Generated AM Peak Hour Traffic Volumes



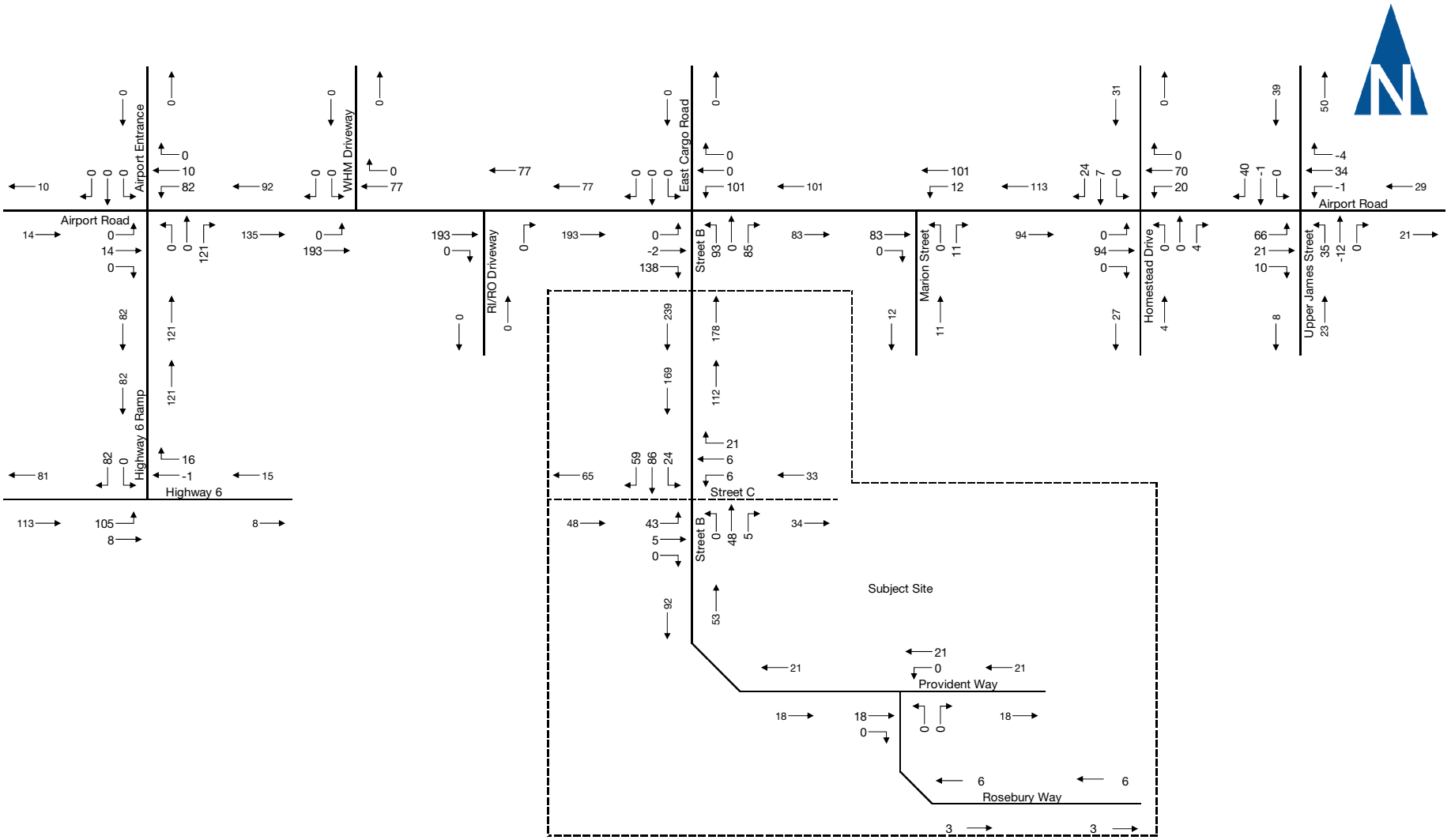
2019 Site Generated PM Peak Hour Traffic Volumes

Figure 3.3B



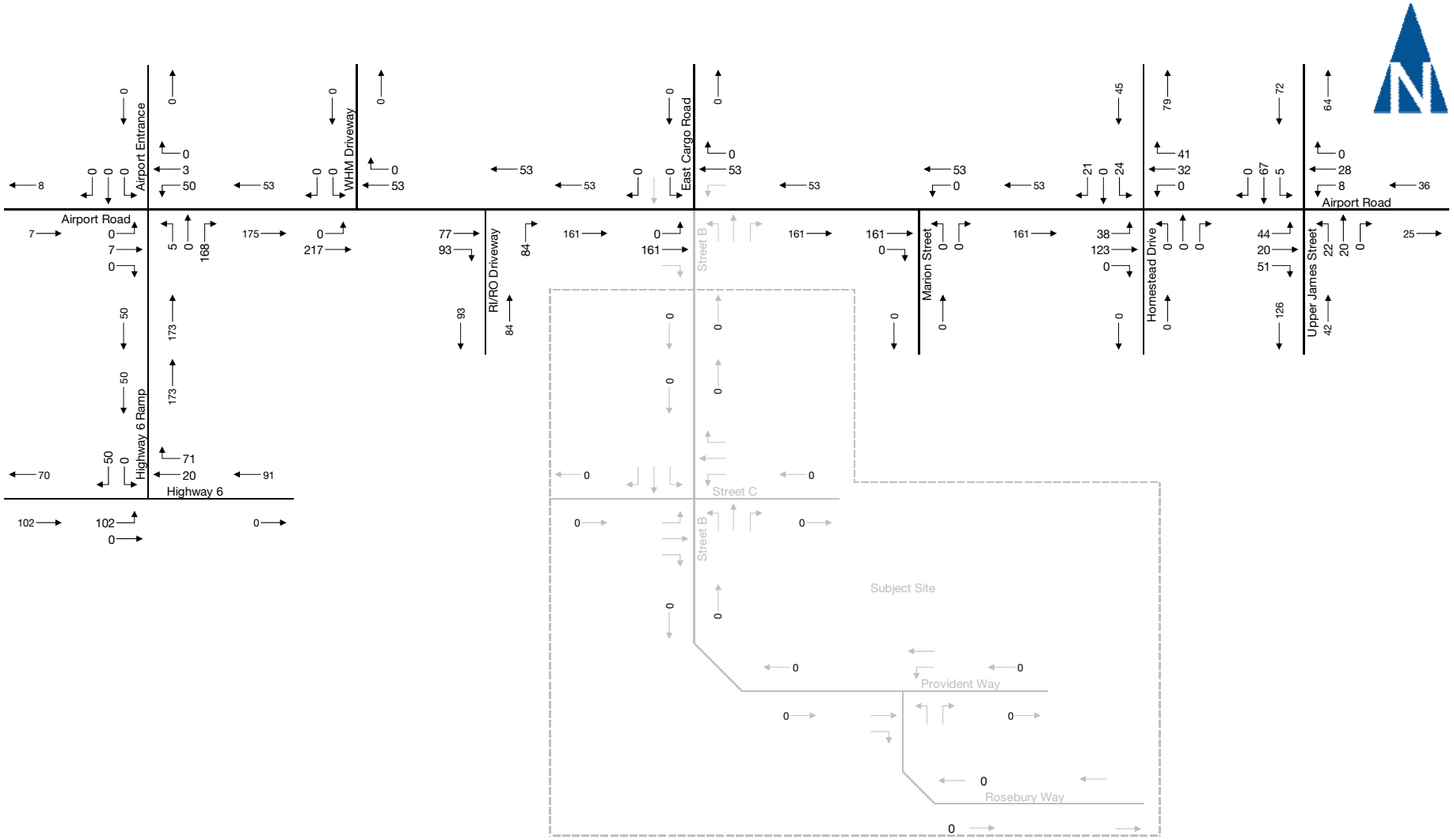
2021 Site Generated AM Peak Hour Traffic Volumes

Figure 3.4A



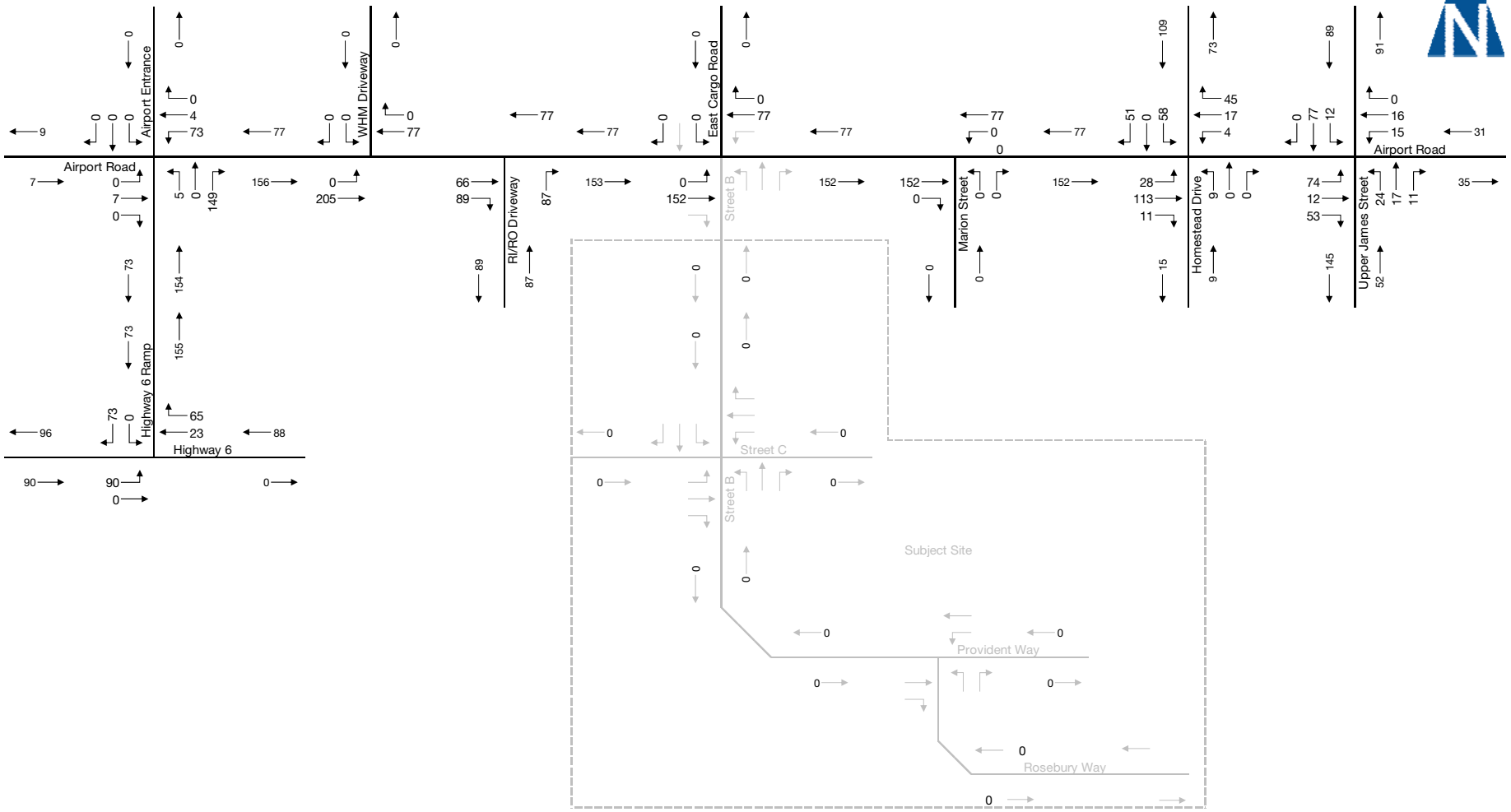
2021 Site Generated PM Peak Hour Traffic Volumes

Figure 3.4B



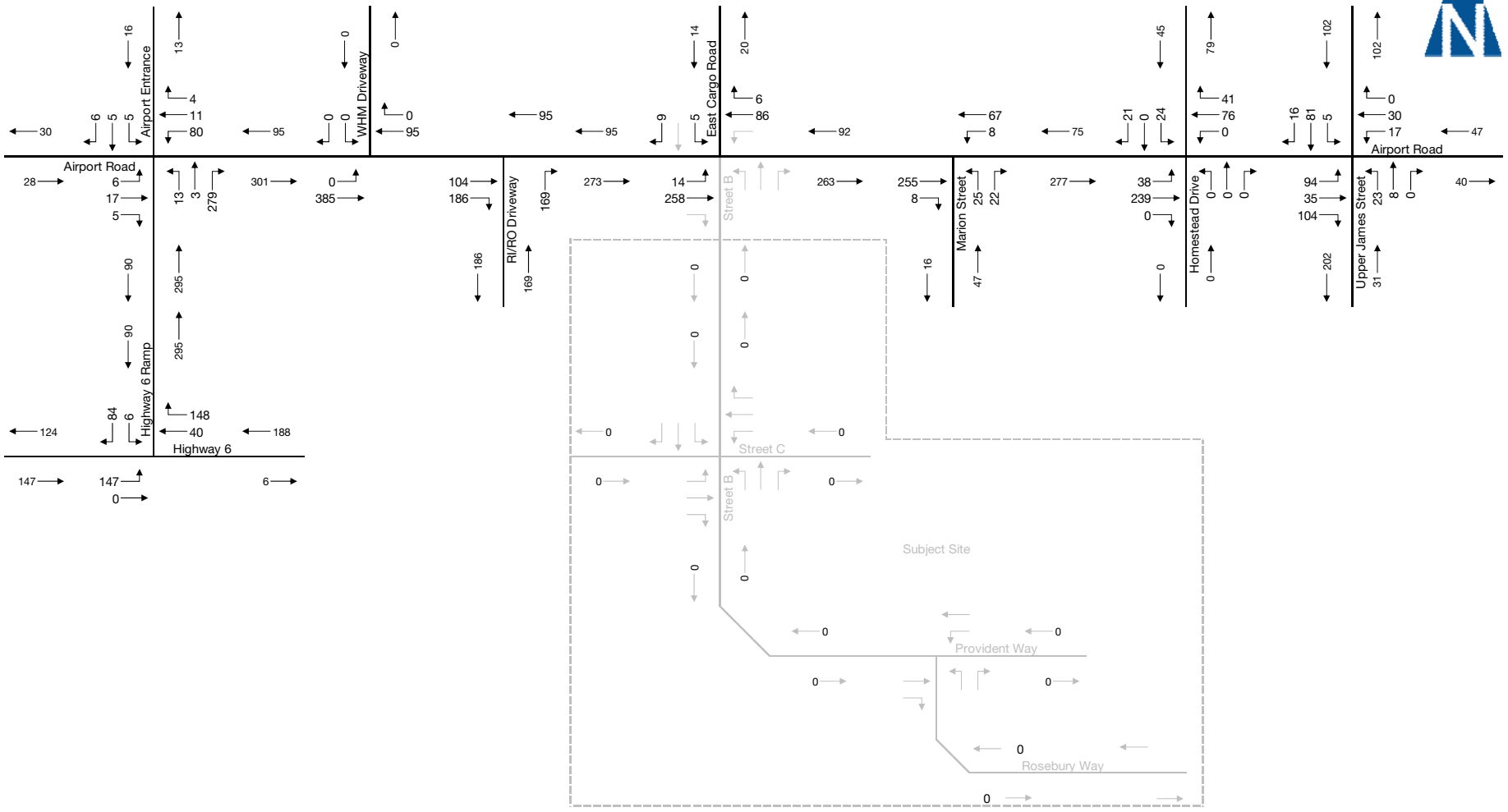
2019 Other Area Development Site Traffic

A.M. Peak Hour



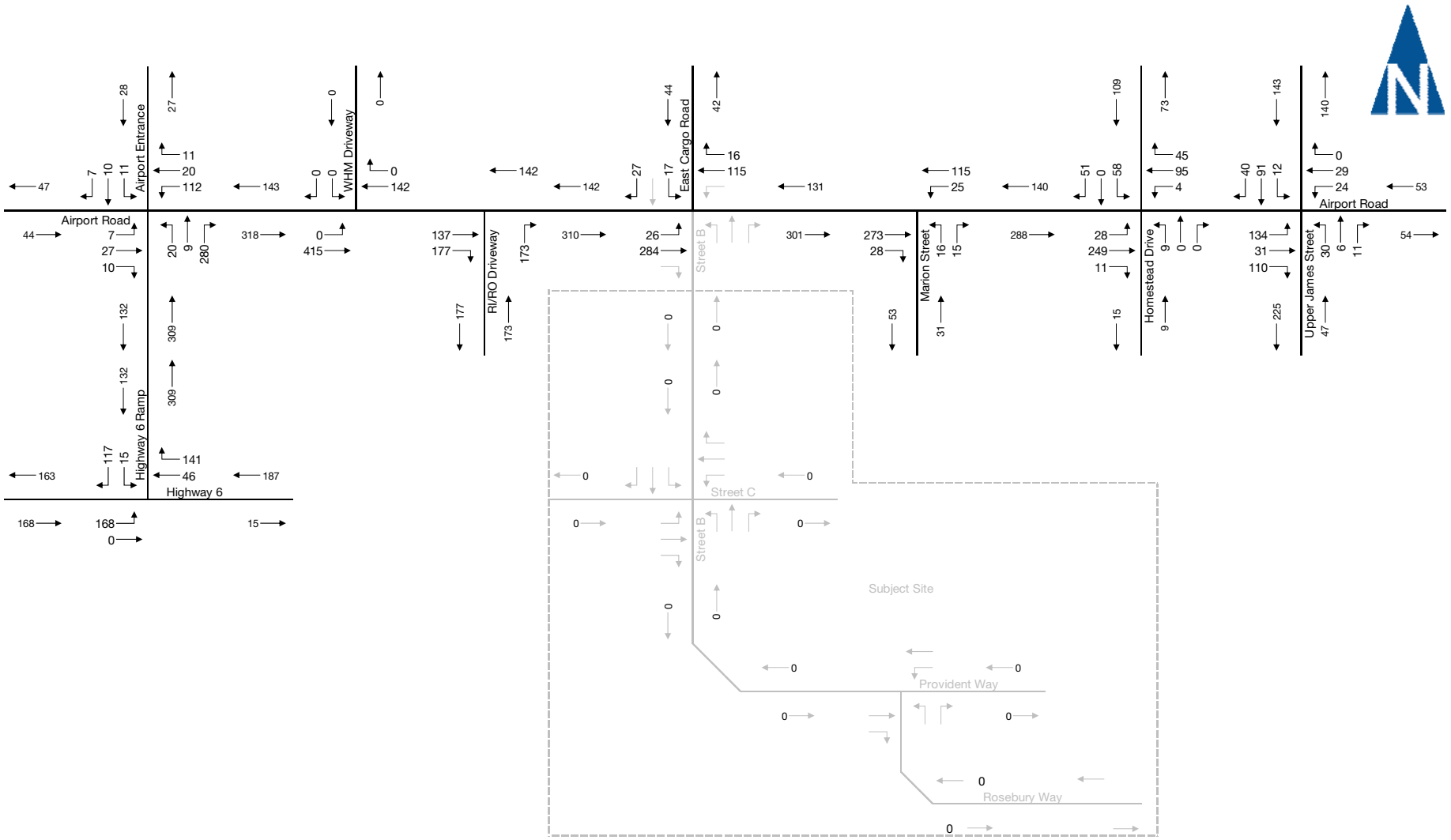
2019 Other Area Development Site Traffic

