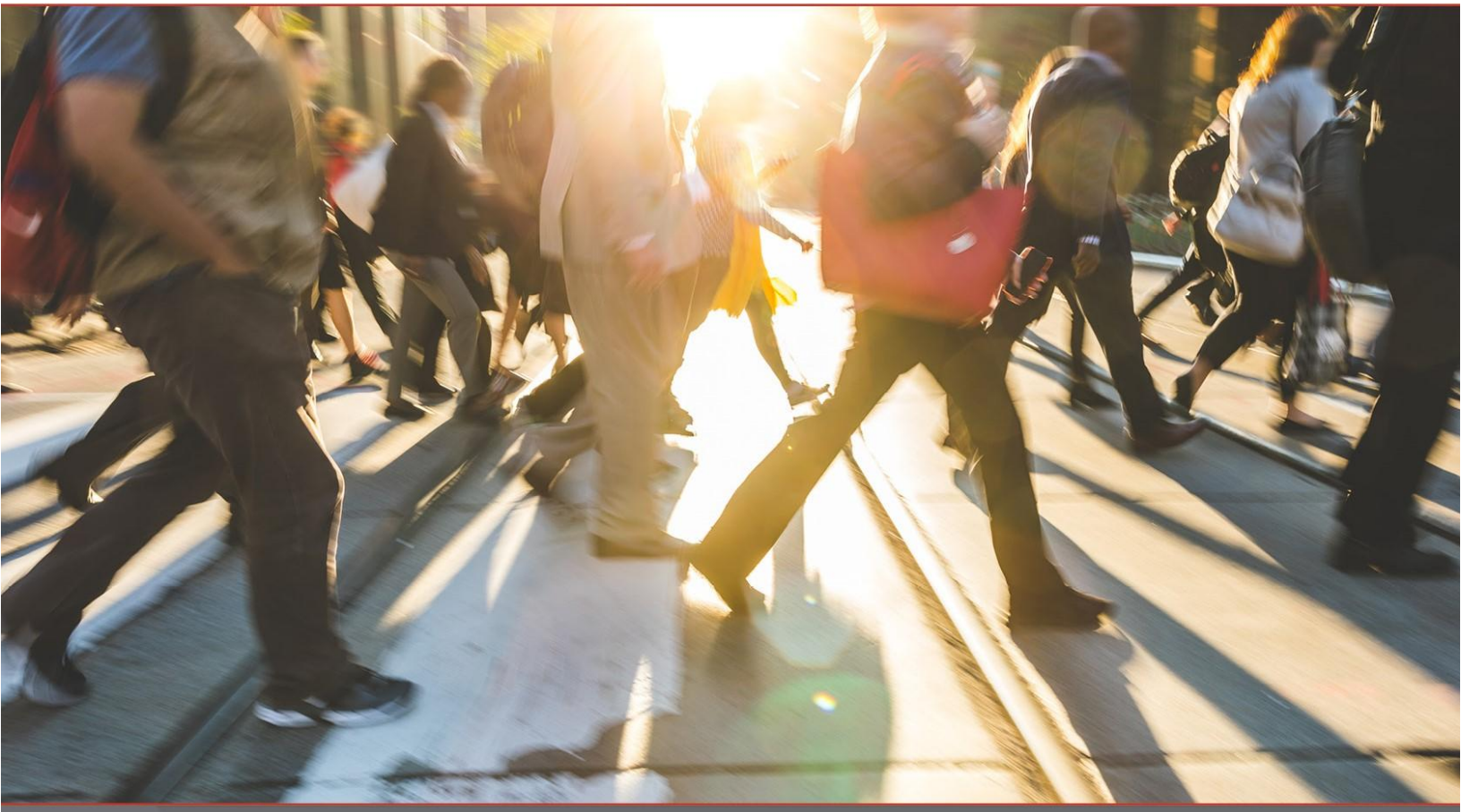
# SEATON
# A5 & A11 LANDS

Traffic Sensitivity Analysis
City of Pickering



Prepared For: Oak Ridges Seaton Inc. & Zavala Developments Inc. ("c/o DG Group")

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# 1.0 INTRODUCTION

BA Group has been retained by Oak Ridges Seaton Inc. to provide transportation consulting services regarding the proposed residential and elementary school developments knowns as the A5 and A11 Lands in the area of the proposed Whites Road / Alexander Knox Road intersection. The A5 Lands are located within SP-2009-02 whereas the A11 Lands are in a separate parcel of land that is adjacent too and surrounded by SP-2009-02. The subdivision is located in Neighbourhood 18 – Mount Pleasant of the City of Pickering's planned Seaton Community.

## 1.1 Residential Subdivision SP-2009-02

The lands of interest to this study (A5 and A11 Lands) are herein referred to as the "A5/A11 Lands" or the "Site". As noted above, the A5 Lands are currently contained within SP-2009-02, whilst the A11 Lands are adjacent too and surrounded by SP-2009-02. The A5/A11 Lands are proposed in the vicinity of the proposed Whites Road / Alexander Knox Road and Whites Road / Whitevale Road intersections, west of Whites Road and south of Whitevale Road. Notably, additional lands within SP-2009-02, located east of Whites Road and south of Whitevale Road, are to be assessed in a subsequent submission.

The A5/A11 Lands will include 274 detached dwelling units, 495 townhouse dwelling units, 144 mid-rise apartment dwelling units and 2 elementary schools. The remainder of the lands within SP-2009-02 (located east of Whites Road) will be assessed in a subsequent submission. The location of the A5/A11 Lands within the broader Seaton context is illustrated on **Figure 1** and the Draft Plan of Subdivision is illustrated on **Figure 2**.

## 1.2 Seaton Transportation Operations Review

In May 2013, BA Group completed a transportation planning exercise on behalf of the Seaton Landowners Group and issued a summary report and technical appendix entitled *Seaton Transportation Operations Review* (the "2013 Report") which examined several transportation-related elements of the entire "full build-out" Seaton community (approximately 61,000 residents and 30,500 jobs).

Utilizing draft plans and assumptions regarding future land uses and transportation facilities, the study derived traffic forecasts to evaluate projected traffic operations throughout the Seaton community. Through this assessment, the 2013 Report identified potential problem areas, recommended mitigation measures, and commented on several long-term transportation considerations relevant to the future full build-out of the Seaton community.

The traffic volume projections presented in the 2013 Report have since been used by both HDR (*Central Pickering Development Class EA Travel Demand Modelling Analysis* – April 29, 2014) and the Region of Durham (*Operational Analysis for Seaton Arterial Development* – April 16, 2014) in their respective evaluations of future traffic operations along regional arterial roads throughout Seaton. Additionally, these volumes constitute the basis from which the traffic volume projections used as part of the current study were derived.

## 1.3 Purpose of this Report

This report addresses transportation considerations pertaining to the A5/A11 Lands, largely City of Pickering requirements, upon which final approval of SP-2009-02 is conditional. Specifically, these requirements are satisfied through the submission of a Traffic Sensitivity Analysis, including:

- a Traffic Impact Study;
- a Traffic Signal Implementation Program;
- a Traffic Management Implementation Plan;
- a Transportation Planning Exercise; and,
- a Transportation Demand Management Plan.

A copy of the complete City of Pickering conditions of draft approval for residential subdivision SP-2009-02 is attached in **Appendix B**.

Notably, the purpose, scope, methodology, scale, horizon period, findings, and recommendations of the 2013 Report are similar in nature to those typically associated with standard transportation planning exercises. Moreover, the review implicitly considers the transportation-related impacts of the residential and school developments of interest to the current study. As such, the 2013 Report satisfies the need for a Transportation Planning Exercise required by the City of Pickering as part of the approval process for subdivision SP-2009-02.

## 1.4 Road Network Nomenclature

The report uses street names based on the proposed plans. As a result of the adopted roadway nomenclature, there may be some discrepancy between the labelling of streets in this report and on previously dated submissions.

Area roads that have undergone a nomenclature change since the 2013 Report are provided with their current names in **Table 1**.

Table 1 Previous and Current Area Road Network Nomenclature

| Previous Nomenclature | Current Nomenclature |
|---|---|
| Whitevale Bypass | Alexander Knox Road |
| Collector 2 | Smoothrock Avenue |
| | Silvermoon Drive |
| Street 16H | Dusk Owl Circle |
| Street 18AL | Andiron Path |
| Street 18AM | Daleena Street |
| Street 18AQ | Folklore Street |
| Street 18AS | Cinnabar Street |
| Street 18BD | Begonia Place |
| Street 18BE | Spring Meadow Avenue |
| | Galaxy Street |

## 1.5 Arterial Road Network

**Whites Road** is a six-lane north-south arterial road within the vicinity of the Site, extending from Taunton Road in the south to Highway 7 in the north. Approximately 1 kilometre west of its southern terminal with Taunton Road, Whites Road continues south to Petticoat Creek Conservation Park, along Lake Ontario. Whites Road is considered a Type 'A' Arterial Road per the Region of Durham's *Staged Servicing and Implementation Strategy* (the "SSIS").

As part of the build-out of Seaton, Whites Road will be realigned at Taunton Road, connecting the northern and southern legs currently offset by approximately 1 kilometre. The southern leg of Whites Road will be relocated to the existing intersection of the northern leg of Whites Road with Taunton Road.

**Alexander Knox Road** is a future four-lane east-west arterial road that will extend from Brock Road in the east to York Durham Line in the west. As part of the build-out of Seaton, Alexander Knox Road will constitute the formerly titled Whitevale Bypass and a segment of Whitevale Road from Brock Road in the east to Peter Matthews Drive in the west and will function as a Type 'B' Arterial Road. Currently, Alexander Knox Road is under construction and does not exist west of its intersection with Peter Matthews Drive.

## 1.6 Collector Road Network

**Smoothrock Avenue / Silvermoon Drive (formerly Collector 2)** is a future two-lane north-south and east-west (L-shaped) collector road that will extend from Whites Road (approximately 730 metres north of Taunton Road) in the south to Alexander Knox Road in the north, functioning as a collector road. The east-west portion of the road (named Smoothrock Avenue) is not yet constructed and will be built-out with the completion of the neighbouring B2 and B3 Lands to the south of the Site. The north-south portion of the road (named Silvermoon Drive) is not yet constructed and will be built-out with the completion of the A5/A11 Lands. The Silvermoon Drive portion of the road which connects the B2 Lands with Alexander Knox Road will be tied to the build out of the A5/A11 Lands and is planned to be operational in 2026.

## 1.7 Public Transit

A review of the Region of Durham's SSIS indicates potential bus service routing near the Site at both the build out of the first phase of development as well as the full build-out of the Seaton community. It is proposed that, under both conditions, transit routes will be located along Whites Road, Alexander Knox Road and Silvermoon Drive in the vicinity of the Site.

As part of both the first phase and full build-out of the Seaton community, the following transit routes are proposed along area roads:

- **Whites Road** Route 1;
- **Alexander Knox Road** Routes 2 and 4; and,
- **Silvermoon Drive** Routes 2 and 4.

Under ultimate conditions, far-sided bus stops are planned at signalized intersections along Whites Road and Alexander Knox Road in both a north-south and an east-west direction, respectively. The placement of stops ensures residents are within an approximate 5-minute walk from north-south bus routes along Whites Road and within an approximate 10-minute walk from east-west routes along Alexander Knox Road.

# 2.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a series of infrastructure, policy or operational measures designed to discourage peak period, single-occupant automobile travel.

BA Group has confirmed that the following TDM measures will be implemented as part of the development of these lands. Please note that our review focuses on the development of the residential component of these lands; we have not had discussions with school boards regarding TDM measures for their two properties in the vicinity. In our experience, schools can be ideal candidates for TDM measures through programs designed to discourage parent drop-off.

## 2.1 Transit Infrastructure

The Site will be served by transit routes operated by Durham Region Transit (DRT) along Whites Road and Alexander Knox Road. Far-sided bus stops are planned at signalized intersections along Whites Road and Alexander Knox Road in both a north-south and an east-west direction, respectively. The placement of stops ensures residents are within an approximate 5-minute walk from north-south bus routes along Whites Road and within an approximate 10-minute walk from east-west routes along Alexander Knox Road.

## 2.2 Cycling Infrastructure

Cycling infrastructure is proposed proximate to the Site along area arterial roads. Bordering the Site, separated on-street bike lanes spanning 1.5 – 2.5 metres are proposed along Whites Road and Alexander Knox Road in north-south and east-west directions, respectively. Furthermore, per the Region of Durham's SSIS, Silvermoon Drive is proposed as a Secondary Bikeway south of Alexander Knox Road and is therefore planned to posses cycling infrastructure.

## 2.3 Pedestrian Infrastructure

Smooth and sufficiently wide sidewalks, street crossings, and detectable signs and signals will be provided throughout the Site to provide adequate connections between residential units, schools and surrounding transit infrastructure.

## 2.4 Provide Walking, Cycling, and Transit Information

To encourage the use of non-auto modes of transportation by residents, the developer will have information available in the sales office on walking routes, trails, cycling and transit (e.g., GO and Durham Transit schedules). This will include information on the extensive trail and bikeway system to be constructed within both the public street network and in the natural heritage lands of Seaton.

## 2.5 Travel Mode Information Packages

TDM measures proposed as part of this plan must be continually promoted to ensure that they are used and thus, that demand for driving and parking remains low.

# 3.0 TRAFFIC VOLUMES

The projected future traffic volumes at several area intersections were assessed based upon forecasted vehicular volumes in the vicinity of the Site. Due to the planned phased construction of the Seaton Community, the forecast of vehicular volumes and the corresponding assessment of traffic operations were performed under two scenarios, referred to as "ultimate" conditions and "interim" conditions.

Both scenarios were assessed for the weekday morning (AM) and afternoon (PM) peak hours. These analysis periods are appropriate in that they reflect the times on the area road network when traffic volumes are at their greatest.

## 3.1 Ultimate Conditions

### 3.1.1 Road Network

The future area road network, as well as corresponding lane configurations and intersection controls in the vicinity of the Site are shown in **Figure 3** and are anticipated to remain generally consistent across both ultimate and interim conditions. Future intersection layouts have been generally assumed in accordance with the *Central Pickering Development Plan – Class Environmental Assessment for Regional Services in the City of Pickering* and the *Seaton Arterial and Collector Roads Environmental Study Report*.

The major roadways providing access to the Site are summarized below.

**Whites Road**

Whites Road will function as a major north-south arterial road from Petticoat Creek Conservation Park in the south to Highway 7 in the north. In the vicinity of the Site, Whites Road will consist of a six-lane, bi-directional road, with the curbside lanes operating as HOV lanes. In addition, dedicated left- and right-turn lanes will be provided at area signalized intersections and channelized right-turns on all approaches will be provided at the Whites Road / Alexander Knox Road intersection, as shown in **Figure 3**. Six access points to the Site are proposed along Whites Road, consisting of two fully signalized intersections, three right-in-right-out intersections and one three quarter (left in / right in / right out) intersection.

**Alexander Knox Road**

Alexander Knox Road will function as a major east-west arterial road from Brock Road in the east to York Durham Line in the west. In the vicinity of the Site, Alexander Knox Road will consist of a four-lane bi-directional road, with dedicated left- and right-turn lanes at area signalized intersections. Two access points to the Site are proposed along Alexander Knox Road, consisting of one fully signalized intersection and one right-in-right-out intersection.

**Smoothrock Avenue / Silvermoon Drive**

Smoothrock Avenue and SIlvermoon Drive will function as a predominately north-south collector road from Whites Road in the south to Alexander Knox Road in the north. Smoothrock Avenue and SIlvermoon Drive consist of a two-lane bi-directional road. Silvermoon Drive is internal to the Site and the neighbouring B2 Lands south of the Site whereas Smoothrock Avenue is internal to the neighbouring B2 and B3 Lands south of the Site. The collector provides signalized access to the Site via Whites Road in the south and Alexander Knox Road in the north.

### 3.1.2 Study Area and Analysis Periods

An assessment of future traffic operations under ultimate conditions was conducted at key future access locations to the A5/A11 Lands as follows:

**Signalized Intersections**

- Whites Road / Alexander Knox Road;
- Whites Road / Smoothrock Avenue / Dusk Owl Circle;
- Whites Road / Daleena Street / Street 18AM; and,
- Alexander Knox Road / Silvermoon Drive / Begonia Place.

**Unsignalized Intersections**

- Whites Road / Cinnabar Street;
- Whites Road / Folklore Street / Street 18AQ;
- Whites Road / Andiron Path / Street 18AL;
- Whites Road / Begonia Place / Street 18BD; and,
- Alexander Knox Road / Spring Meadow Avenue / Galaxy Street.

It is noted that the full build-out of Seaton has already been assessed as part of the 2013 Report, with lane configurations and traffic control addressed further in the subsequent Environmental Assessments. On this basis, the intention of this analysis is to focus specifically on the operations for intersections within the vicinity of the Site with updated lane configurations and traffic controls.

### 3.1.3 Forecasted Traffic Volumes

As part of the modeling exercise conducted to derive full build-out Seaton traffic volumes, a 20% mode split reduction was applied throughout the entire six-neighbourhood study area. Since the current traffic operations assessment has been conducted with respect to local access to the A5/A11 Lands, it was determined that, in order to produce conservative results and recommendations, it would be appropriate to undo this 20% reduction in the case of trips generated by the A5/A11 Lands.

To reintroduce the additional 20% of traffic volumes removed in the 2013 Report, the projected number of vehicle trips generated by the A5/A11 Lands as of the 2013 Report were first disaggregated. That is, traffic originating from the A5/A11 Lands were isolated from corridor (through) traffic. These volumes represent the base future traffic volumes for the Site. This locally generated traffic was then factored up, in order to undo the 20% mode split reduction, and assigned throughout the area road network.

A summary of the projected full build-out trip generation for the A5/A11 Lands is provided in **Table 2**.

Table 2 Projected Full Build-Out Vehicular Trip Generation – A5/A11 Lands

| | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|
| | In | Out | 2-Way | In | Out | 2-Way |
| Estimated Site Trip Generation per 2013 Report (with 20% mode split reduction) | 255 | 405 | 660 | 420 | 270 | 690 |
| Estimated Site Trip Generation (with 20% mode split reduction removed) | 310 | 505 | 815 | 545 | 335 | 880 |
| **Additional Site Trip Generation Associated with Removal of 20% Mode Split Reduction** | **55** | **100** | **155** | **125** | **65** | **190** |

The base future volumes as detailed in the 2013 Report are provided in **Figure 4**, and the future volumes inclusive of the previously removed 20% mode split reduction are provided in **Figure 5**. It is noted that some adjustments were made to reflect lane configuration changes from the 2013 Report and the subsequent Environmental Assessment processes. The reassignment of volumes as a result of these changes is presented in **Figure 6**. The resulting future total traffic volumes were used as inputs to conduct the ultimate conditions intersection capacity analysis and are illustrated in **Figure 7**.

## 3.2 Interim Conditions

### 3.2.1 Road Network

As discussed above, the construction of the roadway infrastructure supporting the development is expected to occur in phases. For the purpose of analysis, it is assumed that the external road network impacting the Site and built under interim conditions is consistent with ultimate conditions, with the exception of:

- The extension of Alexander Knox Road from Collector 1 (a north-south collector road under construction approximately 1 kilometre west of Whites Road) in the east to York Durham Line in the west.