P.M. Peak Hour



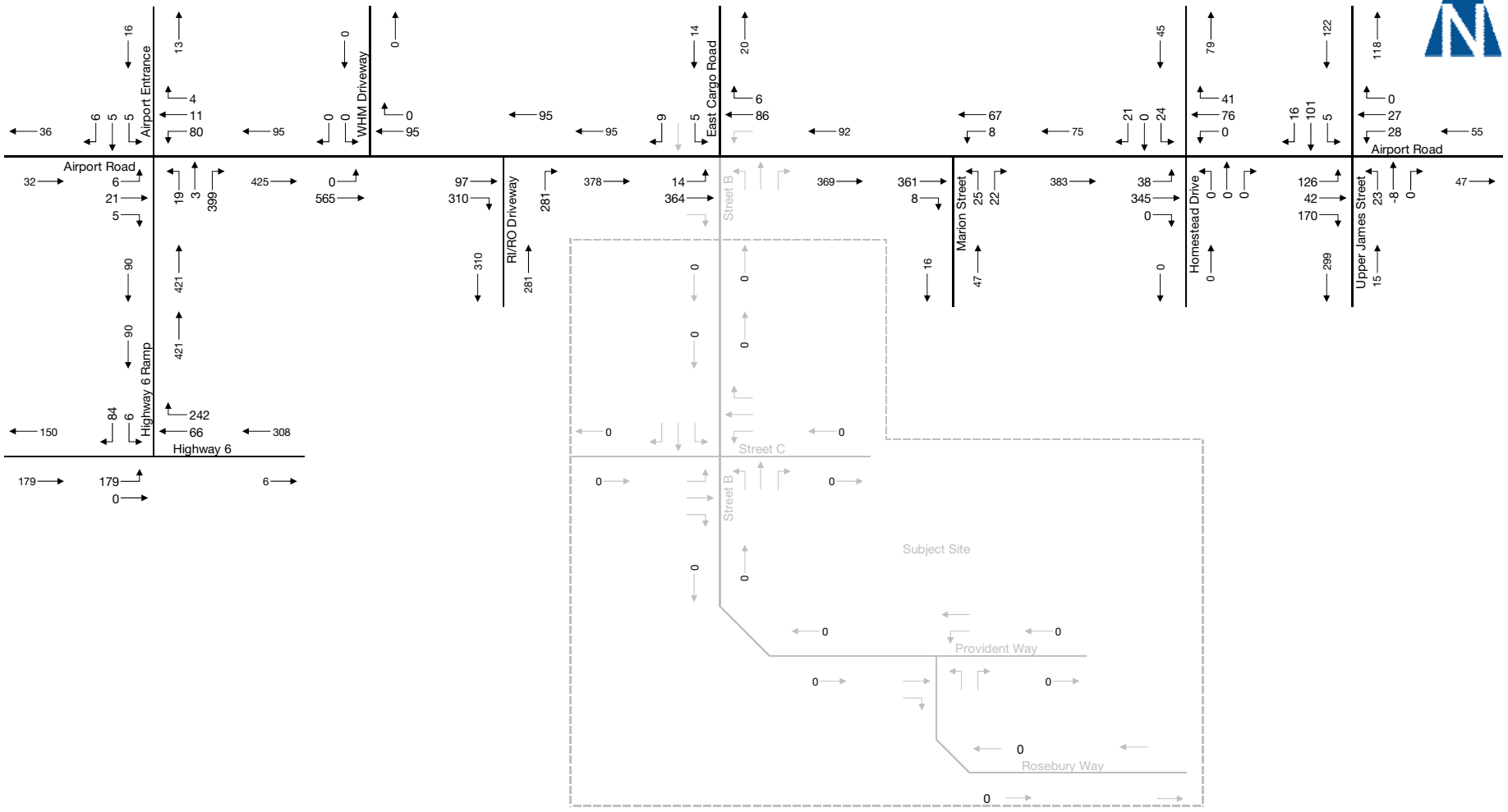
2021 Other Area Development Site Traffic

A.M. Peak Hour



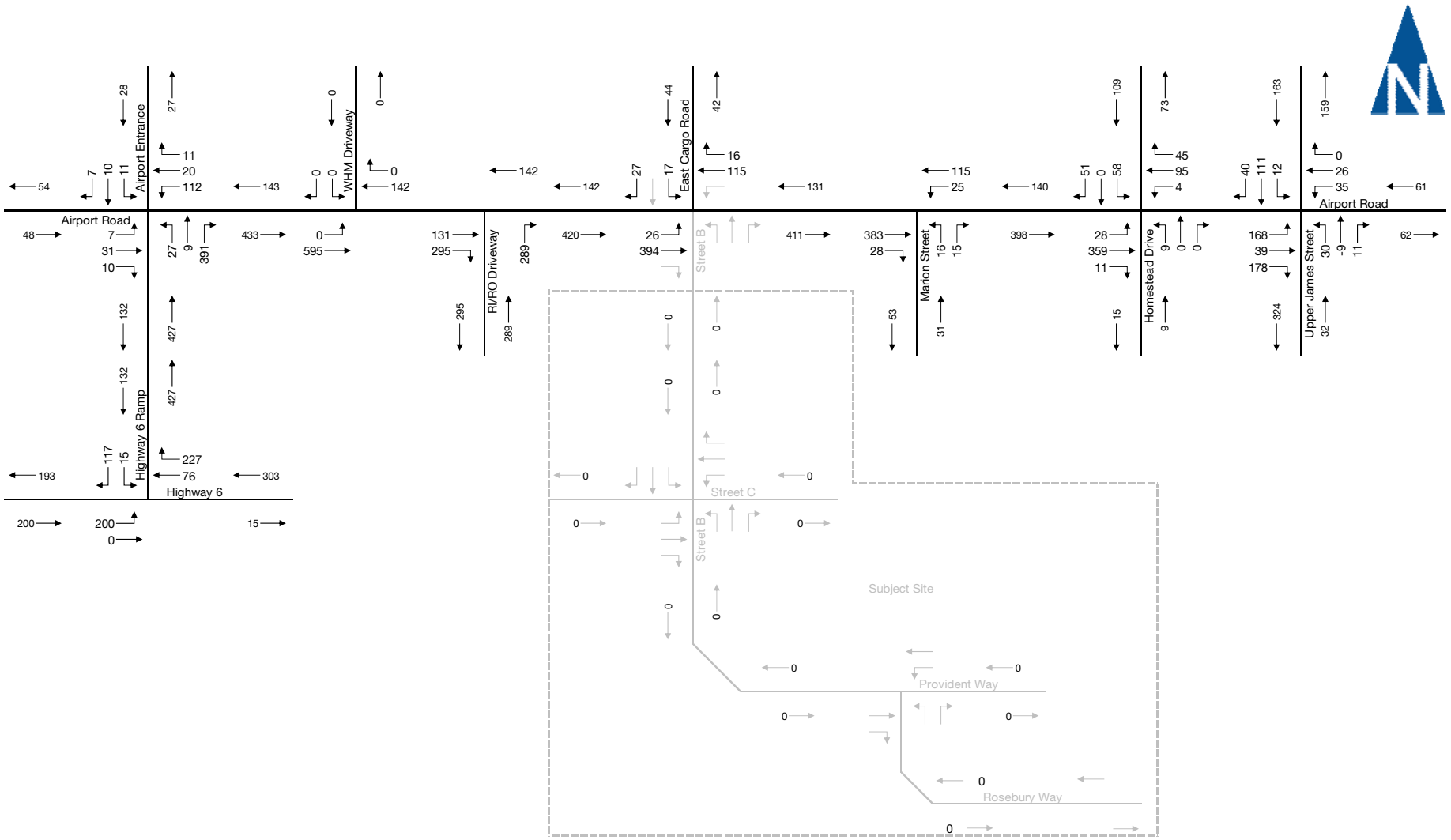
2021 Other Area Development Site Traffic

P.M. Peak Hour



2026 Other Area Development Site Traffic

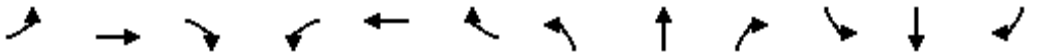
A.M. Peak Hour



2026 Other Area Development Site Traffic

P.M. Peak Hour

Appendix E
2034 Future Background
Intersection Performance Analysis



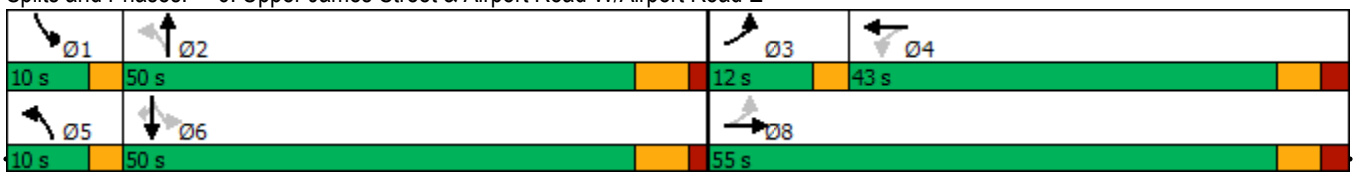
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	513	270	205	74	303	116	152	1078	88	49	555	236
Future Volume (vph)	513	270	205	74	303	116	152	1078	88	49	555	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	140.0		0.0	100.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	1588	0	0	1716	0	1716	3360	0	1653	3305	1365
Flt Permitted	0.282				0.705		0.326			0.088		
Satd. Flow (perm)	509	1588	0	0	1218	0	589	3360	0	153	3305	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			14			9				254
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	5%	18%	18%	3%	3%	4%	5%	6%	8%	8%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	552	510	0	0	531	0	163	1254	0	53	597	254
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases	8			4			2			6		6
Detector Phase	3	8		4	4		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		5.0	30.0		5.0	30.0	30.0
Minimum Split (s)	9.5	42.3		42.3	42.3		9.5	41.3		9.5	41.3	41.3
Total Split (s)	12.0	55.0		43.0	43.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	10.4%	47.8%		37.4%	37.4%		8.7%	43.5%		8.7%	43.5%	43.5%
Maximum Green (s)	9.0	48.7		36.7	36.7		7.0	43.7		7.0	43.7	43.7
Yellow Time (s)	3.0	3.7		3.7	3.7		3.0	4.6		3.0	4.6	4.6
All-Red Time (s)	0.0	2.6		2.6	2.6		0.0	1.7		0.0	1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.3			5.3		2.0	5.3		2.0	5.3	5.3

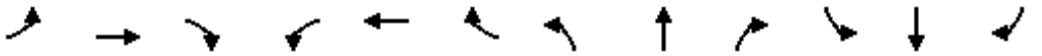
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		11.0		11.0	11.0			18.0			18.0	18.0
Flash Dont Walk (s)		24.0		24.0	24.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		0		0	0			0			0	0
Act Effct Green (s)	53.0	49.7			37.7		56.5	46.8		55.6	44.7	44.7
Actuated g/C Ratio	0.46	0.43			0.33		0.49	0.41		0.48	0.39	0.39
v/c Ratio	1.63	0.72			1.30		0.44	0.91		0.31	0.46	0.37
Control Delay	319.3	31.4			185.4		19.9	44.0		19.4	27.7	4.5
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	319.3	31.4			185.4		19.9	44.0		19.4	27.7	4.5
LOS	F	C			F		B	D		B	C	A
Approach Delay		181.0			185.4			41.2			20.7	
Approach LOS		F			F			D			C	
Queue Length 50th (m)	~173.7	90.1			~159.9		20.4	149.3		6.2	54.7	0.0
Queue Length 95th (m)	#257.3	133.2			#229.2		33.7	#198.8		13.1	71.6	16.6
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0						140.0			100.0		90.0
Base Capacity (vph)	339	710			408		367	1372		178	1284	685
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	1.63	0.72			1.30		0.44	0.91		0.30	0.46	0.37

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.63
Intersection Signal Delay: 94.0 Intersection LOS: F
Intersection Capacity Utilization 108.9% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





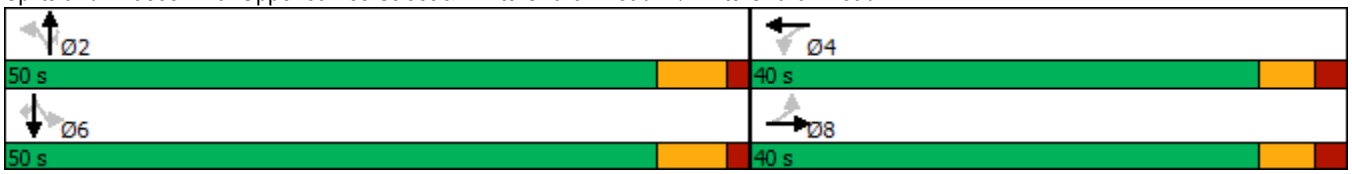
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	88	35	252	178	96	12	1204	113	46	988	82
Future Volume (vph)	79	88	35	252	178	96	12	1204	113	46	988	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		15.0	75.0		15.0
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1717	0	0	1726	0	1275	3336	1479	1653	3131	1413
Flt Permitted		0.710			0.746		0.174			0.106		
Satd. Flow (perm)	0	1243	0	0	1318	0	234	3336	1479	184	3131	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			15				41			36
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	3%	7%	2%	3%	8%	40%	7%	8%	8%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	210	0	0	548	0	13	1254	118	48	1029	85
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		6
Detector Phase	8	8		4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0	25.0	25.0	25.0	25.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3	31.3	31.3	31.3	31.3
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	34.0	34.0		34.0	34.0		43.7	43.7	43.7	43.7	43.7	43.7
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7	1.7	1.7	1.7	1.7
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0			5.0		5.3	5.3	5.3	5.3	5.3	5.3

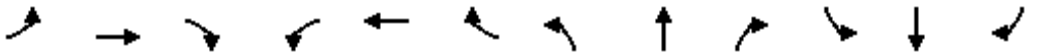
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	14.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		35.2			35.2		37.9	37.9	37.9	37.9	37.9	37.9
Actuated g/C Ratio		0.42			0.42		0.45	0.45	0.45	0.45	0.45	0.45
v/c Ratio		0.39			0.97		0.12	0.83	0.17	0.58	0.72	0.13
Control Delay		19.9			58.5		15.8	25.2	9.2	47.6	21.6	8.5
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		19.9			58.5		15.8	25.2	9.2	47.6	21.6	8.5
LOS		B			E		B	C	A	D	C	A
Approach Delay		19.9			58.5			23.7			21.8	
Approach LOS		B			E			C			C	
Queue Length 50th (m)		22.4			87.1		1.2	92.3	7.1	5.7	70.4	4.5
Queue Length 95th (m)		45.6			#172.8		5.0	119.4	16.5	#23.8	92.7	12.2
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)							75.0		15.0	75.0		15.0
Base Capacity (vph)		532			564		125	1796	815	98	1685	777
Starvation Cap Reductn		0			0		0	0	0	0	0	0
Spillback Cap Reductn		0			0		0	0	0	0	0	0
Storage Cap Reductn		0			0		0	0	0	0	0	0
Reduced v/c Ratio		0.39			0.97		0.10	0.70	0.14	0.49	0.61	0.11

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 28.6 Intersection LOS: C
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	0	366	0	0	0	486	1234	0	0	991	284
Future Volume (vph)	96	0	366	0	0	0	486	1234	0	0	991	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1405	0	1320	0	1879	0	1700	3368	0	1879	3159	1536
Flt Permitted	0.757						0.222					
Satd. Flow (perm)	1120	0	1320	0	1879	0	397	3368	0	1879	3159	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			105									302
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	27%	0%	21%	0%	0%	0%	5%	6%	0%	0%	13%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	0	389	0	0	0	517	1313	0	0	1054	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm				Perm	NA		Perm	NA	Perm
Protected Phases					8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		25.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		31.3	31.3		31.3	31.3	31.3
Total Split (s)	31.0		31.0	31.0	31.0		59.0	59.0		59.0	59.0	59.0
Total Split (%)	34.4%		34.4%	34.4%	34.4%		65.6%	65.6%		65.6%	65.6%	65.6%
Maximum Green (s)	25.0		25.0	25.0	25.0		52.7	52.7		52.7	52.7	52.7
Yellow Time (s)	3.7		3.7	3.7	3.7		4.6	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		5.3	5.3		5.3	5.3	5.3

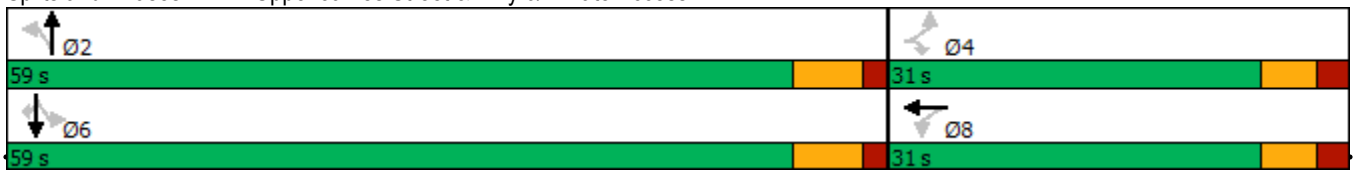
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	10.0		10.0	10.0	10.0		14.0	14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0		0	0		0	0	0
Act Effct Green (s)	23.6		23.6				53.8	53.8			53.8	53.8
Actuated g/C Ratio	0.27		0.27				0.61	0.61			0.61	0.61
v/c Ratio	0.34		0.90				2.13	0.64			0.54	0.29
Control Delay	29.1		48.1				540.4	13.0			11.6	1.7
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	29.1		48.1				540.4	13.0			11.6	1.7
LOS	C		D				F	B			B	A
Approach Delay		44.2						162.0			9.4	
Approach LOS		D						F			A	
Queue Length 50th (m)	14.5		50.0				~111.0	76.2			56.0	0.0
Queue Length 95th (m)	28.8		#103.2				#174.4	98.2			73.6	9.8
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	332		465				243	2065			1937	1059
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	0.31		0.84				2.13	0.64			0.54	0.29

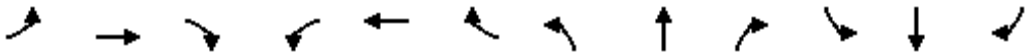
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 87.7			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.13			
Intersection Signal Delay: 90.0		Intersection LOS: F	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

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

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access

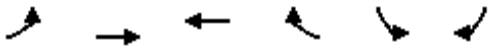




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	48	755	40	32	648	62	46	5	214	50	57	149
Future Volume (vph)	48	755	40	32	648	62	46	5	214	50	57	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	821	43	35	704	67	50	5	233	54	62	162

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	52	864	35	771	50	238	54	224
Volume Left (vph)	52	0	35	0	50	0	54	0
Volume Right (vph)	0	43	0	67	0	233	0	162
Hadj (s)	0.50	0.11	0.74	0.11	0.55	-0.69	0.58	-0.44
Departure Headway (s)	8.1	7.7	8.4	7.8	9.1	7.9	9.1	8.1
Degree Utilization, x	0.12	1.86	0.08	1.66	0.13	0.52	0.14	0.51
Capacity (veh/h)	433	471	422	469	388	439	384	425
Control Delay (s)	11.0	411.8	10.9	325.0	12.2	18.0	12.4	18.0
Approach Delay (s)	389.0		311.4		17.0		16.9	
Approach LOS	F		F		C		C	

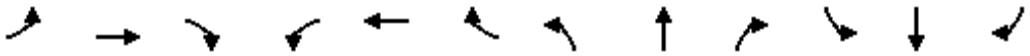
Intersection Summary				
Delay	269.6			
Level of Service	F			
Intersection Capacity Utilization	69.0%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	227	299	397	143	44	160
Future Volume (Veh/h)	227	299	397	143	44	160
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)	247	325	432	155	48	174
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	587				1328	510
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	587				1328	510
tC, single (s)	4.1				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.4
p0 queue free %	75				60	68
cM capacity (veh/h)	988				119	548

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	572	587	222
Volume Left	247	0	48
Volume Right	0	155	174
cSH	988	1700	308
Volume to Capacity	0.25	0.35	0.72
Queue Length 95th (m)	7.9	0.0	41.7
Control Delay (s)	6.0	0.0	41.8
Lane LOS	A		E
Approach Delay (s)	6.0	0.0	41.8
Approach LOS			E

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	193	7	4	480	35	5	49	2	17	24	34
Future Volume (Veh/h)	48	193	7	4	480	35	5	49	2	17	24	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	56	224	8	5	558	41	6	57	2	20	28	40
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	599			232			982	949	228	959	932	578
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	599			232			982	949	228	959	932	578
tC, single (s)	4.1			4.1			7.3	6.5	6.2	7.3	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.3	3.7	4.1	3.5
p0 queue free %	94			100			96	77	100	88	89	92
cM capacity (veh/h)	963			1348			165	243	816	171	246	481

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	288	604	65	88
Volume Left	56	5	6	20
Volume Right	8	41	2	40
cSH	963	1348	238	280
Volume to Capacity	0.06	0.00	0.27	0.31
Queue Length 95th (m)	1.5	0.1	8.6	10.4
Control Delay (s)	2.2	0.1	25.7	23.6
Lane LOS	A	A	D	C
Approach Delay (s)	2.2	0.1	25.7	23.6
Approach LOS			D	C

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	402	5	71	486	7	124
Future Volume (Veh/h)	402	5	71	486	7	124
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	428	5	76	517	7	132
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			433		1100	430
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			433		1100	430
tC, single (s)			4.3		6.7	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.8	3.3
p0 queue free %			93		96	79
cM capacity (veh/h)			1056		190	625

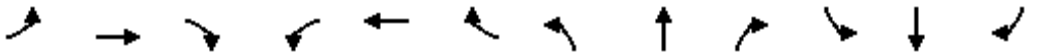
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	433	593	139
Volume Left	0	76	7
Volume Right	5	0	132
cSH	1700	1056	560
Volume to Capacity	0.25	0.07	0.25
Queue Length 95th (m)	0.0	1.9	7.8
Control Delay (s)	0.0	1.9	13.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.9	13.5
Approach LOS			B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	245	2	1	518	9	2
Future Volume (Veh/h)	245	2	1	518	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	272	2	1	576	10	2
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			274		851	273
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			274		851	273
tC, single (s)			5.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			3.1		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			884		333	771

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	274	577	12
Volume Left	0	1	10
Volume Right	2	0	2
cSH	1700	884	367
Volume to Capacity	0.16	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	15.1
Lane LOS		A	C
Approach Delay (s)	0.0	0.0	15.1
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		



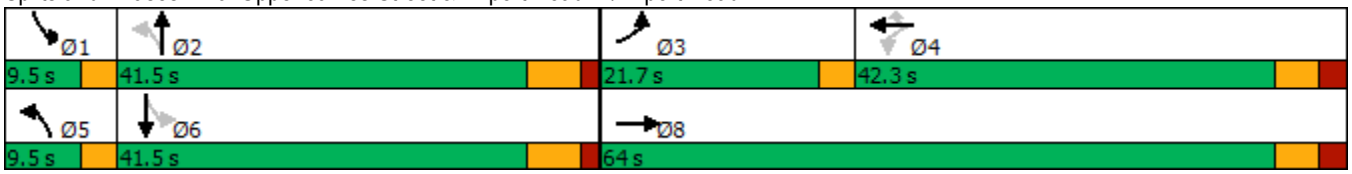
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	513	270	205	74	303	116	152	1078	88	49	555	236
Future Volume (vph)	513	270	205	74	303	116	152	1078	88	49	555	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	35.0		35.0	140.0		0.0	100.0		0.0
Storage Lanes	2		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	3330	1588	0	1513	3466	1551	1716	4828	0	1653	4426	0
Flt Permitted	0.950			0.476			0.249			0.136		
Satd. Flow (perm)	3330	1588	0	758	3466	1551	450	4828	0	237	4426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49				125		12			98	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	5%	18%	18%	3%	3%	4%	5%	6%	8%	8%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	552	510	0	80	326	125	163	1254	0	53	851	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Prot	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases				4		4	2			6		
Detector Phase	3	8		4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	30.0		5.0	30.0	
Minimum Split (s)	9.5	42.3		42.3	42.3	42.3	9.5	41.3		9.5	41.3	
Total Split (s)	21.7	64.0		42.3	42.3	42.3	9.5	41.5		9.5	41.5	
Total Split (%)	18.9%	55.7%		36.8%	36.8%	36.8%	8.3%	36.1%		8.3%	36.1%	
Maximum Green (s)	18.7	57.7		36.0	36.0	36.0	6.5	35.2		6.5	35.2	
Yellow Time (s)	3.0	3.7		3.7	3.7	3.7	3.0	4.6		3.0	4.6	
All-Red Time (s)	0.0	2.6		2.6	2.6	2.6	0.0	1.7		0.0	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.3		5.3	5.3	5.3	2.0	5.3		2.0	5.3	

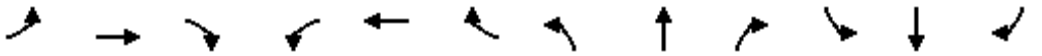
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		11.0		11.0	11.0	11.0		18.0			18.0	
Flash Dont Walk (s)		24.0		24.0	24.0	24.0		17.0			17.0	
Pedestrian Calls (#/hr)		0		0	0	0		0			0	
Act Effct Green (s)	19.8	38.9		17.2	17.2	17.2	47.6	38.4		46.9	36.3	
Actuated g/C Ratio	0.21	0.41		0.18	0.18	0.18	0.50	0.40		0.49	0.38	
v/c Ratio	0.80	0.75		0.59	0.52	0.33	0.50	0.64		0.24	0.49	
Control Delay	46.9	29.5		53.4	38.1	8.4	19.8	26.0		15.9	21.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.9	29.5		53.4	38.1	8.4	19.8	26.0		15.9	21.5	
LOS	D	C		D	D	A	B	C		B	C	
Approach Delay		38.6			33.4			25.3			21.1	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	51.8	75.0		14.3	30.3	0.0	15.7	70.8		4.8	38.7	
Queue Length 95th (m)	#89.3	114.2		29.7	43.5	14.4	33.3	102.9		13.1	60.2	
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0			35.0		35.0	140.0			100.0		
Base Capacity (vph)	689	998		295	1348	679	324	1949		228	1744	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.51		0.27	0.24	0.18	0.50	0.64		0.23	0.49	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 95.4
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 29.0 Intersection LOS: C
Intersection Capacity Utilization 85.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





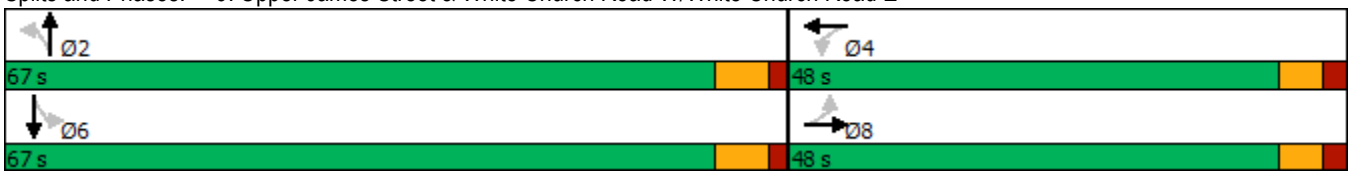
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	88	35	252	178	96	12	1204	113	46	988	82
Future Volume (vph)	79	88	35	252	178	96	12	1204	113	46	988	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1684	3284	0	1750	3212	0	1275	4728	0	1653	4453	0
Flt Permitted	0.543			0.671			0.221			0.158		
Satd. Flow (perm)	962	3284	0	1236	3212	0	297	4728	0	275	4453	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36			47			21			18	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	3%	7%	2%	3%	8%	40%	7%	8%	8%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	128	0	263	285	0	13	1372	0	48	1114	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3		31.3	31.3	
Total Split (s)	48.0	48.0		48.0	48.0		67.0	67.0		67.0	67.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	42.0	42.0		42.0	42.0		60.7	60.7		60.7	60.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		4.6	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.3	5.3		5.3	5.3	

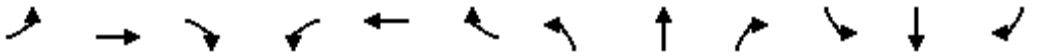
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0		14.0	14.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	27.2	27.2		27.2	27.2		62.1	62.1		62.1	62.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.62		0.62	0.62	
v/c Ratio	0.31	0.14		0.78	0.31		0.07	0.46		0.28	0.40	
Control Delay	31.1	18.7		49.5	23.9		11.7	11.5		17.0	10.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.1	18.7		49.5	23.9		11.7	11.5		17.0	10.8	
LOS	C	B		D	C		B	B		B	B	
Approach Delay		23.5			36.2			11.5			11.1	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	13.2	7.3		49.0	19.8		0.9	48.2		4.0	37.0	
Queue Length 95th (m)	25.8	14.2		78.4	30.5		4.9	82.8		16.0	65.0	
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)	30.0			30.0			75.0			75.0		
Base Capacity (vph)	417	1446		536	1421		185	2954		171	2781	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.20	0.09		0.49	0.20		0.07	0.46		0.28	0.40	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 99.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 77.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E



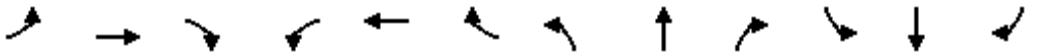


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	0	366	0	0	0	486	1234	0	0	991	284
Future Volume (vph)	96	0	366	0	0	0	486	1234	0	0	991	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1405	0	1320	0	1879	0	1700	4839	0	1879	4539	1536
Flt Permitted	0.757						0.150					
Satd. Flow (perm)	1120	0	1320	0	1879	0	268	4839	0	1879	4539	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			389									302
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	27%	0%	21%	0%	0%	0%	5%	6%	0%	0%	13%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	0	389	0	0	0	517	1313	0	0	1054	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	32.0		32.0	32.0	32.0		42.0	83.0		41.0	41.0	41.0
Total Split (%)	27.8%		27.8%	27.8%	27.8%		36.5%	72.2%		35.7%	35.7%	35.7%
Maximum Green (s)	26.0		26.0	26.0	26.0		39.0	76.7		34.7	34.7	34.7
Yellow Time (s)	3.7		3.7	3.7	3.7		3.0	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		0.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		2.0	5.3		5.3	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Min		Min	Min	Min
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	18.0		18.0				67.8	64.4			30.4	30.4
Actuated g/C Ratio	0.19		0.19				0.73	0.69			0.33	0.33
v/c Ratio	0.47		0.68				0.75	0.39			0.71	0.43
Control Delay	44.7		10.9				23.9	6.3			31.7	5.3
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	44.7		10.9				23.9	6.3			31.7	5.3
LOS	D		B				C	A			C	A
Approach Delay		17.9						11.3			25.8	
Approach LOS		B						B			C	
Queue Length 50th (m)	17.5		0.0				55.2	29.7			64.3	0.0
Queue Length 95th (m)	38.1		29.9				115.5	48.3			94.7	19.6
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	332		665				825	4086			1783	786
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	0.31		0.58				0.63	0.32			0.59	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 93			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access

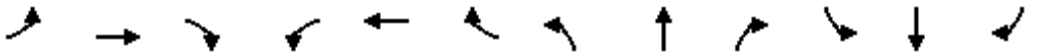


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	755	40	32	648	62	46	5	214	50	57	149
Future Volume (vph)	48	755	40	32	648	62	46	5	214	50	57	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	1720	0	1566	1689	0	1733	1603	0	1700	1612	0
Flt Permitted	0.259			0.202			0.533			0.501		
Satd. Flow (perm)	487	1720	0	333	1689	0	972	1603	0	896	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			7			176			120	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	18%	14%	9%	18%	3%	0%	0%	5%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	864	0	35	771	0	50	238	0	54	224	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	73.2	73.2		73.2	73.2		41.8	41.8		41.8	41.8	
Total Split (%)	63.7%	63.7%		63.7%	63.7%		36.3%	36.3%		36.3%	36.3%	
Maximum Green (s)	66.9	66.9		66.9	66.9		35.5	35.5		35.5	35.5	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.8	38.8		38.8	38.8		12.4	12.4		12.4	12.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.20	0.20		0.20	0.20	
v/c Ratio	0.17	0.81		0.17	0.74		0.26	0.52		0.31	0.54	
Control Delay	6.9	16.5		7.6	13.4		30.3	13.7		31.8	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.9	16.5		7.6	13.4		30.3	13.7		31.8	19.0	
LOS	A	B		A	B		C	B		C	B	
Approach Delay		16.0			13.1			16.6			21.5	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	2.2	63.8		1.4	51.8		4.8	5.9		5.2	10.1	
Queue Length 95th (m)	8.0	144.2		6.3	116.2		19.3	32.9		20.7	41.1	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	451	1593		308	1565		625	1094		576	1080	
Starvation Cap Reductn	0	0		0	26		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.54		0.11	0.50		0.08	0.22		0.09	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 63			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 17: Homestead Drive & Airport Road W



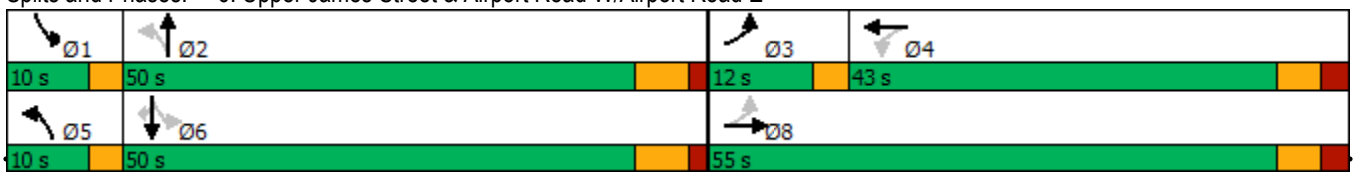
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	539	282	248	180	242	73	119	868	113	97	1098	170
Future Volume (vph)	539	282	248	180	242	73	119	868	113	97	1098	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		0.0	140.0		0.0	100.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	1729	0	0	1776	0	1785	3399	0	1785	3466	1479
Flt Permitted	0.405				0.443		0.093			0.107		
Satd. Flow (perm)	725	1729	0	0	801	0	175	3399	0	201	3466	1479
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			8			14				183
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	0%	5%	0%	0%	0%	3%	5%	0%	3%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	580	570	0	0	532	0	128	1055	0	104	1181	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases	8			4			2			6		6
Detector Phase	3	8		4	4		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		5.0	30.0		5.0	30.0	30.0
Minimum Split (s)	9.5	42.3		42.3	42.3		9.5	41.3		9.5	41.3	41.3
Total Split (s)	12.0	55.0		43.0	43.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	10.4%	47.8%		37.4%	37.4%		8.7%	43.5%		8.7%	43.5%	43.5%
Maximum Green (s)	9.0	48.7		36.7	36.7		7.0	43.7		7.0	43.7	43.7
Yellow Time (s)	3.0	3.7		3.7	3.7		3.0	4.6		3.0	4.6	4.6
All-Red Time (s)	0.0	2.6		2.6	2.6		0.0	1.7		0.0	1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.3			5.3		2.0	5.3		2.0	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Walk Time (s)		11.0		11.0	11.0			18.0			18.0	18.0
Flash Dont Walk (s)		24.0		24.0	24.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		0		0	0			0			0	0
Act Effct Green (s)	53.0	49.7			37.7		54.3	42.9		54.0	42.8	42.8
Actuated g/C Ratio	0.47	0.44			0.33		0.48	0.38		0.48	0.38	0.38
v/c Ratio	1.36	0.72			1.96		0.65	0.81		0.50	0.90	0.27
Control Delay	204.1	30.5			469.1		33.6	37.0		23.9	43.6	4.4
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	204.1	30.5			469.1		33.6	37.0		23.9	43.6	4.4
LOS	F	C			F		C	D		C	D	A
Approach Delay		118.1			469.1			36.6			37.3	
Approach LOS		F			F			D			D	
Queue Length 50th (m)	~166.2	101.5			~197.4		15.6	113.4		12.5	134.7	0.0
Queue Length 95th (m)	#253.0	147.0			#266.7		#35.9	141.2		22.4	165.8	14.3
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0						140.0			100.0		90.0
Base Capacity (vph)	425	787			272		197	1351		208	1369	694
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	1.36	0.72			1.96		0.65	0.78		0.50	0.86	0.26