Area developments constructed as part of the interim condition of the Seaton community have been generally assumed in accordance with Phase 1 of the SSIS.

The future area road network, as well as corresponding lane configurations and intersection controls in the immediate vicinity of the Site under interim conditions is anticipated to remain consistent with ultimate conditions as presented in **Figure 3**. The exception to this is the interim condition of intersections which are planned to be signalized as part of the full build-out of Seaton which is assessed in **Section 4.1**.

### 3.2.2 Forecasted Traffic Volumes

Estimates of future traffic volumes in the vicinity of the Site under interim conditions were derived using the following methodology:

- **Step 1:** Two-thirds of the 2013 Report volumes were assumed for all movements at the Whites Road / Alexander Knox Road intersection, inclusive of background developments in the vicinity of the Site. Volumes separated from background developments were carried along their respective corridors. Background developments considered are as follows:
    - Developments south of the A5/A11 Lands, as demonstrated in the interim condition of the "*Seaton Draft Plan of Subdivisions SP-2008-05 & SP-2008-06*" report completed by BA Group on March 14, 2023.
    - Developments east of the A5/A11 Lands within SP-2009-02, as generated and distributed following the 2013 Report and the interim road network condition. Trips originating or destined to the A5/A11 Lands were balanced with Site traffic volumes derived in **Steps 3 – 4** and removed from the background developments layer to avoid double counting trips.
- **Step 2:** Through volumes along Alexander Knox Road at the Whites Road / Alexander Knox Road intersection, as calculated in **Step 1**, were reassigned as turning movements at the intersection (in addition to **Step 1** turning movement volumes), representative of the interim buildout of Alexander Knox Road terminating at Collector 1;
- **Step 3:** Trip generation associated with the proposed A5/A11 Lands. Trip generation rates are consistent with those outlined in the 2013 Report as outlined in **Table 3**. Trips internal to the Site between residential and school land uses were based on distributions internal to Neighbourhood 18 outlined in the 2013 Report and were assumed to be 80% pedestrian trips, representative of the percentage of residents within the Site situated south of Alexander Knox Road (within reasonable walking distance). The projected interim Site trip generation is detailed in **Table 4**; and,
- **Step 4:** Site trips distributed and assigned to study area intersections based on the distributions outlined in the 2013 Report for Neighbourhood 18 based on the interim road network condition.

Table 3 Vehicular Trip Generation Rates

| Land Use | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|
| | In | Out | 2-Way | In | Out | 2-Way |
| Residential Detached Dwelling (per unit) | 0.20 | 0.57 | 0.77 | 0.65 | 0.37 | 1.02 |
| Residential Townhouse (per unit) | 0.11 | 0.56 | 0.67 | 0.46 | 0.23 | 0.69 |
| Residential Apartment (per unit) | 0.10 | 0.25 | 0.35 | 0.26 | 0.18 | 0.44 |
| Elementary School (per student) | 0.16 | 0.14 | 0.30 | 0.07 | 0.08 | 0.15 |

Table 4 Projected Interim Vehicular Trip Generation – A5/A11 Lands

| Land Use | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|
| | In | Out | 2-Way | In | Out | 2-Way |
| **Residential** | | | | | | |
| Residential Detached Dwelling (274 units) | 55 | 155 | 210 | 180 | 100 | 280 |
| Residential Townhouse (495 units) | 55 | 280 | 335 | 225 | 115 | 340 |
| Residential Apartment (144 units) | 15 | 35 | 50 | 40 | 25 | 65 |
| Internal Trip Reduction (20% Vehicular)[1] | -5 | -15 | -20 | -5 | -5 | -10 |
| Internal Trip Reduction (80% Pedestrians)[2] | -15 | -60 | -75 | -20 | -10 | -30 |
| **Residential Trip Generation (913 units)** | **105** | **395** | **500** | **420** | **225** | **645** |
| **School** | | | | | | |
| Elementary School (1,200 students)[3] | 190 | 170 | 360 | 85 | 95 | 180 |
| Internal Trip Reduction (80% Pedestrians)[2] | -60 | -15 | -75 | -10 | -20 | -30 |
| **School Trip Generation (1,200 students)** | **130** | **155** | **285** | **75** | **75** | **150** |
| **Total Trip Generation** | **235** | **550** | **785** | **495** | **300** | **795** |

Notes:

1. Vehicular internal trips have been removed from the residential trip generation to avoid double counting vehicles included in the school trip generation
2. Pedestrian internal trips have been removed from both the residential and school trip generation to avoid including as vehicular trips
3. Assumes 600 students per elementary school as per the 2013 Report

Future background volumes under interim conditions, inclusive of **Steps 1 – 2**, are provided in **Figure 8.** Projected Site traffic volumes under interim conditions, inclusive of **Steps 3 – 4**, are shown in **Figure 9.** Resulting future total traffic volumes, which were used as inputs to conduct the interim conditions intersection capacity analysis are illustrated in **Figure 10**.

# 4.0 INTERSECTION CAPACITY ANALYSIS

Traffic operations were analyzed based on the principles and methodology outlined in the Highway Capacity Manual (HCM). This analysis was performed using Trafficware's Synchro 11 software, in accordance with the Region of Durham requirements and standards.

For signalized intersections, the volume-to-capacity ratio (v/c) is an indicator of the capacity utilization for the key movements in the intersection. A v/c of 1.00 indicates that certain governing traffic movements through the intersection are operating at or near maximum capacity. The primary overall level of service (LOS) indicator is delay, both on individual movements and expressed as an average for all vehicles processed. Many busy urban intersections operate at LOS D to E, which reflects average delays in the range of 35 to 80 seconds.

For unsignalized intersections, level of service (LOS) characterizes operational conditions for key movements in terms of delay within the traffic stream. LOS A represents a good level of service with short delays. LOS F represents a poor level of service with long delays. The volume to capacity ratio (v/c) is an indicator of the capacity utilization for key movements at the intersection and resultant residual capacity potential.

Existing signal timing plans provided by the Region of Durham at nearby intersections were utilized in the development of future signalized intersections within the vicinity of the Site. With the widening of Whites Road to six lanes, cycle lengths at signals along Whites Road were assumed to be 144 seconds under both interim and ultimate conditions. Optimized signal phasing and timing parameters have been adopted to respond to changing traffic conditions as appropriate.

With regards to HOV lanes within the study area, a lane utilization factor of 0.83 was assumed, which represents 20% of the total traffic in the HOV lanes (for the proposed three lanes in each direction).

Synchro 11 worksheets including detailed parameters and output results are included in **Appendix C**.

## 4.1 Traffic Signal Warrants

The following intersections providing access to the A5/A11 Lands were planned to be signalized as part of the initial planning of Seaton:

- Whites Road / Smoothrock Avenue / Dusk Owl Circle;
- Whites Road / Daleena Street / Street 18AM; and,
- Alexander Knox Road / Silvermoon Drive / Begonia Place.

Traffic signal warrants were conducted for all three intersections under interim conditions based on Ontario Traffic Manual methodologies and is attached in **Appendix D**.

Based on the analysis, as part of the interim condition, a traffic signal is not warranted at any of the above three intersections, albeit the intersections of Whites Road / Smoothrock Avenue / Dusk Circle and Whites Road / Daleena Street / Street 18AM are close. While a signal is not warranted at any of the three intersections, the intersections have been considered operationally as either a potential signalized or unsignalized intersection under interim conditions.

The operations analysis results provided in **Section 4.2** and **Section 4.3** indicate that signals are required for the intersections of Whites Road / Smoothrock Avenue / Dusk Circle and Whites Road / Daleena Street / Street 18AM to operate appropriately. Further to the above, it is recommended that the operation of all three intersections be monitored as development within the area progresses and that reasonable underground signal related infrastructure is installed during the initial construction of each intersection.

Traffic analysis results for area signalized and unsignalized intersections are discussed in the following sections.

## 4.2 Signalized Intersections

The results of the traffic operations analysis at the area signalized intersections for the interim and ultimate scenarios are provided in **Table 5**. As shown, all signalized intersections within the respective study area are projected to operate with acceptable levels of service and within capacity under interim and ultimate conditions.

Table 5 Synchro Results – Signalized Intersections

| Lane Group | Ultimate (Full Build-Out) Conditions | | | Interim Conditions | | |
|---|---|---|---|---|---|---|
| | V/C | LOS | Delay (sec) | V/C | LOS | Delay (sec) |
| **Whites Road / Alexander Knox Road** | | | | | | |
| EBL | 0.44 (0.33) | D (D) | 45.1 (37.9) | 0.50 (0.37) | D (D) | 43.2 (44.3) |
| EBT | 0.70 (0.87) | E (E) | 59.5 (62.9) | 0.21 (0.34) | D (D) | 52.0 (53.4) |
| EBR | 0.11 (0.12) | D (D) | 50.3 (43.6) | 0.09 (0.05) | D (D) | 50.9 (50.5) |
| WBL | 0.85 (0.89) | D (E) | 50.5 (61.8) | 0.64 (0.67) | D (D) | 37.9 (38.5) |
| WBT | 0.63 (0.42) | D (D) | 45.2 (35.1) | 0.21 (0.13) | D (D) | 43.8 (40.0) |
| WBR | 0.10 (0.13) | D (C) | 36.9 (31.3) | 0.21 (0.21) | D (D) | 44.0 (41.2) |
| NBL | 0.20 (0.74) | C (D) | 27.8 (48.4) | 0.15 (0.52) | C (C) | 23.4 (28.5) |
| NBT | 0.53 (0.50) | D (D) | 36.1 (41.8) | 0.38 (0.32) | C (C) | 32.1 (34.0) |
| NBR | 0.19 (0.44) | D (D) | 40.5 (44.9) | 0.32 (0.34) | D (D) | 35.9 (37.8) |
| SBL | 0.60 (0.68) | C (C) | 23.9 (30.5) | 0.63 (0.76) | C (C) | 21.9 (26.6) |
| SBT | 0.20 (0.65) | C (D) | 23.9 (42.4) | 0.15 (0.38) | C (C) | 21.7 (28.2) |
| SBR | 0.12 (0.15) | C (C) | 23.1 (33.7) | 0.08 (0.14) | C (C) | 21.1 (24.9) |
| **Overall** | **0.74 (0.82)** | **D (D)** | **40.4 (45.2)** | **0.66 (0.75)** | **C (C)** | **34.9 (34.8)** |
| **Whites Road / Smoothrock Avenue / Dusk Owl Cricle (Signalized Configuration)** | | | | | | |
| EBL | 0.09 (0.06) | E (D) | 55.3 (54.2) | 0.66 (0.38) | E (E) | 67.4 (60.9) |
| EBTR | 0.54 (0.66) | E (E) | 61.5 (66.7) | 0.42 (0.30) | E (E) | 57.8 (59.5) |
| WBL | 0.16 (0.09) | E (D) | 56.0 (54.6) | 0.31 (0.19) | E (E) | 56.7 (58.5) |
| WBTR | 0.03 (--)[2] | D (--)[2] | 54.6 (--)[2] | 0.33 (0.30) | E (E) | 56.6 (59.5) |
| NBL | 0.29 (0.68) | A (C) | 6.2 (20.3) | 0.07 (0.34) | A (A) | 4.1 (6.4) |
| NBTR | 0.28 (0.29) | A (A) | 4.5 (4.7) | 0.22 (0.29) | A (A) | 4.5 (3.8) |
| SBL | 0.02 (0.05) | A (A) | 2.3 (2.2) | 0.12 (0.32) | A (A) | 3.6 (8.1) |
| SBTR | 0.24 (0.33) | A (A) | 2.7 (3.3) | 0.24 (0.26) | A (A) | 3.1 (4.6) |
| **Overall** | **0.33 (0.68)** | **A (A)** | **7.7 (8.9)** | **0.30 (0.35)** | **B (A)** | **13.0 (8.8)** |

| Lane Group | Ultimate (Full Build-Out) Conditions | | | Interim Conditions | | |
|---|---|---|---|---|---|---|
| | V/C | LOS | Delay (sec) | V/C | LOS | Delay (sec) |
| **Alexander Knox Road / Silvermoon Drive / Begonia Place (Signalized Configuration)** | | | | | | |
| EBL | --[2] (0.03) | --[2] (A) | --[2] (3.7) | 0.01 (0.01) | A (A) | 2.9 (2.8) |
| EBT | 0.20 (0.31) | A (A) | 5.3 (4.9) | 0.09 (0.11) | A (A) | 3.2 (3.1) |
| EBR | 0.04 (0.08) | A (A) | 4.6 (3.9) | 0.02 (0.02) | A (A) | 3.0 (2.9) |
| WBL | 0.21 (0.34) | A (A) | 6.0 (6.7) | 0.07 (0.08) | A (A) | 3.2 (3.2) |
| WBT | 0.28 (0.24) | A (A) | 5.8 (4.5) | 0.09 (0.10) | A (A) | 3.2 (3.1) |
| WBR | -- (--)[2] | -- (--)[2] | -- (--)[2] | 0.00 (0.02) | A (A) | 2.9 (2.8) |
| NBL | 0.69 (0.51) | D (D) | 46.8 (41.7) | 0.38 (0.18) | D (D) | 42.1 (40.5) |
| NBTR | 0.09 (0.06) | C (D) | 34.6 (36.9) | 0.08 (0.05) | D (D) | 39.2 (39.4) |
| SBL | 0.22 (0.15) | D (D) | 35.8 (37.7) | 0.41 (0.22) | D (D) | 42.5 (40.9) |
| SBTR | 0.01 (0.00) | C (D) | 33.9 (36.5) | 0.08 (0.03) | D (D) | 39.2 (39.3) |
| **Overall** | **0.36 (0.37)** | **B (A)** | **12.7 (8.9)** | **0.14 (0.13)** | **B (A)** | **14.0 (8.3)** |
| **Whites Road / Daleena Street / Street 18AM (Signalized Configuration)** | | | | | | |
| EBL | 0.64 (0.59) | E (E) | 68.0 (68.4) | 0.48 (0.28) | E (E) | 60.7 (57.7) |
| EBTR | 0.03 (0.10) | D (E) | 54.4 (55.8) | 0.13 (0.16) | E (E) | 56.1 (56.1) |
| WBL | 0.25 (0.40) | E (E) | 56.8 (59.4) | 0.24 (0.54) | E (E) | 57.4 (62.1) |
| WBTR | 0.11 (0.17) | E (E) | 55.2 (56.5) | 0.09 (0.28) | E (E) | 55.7 (57.4) |
| NBL | 0.03 (0.10) | A (A) | 3.6 (4.3) | 0.06 (0.21) | A (A) | 3.0 (5.0) |
| NBTR | 0.29 (0.28) | A (A) | 4.5 (4.2) | 0.25 (0.27) | A (A) | 3.3 (3.9) |
| SBL | 0.20 (0.61) | A (C) | 7.4 (21.8) | 0.11 (0.41) | A (A) | 3.8 (9.7) |
| SBTR | 0.25 (0.34) | A (A) | 5.6 (6.0) | 0.21 (0.28) | A (A) | 3.1 (2.9) |
| **Overall** | **0.34 (0.60)** | **B (B)** | **11.3 (12.5)** | **0.28 (0.42)** | **A (B)** | **9.9 (10.2)** |

Notes:
1. 00 (00) – AM Peak (PM Peak)
2. Zero volumes projected for movement

## 4.3 Unsignalized Intersections

The results of the traffic operations analysis at the area unsignalized intersections for the interim and ultimate scenarios are provided in **Table 6**. As shown, all unsignalized intersections within the respective study area are projected to operate with acceptable levels of service under interim and ultimate conditions.

The exception to the above is the intersections of Whites Road / Smoothrock Avenue / Dusk Circle and Whites Road / Daleena Street / Street 18AM which are required to be signalized under interim conditions. **Table 5** demonstrates that both intersections are projected to operate with acceptable levels of service and within capacity when signalized.

Table 6 Synchro Results – Unsignalized Intersections

| Lane Group | Ultimate (Full Build-Out) Conditions | | Interim Conditions | |
|---|---|---|---|---|
| | LOS | Delay (sec) | LOS | Delay (sec) |
| **Whites Road / Smoothrock Avenue / Dusk Owl Cricle (Unsignalized Configuration)** | | | | |
| EBL | **Signalized as per Table 5** | | F (F) | 354.9 (Error) |
| EBTR | | | F (F) | 74.8 (294.1) |
| WBL | | | F (F) | 253.2 (Error) |
| WBTR | | | C (F) | 21.4 (323.3) |
| NBL | | | A (B) | 9.9 (11.3) |
| SBL | | | A (B) | 9.7 (11.7) |
| **Alexander Knox Road / Silvermoon Drive / Begonia Place (Unsignalized Configuration)** | | | | |
| EBL | **Signalized as per Table 5** | | A (A) | 7.8 (7.9) |
| WBL | | | A (A) | 8.0 (8.2) |
| NBL | | | C (C) | 16.0 (16.6) |
| NBTR | | | B (B) | 10.1 (10.6) |
| SBL | | | C (C) | 18.6 (17.6) |
| SBTR | | | B (B) | 14.1 (13.3) |
| **Whites Road / Daleena Street / Street 18AM (Unsignalized Configuration)** | | | | |
| EBL | **Signalized as per Table 5** | | F (F) | 129.8 (Error) |
| EBTR | | | E (F) | 38.3 (365.4) |
| WBL | | | F (F) | 109.0 (Error) |
| WBTR | | | C (F) | 23.2 (349.9) |
| NBL | | | A (B) | 9.5 (10.0) |
| SBL | | | B (B) | 10.2 (11.4) |

| Lane Group | Ultimate (Full Build-Out) Conditions | | Interim Conditions | |
|---|---|---|---|---|
| | LOS | Delay (sec) | LOS | Delay (sec) |
| **Whites Road / Cinnabar Street** | | | | |
| EBR | A (A) | 10.0 (10.0) | B (B) | 10.5 (10.3) |
| NBL | A (B) | 9.7 (11.0) | A (B) | 9.7 (10.8) |
| **Whites Road / Folklore Street / Street 18AQ** | | | | |
| EBR | A (A) | 9.5 (9.6) | A (A) | 9.8 (9.7) |
| WBR | B (B) | 10.4 (10.5) | B (B) | 10.2 (10.7) |
| **Whites Road / Andiron Path / Street 18AL** | | | | |
| EBR | A (--)[2] | 9.5 (--)[2] | A (A) | 9.7 (8.8) |
| WBR | B (B) | 10.3 (10.5) | A (B) | 10.0 (10.2) |
| **Whites Road / Begonia Place / Street 18BD** | | | | |
| EBR | -- (--)[2] | -- (--)[2] | B (B) | 10.0 (12.1) |
| WBR | A (A) | 9.2 (9.0) | A (A) | 8.9 (9.0) |
| **Alexander Knox Road / Spring Meadow Avenue / Galaxy Street** | | | | |
| NBR | B (B) | 10.6 (10.9) | A (A) | 10.1 (9.9) |
| SBR | A (A) | 9.1 (9.5) | A (--) | 9.0 (--)[2] |

Notes:
1. 00 (00) – AM Peak (PM Peak)
2. Zero volumes projected for movement

# 5.0 CONCLUSIONS AND RECOMMENDATIONS

**Overview**

1. This study examines transportation aspects related to the proposed residential and elementary school developments known as the A5 and A11 Lands. The A5 Lands are located within SP-2009-02 whereas the A11 Lands are in a separate parcel of land that is adjacent too and surrounded by SP-2009-02.

2. The lands of interest to this study (A5 and A11 Lands) are referred to as the "A5/A11 Lands" or the "Site". The A5/A11 Lands are proposed in the vicinity of the proposed Whites Road / Alexander Knox Road and Whites Road / Whitevale Road intersections, west of Whites Road and south of Whitevale Road. Additional lands within SP-2009-02, located east of Whites Road and south of Whitevale Road, are to be assessed in a subsequent submission.

3. The A5/A11 Lands will include 274 detached dwelling units, 495 townhouse dwelling units, 144 mid-rise apartment dwelling units and 2 elementary schools.

4. In May 2013, BA Group completed a transportation planning exercise on behalf of the Seaton Landowners Group and issued a summary report and technical appendix entitled Seaton Transportation Operations Review (the "2013 Report") which examined several transportation-related elements of the entire "full build-out" Seaton community. The conclusions drawn from this report in-part guided the development of the ultimate and interim conditions utilized in this study.

**Transportation Demand Management**

5. The following Transportation Demand Management (TDM) measures will be implemented as part of the development of the Site:

    a) Transit routes along Whites Road, Alexander Knox Road and Silvermoon Drive;
    b) Cycling infrastructure along Whites Road, Alexander Knox Road and Silvermoon Drive;
    c) Smooth and sufficient pedestrian infrastructure throughout the Site; and,
    d) Provision of information in the sales office on walking routes, trails, cycling and transit.

**Traffic Volumes – Ultimate Conditions**

6. Future intersection layouts have been generally assumed in accordance with the *Central Pickering Development Plan – Class Environmental Assessment for Regional Services in the City of Pickering* and the *Seaton Arterial and Collector Roads Environmental Study Report*.

7. The full build-out of Seaton has already been assessed as part of the 2013 Report, with lane configurations and traffic control addressed further in the subsequent Environmental Assessments. On this basis, the intention of the ultimate analysis in this report is to focus specifically on the operations for intersections within the vicinity of the Site with updated lane configurations and traffic controls.

8. Traffic forecasts used in the evaluation of future intersection operations were based on projections obtained from future total volumes outlined in the 2013 Report.

9. As part of the modeling exercise conducted to derive full build-out Seaton traffic volumes, a 20% mode split reduction was applied throughout the entire six-neighbourhood study area. Since the current traffic operations assessment has been conducted with respect to local access to the A5/A11 Lands, it was determined that, in order to produce conservative results and recommendations, it would be appropriate to undo this 20% reduction in the case of trips generated by the A5/A11 Lands.

10. Removal of the 20% mode split reduction for the Site resulted in an estimated 155 and 190 additional two-way trips generated by the A5/A11 Lands during the weekday morning and afternoon peak hours, respectively.

**Traffic Volumes – Interim Conditions**

11. The construction of the roadway infrastructure supporting the development is expected to occur in phases.

12. For the purposes of analysis, it is assumed that external road network infrastructure impacting the Site and built under interim conditions is consistent with ultimate conditions, with the exception of:

    - The extension of Alexander Knox Road from Collector 1 (a north-south collector road under construction approximately 1 kilometre west of Whites Road) in the east to York Durham Line in the west.

13. Area developments constructed as part of the interim condition of the Seaton community have been generally assumed in accordance with Phase 1 of the Region of Durham's *Staged Servicing and Implementation Strategy*.

14. Traffic forecasts used in the evaluation of future intersection operations were based on projections obtained from future total volumes outlined in the 2013 Report with adjustments made to represent interim conditions.

15. Under these conditions, the A5/A11 Lands are projected to generate in the order of 785 and 795 two-way trips during the weekday morning and afternoon peak hours, respectively.

**Traffic Signal Warrants**

16. The following intersections providing access to the A5/A11 Lands were planned to be signalized as part of the initial planning of Seaton:

    - Whites Road / Smoothrock Avenue / Dusk Owl Circle;
    - Whites Road / Daleena Street / Street 18AM; and,
    - Alexander Knox Road / Silvermoon Drive / Begonia Place.

17. Traffic signal warrants were conducted for all three intersections under interim conditions based on Ontario Traffic Manual methodologies.

18. Based on the analysis, as part of the interim condition, a traffic signal is not warranted at any of the three intersections, albeit the intersections of Whites Road / Smoothrock Avenue / Dusk Circle and Whites Road / Daleena Street / Street 18AM are close.

19. While a signal is not warranted at any of the three intersections, the intersections were considered operationally as either a potential signalized or unsignalized intersection under interim conditions.

20. Operations analysis results indicate that signals are required for the intersections of Whites Road / Smoothrock Avenue / Dusk Circle and Whites Road / Daleena Street / Street 18AM to operate appropriately. Further to the above, it is recommended that the operation of all three intersections be monitored as development within the area progresses and that reasonable underground signal related infrastructure is installed during the initial construction of each intersection.

**Traffic Operations**

21. Traffic operations analysis results indicate that all intersections within the study area under ultimate and interim conditions are projected to operate with acceptable levels of service and within capacity.

# Appendix A:
# Figures

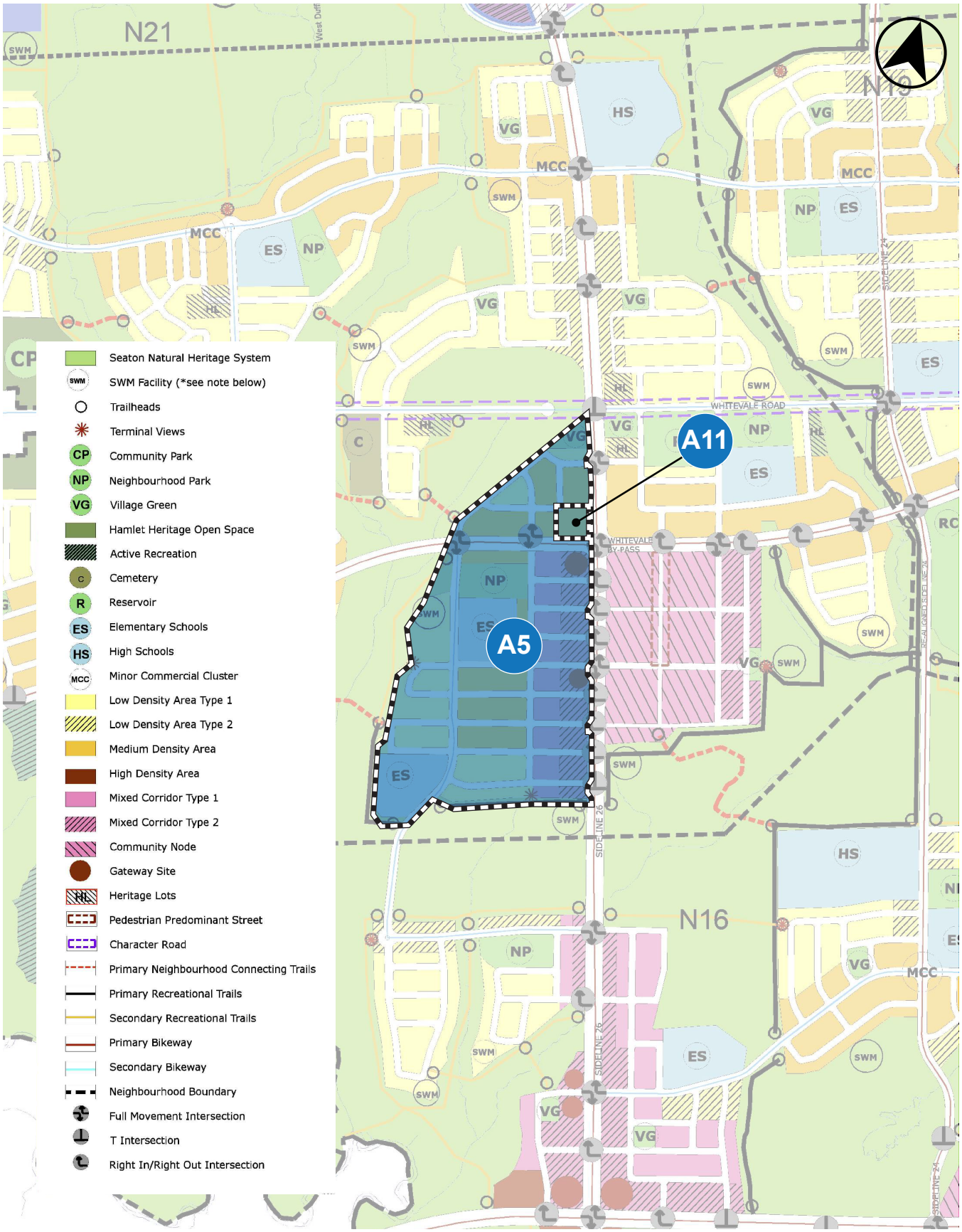
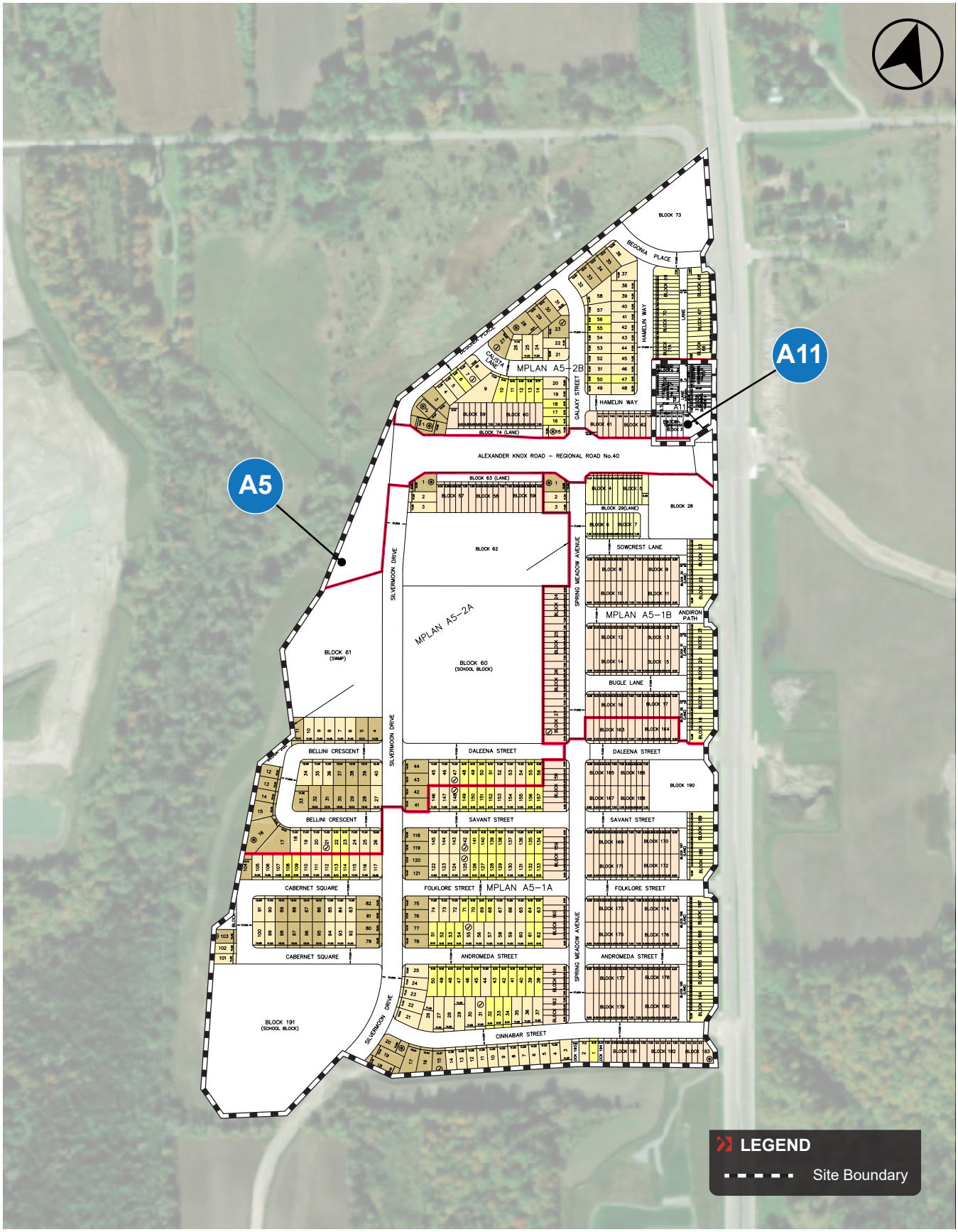



**FIGURE 1 SITE LOCATION**

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Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

**FIGURE 2 DRAFT PLAN**

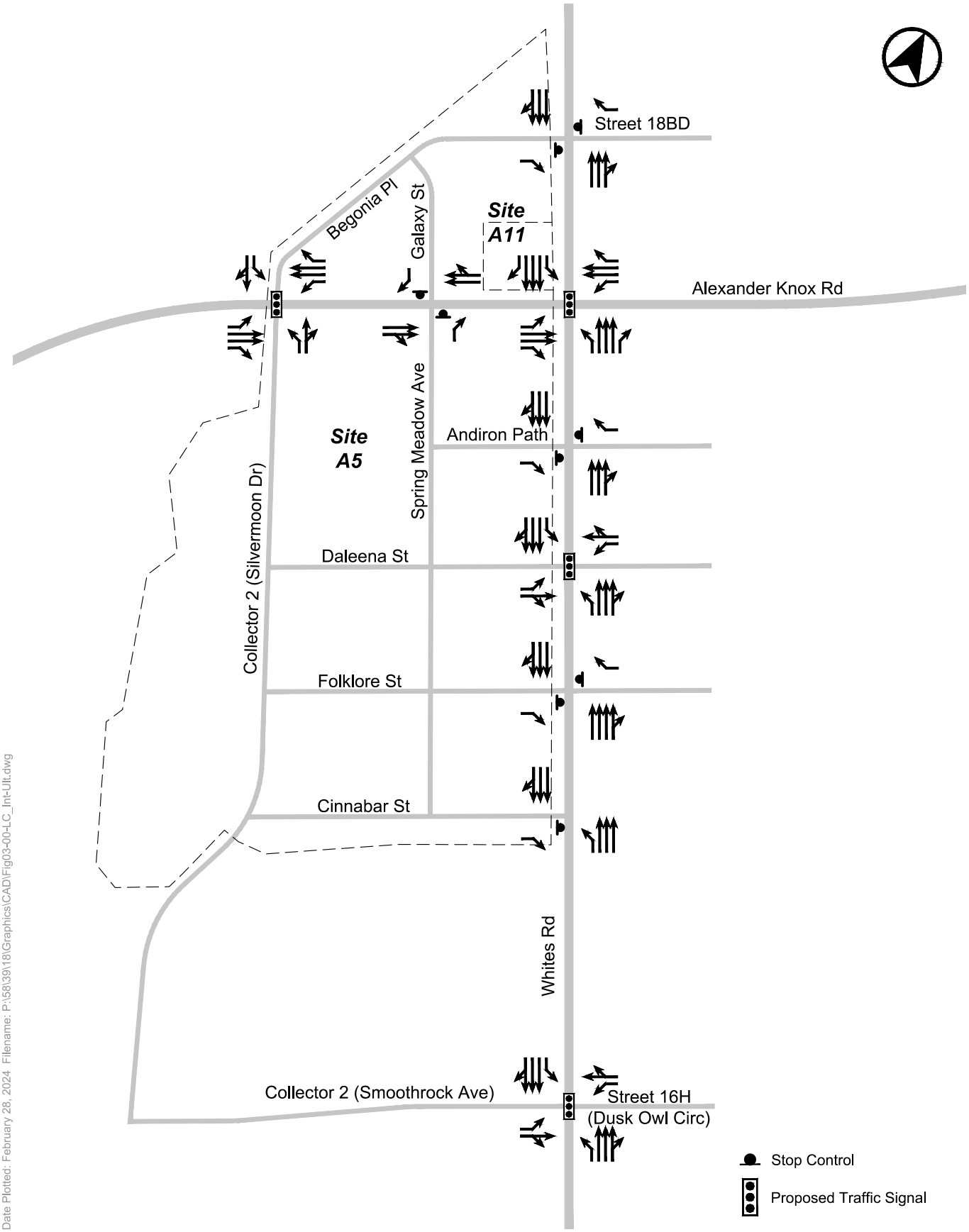


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**FIGURE 3 INTERIM AND ULTIMATE ROAD NETWORK**