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 113.2
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.96
Intersection Signal Delay: 111.6 Intersection LOS: F
Intersection Capacity Utilization 110.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E



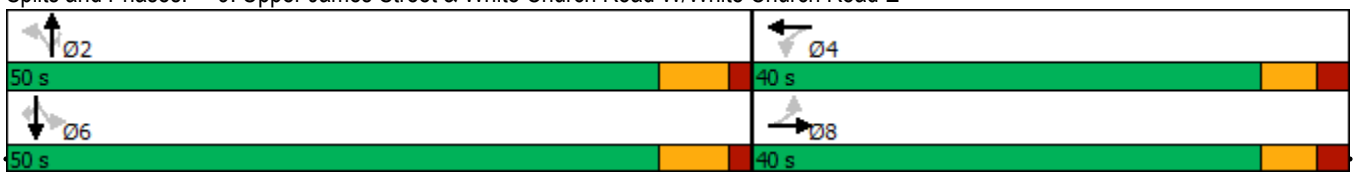
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	322	30	185	174	62	51	836	197	89	1476	123
Future Volume (vph)	143	322	30	185	174	62	51	836	197	89	1476	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	75.0		15.0	75.0		15.0
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1777	0	0	1762	0	1785	3400	1551	1767	3433	1566
Flt Permitted		0.744			0.576		0.089			0.252		
Satd. Flow (perm)	0	1341	0	0	1038	0	167	3400	1551	469	3433	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			11				102			36
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	1%	12%	3%	1%	2%	0%	5%	3%	1%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	515	0	0	439	0	53	871	205	93	1538	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2		2	6		6
Detector Phase	8	8		4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0	25.0	25.0	25.0	25.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3	31.3	31.3	31.3	31.3
Total Split (s)	40.0	40.0		40.0	40.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Maximum Green (s)	34.0	34.0		34.0	34.0		43.7	43.7	43.7	43.7	43.7	43.7
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7	1.7	1.7	1.7	1.7
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0			5.0		5.3	5.3	5.3	5.3	5.3	5.3

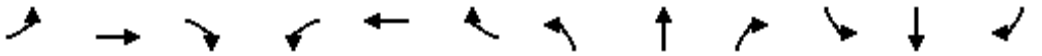
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	14.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		35.0			35.0		44.7	44.7	44.7	44.7	44.7	44.7
Actuated g/C Ratio		0.39			0.39		0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio		0.98			1.07		0.65	0.52	0.25	0.40	0.90	0.16
Control Delay		64.9			93.3		57.4	16.7	7.3	20.8	29.7	9.4
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		64.9			93.3		57.4	16.7	7.3	20.8	29.7	9.4
LOS		E			F		E	B	A	C	C	A
Approach Delay		64.9			93.3			16.9			27.7	
Approach LOS		E			F			B			C	
Queue Length 50th (m)		90.3			~88.3		6.8	53.8	9.6	10.1	128.1	8.5
Queue Length 95th (m)		#159.2			#147.8		#28.5	70.8	22.2	24.2	#180.8	18.3
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)							75.0		15.0	75.0		15.0
Base Capacity (vph)		523			410		82	1688	821	232	1705	795
Starvation Cap Reductn		0			0		0	0	0	0	0	0
Spillback Cap Reductn		0			0		0	0	0	0	0	0
Storage Cap Reductn		0			0		0	0	0	0	0	0
Reduced v/c Ratio		0.98			1.07		0.65	0.52	0.25	0.40	0.90	0.16

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 37.0 Intersection LOS: D
Intersection Capacity Utilization 111.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E





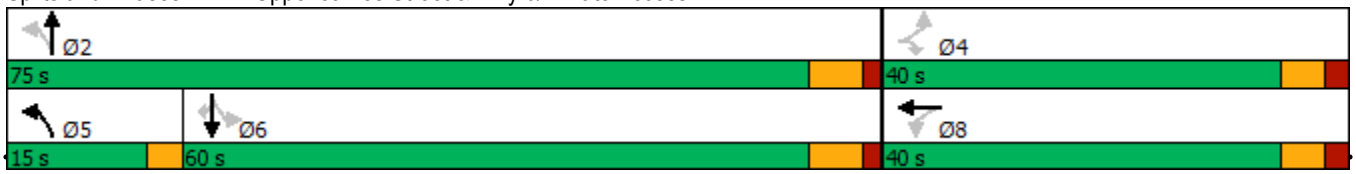
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	0	633	2	0	0	403	824	0	0	1582	166
Future Volume (vph)	211	0	633	2	0	0	403	824	0	0	1582	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	0	1507	0	1785	0	1594	3368	0	1879	3466	1365
Flt Permitted	0.757				0.950		0.071					
Satd. Flow (perm)	1368	0	1507	0	1785	0	119	3368	0	1879	3466	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207									171
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	6%	0%	0%	0%	12%	6%	0%	0%	3%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	0	653	0	2	0	415	849	0	0	1631	171
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	40.0		40.0	40.0	40.0		15.0	75.0		60.0	60.0	60.0
Total Split (%)	34.8%		34.8%	34.8%	34.8%		13.0%	65.2%		52.2%	52.2%	52.2%
Maximum Green (s)	34.0		34.0	34.0	34.0		12.0	68.7		53.7	53.7	53.7
Yellow Time (s)	3.7		3.7	3.7	3.7		3.0	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		0.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		2.0	5.3		5.3	5.3	5.3

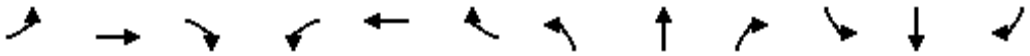
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Max		Max	Max	Max
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	35.0		35.0		35.0		73.0	69.7			54.7	54.7
Actuated g/C Ratio	0.30		0.30		0.30		0.63	0.61			0.48	0.48
v/c Ratio	0.52		1.08		0.00		1.71	0.42			0.99	0.23
Control Delay	38.6		88.8		28.0		363.7	12.7			50.2	3.3
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	38.6		88.8		28.0		363.7	12.7			50.2	3.3
LOS	D		F		C		F	B			D	A
Approach Delay		76.2			28.0			127.9			45.7	
Approach LOS		E			C			F			D	
Queue Length 50th (m)	42.7		~137.2		0.4		~130.7	52.2			195.8	0.0
Queue Length 95th (m)	68.4		#210.6		2.3		#194.5	65.8			#254.2	11.8
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	416		602		543		242	2041			1648	738
Starvation Cap Reductn	0		0		0		0	0			0	0
Spillback Cap Reductn	0		0		0		0	0			0	0
Storage Cap Reductn	0		0		0		0	0			0	0
Reduced v/c Ratio	0.52		1.08		0.00		1.71	0.42			0.99	0.23

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.71
Intersection Signal Delay: 78.8 Intersection LOS: E
Intersection Capacity Utilization 108.2% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access

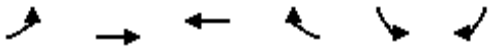




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	46	968	46	111	373	75	47	16	125	119	142	193
Future Volume (vph)	46	968	46	111	373	75	47	16	125	119	142	193
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	1064	51	122	410	82	52	18	137	131	156	212

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	51	1115	122	492	52	155	131	368
Volume Left (vph)	51	0	122	0	52	0	131	0
Volume Right (vph)	0	51	0	82	0	137	0	212
Hadj (s)	0.50	0.04	0.50	0.00	0.55	-0.60	0.64	-0.34
Departure Headway (s)	8.6	8.2	8.6	8.1	9.7	8.5	9.0	8.1
Degree Utilization, x	0.12	2.53	0.29	1.10	0.14	0.37	0.33	0.82
Capacity (veh/h)	407	450	414	456	363	411	392	440
Control Delay (s)	11.6	712.2	13.8	100.2	13.0	15.2	15.2	37.9
Approach Delay (s)	681.6		83.1		14.7		31.9	
Approach LOS	F		F		B		D	

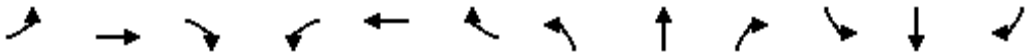
Intersection Summary				
Delay	347.8			
Level of Service	F			
Intersection Capacity Utilization	96.5%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	224	489	403	68	71	226
Future Volume (Veh/h)	224	489	403	68	71	226
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	238	520	429	72	76	240
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	501				1461	465
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501				1461	465
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	78				32	60
cM capacity (veh/h)	1074				112	597

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	758	501	316
Volume Left	238	0	76
Volume Right	0	72	240
cSH	1074	1700	292
Volume to Capacity	0.22	0.29	1.08
Queue Length 95th (m)	6.8	0.0	99.9
Control Delay (s)	5.0	0.0	115.5
Lane LOS	A		F
Approach Delay (s)	5.0	0.0	115.5
Approach LOS			F

Intersection Summary			
Average Delay	25.6		
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	552	5	6	372	18	4	57	6	21	76	48
Future Volume (Veh/h)	49	552	5	6	372	18	4	57	6	21	76	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	54	607	5	7	409	20	4	63	7	23	84	53
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	429			612			1246	1160	610	1189	1153	419
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429			612			1246	1160	610	1189	1153	419
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			99			95	66	99	80	55	92
cM capacity (veh/h)	1125			977			87	186	498	116	188	638

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	666	436	74	160
Volume Left	54	7	4	23
Volume Right	5	20	7	53
cSH	1125	977	186	220
Volume to Capacity	0.05	0.01	0.40	0.73
Queue Length 95th (m)	1.2	0.2	14.1	38.9
Control Delay (s)	1.3	0.2	36.6	55.5
Lane LOS	A	A	E	F
Approach Delay (s)	1.3	0.2	36.6	55.5
Approach LOS			E	F

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	593	6	138	491	4	121
Future Volume (Veh/h)	593	6	138	491	4	121
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	659	7	153	546	4	134
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			666		1514	662
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			666		1514	662
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		96	71
cM capacity (veh/h)			928		111	465

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	666	699	138
Volume Left	0	153	4
Volume Right	7	0	134
cSH	1700	928	426
Volume to Capacity	0.39	0.16	0.32
Queue Length 95th (m)	0.0	4.7	11.1
Control Delay (s)	0.0	3.9	17.5
Lane LOS		A	C
Approach Delay (s)	0.0	3.9	17.5
Approach LOS			C

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	602	6	6	417	5	4
Future Volume (Veh/h)	602	6	6	417	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	662	7	7	458	5	4
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			669		1138	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			669		1138	666
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			99		97	99
cM capacity (veh/h)			931		200	463

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	669	465	9
Volume Left	0	7	5
Volume Right	7	0	4
cSH	1700	931	267
Volume to Capacity	0.39	0.01	0.03
Queue Length 95th (m)	0.0	0.2	0.8
Control Delay (s)	0.0	0.2	18.9
Lane LOS		A	C
Approach Delay (s)	0.0	0.2	18.9
Approach LOS			C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

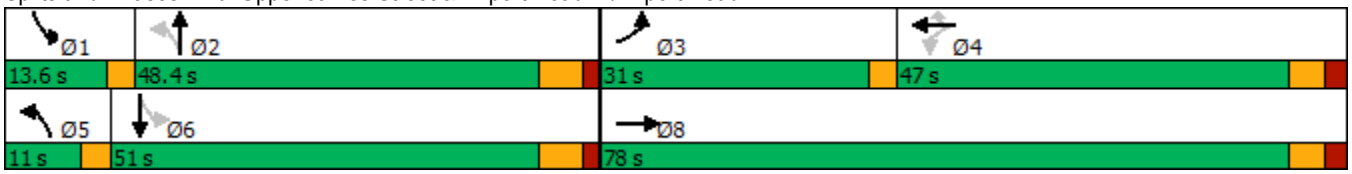
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	539	282	248	180	242	73	119	868	113	97	1098	170
Future Volume (vph)	539	282	248	180	242	73	119	868	113	97	1098	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	0.0		35.0	140.0		0.0	100.0		90.0
Storage Lanes	2		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	3298	1729	0	1700	3570	1597	1785	4884	0	1785	4849	0
Flt Permitted	0.950			0.450			0.089			0.147		
Satd. Flow (perm)	3298	1729	0	805	3570	1597	167	4884	0	276	4849	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47				78		17			22	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			2903.2			335.6			397.8	
Travel Time (s)		17.0			209.0			24.2			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	0%	5%	0%	0%	0%	3%	5%	0%	3%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	580	570	0	194	260	78	128	1055	0	104	1364	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Prot	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases				4		4	2			6		
Detector Phase	3	8		4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	30.0		5.0	30.0	
Minimum Split (s)	9.5	42.3		42.3	42.3	42.3	9.5	41.3		9.5	41.3	
Total Split (s)	31.0	78.0		47.0	47.0	47.0	11.0	48.4		13.6	51.0	
Total Split (%)	22.1%	55.7%		33.6%	33.6%	33.6%	7.9%	34.6%		9.7%	36.4%	
Maximum Green (s)	28.0	71.7		40.7	40.7	40.7	8.0	42.1		10.6	44.7	
Yellow Time (s)	3.0	3.7		3.7	3.7	3.7	3.0	4.6		3.0	4.6	
All-Red Time (s)	0.0	2.6		2.6	2.6	2.6	0.0	1.7		0.0	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.3		5.3	5.3	5.3	2.0	5.3		2.0	5.3	

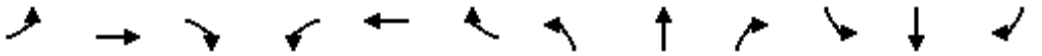
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		11.0		11.0	11.0	11.0		18.0			18.0	
Flash Dont Walk (s)		24.0		24.0	24.0	24.0		17.0			17.0	
Pedestrian Calls (#/hr)		0		0	0	0		0			0	
Act Effct Green (s)	27.0	65.0		36.0	36.0	36.0	57.1	44.7		59.3	46.0	
Actuated g/C Ratio	0.20	0.49		0.27	0.27	0.27	0.43	0.34		0.45	0.35	
v/c Ratio	0.87	0.66		0.89	0.27	0.16	0.70	0.64		0.43	0.81	
Control Delay	66.0	26.8		85.1	38.5	8.2	47.6	40.2		28.9	44.3	
Queue Delay	0.0	0.7		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	66.0	27.4		85.1	38.5	8.2	47.6	40.2		28.9	44.3	
LOS	E	C		F	D	A	D	D		C	D	
Approach Delay		46.9			51.1			41.0			43.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	84.6	105.4		52.4	30.2	0.0	22.7	97.7		18.2	134.1	
Queue Length 95th (m)	#112.6	145.5		#96.2	42.6	12.6	#52.5	115.0		30.9	154.4	
Internal Link Dist (m)		211.8			2879.2			311.6			373.8	
Turn Bay Length (m)	35.0					35.0	140.0			100.0		
Base Capacity (vph)	725	974		254	1129	558	182	1656		258	1694	
Starvation Cap Reductn	0	147		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.69		0.76	0.23	0.14	0.70	0.64		0.40	0.81	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 132.7
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 44.5 Intersection LOS: D
Intersection Capacity Utilization 88.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





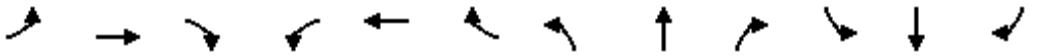
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	322	30	185	174	62	51	836	197	89	1476	123
Future Volume (vph)	143	322	30	185	174	62	51	836	197	89	1476	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1668	3457	0	1733	3372	0	1785	4761	0	1767	4880	0
Flt Permitted	0.599			0.513			0.103			0.226		
Satd. Flow (perm)	1051	3457	0	936	3372	0	194	4761	0	420	4880	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			47			81			20	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			1843.9			449.0			595.3	
Travel Time (s)		34.9			132.8			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	1%	12%	3%	1%	2%	0%	5%	3%	1%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	366	0	193	246	0	53	1076	0	93	1666	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3		31.3	31.3	
Total Split (s)	43.0	43.0		43.0	43.0		72.0	72.0		72.0	72.0	
Total Split (%)	37.4%	37.4%		37.4%	37.4%		62.6%	62.6%		62.6%	62.6%	
Maximum Green (s)	37.0	37.0		37.0	37.0		65.7	65.7		65.7	65.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		4.6	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0		14.0	14.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	24.0	24.0		24.0	24.0		39.1	39.1		39.1	39.1	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.53	0.53		0.53	0.53	
v/c Ratio	0.44	0.33		0.64	0.22		0.52	0.42		0.42	0.65	
Control Delay	27.5	20.9		35.3	16.8		34.3	10.4		18.8	13.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.5	20.9		35.3	16.8		34.3	10.4		18.8	13.8	
LOS	C	C		D	B		C	B		B	B	
Approach Delay		22.8			24.9			11.5			14.1	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	15.1	18.2		21.2	9.6		4.3	27.0		7.0	53.3	
Queue Length 95th (m)	47.8	46.2		66.0	27.7		22.9	53.4		25.3	100.2	
Internal Link Dist (m)		461.4			1819.9			425.0			571.3	
Turn Bay Length (m)	30.0			30.0			75.0			75.0		
Base Capacity (vph)	582	1920		518	1890		170	4202		370	4299	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.19		0.37	0.13		0.31	0.26		0.25	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 74.2
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 92.0% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E