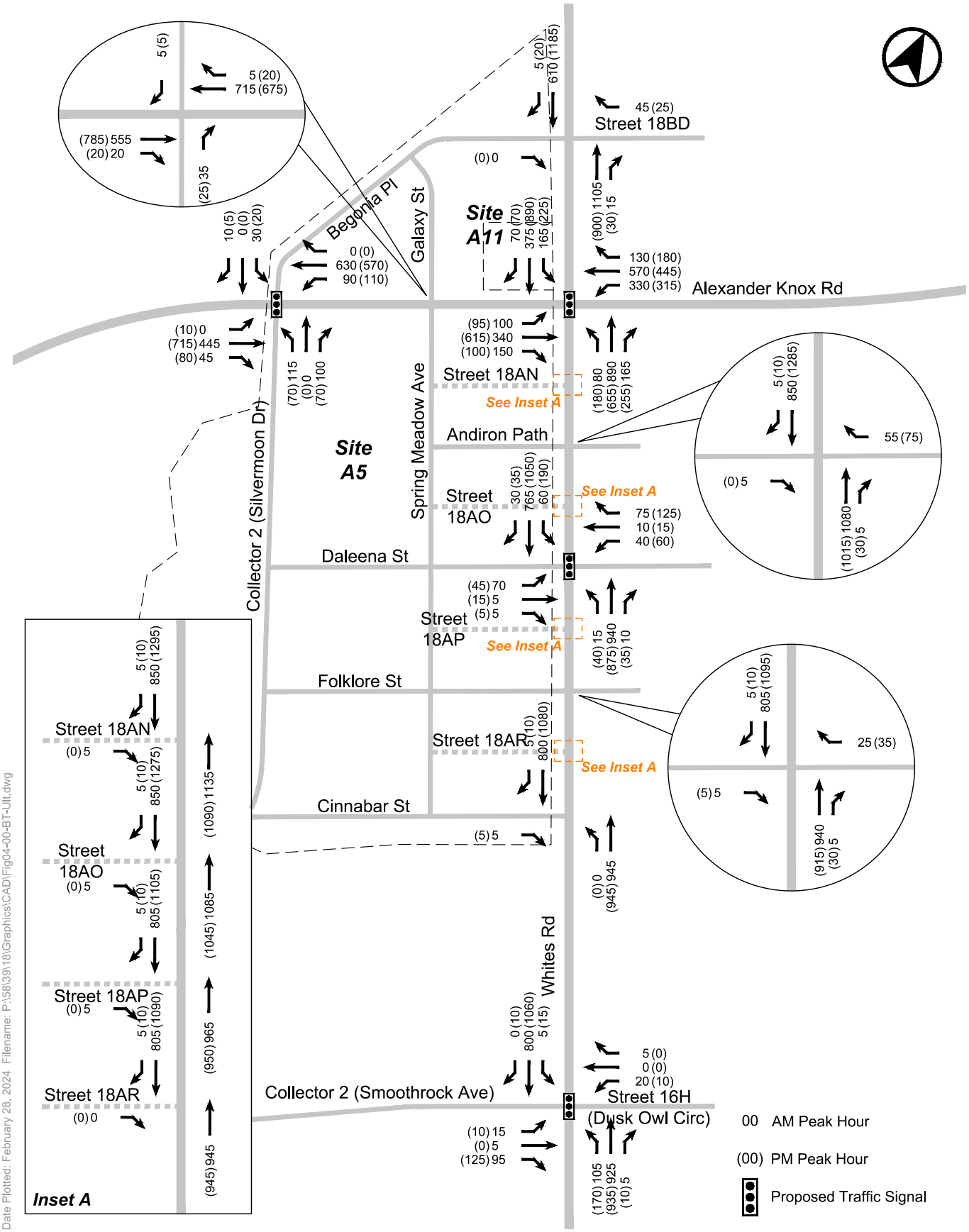


FIGURE 4 BASE TRAFFIC VOLUMES - ULTIMATE CONDITIONS

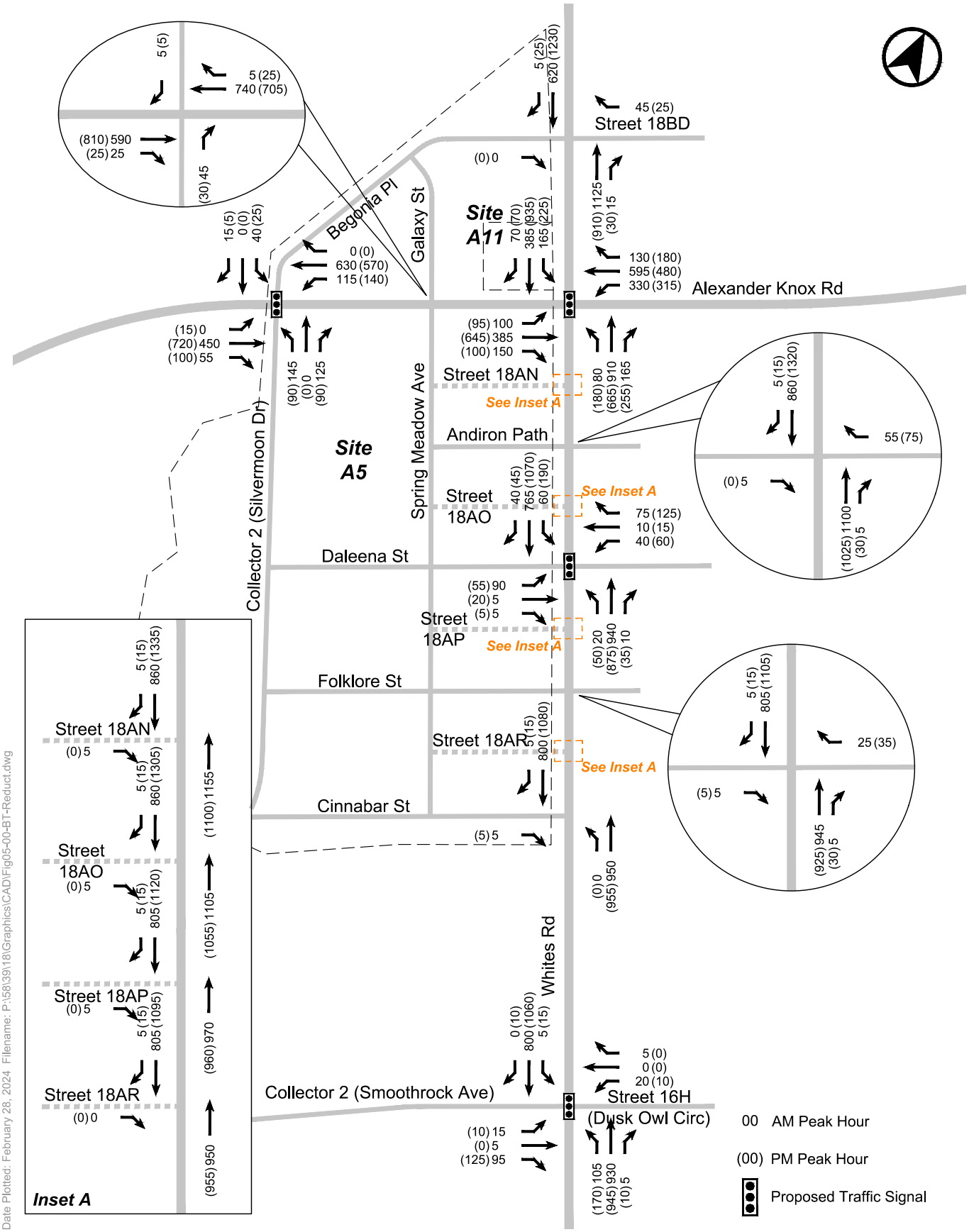


**FIGURE 5 BASE TRAFFIC VOLUMES AND RE-ADDITION OF 20% REDUCTION - ULTIMATE CONDITIONS**

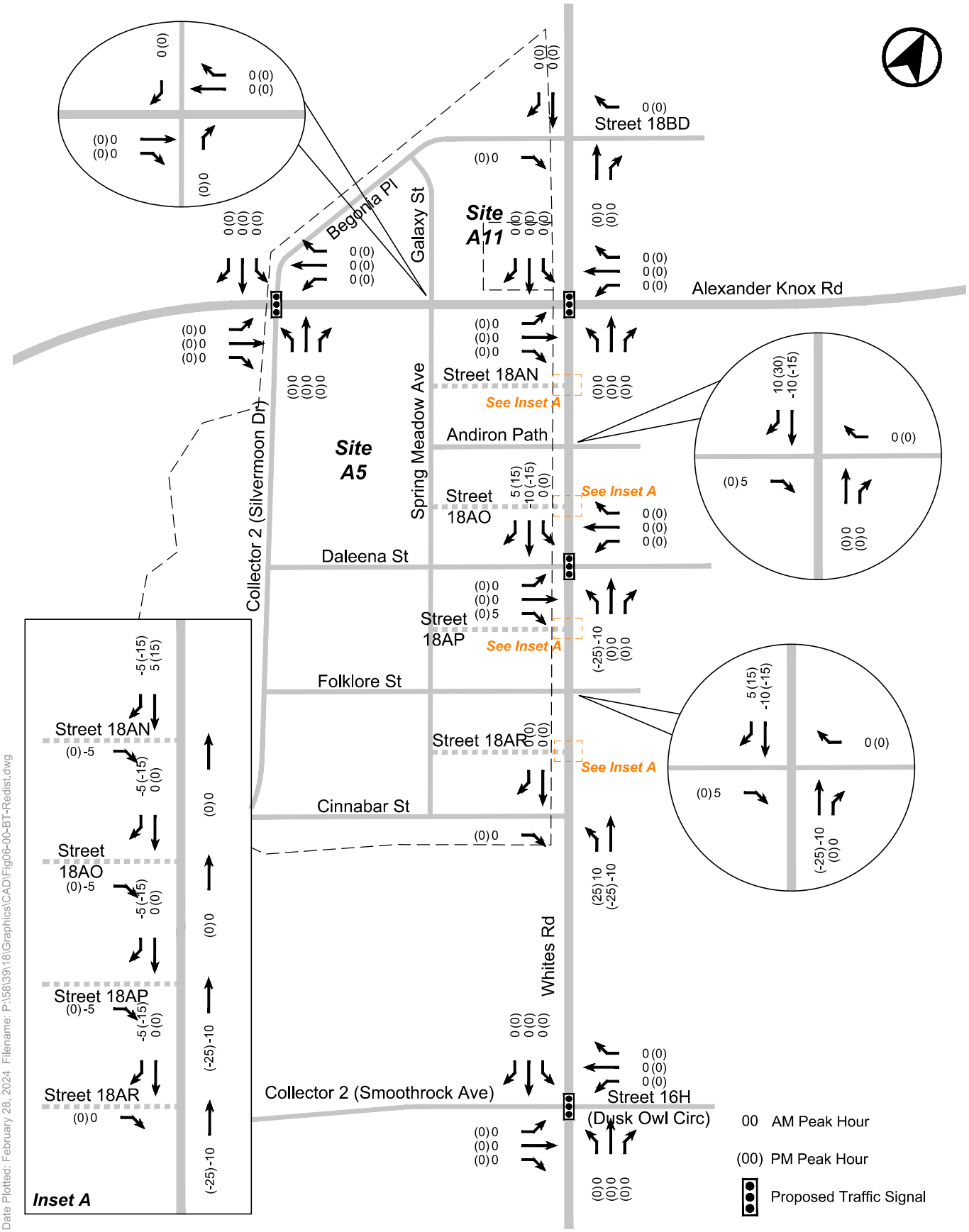


**FIGURE 6 BASE TRAFFIC VOLUME REDISTRIBUTION - ULTIMATE CONDITIONS**

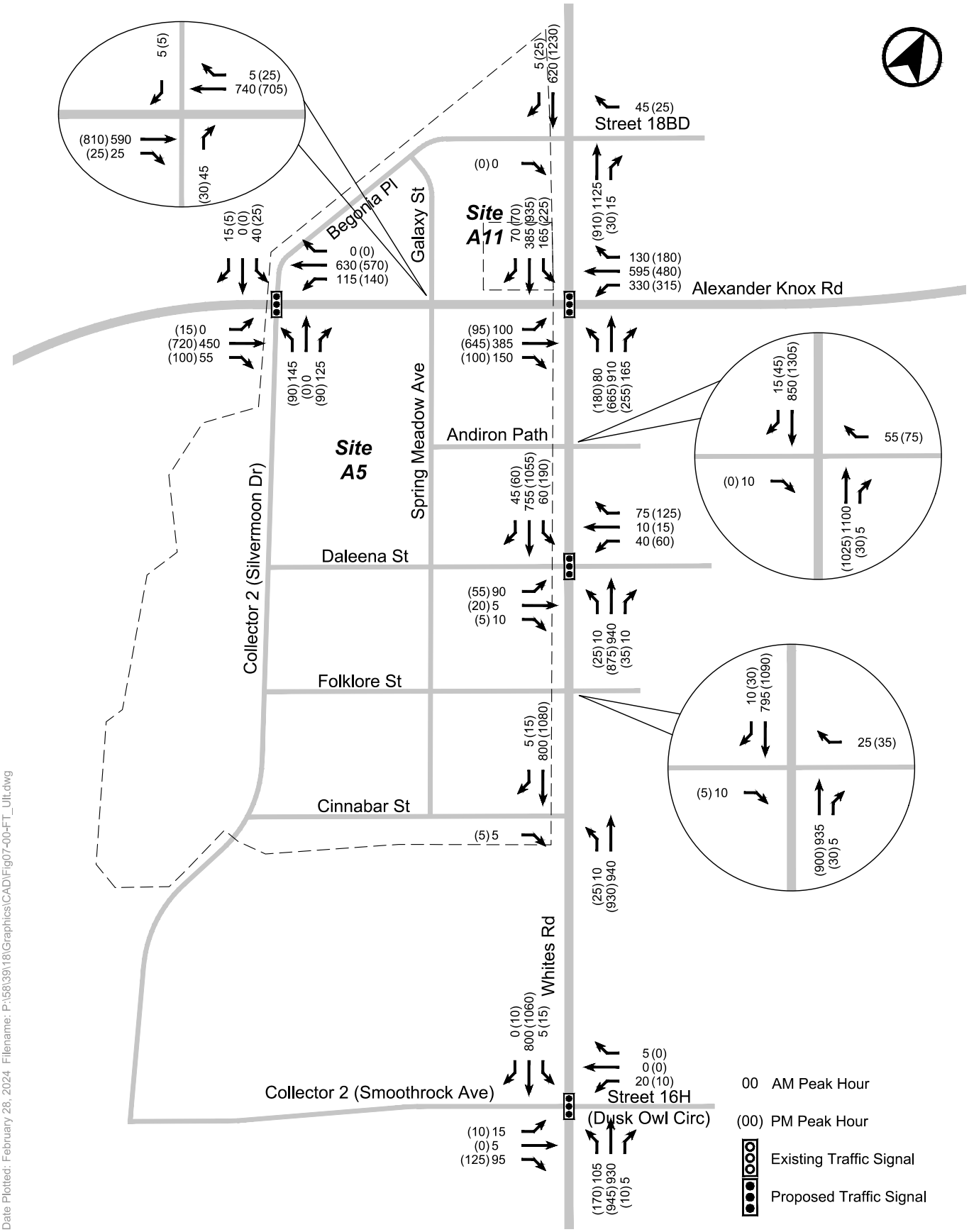


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**FIGURE 7 FUTURE TOTAL VOLUMES - ULTIMATE CONDITIONS**

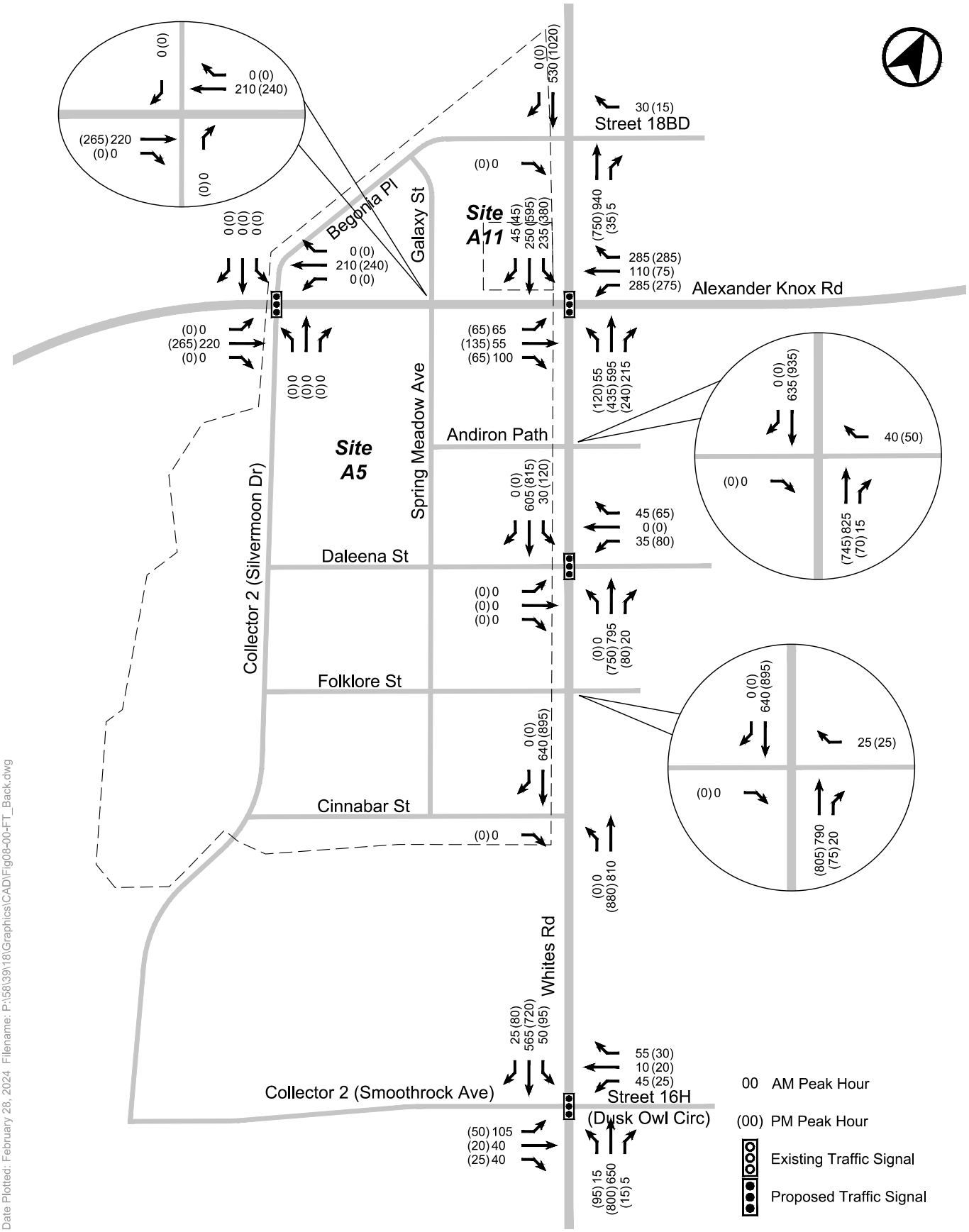


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**FIGURE 8 FUTURE BACKGROUND TRAFFIC VOLUMES - INTERIM CONDITIONS**

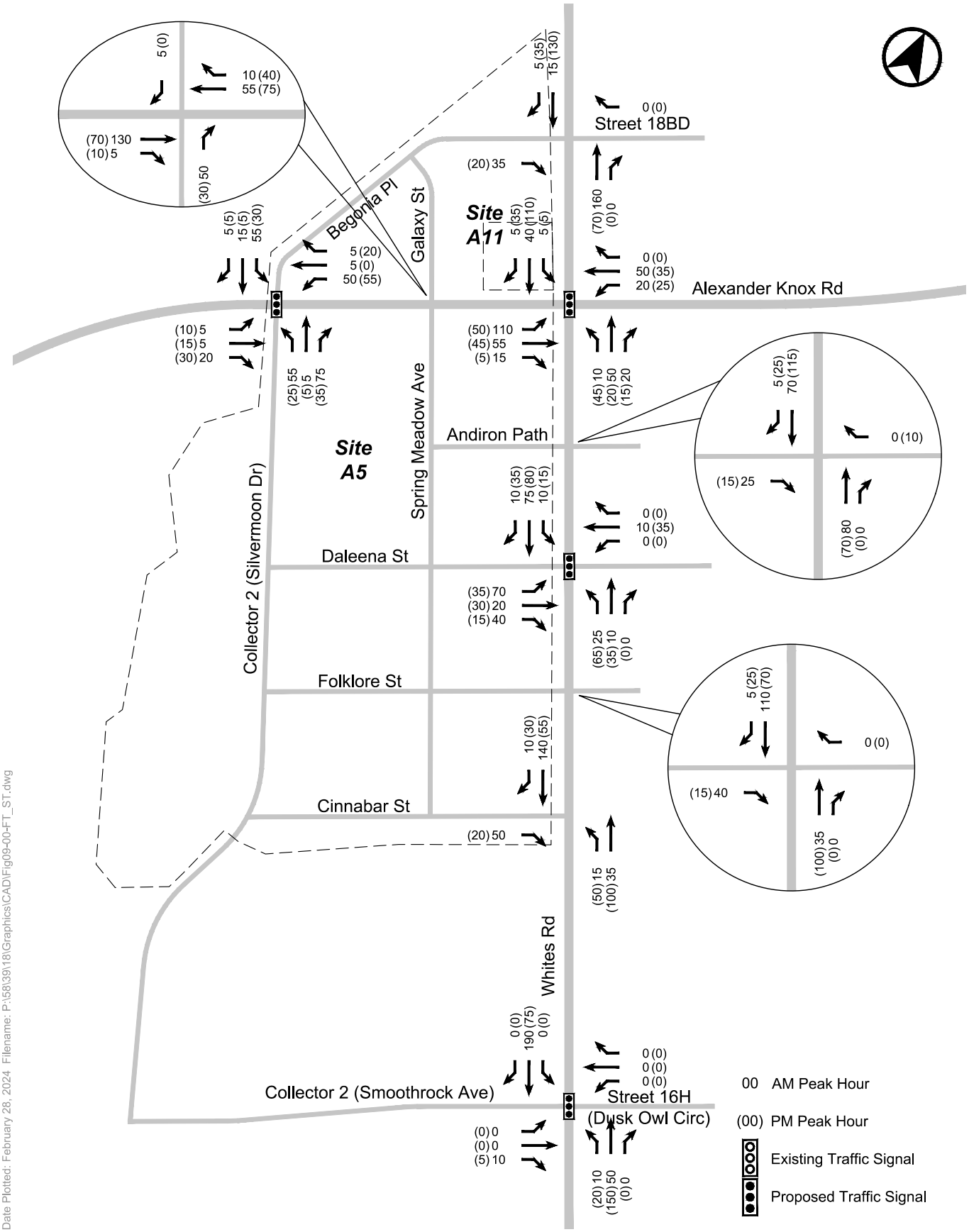


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**FIGURE 9 SITE TRAFFIC VOLUMES - INTERIM CONDITIONS**

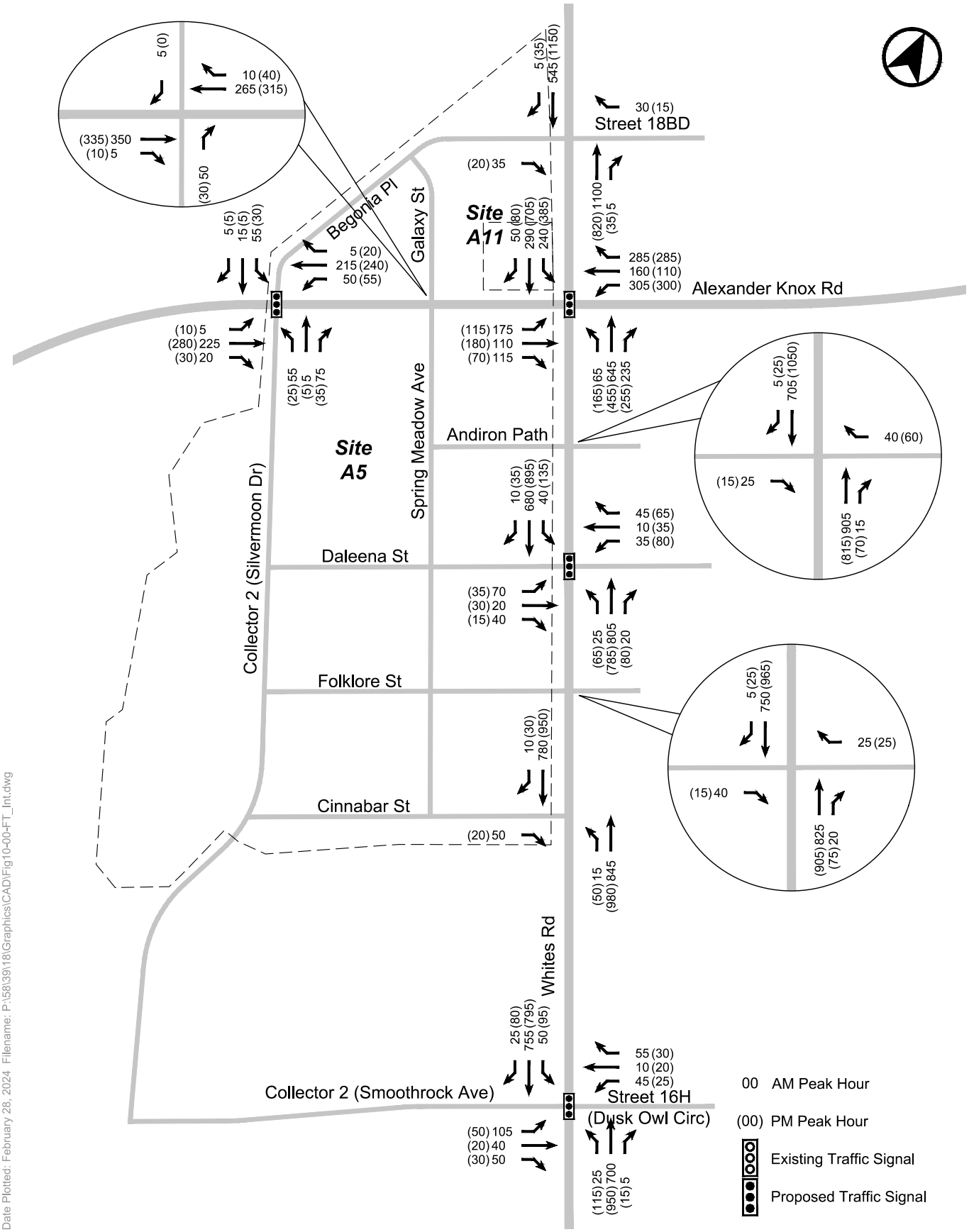


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**FIGURE 10 FUTURE TRAFFIC VOLUMES - INTERIM CONDITIONS**

# Appendix B:
# Conditions of Approval

City of PICKERING
City Development Department
T. 905.420.4617
TTY. 905.420.1739
F. 905.420.7648
Email citydev@pickering.ca

Pickering Civic Complex
One The Esplanade
Pickering, ON L1V 6K7
Direct 905.420.4660
Toll Free 1.866.683.2760
pickering.ca

February 5, 2014

Bruce Fisher
Vice President
Metrus Development Inc.
1700 Langstaff Road, Suite 2003
Concord, ON L4K 3S3

Subject: Draft Plan of Subdivision SP-2009-02
Hunley Homes Ltd, 1350557 Ontario Limited, Affiliated Realty Corporation Limited and Chestermere Investments Limited.
Part Lot 25, 26 and 27, Concession 4
City of Pickering

Further to the Ontario Municipal Board's written decision dated December 17, 2013, this application is draft approved. The conditions of draft plan approval and a copy of the draft approved plan that were approved by the OMB are attached.

It is your responsibility as the owner to fulfill the conditions of draft approval attached to the decision. Final approval of the application will be granted when the following has been received:

1. Fulfilling all requirements of the City of Pickering.

2. Letters clearing the conditions of approval from the Region of Durham, the Toronto Region Conservation Authority, Durham District School Board and Durham Catholic District School Board.

3. The clearance release fee of $1,100.00, payable to the City of Pickering. This is the current fee; please check with City staff at the time you plan to register for the applicable fee.

4. A final plan package containing the following:

   a) one original final plan;

   b) a minimum of four translucent or mylar copies (excluding the O.L.S.'s copy);

   c) a minimum of five white paper prints; and

   d) one white paper print with an A.O.L.S. plan submission form.

The final plans must include the following inscription on the plan:

> Approved under Section 51 of the *Planning Act*, R.S.O. 1990, c.P.13,
> this _____ day of _____, 20___.
>
> _____
> Director, City Development Department
> City of Pickering
> (Authority granted by By-law 7306/13)

In addition, please inscribe the City of Pickering's file number in the upper right hand corner of the final plan.

5. An area table indicating the total area in hectares of each type of land use including road(s), and the total area of the plan, or phase of the plan, to be registered.

Should you have any questions, or require anything further, please contact me at 905.420.4660, extension 2034.

Yours truly

Ross Pym

Ross Pym, MCIP, RPP
Principal Planner – Development Review

RP:ld
J:\Documents\Development\D-3200\2009\SP-2009-02, A 02-09\notice draft plan decision.docx
Enclosures: Conditions of Draft Plan Approval
Draft Approved Plan

Copy: Brian Bridgeman, Durham Region Planning Department
Steven Heuchert, TRCA
Christine Nancekivell, Durham District School Board
Lewis Morgulis, Durham Catholic District School Board
James Kennedy, KLM Planning Partners Inc.

**Conditions of Draft Approval** **December 2, 2013**

**Plan of Subdivision: SP-2009-02**
**Part Lot 25, 26 and 27, Concession 4**
**Hunley Homes Ltd, 1350557 Ontario Limited, Affiliated Realty Corporation Limited and Chestermere Investments Limited**
**City of Pickering**

## Section A - General

1. The Owner shall prepare the final plan generally on the basis of the draft plan of subdivision prepared by KLM Planning Partnership Inc. identified as Project Number P-1977 revised and dated Sept 6, 2013 which illustrates 213 lots for detached dwelling units, 89 lots for 178 semi detached dwelling units, 133 blocks for 846 townhouse dwelling units, 1 block for 76 stacked townhouses dwelling units, two gateway blocks for approximately 142 dwelling units, two commercial/high density blocks that may contain approximately 3129 dwelling units, a future residential development block, 2 park blocks, 3 village green blocks, 3 school blocks, 2 stormwater management facility blocks, a reservoir block, open space blocks, buffer blocks, roadways and road widening blocks.

2. Prior to final approval of this plan for registration, the Director, City Development for the City of Pickering shall be advised in writing by:

   (i) The Region of Durham how Conditions A-1, and all conditions in Section B have been satisfied.

   (ii) The Toronto and Region Conservation Authority how all conditions in Section D have been satisfied.

   (iii) The Durham District School Board how all conditions in Section E have been satisfied.

   (iv) The Durham Catholic District School Board how all conditions in Section F have been satisfied.

## Section B – Region of Durham

1. The Owner shall satisfy all requirements, financial and otherwise, of the Regional Municipality of Durham. This shall include, among other matters, the execution of a subdivision agreement between the Owner and the Region concerning the provision and installation of sanitary sewers, water supply, roads and other services.
2. The Owner shall name the road allowances included in this draft plan to the satisfaction of the Region of Durham and the City of Pickering.
3. The Owner shall submit to the Region of Durham, for review and approval, a noise report prepared by an acoustic engineer based on projected traffic volumes provided by the Durham Region Planning and Economic Development Department and recommending noise attenuation measures for the draft plan in accordance with the Ministry of the Environment guidelines. The Owner shall agree in the City of Pickering Subdivision Agreement to implement the recommended noise control

measures. The Agreement shall contain a full and complete reference to the noise report (i.e. author, title, date and any revisions/addenda thereto) and shall include any required warning clauses identified in the acoustic report. The Owner shall provide the Region with a copy of the Subdivision Agreement containing such provisions prior to final approval of the plan.

4. The Owner shall carry out an archeological assessment of the subject property and mitigation and/or salvage excavation of any significant heritage resources to the satisfaction of the Ministry of Tourism, Culture and Sport. No grading or other soil disturbance shall take place on the subject property prior to a letter of clearance from the Ministry.

5. The Owner shall carry out, at a minimum, a Phase 1 Environmental Site Assessment on the subject property and submit a Record of Site Condition (RSC) to the Ministry of the Environment. This RSC must be to the satisfaction of the Region of Durham, including an acknowledgement being posted on the RSC Environmental Site Registry.

6. The Owner shall submit plans showing any proposed phasing to the Region for review and approval, if this subdivision is to be developed by more than one registration.

7. The Owner shall grant to the Region, any easements required to provide Regional Services for this development and these easements shall be in locations and of such widths as determined by the Region.

8. The Owner shall provide for the extension of such sanitary sewer and water supply facilities which are external to, as well as within, the limits of this plan that are required to service this plan. In addition, the Owner shall provide for the extension of sanitary sewer and water supply facilities within the limits of the plan, which are required to service other developments external to this subdivision. Such sanitary sewer and water supply facilities are to be designed and constructed according to the standards and requirements of the Regional Municipality of Durham. All arrangements, financial and otherwise for said extensions are to be made to the satisfaction of the Regional Municipality of Durham, and are to be completed prior to final approval of this plan.