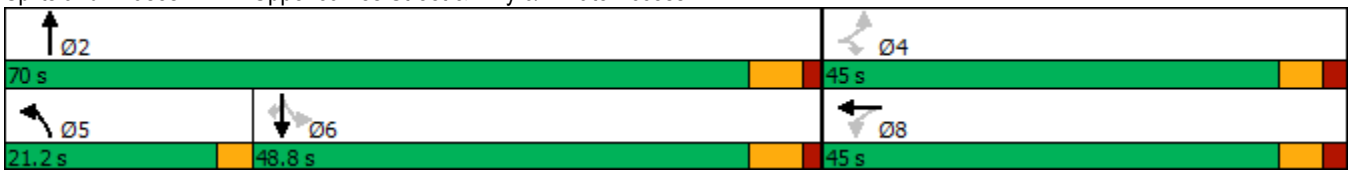


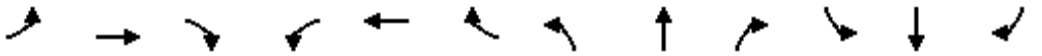
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	0	633	2	0	0	403	824	0	0	1582	166
Future Volume (vph)	211	0	633	2	0	0	403	824	0	0	1582	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	0	1507	0	1785	0	3092	4839	0	1879	4980	1365
Flt Permitted	0.757				0.950		0.950					
Satd. Flow (perm)	1368	0	1507	0	1785	0	3092	4839	0	1879	4980	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			329									171
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	6%	0%	0%	0%	12%	6%	0%	0%	3%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	0	653	0	2	0	415	849	0	0	1631	171
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm	Perm	NA		Prot	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8						6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	45.0		45.0	45.0	45.0		21.2	70.0		48.8	48.8	48.8
Total Split (%)	39.1%		39.1%	39.1%	39.1%		18.4%	60.9%		42.4%	42.4%	42.4%
Maximum Green (s)	39.0		39.0	39.0	39.0		18.2	63.7		42.5	42.5	42.5
Yellow Time (s)	3.7		3.7	3.7	3.7		3.0	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		0.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		2.0	5.3		5.3	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Min		Min	Min	Min
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	33.5		33.5		33.5		18.2	60.6			40.4	40.4
Actuated g/C Ratio	0.32		0.32		0.32		0.17	0.58			0.39	0.39
v/c Ratio	0.50		0.92		0.00		0.77	0.30			0.85	0.27
Control Delay	33.6		37.5		24.5		54.1	12.3			35.5	4.8
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	33.6		37.5		24.5		54.1	12.3			35.5	4.8
LOS	C		D		C		D	B			D	A
Approach Delay		36.5			24.5			26.0			32.6	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	39.8		80.1		0.3		49.3	37.1			129.3	0.0
Queue Length 95th (m)	63.8		#157.8		2.2		#72.2	45.7			150.6	14.2
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	536		791		700		582	3070			2124	680
Starvation Cap Reductn	0		0		0		0	0			0	0
Spillback Cap Reductn	0		0		0		0	0			0	0
Storage Cap Reductn	0		0		0		0	0			0	0
Reduced v/c Ratio	0.41		0.83		0.00		0.71	0.28			0.77	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 104.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 31.4		Intersection LOS: C	
Intersection Capacity Utilization 95.0%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	968	46	111	373	75	47	16	125	119	142	193
Future Volume (vph)	46	968	46	111	373	75	47	16	125	119	142	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	1790	0	1785	1707	0	1733	1615	0	1653	1609	0
Flt Permitted	0.483			0.045			0.139			0.552		
Satd. Flow (perm)	899	1790	0	85	1707	0	251	1615	0	960	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			17			137			45	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)	9		10	10		9	10					10
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	5%	0%	8%	0%	3%	0%	1%	8%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	1115	0	122	492	0	52	155	0	131	368	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		9.5	41.3		35.0	35.0		35.0	35.0	
Total Split (s)	94.0	94.0		10.0	104.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.1%	67.1%		7.1%	74.3%		25.7%	25.7%		25.7%	25.7%	
Maximum Green (s)	87.7	87.7		7.0	97.7		29.7	29.7		29.7	29.7	
Yellow Time (s)	4.6	4.6		3.0	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		0.0	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		2.0	5.3		5.3	5.3		5.3	5.3	

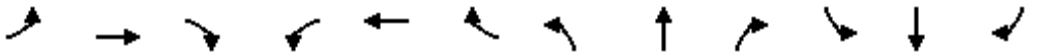
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		None	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0			18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0			17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	87.4	87.4		100.7	97.4		30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.63	0.63		0.73	0.70		0.22	0.22		0.22	0.22	
v/c Ratio	0.09	0.98		0.76	0.41		0.95	0.34		0.63	0.95	
Control Delay	10.5	48.5		55.5	9.3		162.3	11.8		63.8	82.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.5	48.5		55.5	9.3		162.3	11.8		63.8	82.1	
LOS	B	D		E	A		F	B		E	F	
Approach Delay		46.8			18.5			49.6			77.3	
Approach LOS		D			B			D			E	
Queue Length 50th (m)	5.5	297.4		17.6	52.1		15.1	4.2		34.8	95.3	
Queue Length 95th (m)	11.4	#416.4		#51.2	71.9		#44.4	23.6		59.1	#159.8	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	577	1150		160	1224		56	465		213	392	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.97		0.76	0.40		0.93	0.33		0.62	0.94	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 138.2
Natural Cycle: 130
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 46.2 Intersection LOS: D
Intersection Capacity Utilization 101.6% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 17: Homestead Drive & Airport Road W

Appendix F
2034 Future Total
Intersection Performance Analysis



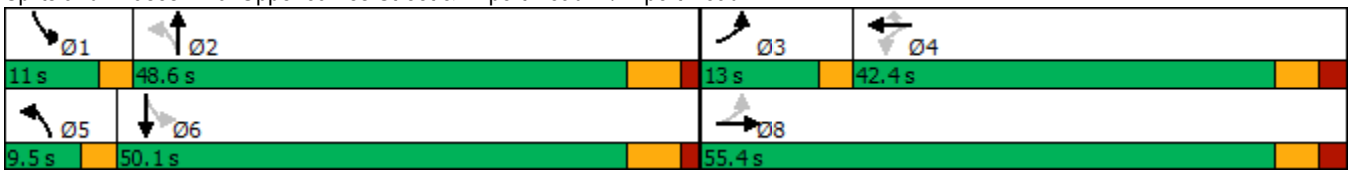
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	513	330	205	74	464	382	152	1404	88	128	800	236
Future Volume (vph)	513	330	205	74	464	382	152	1404	88	128	800	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	35.0		35.0	140.0		0.0	100.0		0.0
Storage Lanes	2		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	3330	3058	0	1513	3466	1551	1716	4838	0	1653	4503	0
Flt Permitted	0.322			0.451			0.206			0.089		
Satd. Flow (perm)	1129	3058	0	718	3466	1551	372	4838	0	155	4503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		149				133		10			76	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			323.1			193.8			397.8	
Travel Time (s)		17.0			23.3			14.0			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	5%	18%	18%	3%	3%	4%	5%	6%	8%	8%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	518	540	0	75	469	386	154	1507	0	129	1046	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	30.0		5.0	30.0	
Minimum Split (s)	9.5	42.3		42.3	42.3	42.3	9.5	41.3		9.5	41.3	
Total Split (s)	13.0	55.4		42.4	42.4	42.4	9.5	48.6		11.0	50.1	
Total Split (%)	11.3%	48.2%		36.9%	36.9%	36.9%	8.3%	42.3%		9.6%	43.6%	
Maximum Green (s)	10.0	49.1		36.1	36.1	36.1	6.5	42.3		8.0	43.8	
Yellow Time (s)	3.0	3.7		3.7	3.7	3.7	3.0	4.6		3.0	4.6	
All-Red Time (s)	0.0	2.6		2.6	2.6	2.6	0.0	1.7		0.0	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.3		5.3	5.3	5.3	2.0	5.3		2.0	5.3	

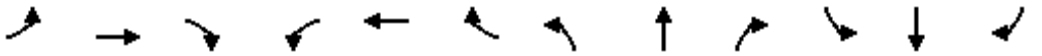
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None	None	None	Max		None	Max	
Walk Time (s)		11.0		11.0	11.0	11.0		18.0			18.0	
Flash Dont Walk (s)		24.0		24.0	24.0	24.0		17.0			17.0	
Pedestrian Calls (#/hr)		0		0	0	0		0			0	
Act Effct Green (s)	41.8	38.4		25.4	25.4	25.4	54.7	43.8		57.1	45.0	
Actuated g/C Ratio	0.40	0.37		0.24	0.24	0.24	0.53	0.42		0.55	0.43	
v/c Ratio	0.75	0.44		0.43	0.55	0.81	0.53	0.74		0.61	0.52	
Control Delay	29.6	18.0		40.1	36.2	36.8	20.3	28.8		29.4	21.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	29.6	18.0		40.1	36.2	36.8	20.3	28.8		29.4	21.9	
LOS	C	B		D	D	D	C	C		C	C	
Approach Delay		23.7			36.8			28.0			22.8	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	39.1	31.4		13.4	45.6	51.5	15.2	96.5		12.5	54.1	
Queue Length 95th (m)	51.9	45.5		27.8	61.2	87.2	32.1	136.6		#39.8	80.5	
Internal Link Dist (m)		211.8			299.1			169.8			373.8	
Turn Bay Length (m)	35.0			35.0		35.0	140.0			100.0		
Base Capacity (vph)	689	1562		258	1246	643	293	2049		216	1998	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.75	0.35		0.29	0.38	0.60	0.53	0.74		0.60	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 103.7
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 27.5 Intersection LOS: C
Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





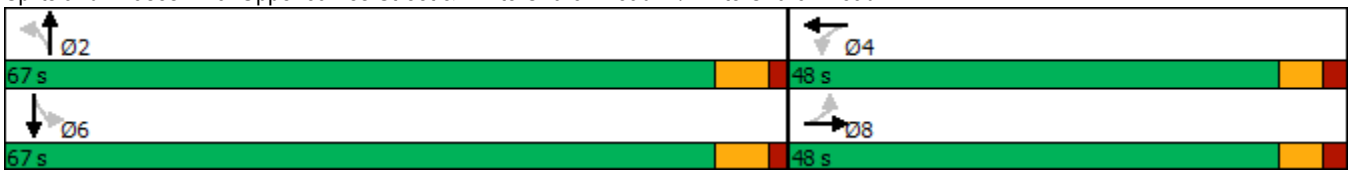
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	179	35	405	330	363	12	1204	159	126	1149	82
Future Volume (vph)	79	179	35	405	330	363	12	1204	159	126	1149	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		30.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1684	3362	0	1750	3091	0	1275	4702	0	1653	4457	0
Flt Permitted	0.263			0.617			0.169			0.139		
Satd. Flow (perm)	466	3362	0	1137	3091	0	227	4702	0	242	4457	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			52			32			15	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			417.0			449.0			595.3	
Travel Time (s)		34.9			30.0			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	3%	7%	2%	3%	8%	40%	7%	8%	8%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	216	0	409	700	0	12	1377	0	127	1244	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		5.0	5.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		31.3	31.3		31.3	31.3	
Total Split (s)	48.0	48.0		48.0	48.0		67.0	67.0		67.0	67.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	42.0	42.0		42.0	42.0		60.7	60.7		60.7	60.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		4.6	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.3	5.3		5.3	5.3	

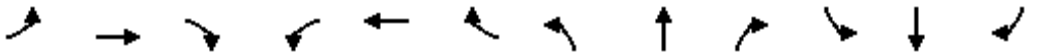
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0		14.0	14.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	42.6	42.6		42.6	42.6		61.7	61.7		61.7	61.7	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.54	0.54		0.54	0.54	
v/c Ratio	0.46	0.17		0.97	0.59		0.10	0.54		0.98	0.52	
Control Delay	37.9	22.0		73.0	29.1		15.7	17.8		104.3	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.9	22.0		73.0	29.1		15.7	17.8		104.3	17.7	
LOS	D	C		E	C		B	B		F	B	
Approach Delay		26.3			45.3			17.8			25.7	
Approach LOS		C			D			B			C	
Queue Length 50th (m)	14.2	15.8		93.8	64.2		1.3	73.0		28.1	65.5	
Queue Length 95th (m)	31.2	24.8		#159.6	84.4		5.1	86.7		#70.6	78.7	
Internal Link Dist (m)		461.4			393.0			425.0			571.3	
Turn Bay Length (m)	30.0			30.0			75.0			75.0		
Base Capacity (vph)	175	1274		426	1192		121	2546		130	2406	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.46	0.17		0.96	0.59		0.10	0.54		0.98	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 114.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 99.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E



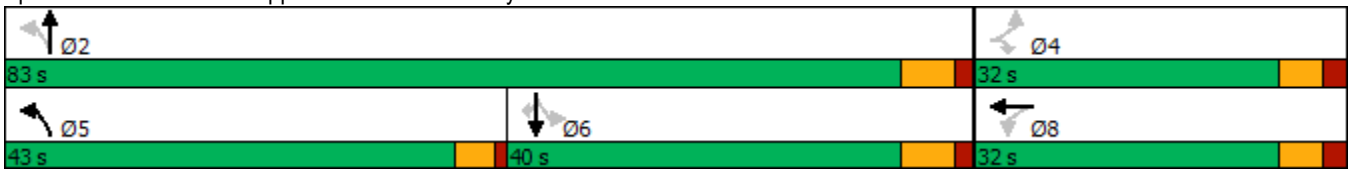


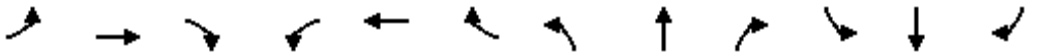
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	0	366	0	0	0	486	1241	0	0	996	589
Future Volume (vph)	142	0	366	0	0	0	486	1241	0	0	996	589
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1405	0	1320	0	1879	0	1700	4839	0	1879	4539	1536
Flt Permitted	0.757						0.153					
Satd. Flow (perm)	1120	0	1320	0	1879	0	274	4839	0	1879	4539	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			370									570
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	27%	0%	21%	0%	0%	0%	5%	6%	0%	0%	13%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	0	370	0	0	0	491	1254	0	0	1006	595
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	32.0		32.0	32.0	32.0		43.0	83.0		40.0	40.0	40.0
Total Split (%)	27.8%		27.8%	27.8%	27.8%		37.4%	72.2%		34.8%	34.8%	34.8%
Maximum Green (s)	26.0		26.0	26.0	26.0		38.5	76.7		33.7	33.7	33.7
Yellow Time (s)	3.7		3.7	3.7	3.7		3.5	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		1.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		3.5	5.3		5.3	5.3	5.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Min		Min	Min	Min
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	20.0		20.0				67.5	65.6			30.6	30.6
Actuated g/C Ratio	0.21		0.21				0.70	0.68			0.32	0.32
v/c Ratio	0.62		0.65				0.75	0.38			0.70	0.68
Control Delay	49.8		10.0				24.8	7.0			33.2	7.8
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	49.8		10.0				24.8	7.0			33.2	7.8
LOS	D		A				C	A			C	A
Approach Delay		21.1						12.0			23.8	
Approach LOS		C						B			C	
Queue Length 50th (m)	26.8		0.0				56.3	31.2			64.7	3.5
Queue Length 95th (m)	52.2		27.6				114.6	51.3			95.1	38.9
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	323		644				794	3976			1684	928
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	0.44		0.57				0.62	0.32			0.60	0.64

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 96.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access



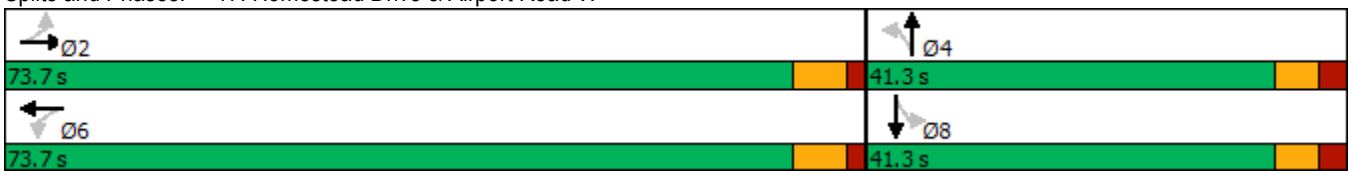


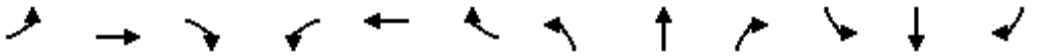
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	815	40	32	809	62	46	5	214	50	57	149
Future Volume (vph)	48	815	40	32	809	62	46	5	214	50	57	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	3268	0	1566	3220	0	1733	1603	0	1700	1612	0
Flt Permitted	0.293			0.302			0.627			0.620		
Satd. Flow (perm)	551	3268	0	498	3220	0	1144	1603	0	1109	1612	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			12			178			119	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	18%	14%	9%	18%	3%	0%	0%	5%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	863	0	32	880	0	46	221	0	51	209	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	73.7	73.7		73.7	73.7		41.3	41.3		41.3	41.3	
Total Split (%)	64.1%	64.1%		64.1%	64.1%		35.9%	35.9%		35.9%	35.9%	
Maximum Green (s)	67.4	67.4		67.4	67.4		35.0	35.0		35.0	35.0	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	17.8	17.8		17.8	17.8		9.4	9.4		9.4	9.4	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.25	0.25		0.25	0.25	
v/c Ratio	0.19	0.57		0.14	0.58		0.16	0.42		0.19	0.43	
Control Delay	8.4	9.1		7.8	9.3		14.4	7.1		14.8	9.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.4	9.1		7.8	9.3		14.4	7.1		14.8	9.8	
LOS	A	A		A	A		B	A		B	A	
Approach Delay		9.0			9.2			8.4			10.8	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	1.6	18.4		1.0	18.9		2.3	2.1		2.6	4.6	
Queue Length 95th (m)	7.0	37.6		5.1	38.7		9.7	16.2		10.5	20.3	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	551	3268		498	3220		1042	1476		1010	1479	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.26		0.06	0.27		0.04	0.15		0.05	0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 38.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 17: Homestead Drive & Airport Road W



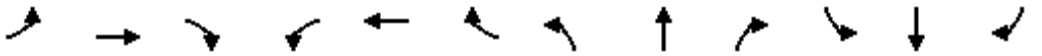


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	320	7	4	518	43	5	49	2	42	24	34
Future Volume (vph)	48	320	7	4	518	43	5	49	2	42	24	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	3371	0	1785	3459	0	1428	1815	0	1475	1493	0
Flt Permitted	0.439			0.553			0.719			0.724		
Satd. Flow (perm)	786	3371	0	1039	3459	0	1081	1815	0	1124	1493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			2			34	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		463.4			981.2			797.9			400.2	
Travel Time (s)		27.8			58.9			47.9			24.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	33%	0%	2%	3%	25%	3%	0%	21%	6%	21%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	330	0	4	566	0	5	51	0	42	58	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	69.0	69.0		69.0	69.0		46.0	46.0		46.0	46.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	62.7	62.7		62.7	62.7		39.7	39.7		39.7	39.7	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	11.3	11.3		11.3	11.3		7.8	7.8		7.8	7.8	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.26	0.26		0.26	0.26	
v/c Ratio	0.16	0.26		0.01	0.43		0.02	0.11		0.14	0.14	
Control Delay	7.8	6.9		6.0	7.9		9.0	9.4		10.4	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	6.9		6.0	7.9		9.0	9.4		10.4	6.5	
LOS	A	A		A	A		A	A		B	A	
Approach Delay		7.0			7.9			9.3			8.2	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	1.4	5.2		0.2	9.4		0.2	1.8		1.5	0.9	
Queue Length 95th (m)	5.3	10.8		1.0	18.0		1.6	6.7		6.3	5.9	
Internal Link Dist (m)		439.4			957.2			773.9			376.2	
Turn Bay Length (m)	15.0			15.0			15.0			15.0		
Base Capacity (vph)	786	3371		1039	3459		1081	1815		1124	1493	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.10		0.00	0.16		0.00	0.03		0.04	0.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 29.8			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 42.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 22: Miles Road/Miles Road South & White Church Road E