9. The Owner shall to the satisfaction of the Region, revise the draft plan of subdivision to conform to the final Central Pickering Development Plan – Regional Services Class Environmental Assessment with respect to all matters addressed therein, including sanitary sewerage, water supply, Regional roads and stormwater management facilities servicing Regional roads.

10. The Owner shall revise the draft plan as necessary to the satisfaction of the Region to accommodate any unforeseen technical issues which arise during the review of the final engineering drawings. Required revisions may include reducing the number of residential building lots or blocks, or reconfiguring the roads, lots, or blocks to the Region's satisfaction.

11. Prior to entering into a subdivision agreement the Regional Municipality of Durham shall be satisfied that a front-ending agreement has been entered into to provide adequate water pollution control and water supply facilities to the proposed subdivision.

12. The Owner shall convey sufficient road allowance to provide a minimum of 45.0 metres for Whites Road.
13. The Owner shall convey a sufficient road allowance to provide 30.0 to 36.0 metres for Realigned Whitevale Road, in accordance with the final approved Central Pickering Development Plan – Regional Service Class Environmental Assessment.
14. The Owner shall convey a sight triangle of 15m x 15m at the intersection of Whites Road / Realigned Whitevale Road.
15. The Owner shall convey a sight triangle of 10m x 15m at the intersection of Whites Road / existing Whitevale Road and Whites Road / Street '18'/Street '23'.
16. The Owner shall convey a sight triangle of 10m x 15m at the northwest quadrant and a 5m x 5m at the southwest quadrant at the intersection of Whites Road / Street '10', '13', '14', '17', '20', '21', '22' and '3'.
17. The Owner shall convey a sight triangle of 10m x 15m at the southeast quadrant and a 5m x 5m at the northeast quadrant at the intersection of Whites Road / Street '37'.
18. The Owner shall convey a sight triangle of 10m x 15m at the northeast quadrant and a 5m x 5m at the northwest quadrant at the intersection of Realigned Whitevale Road / Street '4', '36' and '30'.
19. The Owner shall convey a sight triangle of 10m x 15m at the southwest quadrant and a 5m x 5m at the southeast quadrant at the intersection of Realigned Whitevale Road / Street '11'and '27' (east and west leg).
20. The Owner shall convey to the Region, free and clear of all encumbrances, a 0.30m reserve across the total frontage of the residential lots/blocks abutting Whites Road and Realigned Whitevale Road. The 0.30m reserve can be located within the Regional right-of-way.
21. The Owner shall convey Block 455 for the Zone 3 reservoir to the Region of Durham.

**Section C – City of Pickering**

**Financial**

1. That the draft plan not receive final approval and registration unless the City of Pickering is satisfied that the Financial Impacts Agreement dated October 29, 2013, is in full force and effect and all conditions precedent set out in Article 2 of the said Agreement have been fulfilled or waived.

**Subdivision Agreement**

2. That the Owner enters into a subdivision agreement with and to the satisfaction of the City of Pickering to ensure the fulfillment of the City's requirements, financial and otherwise, which shall include, but not necessarily be limited to all of the City's conditions of approval as issued by the Ontario Municipal Board.

3. The Owner hereby covenants and agrees that this agreement shall be deemed by the parties hereto and their successors and assigns, to constitute "other applicable law" within the meaning of the *Building Code Act, S.O. 1992, c23*, as amended, or any successor or replacement legislation and the City's Chief Building Official shall not be required to issue, and the Owner hereby covenants and agrees not to request the issuance of, any building permit with respect to the Owners lands or part thereof until such time as the Owner has, in the unfettered opinion of the City, fully complied with all such provisions of the agreement as are capable of compliance prior to construction of dwellings. This provision may be pleaded as an estoppels in any court application brought by the Owners to compel issuance of a building permit.

**Zoning**

4. That the implementing by-law for Zoning By-law Amendment Application A 02/09 become final and binding.

**Street Name**

5. That street names and signage to be provided to the satisfaction of the City of Pickering.

**Development Charges**

6. That the Owner satisfy the City financially with respect to the *Development Charges Act*.

7. That the Owner agrees to submit progress reports for any DC reimbursable items identified through DC credits in a form satisfactory to the City of Pickering. Further, the Owner agrees to abide by the City's requirements for matters dealing with DC credits.

**Phasing and Development Coordination**

8. That if this subdivision is to be developed by more than one registration, the Owner will be required to submit a plan showing the proposed phasing, all to the satisfaction of the City.

9. That the Owner satisfy the City with respect to the disposition of future development blocks and acquisition of abutting part lots prior to draft plan registration.

10. That the Owner satisfy the City with respect to arrangements necessary to provide for coordination of services and roads with adjacent lands and any phasing of development that may be required.

11. That the Owner satisfy the City that portions of 3160 Sideline 26 have been conveyed to the appropriate municipality in order for Street 1 and Street 2 to be constructed.

12. That the Owner acknowledge that Blocks 440, 441, 442 and 443 must be held as future development blocks until the property at 3160 Sideline 26 is developed and provides a through access for the laneway. Blocks 1, 2, 10 and 11 may be developed independently provided that the entire laneway is constructed from Street "3" to the north limit of the adjoining property with a temporary connection westerly to Street "6" trough Block 441 to the all to the satisfaction of the City of Pickering.

**Architectural Control Guidelines**

13. That the Owner, prior to the preparation of the subdivision agreement, shall engage a control architect, to the satisfaction of the Director, City Development Department, who will prepare streetscape/architectural control guidelines to the City's satisfaction, approval all models offered for sale and certify that all building permit plans comply with the City's approved guidelines.

14. That the Owner ensure that the engineering plans be coordinated with the streetscape/architectural control guidelines and further that the engineering plans coordinate the driveway, street hardware and street trees to ensure that conflicts do not exist, asphalt is minimized and all objectives of the streetscape/architectural control guidelines can be achieved.

15. That the Owner satisfy the City that the streetscape/architectural control guidelines contain appropriate design elements for development in proximity to heritage lots, that includes landscaping, house siting and design standards that have regard to compatible building types, colours and material palettes while having regard for modern building designs, techniques and materials.

16. That the Owner satisfy the City that the streetscape/architectural control guidelines contain appropriate design elements for townhouse dwelling units less than 5.0 metres wide that include special emphasis on sitting, massing and façade designs that is coordinated on an individual and block basis. Variation between units should be incorporated that includes a variety of architectural elements such as entry porch, dormers, material detailing and window treatment.

**Parks and Village Greens**

17. That the Owner convey to the City of Pickering the park blocks (Blocks 456 and 457) and the village green blocks (Blocks 458, 459 and 460) at no cost and in a physical condition acceptable to the City for parkland dedications, to the satisfaction of the Director, City Development Department, in order to satisfy Section 42(1) of the *Planning Act*.

18. That the Owner satisfy, to the satisfaction of the City of Pickering, that the Seaton Master Parks Agreement has been entered into and executed that establishes the requirements and process for parkland dedication in accordance with the *Planning Act* for the Seaton Neighbourhoods.