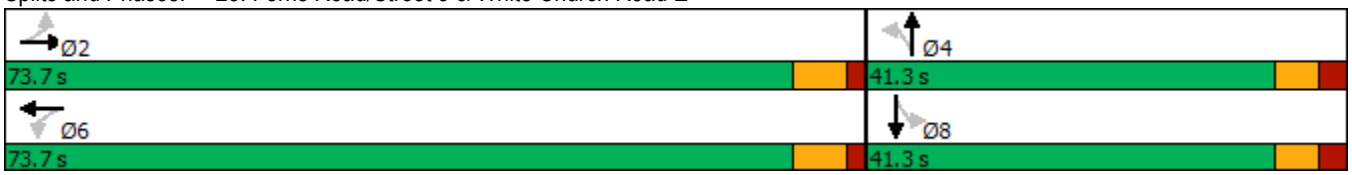


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	364	2	1	655	8	9	23	2	25	76	114
Future Volume (vph)	43	364	2	1	655	8	9	23	2	25	76	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1750	3365	0	892	3459	0	1750	1820	0	1750	1676	0
Flt Permitted	0.397			0.532			0.637			0.741		
Satd. Flow (perm)	731	3365	0	500	3459	0	1173	1820	0	1365	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			2			2			68	
Link Speed (k/h)		60			60			60			40	
Link Distance (m)		473.0			809.0			804.5			210.3	
Travel Time (s)		28.4			48.5			48.3			18.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	2%	100%	3%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	370	0	1	670	0	9	25	0	25	192	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	73.7	73.7		73.7	73.7		41.3	41.3		41.3	41.3	
Total Split (%)	64.1%	64.1%		64.1%	64.1%		35.9%	35.9%		35.9%	35.9%	
Maximum Green (s)	67.4	67.4		67.4	67.4		35.0	35.0		35.0	35.0	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	13.6	13.6		13.6	13.6		9.4	9.4		9.4	9.4	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.28	0.28		0.28	0.28	
v/c Ratio	0.15	0.27		0.00	0.48		0.03	0.05		0.07	0.37	
Control Delay	8.2	7.5		6.0	8.9		10.2	9.8		10.5	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.2	7.5		6.0	8.9		10.2	9.8		10.5	9.6	
LOS	A	A		A	A		B	A		B	A	
Approach Delay		7.6			8.9			9.9			9.7	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	1.4	6.7		0.0	13.4		0.4	0.9		1.0	5.3	
Queue Length 95th (m)	6.0	14.6		0.6	26.5		2.7	4.8		5.0	18.5	
Internal Link Dist (m)		449.0			785.0			780.5			186.3	
Turn Bay Length (m)	15.0			15.0			15.0			15.0		
Base Capacity (vph)	731	3365		500	3459		1136	1762		1322	1625	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.11		0.00	0.19		0.01	0.01		0.02	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 33.8			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 25: Ferris Road/Street 3 & White Church Road E



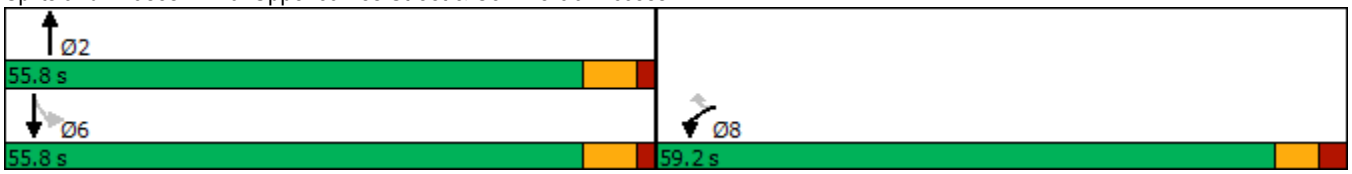
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	60	1584	8	98	982
Future Volume (vph)	5	60	1584	8	98	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1750	1566	5024	0	1750	5029
Flt Permitted	0.950				0.138	
Satd. Flow (perm)	1750	1566	5024	0	254	5029
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		7	1			
Link Speed (k/h)	60		60			60
Link Distance (m)	187.7		141.8			193.8
Travel Time (s)	11.3		8.5			11.6
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	61	1608	0	99	992
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	41.3	41.3	41.3		24.3	24.3
Total Split (s)	59.2	59.2	55.8		55.8	55.8
Total Split (%)	51.5%	51.5%	48.5%		48.5%	48.5%
Maximum Green (s)	52.9	52.9	49.5		49.5	49.5
Yellow Time (s)	3.7	3.7	4.6		4.6	4.6
All-Red Time (s)	2.6	2.6	1.7		1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3

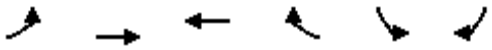
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	None	Min		Min	Min
Walk Time (s)	11.0	11.0	18.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0	17.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	9.2	9.2	66.5		66.5	66.5
Actuated g/C Ratio	0.12	0.12	0.85		0.85	0.85
v/c Ratio	0.02	0.32	0.38		0.46	0.23
Control Delay	31.2	34.3	3.1		13.8	2.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	31.2	34.3	3.1		13.8	2.5
LOS	C	C	A		B	A
Approach Delay	34.1		3.1			3.6
Approach LOS	C		A			A
Queue Length 50th (m)	0.8	8.7	26.7		5.0	13.9
Queue Length 95th (m)	3.8	18.7	39.1		#32.6	21.3
Internal Link Dist (m)	163.7		117.8			169.8
Turn Bay Length (m)	15.0				15.0	
Base Capacity (vph)	1209	1084	4258		215	4262
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.06	0.38		0.46	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 78.5			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 4.0		Intersection LOS: A	
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 46: Upper James Street & Commercial Access





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	227	470	472	143	44	160
Future Volume (Veh/h)	227	470	472	143	44	160
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	229	475	477	144	44	162
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	621				1244	310
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	621				1244	310
tC, single (s)	4.1				7.1	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.4
p0 queue free %	76				61	76
cM capacity (veh/h)	956				112	662

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	229	238	238	318	303	44	162
Volume Left	229	0	0	0	0	44	0
Volume Right	0	0	0	0	144	0	162
cSH	956	1700	1700	1700	1700	112	662
Volume to Capacity	0.24	0.14	0.14	0.19	0.18	0.39	0.24
Queue Length 95th (m)	7.5	0.0	0.0	0.0	0.0	13.1	7.7
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	56.9	12.2
Lane LOS	A					F	B
Approach Delay (s)	3.2			0.0		21.7	
Approach LOS						C	

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	542	5	80	552	7	155
Future Volume (Veh/h)	542	5	80	552	7	155
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	547	5	81	558	7	157
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		990	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			552		990	276
tC, single (s)			4.4		7.5	6.9
tC, 2 stage (s)						
tF (s)			2.4		3.8	3.3
p0 queue free %			91		96	78
cM capacity (veh/h)			923		178	721

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	365	187	81	279	279	7	157
Volume Left	0	0	81	0	0	7	0
Volume Right	0	5	0	0	0	0	157
cSH	1700	1700	923	1700	1700	178	721
Volume to Capacity	0.21	0.11	0.09	0.16	0.16	0.04	0.22
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.0	6.6
Control Delay (s)	0.0	0.0	9.3	0.0	0.0	26.0	11.4
Lane LOS			A			D	B
Approach Delay (s)	0.0		1.2			12.0	
Approach LOS						B	

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	517	31	9	575	105	30
Future Volume (Veh/h)	517	31	9	575	105	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	522	31	9	581	106	30
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			553		846	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			553		846	276
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		65	96
cM capacity (veh/h)			1013		299	721

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	348	205	9	290	290	106	30
Volume Left	0	0	9	0	0	106	0
Volume Right	0	31	0	0	0	0	30
cSH	1700	1700	1013	1700	1700	299	721
Volume to Capacity	0.20	0.12	0.01	0.17	0.17	0.35	0.04
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	12.4	1.0
Control Delay (s)	0.0	0.0	8.6	0.0	0.0	23.5	10.2
Lane LOS			A			C	B
Approach Delay (s)	0.0		0.1			20.6	
Approach LOS						C	

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	518	31	9	766	105	30
Future Volume (Veh/h)	518	31	9	766	105	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	523	31	9	774	106	30
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			554		944	277
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			554		944	277
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		59	96
cM capacity (veh/h)			1012		258	720

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	349	205	9	387	387	106	30
Volume Left	0	0	9	0	0	106	0
Volume Right	0	31	0	0	0	0	30
cSH	1700	1700	1012	1700	1700	258	720
Volume to Capacity	0.21	0.12	0.01	0.23	0.23	0.41	0.04
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	15.2	1.0
Control Delay (s)	0.0	0.0	8.6	0.0	0.0	28.3	10.2
Lane LOS			A			D	B
Approach Delay (s)	0.0		0.1			24.3	
Approach LOS						C	

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	518	31	9	671	105	30
Future Volume (Veh/h)	518	31	9	671	105	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	523	31	9	678	106	30
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			554		896	277
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			554		896	277
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		62	96
cM capacity (veh/h)			1012		278	720

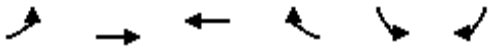
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	349	205	9	339	339	106	30
Volume Left	0	0	9	0	0	106	0
Volume Right	0	31	0	0	0	0	30
cSH	1700	1700	1012	1700	1700	278	720
Volume to Capacity	0.21	0.12	0.01	0.20	0.20	0.38	0.04
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	13.7	1.0
Control Delay (s)	0.0	0.0	8.6	0.0	0.0	25.8	10.2
Lane LOS			A			D	B
Approach Delay (s)	0.0		0.1			22.3	
Approach LOS						C	

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	516	31	9	479	105	30
Future Volume (Veh/h)	516	31	9	479	105	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	521	31	9	484	106	30
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		796	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			552		796	276
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		67	96
cM capacity (veh/h)			1014		321	721

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	347	205	9	242	242	106	30
Volume Left	0	0	9	0	0	106	0
Volume Right	0	31	0	0	0	0	30
cSH	1700	1700	1014	1700	1700	321	721
Volume to Capacity	0.20	0.12	0.01	0.14	0.14	0.33	0.04
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	11.2	1.0
Control Delay (s)	0.0	0.0	8.6	0.0	0.0	21.6	10.2
Lane LOS			A			C	B
Approach Delay (s)	0.0		0.2			19.1	
Approach LOS						C	

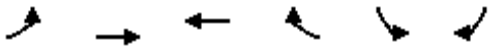
Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	420	983	8	25	114
Future Volume (Veh/h)	43	420	983	8	25	114
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	43	424	993	8	25	115
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	1001				1295	500
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1001				1295	500
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				83	78
cM capacity (veh/h)	687				144	516

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	43	212	212	662	339	25	115
Volume Left	43	0	0	0	0	25	0
Volume Right	0	0	0	0	8	0	115
cSH	687	1700	1700	1700	1700	144	516
Volume to Capacity	0.06	0.12	0.12	0.39	0.20	0.17	0.22
Queue Length 95th (m)	1.6	0.0	0.0	0.0	0.0	4.8	6.8
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	35.1	14.0
Lane LOS	B					E	B
Approach Delay (s)	1.0			0.0		17.7	
Approach LOS						C	

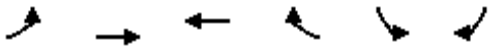
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	402	876	8	25	114
Future Volume (Veh/h)	43	402	876	8	25	114
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	43	406	885	8	25	115
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	893				1178	446
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	893				1178	446
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				86	79
cM capacity (veh/h)	755				173	559

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	43	203	203	590	303	25	115
Volume Left	43	0	0	0	0	25	0
Volume Right	0	0	0	0	8	0	115
cSH	755	1700	1700	1700	1700	173	559
Volume to Capacity	0.06	0.12	0.12	0.35	0.18	0.14	0.21
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	3.9	6.1
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	29.3	13.1
Lane LOS	B					D	B
Approach Delay (s)	1.0			0.0		16.0	
Approach LOS						C	

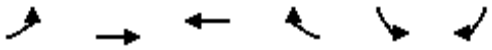
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	384	770	8	25	114
Future Volume (Veh/h)	43	384	770	8	25	114
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	43	388	778	8	25	115
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	786				1062	393
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	786				1062	393
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				88	81
cM capacity (veh/h)	829				207	606

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	43	194	194	519	267	25	115
Volume Left	43	0	0	0	0	25	0
Volume Right	0	0	0	0	8	0	115
cSH	829	1700	1700	1700	1700	207	606
Volume to Capacity	0.05	0.11	0.11	0.31	0.16	0.12	0.19
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	3.2	5.6
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	24.7	12.3
Lane LOS	A					C	B
Approach Delay (s)	1.0			0.0		14.5	
Approach LOS						B	

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	349	549	8	25	114
Future Volume (Veh/h)	43	349	549	8	25	114
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	43	353	555	8	25	115
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	563				822	282
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	563				822	282
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				92	84
cM capacity (veh/h)	1005				299	716

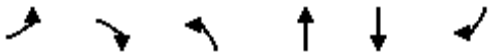
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	43	176	176	370	193	25	115
Volume Left	43	0	0	0	0	25	0
Volume Right	0	0	0	0	8	0	115
cSH	1005	1700	1700	1700	1700	299	716
Volume to Capacity	0.04	0.10	0.10	0.22	0.11	0.08	0.16
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	2.2	4.6
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	18.1	11.0
Lane LOS	A					C	B
Approach Delay (s)	0.9			0.0		12.3	
Approach LOS						B	

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	531	15	30	841	9	18
Future Volume (Veh/h)	531	15	30	841	9	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	536	15	30	849	9	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	323					
pX, platoon unblocked						
vC, conflicting volume			551		1028	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			551		1028	276
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	98
cM capacity (veh/h)			1015		223	722

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	357	194	30	424	424	9	18
Volume Left	0	0	30	0	0	9	0
Volume Right	0	15	0	0	0	0	18
cSH	1700	1700	1015	1700	1700	223	722
Volume to Capacity	0.21	0.11	0.03	0.25	0.25	0.04	0.02
Queue Length 95th (m)	0.0	0.0	0.7	0.0	0.0	1.0	0.6
Control Delay (s)	0.0	0.0	8.7	0.0	0.0	21.8	10.1
Lane LOS			A			C	B
Approach Delay (s)	0.0		0.3			14.0	
Approach LOS						B	

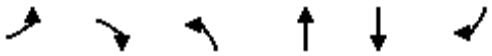
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	13	4	147	80	5
Future Volume (Veh/h)	15	13	4	147	80	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	15	13	4	148	81	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	240	84	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	240	84	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	747	976	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	28	152	86
Volume Left	15	4	0
Volume Right	13	0	5
cSH	838	1510	1700
Volume to Capacity	0.03	0.00	0.05
Queue Length 95th (m)	0.8	0.1	0.0
Control Delay (s)	9.4	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.2	0.0
Approach LOS	A		

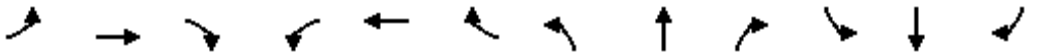
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	13	4	136	88	5
Future Volume (Veh/h)	15	13	4	136	88	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	15	13	4	137	89	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)				400		
pX, platoon unblocked						
vC, conflicting volume	236	92	94			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236	92	94			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	750	966	1500			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	28	141	94
Volume Left	15	4	0
Volume Right	13	0	5
cSH	837	1500	1700
Volume to Capacity	0.03	0.00	0.06
Queue Length 95th (m)	0.8	0.1	0.0
Control Delay (s)	9.5	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		



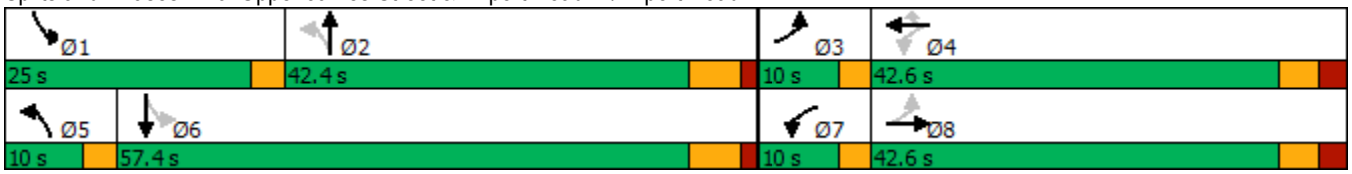
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	539	479	248	180	386	235	119	1251	113	389	1719	170
Future Volume (vph)	539	479	248	180	386	235	119	1251	113	389	1719	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	35.0		0.0	35.0		35.0	140.0		0.0	100.0		0.0
Storage Lanes	2		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	3298	3344	0	1700	3570	1597	1785	4912	0	1785	4889	0
Flt Permitted	0.428			0.152			0.112			0.106		
Satd. Flow (perm)	1486	3344	0	272	3570	1597	210	4912	0	199	4889	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		80				237		13			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		235.8			323.1			193.8			397.8	
Travel Time (s)		17.0			23.3			14.0			28.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	0%	5%	0%	0%	0%	3%	5%	0%	3%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	544	735	0	182	390	237	120	1378	0	393	1908	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	30.0		5.0	30.0	
Minimum Split (s)	9.5	42.3		9.5	42.3	42.3	9.5	41.3		9.5	41.3	
Total Split (s)	10.0	42.6		10.0	42.6	42.6	10.0	42.4		25.0	57.4	
Total Split (%)	8.3%	35.5%		8.3%	35.5%	35.5%	8.3%	35.3%		20.8%	47.8%	
Maximum Green (s)	7.0	36.3		7.0	36.3	36.3	7.0	36.1		22.0	51.1	
Yellow Time (s)	3.0	3.7		3.0	3.7	3.7	3.0	4.6		3.0	4.6	
All-Red Time (s)	0.0	2.6		0.0	2.6	2.6	0.0	1.7		0.0	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.3		2.0	5.3	5.3	2.0	5.3		2.0	5.3	