19. That prior to the City accepting any park or village green block, the Owner shall submit a facility fit plan with full grading information that demonstrates the park or village green block will function to the satisfaction of the City of Pickering , and where a park block abuts an elementary school site, the facility fit plan shall include:
    (i) consultation with the relevant school board, with regard for the objective/principles for the Seaton Master School/Park Joint Use Program, and
    (ii) identify proposed grading on the abutting school site to ensure the park and school site can function as a unit.

20. That the Owner shall pay for the cost of the City preparing a Seaton Master School/Park Joint Use Program (to a maximum of $20,000.00) to be prepared in consultation with the Durham School Boards, that will establish the principle for design, maintenance, and user responsibilities, and shall include but not be limited to:
    (i) design and construction of shared play fields,
    (ii) demarcate of areas of the park that will be for the exclusive use of the school during the weekdays
    (iii) maintenance of the shared fields and facilities,
    (iv) hours of operation and time of exclusive use,
    (v) location of joint accesses,
    (vi) the principles of joint-use agreement, and
    (vii) snow clearance of on-street parking and lay-by areas.

**Second Access**

21. That the Owner satisfy the City with respect to providing two accesses to Whitevale Road until such time as proposed Street "1" and Street "2" are extended and intersects with an existing street and is open to public traffic.

22. That the Owner construct a temporary secondary emergency access at no cost to the City for this draft plan if the connections referred to in Condition 21 have not been completed. The temporary access must be in a location and be designed to the satisfaction of the City. However, the subdivider acknowledges and agrees that if there is an opportunity in the future for the development of lands south of Street "7" in this draft plan, they may eliminate the need for a temporary access to the subject area by utilizing a future road system.

**Fencing**

23. That the Owner satisfy the City with respect to the provision of temporary and/or silt fencing around the entire perimeter of the subject lands during construction, prior to the commencement of any works.

24. That the Owner agrees to install a fence next to the school, park, village greens, trail heads and walkway block to the satisfaction of the City of Pickering.

25. That the Owner agrees to install a1.5 metre high black vinyl coated chain link fence where the lots abut a stormwater management block and a 1.2 metre high black vinyl coated chain link fence where lots are within 40 metres (30 metre buffer plus 10 metres) of a significant wetland feature within the NHS , in accordance with an environmental study or report, and as generally shown on the "NHS Fencing Plan" to be prepared by Bird and Hale Limited which is to be completed to the satisfaction of the City of Pickering.

26. That the Owner agrees to install a fence adjacent to or backing onto lands having conflicting land uses, such as, commercial or recreational.

27. That the Owner satisfy the City respecting the provision of appropriate aesthetic details and design of all boundary fencing and noise attenuation fencing in locations recommended by the approved noise study for the subdivision.

28. That the Owner provide a fixed payment satisfactory to the City to provide for the long term maintenance and repairs of items such as enhancements to fences, entrance feature walls, medians that exceed the City's normal standards and which are requested by the subdivider.

**Noise**

29. That the Owner satisfy the requirements of the Ministry of the Environment regarding the approval of a noise study recommending noise control features to the satisfaction of the Region of Durham, and the City of Pickering.

30. That the Owner agrees in the subdivision agreement to implement noise control measures and warning clauses as recommended in the noise report as approved by the City of Pickering.

**Archaeology Monitor**

31. That the Owner submits an archaeology monitor report, preferably of First Nations' ancestry, if available, for any significant mitigative excavation activities, on known pre-contact archaeological sites. The purpose of this monitor would be to work co-operatively with the applicant's licensed professional archaeologist in order to report back on the results of the mitigative excavation activities to interested First Nations to the satisfaction of the City of Pickering.

**Construction Management Plan**

32. That the Owner make satisfactory arrangements with the City respecting a construction management plan, such Plan to contain, among other things:

    (i) details of erosion and sedimentation controls during all phases of construction and provide maintenance requirements to maintain these controls as per the Erosion & Sediment Control Guideline for Urban Construction;
    (ii) addressing the parking of vehicles and the storage of construction and building materials during servicing and house construction, and ensuring that such locations will not impede the flow of traffic or emergency vehicles on either existing streets or the proposed public street;
    (iii) insurance that the City's Noise By-law will be adhered to and that all contractors, trades and suppliers are advised of this By-law;
    (iv) the provision of mud and dust control on all roads within and adjacent to the site;
    (v) type and timing of construction fencing;
    (vi) location of construction trailers;
    (vii) details of the temporary construction access;

**Landscaping**

33. That the Owner agrees to submit a Subdivision Landscape and Fencing Plan, with respect to the provision of fencing and landscaping for the draft plan of subdivision, to the satisfaction of the Director, City Development. Such Plan shall include a 1.5 metre black vinyl chain link fence in all required locations, and the location and design of all wood or acoustic fencing required by the plan of subdivision.

34. That the Owner submits a street tree planting plan to the satisfaction of the City.

35. That the Owner satisfy the Director, City Development with the submission of a tree preservation plan which will illustrate the protection of trees and other natural features where appropriate, with specific attention to preservation in all pubic open spaces within the draft plan of subdivision prior to the approval of a preliminary grading plan. This tree preservation plan shall also be required for all development areas that abut Whitevale Road west of Sideline 22.

**Engineering Plans**

36. That the Owner satisfy the City respecting the submission of appropriate engineering drawings that detail, among other things, City services, roads, storm sewers, sidewalks, lot grading, streetlights, fencing and tree planting, and financially-secure such works.

37. That the Owner revise the draft plan, as necessary to the satisfaction of the City to accommodate any unforeseen technical engineering issues which arise during the review of the final engineering drawings. Required revisions may include reducing the number of residential building lots or reconfiguring the roads or lots to the City's satisfaction.

38. That the Owner satisfy the City of Pickering for contributions for development review and inspection fees.

**Easement**

39. That the Owner convey to the City, at no costs: any easements as required; and, any reserves as required by the City.

40. That the Owner convey any easement to any utility to facilitate the installation of their services in a location(s) to the satisfaction of the City and the utility.

41. That the Owner arrange at no costs to the City any easements required on third party lands for servicing and such easements shall be in a location as determined by the City and/or the Region and are to be granted upon request at any time after the draft approval.

42. That the Owner satisfy to the satisfaction of the Director, City Development Department any required easement for works, facilities or use rights that are required by the City of Pickering.

**Stormwater**

43. That the Owner satisfy the Director, City Development Department respecting a stormwater drainage and management system to service all the lands in the subdivision, and any provisions regarding easements.

44. That the Owner satisfy the Director, City Development Department for contributions for downstream stormwater management in accordance with the approved Neighbourhood Functional Servicing and Stormwater Report.

45. That the Owner satisfy the Director, City Development Department for design and implementation of diversion of stormwater from off-site lands as proposed in an approved Neighbourhood Functional Servicing and Stormwater Report.

46. An access road for maintenance purposes will be required for all stormwater management facilities and if required for LID measures and the associated outfall for this draft plan. Access road to be as per the City's Stormwater Management Design Guidelines.

47. The Owner shall obtain all required easement or conveyance of lands required for all stormwater management facilities, LID measures and the associated outfall to the satisfaction of the City of Pickering prior to registration of the plan of subdivision.

48. That the Owner agrees that no stormwater management pond will be built and/or preliminarily graded until all permits and/or approvals are received from the City, TRCA, MNR and/or MOE, as necessary.

49. That the Owner agrees that all stormwater management facilities and LID Measures will be designed to be consistent with the City of Pickering Stormwater Management Design Guidelines and TRCA's Low Impact Development Stormwater Management Planning and Design Guidelines (2013 standards).

**Grading**

50. That the Owner satisfy the Director, City Development Department respecting submission and approval of a grading and control plan.

51. That the Owner satisfy the Director, City Development Department respecting the submission and approval of a geotechnical soils analysis.

52. That the Owner satisfy the Director, City Development Department respecting the authorization from abutting land owners for all off-site grading.

53. That the Owner submits to the City a Landform Conservation Study, for any subdivision abutting Whitevale Road between the Whitevale Hamlet and Sideline 22, if required, to the satisfaction of the City of Pickering to demonstrate to the extent practical the topography of the draft plan of subdivision.

**Services**

54. That the Owner satisfy the Director, City Development Department respecting construction of roads with curbs, storm sewers, sidewalks and boulevard designs through the submission and approval of a site servicing plan.

55. That the Owner satisfy the City respecting arrangements for the provision of all services required by the City.

56. That the Owner satisfy the appropriate authorities respecting arrangements for the provision of underground wiring, street lighting, cable television, natural gas and other similar services.

57. That the cost of any relocation, extension, alteration or extraordinary maintenance of existing services necessitated by this development shall be the responsibility of the subdivider.

**Other Approvals**

58. That any approvals which are required from the Region of Durham, the Toronto and Region Conservation Authority, Ministry of Natural Resources, Ministry of the Environment or any utility for the development of this plan be obtained by the subdivider, and upon request written confirmation be provided to the City of Pickering as verification of these approvals.

**MESPA & NFSSR**

59. That the Owner satisfy the City of Pickering regarding all matters required by the final Seaton Master Environmental Servicing Plan Amendment, including but not limited to the funding of all restoration projects as recommended in the final Seaton Master Environmental Servicing Plan Amendment and any recommendation of the studies and their supporting reports.

60. The subdivision agreement will provide that road crossings of the NHS shall be in accordance with municipal standards and the final MESPA and NFSSRs. Any restoration of the NHS will be limited to areas disturbed by development construction activities.

61. That the Owner be required to submit a Functional Servicing and Stormwater Report (FSSR) to the City of Pickering that is consistent with the final approved MESPA and the previously submitted Neighbourhood Functional Servicing and Stormwater Report (NFSSR), especially as it relates to the servicing and stormwater management issues within and between Neighbourhoods that will ensure that the separate FSSR's will combine to form a complete NFSSR as required, to the satisfaction of the City of Pickering.

62. That the Owner shall agree to implement all water balance/infiltration measures identified in the approved NFSSR.

**Traffic - Roads**

63. That the owner satisfy the City of Pickering respecting the submission of, approval of, and implementation program for the results of, the Hamlet of Whitevale Traffic Impact and Management Study, as generally referred to in section 11.74(c) of the Pickering Official Plan. The City of Pickering will undertake a community consultation program on the recommendations of the study prior to the City's approval and implementation of any of the studies recommendations.

64. That the Owner agrees in the subdivision agreement to the requirement for the establishment of a public advisory committee composed of representatives from the owner, the Region of Durham, the City of Pickering, and the Whitevale and District Residents' Association. This committee will meet regularly during construction, and once per year during the monitoring period described in the Hamlet of Whitevale Transportation Mitigation Study, to review the effectiveness of traffic mitigation measures and provide any recommendations to the City.

65. That the Owner agrees in the subdivision agreement to include warning clauses (to be included in all agreements of purchase and sale) advising that Whitevale Road will be closed to vehicular traffic immediately east of the Hamlet of Whitevale as shown in the draft Hamlet of Whitevale Transportation Mitigation Study dated August 2013.

66. That the Owner of all draft plans that abut Whitevale Road, west of Sideline 24, shall submit a traffic calming strategy to the satisfaction of the City of Pickering.

67. That the Owner satisfy the City of Pickering respecting the submission of, approval of, and implementation program for the results of, a Traffic Sensitivity Analysis as required by section 11.25 of the Pickering Official Plan, and shall include: a Traffic Impact Study; an intersection control plan; a traffic signal implementation program; a Traffic Management Implementation Plan; a transportation planning exercise; a Transportation Demand Management Plan; and, a Parking Management Plan.

68. That the Owner satisfy the City of Pickering that appropriate arrangements have been established for the installation of traffic control signals, including all costs, in a time frame acceptable to the City of Pickering, which may includes installation of signals in advance of warrants.

69. That the Owner shall install a temporary turning circle or other alternatives approved by the City of Pickering whenever a road is to be continued in future developments.

70. That the Owner shall agree that any road connection that traverses the NHS must be acquired, constructed and dedicated as part of the development and be addressed in the subdivision agreement and the design shall maintain, to the extent practical, where not precluded by grading or other servicing constraints, the rural cross section of the historic concession roads.

71. That the Owner satisfy the City of Pickering respecting the submission of a future transportation study as required by section 11.74(b) of the Pickering Official Plan and the Owner acknowledge and agree that any lands that are outside the Phase I lands identified in the Stage Servicing and Implementation Strategy shall be subject to a holding zoning provision.

72. That the Owner satisfy the City of Pickering respecting the submission of a transportation study where direct access is proposed along any Type "C" Arterial Road or a Collector Road.

**Closed Roads**

73. That the Owner make appropriate arrangements for the conveyance of any City owned surplus closed road allowances, including the preparation of all required survey works, to the satisfaction of the City of Pickering.

**Model Homes**

74. That the Owner enter into a model home agreement with the City, if applicable for this draft plan. All model homes must satisfy all requirements of the architectural control guidelines for the subdivision.

**Trail Heads**

75. That the owner construct to the satisfaction of the City of Pickering trail heads within or abutting the draft plan and described as west of Street "3", west of Street "1" at Street "7", west of Street "9", south of Block 452, south of Lot 127, south of Block 109, south of Block 441 on the east side of Sideline 26 opposite Street "10", south of Block 441, east of Block 458 and east of Block 332, all to the satisfaction of the City of Pickering.

**Fire**

76. That the Owner agrees that no building permit shall be approved on any land within the subdivision until adequate services are available including adequate water pressure to the satisfaction of the City's Fire Services Division. Building permits for infrastructure projects may be exempt from this requirement.

77. That the Owner provide a fire break plan and other fire prevention measures to the satisfaction of the City of Pickering.

**Development Block**

78. That the Owner satisfy the City of Pickering with respect to a program or undertaking for the disposition of future development block and acquisition of abutting part lots prior to registration. This may require properties merging on title and that no building permit shall be requested until any land assembling has been completed to the satisfaction of the City of Pickering.

**Canada Post**

79. That the Owner satisfy the City of Pickering, through the approval of a Utility Coordination Plan for the location of a Community Mailbox, in consultation with Canada Post, and incorporate in the City's subdivision agreement the provision of a Community Mailbox information including technical specifications, notifications and financial terms.

80. That the Owner agree to determine and provide a suitable temporary Community Mailbox location, if required, to the satisfaction of the City of Pickering.

**Heritage Lots**

81. That the draft plan be appropriately revised surrounding any abutting heritage lot as identified on the Neighbourhood Plan, to the satisfaction of the City of Pickering, to ensure a proper relationship between the heritage property and the new development. This revision may include a modification to the lotting and/or road pattern and may result in a different dwelling form and loss of lots.

82. That the applicant submits a Pre-Condition Survey for any abutting residential dwelling or any listed/designated heritage structure that is located within 30 metres of the limit of development of the draft plan. The findings of the study and survey must be prepared by a qualified professional and should be undertaken prior to any earthwork or construction next to the subject property and, where an owner of the abutting residential dwelling or any listed/designated heritage structure that is located within 30 metres of the limit of development of the draft plan refuses to allow entry into the dwelling, this condition will be deemed to have been satisfied.

**Placemaking Guidelines**

83. That the Owner shall ensure all development is consistent with the City of Pickering's Sustainable Placemaking Guidelines, including but not limited to, all public lands to the satisfaction of the City of Pickering.

**Plan Revisions**

84. The Owner acknowledge and agree that the draft plan of subdivision and associated conditions of approval may require revisions, to the satisfaction of the City of Pickering to implement or integrate any recommendation resulting from studies required as conditions of approval.

85. That the Owner revise the draft plan, as necessary to the satisfaction of the City to accommodate any unforeseen technical engineering issues which arise during the review of the final engineering drawings. Required revisions may include reducing the number of residential building lots or reconfiguring the roads or lots to the City's satisfaction.

86. That the Owner agree to implement the requirements of all studies that are required by the City of Pickering for the development of this draft plan of subdivision to the satisfaction of the City of Pickering.

**Timing**

87. That the owner, agree in the subdivision agreement that it will not commence any construction works (including site servicing, topsoil stripping and grading) on the subject property until the front ending agreement contemplated by the Region of Durham Condition 11 has been executed for the plan.

**Endangered Species Act**

88. That the owner satisfy the *Endangered Species Act* prior to any site alteration and the City be provided by the Owner with confirmation from the Ministry of Natural Resources of their approval.

**Staged Servicing and Implementation Strategy**

89. Prior to final approval, the Seaton Landowners shall confirm that the total number of units for Phase 1 does not exceed 9,800 single-detached equivalent units, to the satisfaction of the City of Pickering, Durham Region, and York Region. For all plans of subdivision, and condominium within the Phase 2 area, or any phase beyond Phase 1, the Holding (H) Zone provisions of Section 36 of the Ontario Planning Act shall be used in order to ensure that final plan approval and development of these lands does not occur until such time as the Holding (H) symbol is removed in accordance with the provisions of the Ontario Planning Act. The Zoning Bylaw shall specify the terms under which Council may consider the removal of the Holding (H) symbol. Said terms shall include a minimum of the following:

    (i) The completion of a transportation study identifying the need, and if warranted, the extent and timing of additional transportation improvements, external to the Seaton Community and Durham Region that may be required to support development beyond the first phase as outlined in the Staged Servicing and Implementation Strategy. The transportation study is to be undertaken by the landowners in consultation with the City of Pickering, Durham Region, City of Toronto and York Region and shall be in accordance with Policy 11.74(b) of the Pickering Official Plan, as amended by Pickering Official Plan Amendment 22.

    (ii) The City is satisfied that the transportation improvements identified in the transportation study referred to in (i) above as required to support the development of the subsequent phase to be released from the H - holding provision will be provided in accordance with the timing recommended by the transportation study, and that satisfactory arrangements are in place for the funding of those transportation improvements.

**Agreement Clauses**

90. The subdivision agreement between the Owner and the City of Pickering shall contain, among other matters, the following provisions:

91. That the Owner agrees to include provisions whereby all offers of purchase and sale shall include information that satisfies Subsection 59(4) of the *Development Charges Act, 1997*;

92. That the Owner agrees to implement those noise control measures recommended in the noise report required in Condition 29;

93. That the Owner agrees to implement the requirements of the TRCA's conditions of approval in the City's subdivision agreement in wording acceptable to the City of Pickering in consultation with TRCA;

94. That the Owner agrees to design and implement on-site erosion and sediment control;

95. That the Owner agrees to maintain all stormwater management and erosion and sedimentation control structures operating and in good repair during the construction period, in a manner satisfactory to the City of Pickering, in consultation with TRCA and/or MNR;

96. That the Owner agrees to commit to provide appropriate information to all perspective buyers of lots adjacent to the publicly owned natural heritage system through all agreements for purchase and sale, sales information, and community maps to ensure that the land owners are well informed that private use and/or access to the open space blocks shall not be permitted, and reflect the intent of the following:

    "The open space adjacent to the subject property is considered to be part of the publicly owned natural heritage system and will be maintained for environmental protection, and public use purposes. Please note that uses such as private picnics, barbeque or garden areas; and/or the dumping of refuse (e.g. grass/garden clippings household compostable goods, garbage etc.) are not permitted on these lands. In addition, access to the valley corridor such as private rear yard gates and/or ladders are prohibited."

    "Stormwater Management Facilities and the Natural Heritage System are intended to be naturalized / kept in a natural state. As such, the publicly owned natural heritage system may not receive routine maintenance such as grass and weed cutting."