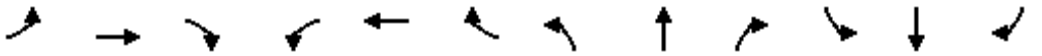
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		11.0			11.0	11.0		18.0			18.0	
Flash Dont Walk (s)		24.0			24.0	24.0		17.0			17.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	39.9	28.5		39.9	28.5	28.5	47.0	35.7		63.6	50.3	
Actuated g/C Ratio	0.36	0.26		0.36	0.26	0.26	0.43	0.33		0.58	0.46	
v/c Ratio	0.81	0.79		0.89	0.42	0.40	0.59	0.86		0.89	0.85	
Control Delay	38.1	40.3		68.5	35.0	6.1	30.3	41.2		52.1	31.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.1	40.3		68.5	35.0	6.1	30.3	41.2		52.1	31.1	
LOS	D	D		E	C	A	C	D		D	C	
Approach Delay		39.3			34.1			40.3			34.7	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	47.3	74.5		28.7	39.3	0.0	11.6	106.0		68.7	135.4	
Queue Length 95th (m)	62.1	96.7		#64.4	53.5	18.4	#33.4	#141.3		#141.4	179.6	
Internal Link Dist (m)		211.8			299.1			169.8			373.8	
Turn Bay Length (m)	35.0			35.0		35.0	140.0			100.0		
Base Capacity (vph)	674	1198		204	1223	702	205	1683		450	2349	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.81	0.61		0.89	0.32	0.34	0.59	0.82		0.87	0.81	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 109.6
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 94.9% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Upper James Street & Airport Road W/Airport Road E





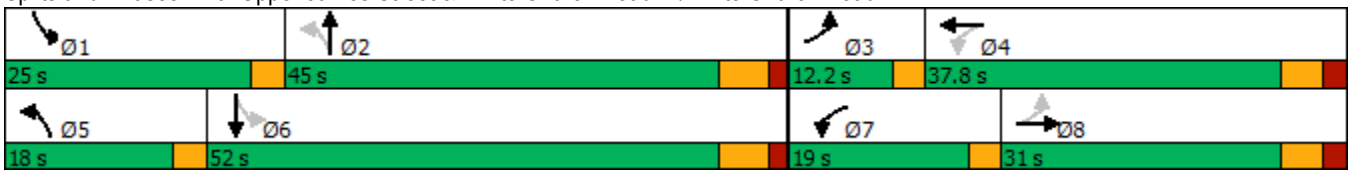
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	655	30	278	267	224	51	836	364	380	1602	123
Future Volume (vph)	143	655	30	278	267	224	51	836	364	380	1602	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		30.0	75.0		0.0	75.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1668	3493	0	1733	3259	0	1785	4688	0	1767	4885	0
Flt Permitted	0.439			0.147			0.114			0.108		
Satd. Flow (perm)	770	3493	0	268	3259	0	214	4688	0	201	4885	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			173			98			12	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		485.4			417.0			449.0			595.3	
Travel Time (s)		34.9			30.0			20.2			26.8	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	1%	12%	3%	1%	2%	0%	5%	3%	1%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	692	0	281	496	0	52	1212	0	384	1742	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	5.0		5.0	25.0		5.0	25.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		18.0	31.3		9.5	31.3	
Total Split (s)	12.2	31.0		19.0	37.8		18.0	45.0		25.0	52.0	
Total Split (%)	10.2%	25.8%		15.8%	31.5%		15.0%	37.5%		20.8%	43.3%	
Maximum Green (s)	9.2	25.0		16.0	31.8		15.0	38.7		22.0	45.7	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6		3.0	4.6	
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.7		0.0	1.7	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		2.0	5.0		2.0	5.3		2.0	5.3	

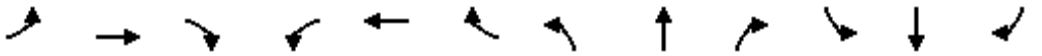
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		10.0			10.0			14.0			14.0	
Flash Dont Walk (s)		15.0			15.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	38.1	25.2		47.3	32.4		45.7	34.4		62.3	50.9	
Actuated g/C Ratio	0.34	0.22		0.42	0.29		0.40	0.30		0.55	0.45	
v/c Ratio	0.43	0.89		0.85	0.47		0.27	0.82		0.91	0.79	
Control Delay	27.3	58.2		51.2	23.6		17.0	38.6		57.3	30.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.3	58.2		51.2	23.6		17.0	38.6		57.3	30.6	
LOS	C	E		D	C		B	D		E	C	
Approach Delay		52.9			33.6			37.8			35.4	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	21.6	84.0		47.0	32.7		5.5	90.2		71.4	129.7	
Queue Length 95th (m)	38.6	#123.9		#101.7	51.9		11.4	108.3		#134.4	153.9	
Internal Link Dist (m)		461.4			393.0			425.0			571.3	
Turn Bay Length (m)	30.0			30.0			75.0			75.0		
Base Capacity (vph)	341	805		331	1068		323	1709		428	2194	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.42	0.86		0.85	0.46		0.16	0.71		0.90	0.79	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 113.6
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 38.6 Intersection LOS: D
Intersection Capacity Utilization 95.1% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Upper James Street & White Church Road W/White Church Road E





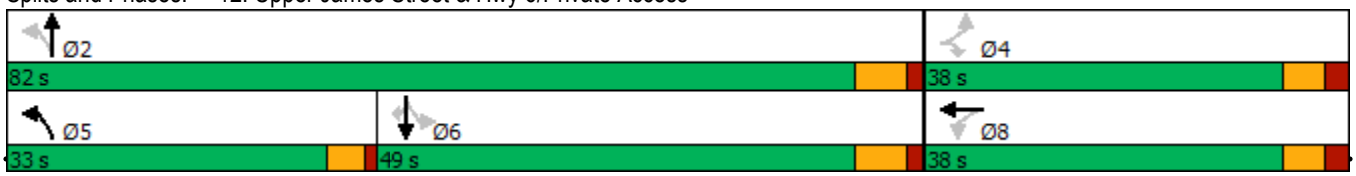
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	0	633	2	0	0	403	839	0	0	1559	351
Future Volume (vph)	377	0	633	2	0	0	403	839	0	0	1559	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	155.0		0.0	0.0		0.0	270.0		0.0	45.0		115.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1716	0	1507	0	1785	0	1594	4839	0	1879	4980	1365
Flt Permitted	0.757				0.950		0.088					
Satd. Flow (perm)	1368	0	1507	0	1785	0	148	4839	0	1879	4980	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			438									355
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		461.5			101.0			356.2			449.0	
Travel Time (s)		20.8			4.5			16.0			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	6%	0%	0%	0%	12%	6%	0%	0%	3%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	381	0	639	0	2	0	407	847	0	0	1575	355
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4		4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		5.0	25.0		25.0	25.0	25.0
Minimum Split (s)	31.0		31.0	31.0	31.0		9.5	31.3		31.3	31.3	31.3
Total Split (s)	38.0		38.0	38.0	38.0		33.0	82.0		49.0	49.0	49.0
Total Split (%)	31.7%		31.7%	31.7%	31.7%		27.5%	68.3%		40.8%	40.8%	40.8%
Maximum Green (s)	32.0		32.0	32.0	32.0		28.5	75.7		42.7	42.7	42.7
Yellow Time (s)	3.7		3.7	3.7	3.7		3.5	4.6		4.6	4.6	4.6
All-Red Time (s)	2.3		2.3	2.3	2.3		1.0	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		5.0		3.5	5.3		5.3	5.3	5.3

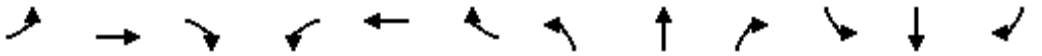
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None		None	None	None		None	Min		Min	Min	Min
Walk Time (s)	10.0		10.0	10.0	10.0			14.0		14.0	14.0	14.0
Flash Dont Walk (s)	15.0		15.0	15.0	15.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0		0	0	0
Act Effct Green (s)	33.0		33.0		33.0		76.5	74.7			42.2	42.2
Actuated g/C Ratio	0.28		0.28		0.28		0.65	0.63			0.36	0.36
v/c Ratio	0.99		0.87		0.00		0.90	0.28			0.88	0.50
Control Delay	88.6		26.4		31.5		56.7	9.9			42.7	5.3
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	88.6		26.4		31.5		56.7	9.9			42.7	5.3
LOS	F		C		C		E	A			D	A
Approach Delay		49.6			31.5			25.1			35.8	
Approach LOS		D			C			C			D	
Queue Length 50th (m)	~96.8		52.7		0.4		81.1	31.1			131.8	0.0
Queue Length 95th (m)	#161.4		#129.3		2.5		#141.3	38.2			153.0	21.0
Internal Link Dist (m)		437.5			77.0			332.2			425.0	
Turn Bay Length (m)	155.0						270.0					115.0
Base Capacity (vph)	383		736		499		457	3147			1845	729
Starvation Cap Reductn	0		0		0		0	0			0	0
Spillback Cap Reductn	0		0		0		0	0			0	0
Storage Cap Reductn	0		0		0		0	0			0	0
Reduced v/c Ratio	0.99		0.87		0.00		0.89	0.27			0.85	0.49

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 118
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 36.0 Intersection LOS: D
Intersection Capacity Utilization 94.6% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Upper James Street & Hwy 6/Private Access



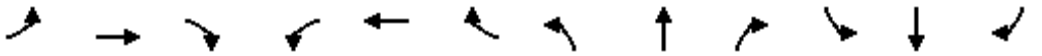


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1165	46	111	500	75	47	16	125	119	142	193
Future Volume (vph)	46	1165	46	111	500	75	47	16	125	119	142	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1785	3406	0	1785	3256	0	1733	1615	0	1653	1626	0
Flt Permitted	0.433			0.120			0.351			0.666		
Satd. Flow (perm)	808	3406	0	225	3256	0	636	1615	0	1159	1626	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			25			126			59	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1232.9			235.8			720.2			457.6	
Travel Time (s)		88.8			17.0			51.9			32.9	
Confl. Peds. (#/hr)	9		10	10		9	10					10
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	5%	0%	8%	0%	3%	0%	1%	8%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1223	0	112	581	0	47	142	0	120	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		8.0	41.3		35.0	35.0		35.0	35.0	
Total Split (s)	67.0	67.0		11.0	78.0		42.0	42.0		42.0	42.0	
Total Split (%)	55.8%	55.8%		9.2%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	60.7	60.7		8.0	71.7		35.7	35.7		35.7	35.7	
Yellow Time (s)	4.6	4.6		3.0	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		0.0	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		2.0	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		None	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0			18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0			17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	39.4	39.4		50.9	47.3		22.3	22.3		22.3	22.3	
Actuated g/C Ratio	0.49	0.49		0.63	0.58		0.27	0.27		0.27	0.27	
v/c Ratio	0.12	0.74		0.36	0.30		0.27	0.27		0.38	0.69	
Control Delay	14.7	21.1		10.2	8.9		31.6	8.4		31.3	31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.7	21.1		10.2	8.9		31.6	8.4		31.3	31.9	
LOS	B	C		B	A		C	A		C	C	
Approach Delay		20.9			9.1			14.1			31.7	
Approach LOS		C			A			B			C	
Queue Length 50th (m)	4.0	81.3		6.0	20.3		6.0	1.9		15.7	40.3	
Queue Length 95th (m)	12.6	140.6		17.3	42.1		19.3	17.5		39.4	89.4	
Internal Link Dist (m)		1208.9			211.8			696.2			433.6	
Turn Bay Length (m)	30.0			30.0			30.0			30.0		
Base Capacity (vph)	622	2625		330	2813		314	862		573	834	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.07	0.47		0.34	0.21		0.15	0.16		0.21	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 81.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 17: Homestead Drive & Airport Road W

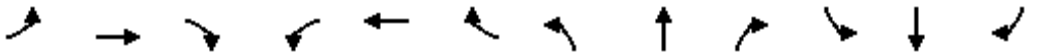


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	629	5	6	510	46	4	57	6	36	76	48
Future Volume (vph)	49	629	5	6	510	46	4	57	6	36	76	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1733	3497	0	1785	3428	0	1785	1853	0	1785	1770	0
Flt Permitted	0.442			0.409			0.677			0.715		
Satd. Flow (perm)	806	3497	0	768	3428	0	1272	1853	0	1343	1770	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			13			5			30	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		463.4			981.2			797.9			400.2	
Travel Time (s)		27.8			58.9			47.9			24.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	0%	0%	2%	13%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	640	0	6	561	0	4	64	0	36	125	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	69.0	69.0		69.0	69.0		46.0	46.0		46.0	46.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	62.7	62.7		62.7	62.7		39.7	39.7		39.7	39.7	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	12.6	12.6		12.6	12.6		8.5	8.5		8.5	8.5	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.27	0.27		0.27	0.27	
v/c Ratio	0.15	0.46		0.02	0.41		0.01	0.13		0.10	0.25	
Control Delay	7.8	8.4		6.3	7.9		9.5	9.7		10.4	9.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	8.4		6.3	7.9		9.5	9.7		10.4	9.4	
LOS	A	A		A	A		A	A		B	A	
Approach Delay		8.4			7.9			9.7			9.6	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	1.5	11.8		0.2	9.8		0.2	2.3		1.4	3.7	
Queue Length 95th (m)	5.9	22.6		1.4	19.4		1.5	8.5		6.0	12.9	
Internal Link Dist (m)		439.4			957.2			773.9			376.2	
Turn Bay Length (m)	15.0			15.0			15.0			15.0		
Base Capacity (vph)	806	3497		768	3428		1272	1853		1343	1770	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.18		0.01	0.16		0.00	0.03		0.03	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 31.8			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 22: Miles Road/Miles Road South & White Church Road E



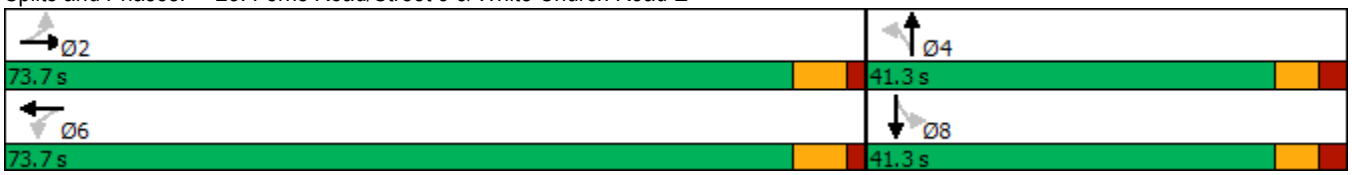
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	807	6	6	569	28	5	83	4	15	46	70
Future Volume (vph)	158	807	6	6	569	28	5	83	4	15	46	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1750	3496	0	1750	3475	0	1428	1829	0	1750	1674	0
Flt Permitted	0.424			0.327			0.682			0.700		
Satd. Flow (perm)	781	3496	0	602	3475	0	1025	1829	0	1289	1674	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			7			2			70	
Link Speed (k/h)		60			60			60			40	
Link Distance (m)		473.0			809.0			804.5			210.3	
Travel Time (s)		28.4			48.5			48.3			18.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	25%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	821	0	6	603	0	5	88	0	15	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	41.3	41.3		41.3	41.3		41.3	41.3		41.3	41.3	
Total Split (s)	73.7	73.7		73.7	73.7		41.3	41.3		41.3	41.3	
Total Split (%)	64.1%	64.1%		64.1%	64.1%		35.9%	35.9%		35.9%	35.9%	
Maximum Green (s)	67.4	67.4		67.4	67.4		35.0	35.0		35.0	35.0	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.7	3.7		3.7	3.7	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.3	5.3		5.3	5.3		5.3	5.3		5.3	5.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		Min	Min		Min	Min	
Walk Time (s)	18.0	18.0		18.0	18.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.3	16.3		16.3	16.3		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.24	0.24		0.24	0.24	
v/c Ratio	0.45	0.51		0.02	0.38		0.02	0.20		0.05	0.26	
Control Delay	11.4	8.1		5.5	7.0		12.6	13.4		12.8	8.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.4	8.1		5.5	7.0		12.6	13.4		12.8	8.4	
LOS	B	A		A	A		B	B		B	A	
Approach Delay		8.6			7.0			13.4			8.9	
Approach LOS		A			A			B			A	
Queue Length 50th (m)	5.8	16.1		0.2	10.8		0.3	4.2		0.7	2.2	
Queue Length 95th (m)	17.9	29.8		1.4	20.8		2.3	14.5		4.3	12.8	
Internal Link Dist (m)		449.0			785.0			780.5			186.3	
Turn Bay Length (m)	15.0			15.0			15.0			15.0		
Base Capacity (vph)	781	3496		602	3475		971	1732		1221	1589	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.20	0.23		0.01	0.17		0.01	0.05		0.01	0.07	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 35.8
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 47.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 25: Ferris Road/Street 3 & White Church Road E



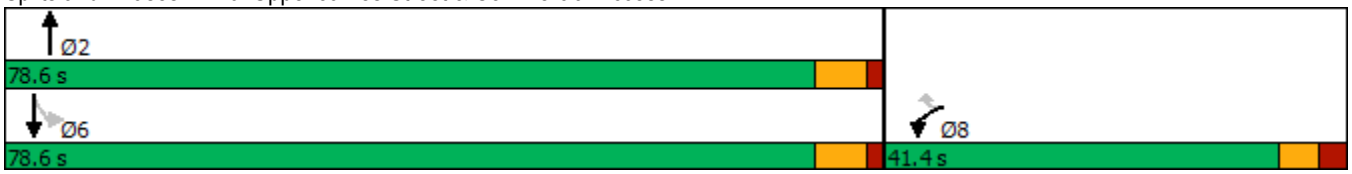
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	266	1173	60	239	1864
Future Volume (vph)	61	266	1173	60	239	1864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	15.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1750	1566	4994	0	1750	5029
Flt Permitted	0.950				0.198	
Satd. Flow (perm)	1750	1566	4994	0	365	5029
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		83	12			
Link Speed (k/h)	60		60			60
Link Distance (m)	187.7		141.8			193.8
Travel Time (s)	11.3		8.5			11.6
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	269	1246	0	241	1883
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	41.3	41.3	41.3		24.3	24.3
Total Split (s)	41.4	41.4	78.6		78.6	78.6
Total Split (%)	34.5%	34.5%	65.5%		65.5%	65.5%
Maximum Green (s)	35.1	35.1	72.3		72.3	72.3
Yellow Time (s)	3.7	3.7	4.6		4.6	4.6
All-Red Time (s)	2.6	2.6	1.7		1.7	1.7
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3