97. That the Owner agrees to include provisions whereby all offers of purchase and sale shall include information that for all dwelling units with a single car garage that the City's by-laws require two parking spaces for the dwelling which have been provided, one in the garage and one in the driveway and that the City's by-law restricts the width of the driveway to a maximum size width which does not allow two cars parked side by side.

**Section D – Toronto and Region Conservation Authority**

1. That prior to the initiation of topsoil stripping, grading, installation of servicing or other site alteration, and prior to the registration of the affected phase of this Draft Plan of Subdivision, the owner shall submit a revised Neighbourhood Functional Servicing Report (NFSSR) for Neighbourhood 18, (or equivalent on a landowner / subdivision basis) consistent with the approved Seaton Master Environmental Servicing Plan to the City of Pickering's satisfaction, in consultation with the Toronto and Region Conservation Authority (TRCA). TRCA shall be satisfied with respect to meeting provincial hazard standards. Nothing in this condition prohibits the construction of regional infrastructure.

2. That prior to the owner entering into any Agreements of Purchase and Sale for lots or blocks within those areas illustrated in green on the map attached to the letter dated October 28, 2013 from TRCA to the City of Pickering, and prior to the registration of any phase of this Draft Plan of Subdivision that contains such area(s), the owner shall submit to the City of Pickering detailed modeling demonstrating the feasibility of the 100 Year Storm capture in accordance with the June 26, 2013 Terms of Reference and relevant provisions of the NFSSR. This condition shall be implemented by the Owners entering into a "no sales or marketing agreement" with the City, to the satisfaction of the City Solicitor, by no later than 60 days following approval of the draft plan of subdivision in question, which agreement would prohibit the sale, marketing or other disposition of the lands described in this condition, until such time as the provisions of this condition have been satisfied. Immediately upon the submission of such modeling, certified by the relevant water resources engineer, this condition shall cease to apply, and the City shall immediately do all things necessary to release the subject area to allow the sale of the affected lots or blocks.

3. That prior to the owner entering into any Agreements of Purchase and Sale for those areas illustrated in purple on the map attached to the letter dated October 28, 2013 from TRCA to the City of Pickering, and prior to the registration of any phase of this Draft Plan of Subdivision that contains such area(s), the owner shall resolve the required storm water management facility, floodline or slope stability technical matters in respect of such area to the City of Pickering's satisfaction, in consultation with the TRCA, and red-line revise the Draft Plan, as necessary. This condition shall be implemented by the Owners entering into a "no sales or marketing agreement" with the City, to the satisfaction of the City Solicitor, by no later than 60 days following approval of the draft plan of subdivision in question, which agreement would prohibit the sale, marketing or other disposition of the lands described in this condition, until such time as the provisions of this condition have been satisfied. Immediately upon the resolution of the required storm water management facility, floodline or slope stability matter for such area this condition shall cease to apply, and the City shall immediately do all things necessary to release the area to allow the sale of the affected lots or blocks.

4. That prior to the initiation of topsoil stripping, grading, and installation of servicing or other site alteration, and prior to the registration of this Draft Plan of Subdivision or any phase thereof, the owner shall submit the following to TRCA's satisfaction. Nothing in this condition prohibits the construction of regional infrastructure.

(i) Pre-consultation and an agreed-upon approach for any studies, reports or strategies requested by the TRCA in these conditions to the satisfaction of the TRCA where specified prior to the preparation of these studies, reports or strategies.

(ii) A signed agreement with an environmental monitoring professional certified by CISEC, which has the effect of ensuring that all environmental controls including stormwater management and ESC controls identified in the Erosion and Sediment Control Report and Plans for the subdivision, will be monitored and, if necessary, immediately corrected.

(iii) A Watershed System Monitoring and Management Program that includes, but may not be limited to, groundwater, sediment transport, erosion, fluvial geomorphic and fisheries monitoring at identified sensitive reaches throughout the Duffins Creek Watershed as referred to in the MESPA, Chapter K, and the agreed upon payment arrangements to the TRCA and /or City of Pickering for the cost of the implementation of the Watershed System Monitoring and Management Program at a rate to be agreed on. The Watershed System Monitoring and Management Program will be established with the TRCA in consultation with the City of Pickering and Seaton Landowners by March 30, 2014.

(iv) Detailed plans illustrating the topsoil stripping and replacement proposal including, but not limited to, the locations, staging and methodology, to ensure the soils will be appropriate for use in the LID Strategy referred to in Condition No. 5(ii)(d).

(v) An Erosion and Sediment Control Report and Plans consistent with the Erosion and Sediment Control Guideline for Urban Construction (Greater Golden Horseshoe Area Conservation Authorities, 2007, as amended), that includes proposed measures for controlling or minimizing erosion and siltation on-site and/or in downstream areas during and after topsoil stripping, grading, the installation of infrastructure and construction of any structures. In addition the ESC Report and Plans shall include temporary feature based water balance measures including water quality treatment that will be implemented in the interim until the final LID Strategy is operational. Such ESC Report and Plans must be consistent with the principles outlined in the NFSSR and will be coordinated with the ESC Plans for subdivisions within the surrounding development context.

5. That prior to the initiation of the installation of servicing and prior to the registration of the affected phase of this Draft Plan of Subdivision, the Owner shall prepare and submit the following to TRCA satisfaction:

(i) A strategy and / or associated plans and five (5) year monitoring program for the natural channel design of any Headwater Drainage Features and Watercourses of Concern that must be altered to prevent erosion, and a properly secured Letter of Credit provided for in the subdivision agreement.

(ii) A detailed engineering submission to include:

a) A description of the storm drainage system (quantity, quality and erosion control) for the proposed development;

b) Plans illustrating how this drainage system will tie into surrounding drainage systems (ie., how external flows will be accommodated, the design capacity of the receiving system);

c) Appropriate stormwater management techniques which may be required to control minor and major flows;

d) Implementation of the Low Impact Development Strategy identified in the Low Impact Development Measures section of the NFSSRs and the Minutes of the Meeting held at the City of Pickering dated June 24, 2013.;

e) Updated storage and release rate requirements for stormwater management facilities to reflect changes in drainage patterns and impervious rates, as per the revised Duffins Creek Hydrology Update (DCHU);

f) Plans and designs illustrating how the feature based water balance targets and objectives for the natural features (i.e., forest, wetlands, headwater drainage features) identified in the approved NFSSR will be achieved, including an update of the existing analysis as required. The designs shall include flexibility for adaptive management to respond to monitoring results;

g) Detailed designs of infrastructure crossings in the Natural Heritage System to avoid, minimize and mitigate impacts to natural features and their functions;

h) Detailed designs of stormwater management ponds, LID facilities and site design based on subsurface groundwater and geotechnical investigations;

i) Geotechnical slope stability work where needed that confirms the erosion hazard limit of adjacent valley systems, and detailed plans illustrating that the location of stormwater management facilities, lots and blocks are located 10 metres from the erosion hazard limit;

j) Where required, evaluation of the need for groundwater dewatering during construction, including but not limited to details for its disposal, potential impacts to natural features due to groundwater withdrawal, mitigation and any permitting requirements;

k) Grading plans for the subject lands shall include plans and details regarding areas where grading is proposed in the Natural Heritage System, including how the works will be minimized in accordance with the policies in City of Pickering Official Plan Amendment No. 22;

l) Plans illustrating how the design of SWM facilities considers LID design features;

m) The location, description and details of all outlets and other facilities or works which may require permits from the TRCA pursuant to the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 166/06);

(iii) A comprehensive mitigation and or compensation plan for any stormwater outfall and associated LID infrastructure to be located within the Seaton Natural Heritage System.

(iv) A comprehensive Planting Plan for the Stormwater Management Blocks consistent with TRCA's SWM Pond Planting Guidelines, or as amended.

6. Prior to the registration of this Draft Plan of Subdivision, the Owner shall submit detailed flood line information and lots or blocks shall be adjusted if necessary by way of red line revision to address the Final Regional Flood Line to TRCA satisfaction.

7. That the owner agrees in the subdivision agreement, in wording acceptable to the TRCA:

(i) To carry out, or cause to be carried out, to the satisfaction of the TRCA, the recommendations of the reports and details of the plans referenced in Conditions 1 through 4 inclusive;

(ii) To implement erosion, sediment and topsoil management consistent with the Erosion Sediment and Topsoil Management Control Plans at all times;

(iii) To install and maintain all stormwater management and erosion and sedimentation control structures operating and in good repair during the construction period, in a manner satisfactory to the TRCA;

(iv) To obtain all necessary permits from the TRCA pursuant to the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 166/06), as amended, to the satisfaction of the TRCA;

(v) To provide the Owner's percent contribution to the aquatic habitat compensation plan identified in MESP, Section F2.1, if required;

(vi) To implement a homeowner education program which includes preparing a "Homeowner Information and Natural Stewardship Guide" to the satisfaction of the Director City Development and the Director, Culture and Recreation for inclusion in all Offers of Purchase and Sale of all Units. This guide shall describe the value and importance of the natural Heritage System, the impact homeowner activities can have on natural areas, and steps which can be taken to minimize such impact in order to assist in protection of the Natural Heritage System. The guide shall address such activities as:

a) Refuse/yard waste/composting;
b) Fertilizer, herbicides and pesticide use as it relates to the hydrogeological features and functions of the site;
c) Identification and protection of natural areas, vegetation preservation zones, rehabilitation areas and landscape buffer plantings;
d) Access and trail use discouraging vegetation trampling;
e) Domestic pet impacts and controls;
f) Invasive plant spreading;
g) Promoting planting of native species;
h) Proper swimming pool management techniques;
i) Impacts of noise and lighting including directing lighting away from wooded and natural areas and setting with motion detectors to minimize constant lighting;
j) Protection of soil and vegetation on natural areas;
k) the ecological role of stormwater treatment facilities; and
l) The importance of choosing sustainable technologies and maintaining the required LID facilities.

8. That this draft plan of subdivision be subject to red-line revision(s) in order to meet the requirements of Conditions 1 through 6 inclusive, if necessary, to the satisfaction of the TRCA.

9. That a copy of the fully executed subdivision agreement be provided to the TRCA by the owner, when available, in order to expedite the clearance of conditions of draft plan approval.

**Section E – Durham District School Board**

1. That the Owner agrees to reserve each of Blocks 453 and 454 within the subject draft plan SP-2009-02 for public elementary school purposes, having a minimum area of 2.460 hectares and 2.471 hectares, respectively, for a period of five years from the date of registration of the phase of the plan that contains the subject Block, unless prior to the expiration of such reservation period the Durham District School Board advises the Owner, in writing, that it does not intend to acquire the Block for school purposes.

2. Prior to the registration of any phase of Plan SP-2009-02 that contains Block 453 and prior to the registration of any phase of Plan SP-2009-02 that contains Block 454, the Owner shall enter into an Agreement with the Durham District School Board regarding the acquisition of Block 453 or Block 454, as the case may be, for an elementary school, substantially in accordance with the form of the Option Agreement pertaining to the subject school block attached to Minutes of Settlement between the Owner and the School Board, dated November 28, 2013.

3. That the following "Notice to Parents" be inserted in all agreements of purchase and sale between the Owner and all prospective homebuyers.

> "Students from this development may have to attend existing schools. Although a school site has been reserved within this plan of subdivision, a school may not be constructed for some time, if at all, and then only if the Ministry of Education authorizes funding and construction of this required school.

4. That the Owner agrees to post the standard Durham District School Board approved "Notice to Parents" in all sales presentation centers. The "Notice to Parents" reads as follows:

> "Students from this development may have to attend existing schools. Although a school site has been reserved within this community, a school may not be constructed for some time, if at all, and then only if the Ministry of Education authorizes funding and construction of this required school."

**Section F – Durham Catholic District School Board**

1. That the Owner agrees to reserve Block 452 within the subject draft plan SP-2009-02 for Catholic elementary school purposes, having a minimum area of 2.396 hectares, for a period of five years from the date of registration of the phase of the plan that contains such Block, unless prior to the expiration of such reservation period the Durham Catholic District School Board advises the Owner, in writing, that it does not intend to acquire the Block for school purposes.

2. Prior to the registration of any phase of Plan SP-2009-02 that contains Block 452 the Owner shall enter into an Agreement with the Durham Catholic District School Board regarding the acquisition of Block 452 for an elementary school, substantially in accordance with the form of the Option Agreement pertaining to such school block attached to Minutes of Settlement between the Owner and the School Board, dated November 28, 2013.

3. That the following "Notice to Parents" be inserted in all agreements of purchase and sale between the Owner and all prospective homebuyers.

> "Students from this development may have to attend existing schools. Although a school site has been reserved within this plan of subdivision, a school may not be constructed for some time, if at all, and then only if the Ministry of Education authorizes funding and construction of this required school.

4. That the Owner agrees to post the standard Durham Catholic District School Board approved "Notice to Parents" in all sales presentation centers. The "Notice to Parents" reads as follows:

> "Students from this development may have to attend existing schools. Although a school site has been reserved within this community, a school may not be constructed for some time, if at all, and then only if the Ministry of Education authorizes funding and construction of this required school."

**Section G - Notes to Draft Approval**

1. As the Owner of the proposed subdivision, it is your responsibility to satisfy all conditions of draft approval in an expeditious manner. The conditions of draft approval will be reviewed periodically and may be amended at any time prior to final approval. The *Planning Act* provides that draft approval, may be withdrawn at any time prior to final approval.

2. All plans of subdivision must be registered in the Land Titles system within the Regional Municipality of Durham.

3. Where agencies' requirements are required to be included in the City of Pickering subdivision agreement, a copy of the agreement should be sent to the agencies in order to facilitate their clearance of conditions for final approval of this plan. The addresses and telephone numbers of these agencies are:

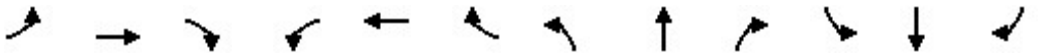
   (i) Commissioner of Planning and Economic Development, Planning and Economic Development Department, Regional Municipality of Durham, 605 Rossland Road East P.O. Box 623, Whitby, Ontario L1N 6A3 905.668.7711.

   (ii) The Toronto and Region Conservation Authority, Development Planning and Regulation, 5 Shoreham Drive, Downsview, Ontario, M3N 1S4, 416.661.6600.

   (iii) Durham District School Board, Facilities Services, 400 Taunton Road East, Whitby, Ontario, L1R 2K6

   (iv) Durham Catholic District School Board, Facilities Services Department, 650 Rossland Road West, Oshawa, Ontario, L1J 7C4

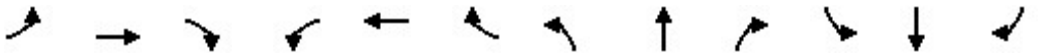
# Appendix C:
# Synchro Sheets



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 175 | 110 | 115 | 305 | 160 | 285 | 65 | 645 | 235 | 240 | 290 | 50 |
| Future Volume (vph) | 175 | 110 | 115 | 305 | 160 | 285 | 65 | 645 | 235 | 240 | 290 | 50 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.2 | 3.3 | 3.4 | 3.2 | 3.3 | 3.5 | 3.2 | 3.3 | 3.5 | 3.2 |
| Total Lost time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | *0.83 | 1.00 | 1.00 | *0.83 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1688 | 3461 | 1455 | 1689 | 3461 | 1455 | 1693 | 4587 | 1449 | 1707 | 4587 | 1449 |
| Flt Permitted | 0.64 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1141 | 3461 | 1455 | 1069 | 3461 | 1455 | 956 | 4587 | 1449 | 493 | 4587 | 1449 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 190 | 120 | 125 | 332 | 174 | 310 | 71 | 701 | 255 | 261 | 315 | 54 |
| RTOR Reduction (vph) | 0 | 0 | 104 | 0 | 0 | 235 | 0 | 0 | 68 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 190 | 120 | 21 | 332 | 174 | 75 | 71 | 701 | 187 | 261 | 315 | 54 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 40.2 | 24.0 | 24.0 | 53.9 | 34.7 | 34.7 | 64.9 | 57.8 | 57.8 | 78.1 | 68.0 | 68.0 |
| Effective Green, g (s) | 40.2 | 24.0 | 24.0 | 53.9 | 34.7 | 34.7 | 64.9 | 57.8 | 57.8 | 78.1 | 68.0 | 68.0 |
| Actuated g/C Ratio | 0.28 | 0.17 | 0.17 | 0.37 | 0.24 | 0.24 | 0.45 | 0.40 | 0.40 | 0.54 | 0.47 | 0.47 |
| Clearance Time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 380 | 576 | 242 | 515 | 834 | 350 | 467 | 1841 | 581 | 413 | 2166 | 684 |
| v/s Ratio Prot | 0.06 | 0.03 | | c0.12 | 0.05 | | 0.01 | 0.15 | | c0.08 | 0.07 | |
| v/s Ratio Perm | 0.08 | | 0.01 | c0.12 | | 0.05 | 0.06 | | 0.13 | c0.27 | | 0.04 |
| v/c Ratio | 0.50 | 0.21 | 0.09 | 0.64 | 0.21 | 0.21 | 0.15 | 0.38 | 0.32 | 0.63 | 0.15 | 0.08 |
| Uniform Delay, d1 | 42.2 | 51.8 | 50.7 | 35.1 | 43.7 | 43.7 | 22.7 | 30.5 | 29.6 | 18.8 | 21.5 | 20.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.03 | 1.03 | 1.16 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 0.2 | 0.2 | 2.8 | 0.1 | 0.3 | 0.1 | 0.6 | 1.4 | 3.1 | 0.1 | 0.2 |
| Delay (s) | 43.2 | 52.0 | 50.9 | 37.9 | 43.8 | 44.0 | 23.4 | 32.1 | 35.9 | 21.9 | 21.7 | 21.1 |
| Level of Service | D | D | D | D | D | D | C | C | D | C | C | C |
| Approach Delay (s) | | 47.8 | | | 41.5 | | | 32.4 | | | 21.7 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 75.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