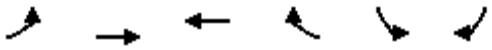
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	None	Min		Min	Min
Walk Time (s)	11.0	11.0	18.0		7.0	7.0
Flash Dont Walk (s)	24.0	24.0	17.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	19.1	19.1	74.3		74.3	74.3
Actuated g/C Ratio	0.18	0.18	0.71		0.71	0.71
v/c Ratio	0.19	0.76	0.35		0.93	0.52
Control Delay	35.9	41.1	6.5		58.7	8.2
Queue Delay	0.0	0.0	0.0		0.0	0.2
Total Delay	35.9	41.1	6.5		58.7	8.4
LOS	D	D	A		E	A
Approach Delay	40.1		6.5			14.1
Approach LOS	D		A			B
Queue Length 50th (m)	11.1	37.6	31.5		37.3	58.0
Queue Length 95th (m)	22.7	66.5	53.0		#110.2	94.5
Internal Link Dist (m)	163.7		117.8			169.8
Turn Bay Length (m)	15.0				15.0	
Base Capacity (vph)	608	598	3568		260	3590
Starvation Cap Reductn	0	0	0		0	811
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.10	0.45	0.35		0.93	0.68

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 104.1			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 46: Upper James Street & Commercial Access





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	224	650	630	68	71	226
Future Volume (Veh/h)	224	650	630	68	71	226
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	226	657	636	69	72	228
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	705				1451	352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	705				1451	352
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	75				22	65
cM capacity (veh/h)	902				93	644

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	226	328	328	424	281	72	228
Volume Left	226	0	0	0	0	72	0
Volume Right	0	0	0	0	69	0	228
cSH	902	1700	1700	1700	1700	93	644
Volume to Capacity	0.25	0.19	0.19	0.25	0.17	0.78	0.35
Queue Length 95th (m)	7.9	0.0	0.0	0.0	0.0	32.4	12.8
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	120.2	13.6
Lane LOS	B					F	B
Approach Delay (s)	2.6			0.0		39.2	
Approach LOS						E	

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	735	6	171	684	4	139
Future Volume (Veh/h)	735	6	171	684	4	139
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	742	6	173	691	4	140
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			748		1436	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			748		1436	374
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		96	78
cM capacity (veh/h)			863		101	629

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	495	253	173	346	346	4	140
Volume Left	0	0	173	0	0	4	0
Volume Right	0	6	0	0	0	0	140
cSH	1700	1700	863	1700	1700	101	629
Volume to Capacity	0.29	0.15	0.20	0.20	0.20	0.04	0.22
Queue Length 95th (m)	0.0	0.0	6.0	0.0	0.0	1.0	6.8
Control Delay (s)	0.0	0.0	10.2	0.0	0.0	42.0	12.4
Lane LOS			B			E	B
Approach Delay (s)	0.0		2.0			13.2	
Approach LOS						B	

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	667	114	33	547	64	19
Future Volume (Veh/h)	667	114	33	547	64	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	674	115	33	553	65	19
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			789		1074	394
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			789		1074	394
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		68	97
cM capacity (veh/h)			827		206	605

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	449	340	33	276	276	65	19
Volume Left	0	0	33	0	0	65	0
Volume Right	0	115	0	0	0	0	19
cSH	1700	1700	827	1700	1700	206	605
Volume to Capacity	0.26	0.20	0.04	0.16	0.16	0.32	0.03
Queue Length 95th (m)	0.0	0.0	1.0	0.0	0.0	10.3	0.8
Control Delay (s)	0.0	0.0	9.5	0.0	0.0	30.3	11.1
Lane LOS			A			D	B
Approach Delay (s)	0.0		0.5			26.0	
Approach LOS						D	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	859	114	33	608	64	19
Future Volume (Veh/h)	859	114	33	608	64	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	868	115	33	614	65	19
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			983		1298	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			983		1298	492
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		55	96
cM capacity (veh/h)			698		146	523

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	579	404	33	307	307	65	19
Volume Left	0	0	33	0	0	65	0
Volume Right	0	115	0	0	0	0	19
cSH	1700	1700	698	1700	1700	146	523
Volume to Capacity	0.34	0.24	0.05	0.18	0.18	0.45	0.04
Queue Length 95th (m)	0.0	0.0	1.2	0.0	0.0	16.1	0.9
Control Delay (s)	0.0	0.0	10.4	0.0	0.0	48.1	12.1
Lane LOS			B			E	B
Approach Delay (s)	0.0		0.5			40.0	
Approach LOS						E	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	763	114	33	578	64	19
Future Volume (Veh/h)	763	114	33	578	64	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	771	115	33	584	65	19
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			886		1186	443
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			886		1186	443
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		63	97
cM capacity (veh/h)			760		173	562

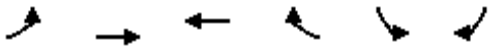
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	514	372	33	292	292	65	19
Volume Left	0	0	33	0	0	65	0
Volume Right	0	115	0	0	0	0	19
cSH	1700	1700	760	1700	1700	173	562
Volume to Capacity	0.30	0.22	0.04	0.17	0.17	0.37	0.03
Queue Length 95th (m)	0.0	0.0	1.1	0.0	0.0	12.9	0.8
Control Delay (s)	0.0	0.0	10.0	0.0	0.0	37.7	11.6
Lane LOS			A			E	B
Approach Delay (s)	0.0		0.5			31.8	
Approach LOS						D	

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	571	114	33	517	64	19
Future Volume (Veh/h)	571	114	33	517	64	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	577	115	33	522	65	19
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			692		962	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			692		962	346
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		73	97
cM capacity (veh/h)			899		245	650

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	385	307	33	261	261	65	19
Volume Left	0	0	33	0	0	65	0
Volume Right	0	115	0	0	0	0	19
cSH	1700	1700	899	1700	1700	245	650
Volume to Capacity	0.23	0.18	0.04	0.15	0.15	0.27	0.03
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.0	8.3	0.7
Control Delay (s)	0.0	0.0	9.2	0.0	0.0	25.0	10.7
Lane LOS			A			C	B
Approach Delay (s)	0.0		0.5			21.7	
Approach LOS						C	

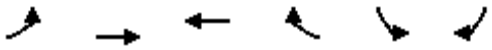
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	1241	700	28	15	70
Future Volume (Veh/h)	158	1241	700	28	15	70
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	160	1254	707	28	15	71
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	735				1668	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	735				1668	368
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				79	89
cM capacity (veh/h)	866				71	630

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	160	627	627	471	264	15	71
Volume Left	160	0	0	0	0	15	0
Volume Right	0	0	0	0	28	0	71
cSH	866	1700	1700	1700	1700	71	630
Volume to Capacity	0.18	0.37	0.37	0.28	0.16	0.21	0.11
Queue Length 95th (m)	5.4	0.0	0.0	0.0	0.0	5.8	3.0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	68.7	11.4
Lane LOS	B					F	B
Approach Delay (s)	1.1			0.0		21.4	
Approach LOS						C	

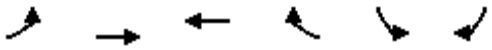
Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	1098	658	28	15	70
Future Volume (Veh/h)	158	1098	658	28	15	70
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	160	1109	665	28	15	71
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	693				1554	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	693				1554	346
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				82	89
cM capacity (veh/h)	898				85	650

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	160	554	554	443	250	15	71
Volume Left	160	0	0	0	0	15	0
Volume Right	0	0	0	0	28	0	71
cSH	898	1700	1700	1700	1700	85	650
Volume to Capacity	0.18	0.33	0.33	0.26	0.15	0.18	0.11
Queue Length 95th (m)	5.2	0.0	0.0	0.0	0.0	4.8	2.9
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	55.9	11.2
Lane LOS	A					F	B
Approach Delay (s)	1.2			0.0		19.0	
Approach LOS						C	

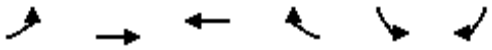
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	956	616	28	15	70
Future Volume (Veh/h)	158	956	616	28	15	70
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	160	966	622	28	15	71
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	650				1439	325
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	650				1439	325
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				85	89
cM capacity (veh/h)	932				103	671

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	160	483	483	415	235	15	71
Volume Left	160	0	0	0	0	15	0
Volume Right	0	0	0	0	28	0	71
cSH	932	1700	1700	1700	1700	103	671
Volume to Capacity	0.17	0.28	0.28	0.24	0.14	0.15	0.11
Queue Length 95th (m)	4.9	0.0	0.0	0.0	0.0	3.9	2.8
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	46.0	11.0
Lane LOS	A					E	B
Approach Delay (s)	1.4			0.0		17.1	
Approach LOS						C	

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	668	534	28	15	70
Future Volume (Veh/h)	158	668	534	28	15	70
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	160	675	539	28	15	71
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	567				1210	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	567				1210	284
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				90	90
cM capacity (veh/h)	1001				147	713

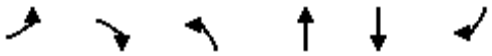
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	160	338	338	359	208	15	71
Volume Left	160	0	0	0	0	15	0
Volume Right	0	0	0	0	28	0	71
cSH	1001	1700	1700	1700	1700	147	713
Volume to Capacity	0.16	0.20	0.20	0.21	0.12	0.10	0.10
Queue Length 95th (m)	4.5	0.0	0.0	0.0	0.0	2.7	2.6
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	32.3	10.6
Lane LOS	A					D	B
Approach Delay (s)	1.8			0.0		14.4	
Approach LOS						B	

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	861	75	104	524	78	113
Future Volume (Veh/h)	861	75	104	524	78	113
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	870	76	105	529	79	114
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	323					
pX, platoon unblocked			0.94		0.94	0.94
vC, conflicting volume			946		1382	473
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			819		1283	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		38	82
cM capacity (veh/h)			758		127	639

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	580	366	105	264	264	79	114
Volume Left	0	0	105	0	0	79	0
Volume Right	0	76	0	0	0	0	114
cSH	1700	1700	758	1700	1700	127	639
Volume to Capacity	0.34	0.22	0.14	0.16	0.16	0.62	0.18
Queue Length 95th (m)	0.0	0.0	3.8	0.0	0.0	25.6	5.2
Control Delay (s)	0.0	0.0	10.5	0.0	0.0	71.2	11.9
Lane LOS			B			F	B
Approach Delay (s)	0.0		1.7			36.1	
Approach LOS						E	

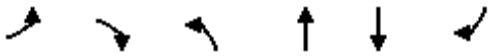
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	8	14	134	160	17
Future Volume (Veh/h)	8	8	14	134	160	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	8	8	14	135	162	17
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	334	170	179			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	170	179			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	655	873	1397			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	149	179
Volume Left	8	14	0
Volume Right	8	0	17
cSH	749	1397	1700
Volume to Capacity	0.02	0.01	0.11
Queue Length 95th (m)	0.5	0.2	0.0
Control Delay (s)	9.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	8	14	138	152	17
Future Volume (Veh/h)	9	8	14	138	152	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	9	8	14	139	154	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				400		
pX, platoon unblocked						
vC, conflicting volume	330	162	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	330	162	171			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	658	882	1406			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	17	153	171
Volume Left	9	14	0
Volume Right	8	0	17
cSH	748	1406	1700
Volume to Capacity	0.02	0.01	0.10
Queue Length 95th (m)	0.6	0.2	0.0
Control Delay (s)	9.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G
Signal Warrant Analysis

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Upper James Street

Minor Street: Proposed Commercial Access

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	2,737	3,663	n/a	1,600
1B - Minor	65	327	25%	98
2A - Major	2,672	3,336	25%	1,502
2B - Crossi	54	181	25%	59

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	1600
	% FULFILLED				267%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	98
	% FULFILLED				58%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	1502
	% FULFILLED				250%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	59
	% FULFILLED				79%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Miles Road North

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,516	1,869	n/a	846
1B - Minor	204	297	25%	125
2A - Major	1,312	1,572	25%	721
2B - Crossi	158	183	25%	85

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [X]	No [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	846
	% FULFILLED				141%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	125
	% FULFILLED				74%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	721
	% FULFILLED				120%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	85
	% FULFILLED				113%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [X]	No [ ]
80% Satisfied:	Yes [X]	No [ ]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Miles Road South

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,341	1,739	n/a	770
1B - Minor	162	143	25%	76
2A - Major	1,179	1,596	25%	694
2B - Crossi	47	90	25%	34

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	770
	% FULFILLED				128%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	76
	% FULFILLED				45%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	694
	% FULFILLED				116%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	34
	% FULFILLED				45%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Street 3

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Flow (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,267	1,444	n/a	678
1B - Minor	135	83	25%	55
2A - Major	1,132	1,361	25%	623
2B - Crossi	110	81	25%	48

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	678
	% FULFILLED				113%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	55
	% FULFILLED				32%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	623
	% FULFILLED				104%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	48
	% FULFILLED				64%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Street 1

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,459	1,697	n/a	790
1B - Minor	135	83	25%	55
2A - Major	1,324	1,614	25%	735
2B - Crossi	110	81	25%	48

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	790
	% FULFILLED				132%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	55
	% FULFILLED				32%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	735
	% FULFILLED				123%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	48
	% FULFILLED				64%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Street 2

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,364	1,571	n/a	734
1B - Minor	135	83	25%	55
2A - Major	1,229	1,488	25%	679
2B - Crossi	110	81	25%	48

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	734
	% FULFILLED				122%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	55
	% FULFILLED				32%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	679
	% FULFILLED				113%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	48
	% FULFILLED				64%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Street 4

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,170	1,318	n/a	623
1B - Minor	135	83	25%	55
2A - Major	1,035	1,235	25%	568
2B - Crossi	110	81	25%	48

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	623
	% FULFILLED				104%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	55
	% FULFILLED				32%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	568
	% FULFILLED				95%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	48
	% FULFILLED				64%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road E

Minor Street: Commercial Access

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ] Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,444	1,755	n/a	800
1B - Minor	27	191	25%	55
2A - Major	1,417	1,564	25%	745
2B - Crossi	24	130	25%	39

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	800
	% FULFILLED				133%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	55
	% FULFILLED				32%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	745
	% FULFILLED				124%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	39
	% FULFILLED				52%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Street 7

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,593	2,212	n/a	951
1B - Minor	139	85	25%	56
2A - Major	1,454	2,127	25%	895
2B - Crossi	47	94	25%	35

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	951
	% FULFILLED				159%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	56
	% FULFILLED				33%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	895
	% FULFILLED				149%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	35
	% FULFILLED				47%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Street 1

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,468	2,027	n/a	874
1B - Minor	139	85	25%	56
2A - Major	1,329	1,942	25%	818
2B - Crossi	47	94	25%	35

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	874
	% FULFILLED				146%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	56
	% FULFILLED				33%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	818
	% FULFILLED				136%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	35
	% FULFILLED				47%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Street 2

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,344	1,843	n/a	797
1B - Minor	139	85	25%	56
2A - Major	1,205	1,758	25%	741
2B - Crossi	47	94	25%	35

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	797
	% FULFILLED				133%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	56
	% FULFILLED				33%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	741
	% FULFILLED				124%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	35
	% FULFILLED				47%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Street 4

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,088	1,473	n/a	640
1B - Minor	139	85	25%	56
2A - Major	949	1,388	25%	584
2B - Crossi	47	94	25%	35

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	640
	% FULFILLED				107%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	56
	% FULFILLED				33%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	584
	% FULFILLED				97%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	35
	% FULFILLED				47%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Miles Road

Minor Street: Street 5

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	264	342	n/a	151
1B - Minor	28	17	25%	11
2A - Major	236	325	25%	140
2B - Crossi	17	16	25%	8

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	151
	% FULFILLED				21%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	120	170	120	170	11
	% FULFILLED				6%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	140
	% FULFILLED				19%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	8
	% FULFILLED				11%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Miles Road

Minor Street: Street 6

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	261	338	n/a	150
1B - Minor	28	17	25%	11
2A - Major	233	321	25%	139
2B - Crossi	17	16	25%	8

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	150
	% FULFILLED				21%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	120	170	120	170	11
	% FULFILLED				6%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	139
	% FULFILLED				19%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	8
	% FULFILLED				11%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Airport Road

Minor Street: Homestead Drive

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	2,327	2,585	n/a	1,228
1B - Minor	521	642	25%	291
2A - Major	1,806	1,943	25%	937
2B - Crossi	177	346	25%	131

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [X]	No [ ]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [X]	No [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	1228
	% FULFILLED				205%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	291
	% FULFILLED				171%

150% Satisfied:	Yes [X]	No [ ]
120% Satisfied:	Yes [X]	No [ ]
100% Satisfied:	Yes [X]	No [ ]
80% Satisfied:	Yes [X]	No [ ]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	937
	% FULFILLED				156%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	131
	% FULFILLED				175%

150% Satisfied:	Yes [X]	No [ ]
120% Satisfied:	Yes [X]	No [ ]
100% Satisfied:	Yes [X]	No [ ]
80% Satisfied:	Yes [X]	No [ ]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Ferris Road/Street 3

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,322	1,797	n/a	780
1B - Minor	249	223	25%	118
2A - Major	1,073	1,574	25%	662
2B - Crossi	132	182	25%	79

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [X]	No [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	780
	% FULFILLED				130%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	118
	% FULFILLED				69%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	662
	% FULFILLED				110%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	79
	% FULFILLED				105%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [X]	No [ ]
80% Satisfied:	Yes [X]	No [ ]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: White Church Road E

Minor Street: Miles Street

Comment Future Total (2034) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [ ] No [X]

Flow Condition: Free Fv (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,096	1,472	n/a	642
1B - Minor	156	227	25%	96
2A - Major	940	1,245	25%	546
2B - Crossi	120	141	25%	65

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [X]	No [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
ALL APPROACHES	480	720	600	900	642
	% FULFILLED				107%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	96
	% FULFILLED				56%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
			X		
MAJOR STREET APPROACHES	480	720	600	900	546
	% FULFILLED				91%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	65
	% FULFILLED				87%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [X]	No [ ]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.