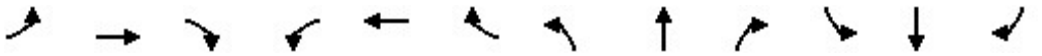
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 105 | 40 | 50 | 45 | 10 | 55 | 25 | 700 | 5 | 50 | 755 | 25 |
| Future Volume (vph) | 105 | 40 | 50 | 45 | 10 | 55 | 25 | 700 | 5 | 50 | 755 | 25 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.87 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1650 | 1652 | | 1652 | 1556 | | 1669 | 4579 | | 1663 | 4550 | |
| Flt Permitted | 0.71 | 1.00 | | 0.66 | 1.00 | | 0.29 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 1234 | 1652 | | 1144 | 1556 | | 512 | 4579 | | 564 | 4550 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 114 | 43 | 54 | 49 | 11 | 60 | 27 | 761 | 5 | 54 | 821 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 114 | 97 | 0 | 49 | 71 | 0 | 27 | 766 | 0 | 54 | 848 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.2 | 20.2 | | 20.2 | 20.2 | | 111.8 | 111.8 | | 111.8 | 111.8 | |
| Effective Green, g (s) | 20.2 | 20.2 | | 20.2 | 20.2 | | 111.8 | 111.8 | | 111.8 | 111.8 | |
| Actuated g/C Ratio | 0.14 | 0.14 | | 0.14 | 0.14 | | 0.78 | 0.78 | | 0.78 | 0.78 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 173 | 231 | | 160 | 218 | | 397 | 3555 | | 437 | 3532 | |
| v/s Ratio Prot | | 0.06 | | | 0.05 | | | 0.17 | | | c0.19 | |
| v/s Ratio Perm | c0.09 | | | 0.04 | | | 0.05 | | | 0.10 | | |
| v/c Ratio | 0.66 | 0.42 | | 0.31 | 0.33 | | 0.07 | 0.22 | | 0.12 | 0.24 | |
| Uniform Delay, d1 | 58.6 | 56.5 | | 55.6 | 55.8 | | 3.8 | 4.3 | | 4.0 | 4.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.75 | 0.66 | |
| Incremental Delay, d2 | 8.7 | 1.2 | | 1.1 | 0.9 | | 0.3 | 0.1 | | 0.6 | 0.2 | |
| Delay (s) | 67.4 | 57.8 | | 56.7 | 56.6 | | 4.1 | 4.5 | | 3.6 | 3.1 | |
| Level of Service | E | E | | E | E | | A | A | | A | A | |
| Approach Delay (s) | | 63.0 | | | 56.7 | | | 4.5 | | | 3.1 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 13.0 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.30 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 55.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

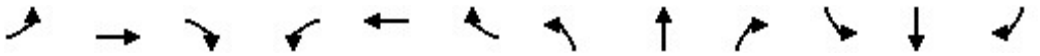
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 105 | 40 | 50 | 45 | 10 | 55 | 25 | 700 | 5 | 50 | 755 | 25 |
| Future Volume (Veh/h) | 105 | 40 | 50 | 45 | 10 | 55 | 25 | 700 | 5 | 50 | 755 | 25 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 114 | 43 | 54 | 49 | 11 | 60 | 27 | 761 | 5 | 54 | 821 | 27 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1346 | 1792 | 317 | 1305 | 1804 | 286 | 863 | | | 781 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1346 | 1792 | 317 | 1305 | 1804 | 286 | 863 | | | 781 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 39 | 92 | 1 | 84 | 91 | 96 | | | 93 | | |
| cM capacity (veh/h) | 78 | 70 | 663 | 50 | 69 | 694 | 766 | | | 823 | | |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 114 | 97 | 49 | 71 | 27 | 304 | 304 | 157 | 54 | 328 | 328 | 191 |
| Volume Left | 114 | 0 | 49 | 0 | 27 | 0 | 0 | 0 | 54 | 0 | 0 | 0 |
| Volume Right | 0 | 54 | 0 | 60 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 27 |
| cSH | 78 | 140 | 50 | 289 | 766 | 1700 | 1700 | 1700 | 823 | 1700 | 1700 | 1700 |
| Volume to Capacity | 1.46 | 0.69 | 0.99 | 0.25 | 0.04 | 0.18 | 0.18 | 0.09 | 0.07 | 0.19 | 0.19 | 0.11 |
| Queue Length 95th (m) | 73.1 | 31.3 | 33.9 | 7.5 | 0.9 | 0.0 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 354.9 | 74.8 | 253.2 | 21.4 | 9.9 | 0.0 | 0.0 | 0.0 | 9.7 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | F | C | A | | | | A | | | |
| Approach Delay (s) | 226.1 | | 116.1 | | 0.3 | | | | 0.6 | | | |
| Approach LOS | F | | F | | | | | | | | | |

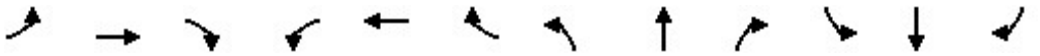
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 30.8 | | | |
| Intersection Capacity Utilization | 37.7% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 5 | 225 | 20 | 50 | 215 | 5 | 55 | 5 | 75 | 55 | 15 | 5 |
| Future Volume (vph) | 5 | 225 | 20 | 50 | 215 | 5 | 55 | 5 | 75 | 55 | 15 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.4 | 3.3 | 3.4 | 3.4 | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.92 | 1.00 | 1.00 | 0.92 | 1.00 | 0.97 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.86 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1639 | 3461 | 1430 | 1640 | 3461 | 1430 | 1656 | 1532 | | 1659 | 1762 | |
| Flt Permitted | 0.61 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 | 0.74 | 1.00 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 1046 | 3461 | 1430 | 1035 | 3461 | 1430 | 1296 | 1532 | | 1223 | 1762 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 5 | 245 | 22 | 54 | 234 | 5 | 60 | 5 | 82 | 60 | 16 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 72 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 5 | 245 | 17 | 54 | 234 | 4 | 60 | 15 | 0 | 60 | 17 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | 75.9 | 75.9 | 75.9 | 75.9 | 75.9 | 75.9 | 12.1 | 12.1 | | 12.1 | 12.1 | |
| Effective Green, g (s) | 75.9 | 75.9 | 75.9 | 75.9 | 75.9 | 75.9 | 12.1 | 12.1 | | 12.1 | 12.1 | |
| Actuated g/C Ratio | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.12 | 0.12 | | 0.12 | 0.12 | |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 793 | 2626 | 1085 | 785 | 2626 | 1085 | 156 | 185 | | 147 | 213 | |
| v/s Ratio Prot | | c0.07 | | | 0.07 | | | 0.01 | | | 0.01 | |
| v/s Ratio Perm | 0.00 | | 0.01 | 0.05 | | 0.00 | 0.05 | | | c0.05 | | |
| v/c Ratio | 0.01 | 0.09 | 0.02 | 0.07 | 0.09 | 0.00 | 0.38 | 0.08 | | 0.41 | 0.08 | |
| Uniform Delay, d1 | 2.9 | 3.1 | 2.9 | 3.1 | 3.1 | 2.9 | 40.5 | 39.0 | | 40.6 | 39.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 1.6 | 0.2 | | 1.8 | 0.2 | |
| Delay (s) | 2.9 | 3.2 | 3.0 | 3.2 | 3.2 | 2.9 | 42.1 | 39.2 | | 42.5 | 39.2 | |
| Level of Service | A | A | A | A | A | A | D | D | | D | D | |
| Approach Delay (s) | | 3.2 | | | 3.2 | | | 40.4 | | | 41.6 | |
| Approach LOS | | A | | | A | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.0 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.14 | | |
| Actuated Cycle Length (s) | 100.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 51.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 225 | 20 | 50 | 215 | 5 | 55 | 5 | 75 | 55 | 15 | 5 |
| Future Volume (Veh/h) | 5 | 225 | 20 | 50 | 215 | 5 | 55 | 5 | 75 | 55 | 15 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 5 | 245 | 22 | 54 | 234 | 5 | 60 | 5 | 82 | 60 | 16 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.4 | | | 3.4 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | 356 | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 254 | | | 282 | | | 523 | 632 | 152 | 589 | 649 | 147 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 254 | | | 282 | | | 523 | 632 | 152 | 589 | 649 | 147 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 100 | | | 96 | | | 85 | 99 | 90 | 81 | 96 | 99 |
| cM capacity (veh/h) | 1293 | | | 1263 | | | 389 | 369 | 846 | 324 | 361 | 853 |

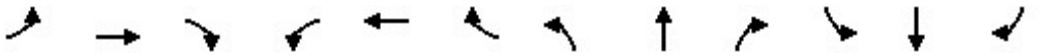
| Direction, Lane # | EB 1 | EB 2 | EB 3 | EB 4 | WB 1 | WB 2 | WB 3 | WB 4 | NB 1 | NB 2 | SB 1 | SB 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 5 | 122 | 122 | 22 | 54 | 117 | 117 | 5 | 60 | 87 | 60 | 21 |
| Volume Left | 5 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 60 | 0 | 60 | 0 |
| Volume Right | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 5 | 0 | 82 | 0 | 5 |
| cSH | 1293 | 1700 | 1700 | 1700 | 1263 | 1700 | 1700 | 1700 | 389 | 788 | 324 | 418 |
| Volume to Capacity | 0.00 | 0.07 | 0.07 | 0.01 | 0.04 | 0.07 | 0.07 | 0.00 | 0.15 | 0.11 | 0.19 | 0.05 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 4.3 | 3.0 | 5.3 | 1.3 |
| Control Delay (s) | 7.8 | 0.0 | 0.0 | 0.0 | 8.0 | 0.0 | 0.0 | 0.0 | 16.0 | 10.1 | 18.6 | 14.1 |
| Lane LOS | A | | | | A | | | | C | B | C | B |
| Approach Delay (s) | 0.1 | | | | 1.5 | | | | 12.5 | | 17.4 | |
| Approach LOS | | | | | | | | | B | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 4.7 | | | |
| Intersection Capacity Utilization | 29.3% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 50 | 15 | 845 | 780 | 10 |
| Future Volume (Veh/h) | 0 | 50 | 15 | 845 | 780 | 10 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 54 | 16 | 918 | 848 | 11 |
| Pedestrians | 15 | | | 15 | 15 | |
| Lane Width (m) | 3.5 | | | 3.5 | 3.5 | |
| Walking Speed (m/s) | 1.2 | | | 1.2 | 1.2 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 377 | 289 | |
| pX, platoon unblocked | 0.99 | 0.99 | 0.99 | | | |
| vC, conflicting volume | 1222 | 318 | 874 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1163 | 267 | 830 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 92 | 98 | | | |
| cM capacity (veh/h) | 178 | 705 | 779 | | | |

| Direction, Lane # | EB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 54 | 16 | 306 | 306 | 306 | 339 | 339 | 181 |
| Volume Left | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| cSH | 705 | 779 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.08 | 0.02 | 0.18 | 0.18 | 0.18 | 0.20 | 0.20 | 0.11 |
| Queue Length 95th (m) | 2.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 10.5 | 9.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | A | | | | | | |
| Approach Delay (s) | 10.5 | 0.2 | | | | 0.0 | | |
| Approach LOS | B | | | | | | | |

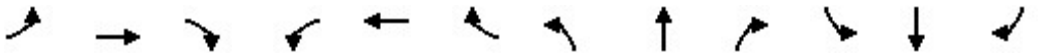
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 28.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 40 | 0 | 0 | 25 | 0 | 825 | 20 | 0 | 750 | 5 |
| Future Volume (Veh/h) | 0 | 0 | 40 | 0 | 0 | 25 | 0 | 825 | 20 | 0 | 750 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 43 | 0 | 0 | 27 | 0 | 897 | 22 | 0 | 815 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 142 | |
| pX, platoon unblocked | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | | 0.97 | | | | | |
| vC, conflicting volume | 1099 | 1766 | 304 | 1253 | 1758 | 265 | 835 | | | 934 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 993 | 1682 | 174 | 1152 | 1673 | 265 | 721 | | | 934 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 95 | 100 | 100 | 96 | 100 | | | 100 | | |
| cM capacity (veh/h) | 179 | 89 | 795 | 135 | 90 | 716 | 841 | | | 721 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 43 | 27 | 256 | 256 | 256 | 150 | 326 | 326 | 168 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 43 | 27 | 0 | 0 | 0 | 22 | 0 | 0 | 5 |
| cSH | 795 | 716 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.05 | 0.04 | 0.15 | 0.15 | 0.15 | 0.09 | 0.19 | 0.19 | 0.10 |
| Queue Length 95th (m) | 1.4 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.8 | 10.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | | |
| Approach Delay (s) | 9.8 | 10.2 | 0.0 | | | | 0.0 | | |
| Approach LOS | A | B | | | | | | | |

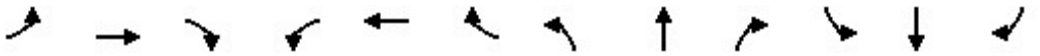
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 27.3% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 70 | 20 | 40 | 35 | 10 | 45 | 25 | 805 | 20 | 40 | 680 | 10 |
| Future Volume (vph) | 70 | 20 | 40 | 35 | 10 | 45 | 25 | 805 | 20 | 40 | 680 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.88 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1649 | 1617 | | 1649 | 1566 | | 1661 | 4558 | | 1672 | 4570 | |
| Flt Permitted | 0.72 | 1.00 | | 0.71 | 1.00 | | 0.33 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | 1246 | 1617 | | 1241 | 1566 | | 576 | 4558 | | 484 | 4570 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 76 | 22 | 43 | 38 | 11 | 49 | 27 | 875 | 22 | 43 | 739 | 11 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 27 | 0 | 38 | 17 | 0 | 27 | 897 | 0 | 43 | 750 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 18.3 | 18.3 | | 18.3 | 18.3 | | 113.7 | 113.7 | | 113.7 | 113.7 | |
| Effective Green, g (s) | 18.3 | 18.3 | | 18.3 | 18.3 | | 113.7 | 113.7 | | 113.7 | 113.7 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.79 | 0.79 | | 0.79 | 0.79 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 158 | 205 | | 157 | 199 | | 454 | 3598 | | 382 | 3608 | |
| v/s Ratio Prot | | 0.02 | | | 0.01 | | | c0.20 | | | 0.16 | |
| v/s Ratio Perm | c0.06 | | | 0.03 | | | 0.05 | | | 0.09 | | |
| v/c Ratio | 0.48 | 0.13 | | 0.24 | 0.09 | | 0.06 | 0.25 | | 0.11 | 0.21 | |
| Uniform Delay, d1 | 58.4 | 55.8 | | 56.6 | 55.5 | | 3.3 | 4.0 | | 3.5 | 3.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.82 | 0.78 | | 0.91 | 0.78 | |
| Incremental Delay, d2 | 2.3 | 0.3 | | 0.8 | 0.2 | | 0.2 | 0.2 | | 0.6 | 0.1 | |
| Delay (s) | 60.7 | 56.1 | | 57.4 | 55.7 | | 3.0 | 3.3 | | 3.8 | 3.1 | |
| Level of Service | E | E | | E | E | | A | A | | A | A | |
| Approach Delay (s) | | 58.6 | | | 56.3 | | | 3.3 | | | 3.1 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 9.9 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.28 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 55.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

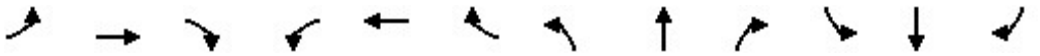
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 70 | 20 | 40 | 35 | 10 | 45 | 25 | 805 | 20 | 40 | 680 | 10 |
| Future Volume (Veh/h) | 70 | 20 | 40 | 35 | 10 | 45 | 25 | 805 | 20 | 40 | 680 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 76 | 22 | 43 | 38 | 11 | 49 | 27 | 875 | 22 | 43 | 739 | 11 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 313 | |
| pX, platoon unblocked | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | | | |
| vC, conflicting volume | 1261 | 1812 | 282 | 1356 | 1806 | 333 | 765 | | | 912 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1259 | 1810 | 280 | 1355 | 1805 | 333 | 763 | | | 912 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 18 | 68 | 94 | 45 | 84 | 92 | 97 | | | 94 | | |
| cM capacity (veh/h) | 93 | 69 | 700 | 69 | 70 | 648 | 835 | | | 734 | | |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 76 | 65 | 38 | 60 | 27 | 350 | 350 | 197 | 43 | 296 | 296 | 159 |
| Volume Left | 76 | 0 | 38 | 0 | 27 | 0 | 0 | 0 | 43 | 0 | 0 | 0 |
| Volume Right | 0 | 43 | 0 | 49 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 11 |
| cSH | 93 | 171 | 69 | 257 | 835 | 1700 | 1700 | 1700 | 734 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.82 | 0.38 | 0.55 | 0.23 | 0.03 | 0.21 | 0.21 | 0.12 | 0.06 | 0.17 | 0.17 | 0.09 |
| Queue Length 95th (m) | 35.2 | 13.1 | 18.5 | 7.1 | 0.8 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 129.8 | 38.3 | 109.0 | 23.2 | 9.5 | 0.0 | 0.0 | 0.0 | 10.2 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | E | F | C | A | | | | B | | | |
| Approach Delay (s) | 87.6 | | 56.5 | | 0.3 | | | | 0.6 | | | |
| Approach LOS | F | | F | | | | | | | | | |

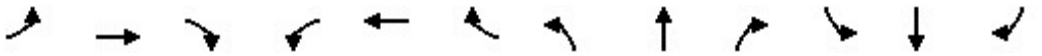
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 9.5 | | | |
| Intersection Capacity Utilization | 37.3% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 25 | 0 | 0 | 40 | 0 | 905 | 15 | 0 | 705 | 5 |
| Future Volume (Veh/h) | 0 | 0 | 25 | 0 | 0 | 40 | 0 | 905 | 15 | 0 | 705 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 27 | 0 | 0 | 43 | 0 | 984 | 16 | 0 | 766 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 154 | | | 160 | |
| pX, platoon unblocked | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.96 | 0.97 | | | 0.96 | | |
| vC, conflicting volume | 1170 | 1798 | 288 | 1304 | 1793 | 366 | 786 | | | 1015 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 899 | 1545 | 177 | 1037 | 1540 | 194 | 688 | | | 870 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 97 | 100 | 100 | 94 | 100 | | | 100 | | |
| cM capacity (veh/h) | 206 | 108 | 796 | 167 | 109 | 764 | 869 | | | 731 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 27 | 43 | 394 | 394 | 213 | 306 | 306 | 158 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 27 | 43 | 0 | 0 | 16 | 0 | 0 | 5 |
| cSH | 796 | 764 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.03 | 0.06 | 0.23 | 0.23 | 0.13 | 0.18 | 0.18 | 0.09 |
| Queue Length 95th (m) | 0.8 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.7 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | | | | | | |
| Approach Delay (s) | 9.7 | 10.0 | 0.0 | | | 0.0 | | |
| Approach LOS | A | A | | | | | | |

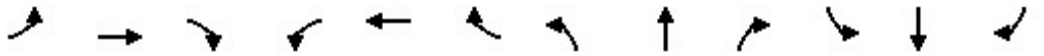
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 30.6% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 35 | 0 | 0 | 30 | 0 | 1100 | 5 | 0 | 545 | 5 |
| Future Volume (Veh/h) | 0 | 0 | 35 | 0 | 0 | 30 | 0 | 1100 | 5 | 0 | 545 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 38 | 0 | 0 | 33 | 0 | 1196 | 5 | 0 | 592 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | 0.91 | 0.91 | | 0.91 | 0.91 | 0.91 | | | | 0.91 | | |
| vC, conflicting volume | 1056 | 1826 | 230 | 1464 | 1826 | 431 | 612 | | | 1216 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 697 | 1547 | 230 | 1147 | 1547 | 7 | 612 | | | 873 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 95 | 100 | 100 | 97 | 100 | | | 100 | | |
| cM capacity (veh/h) | 275 | 100 | 755 | 127 | 100 | 950 | 952 | | | 688 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 38 | 33 | 478 | 478 | 244 | 237 | 237 | 123 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 38 | 33 | 0 | 0 | 5 | 0 | 0 | 5 |
| cSH | 755 | 950 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.05 | 0.03 | 0.28 | 0.28 | 0.14 | 0.14 | 0.14 | 0.07 |
| Queue Length 95th (m) | 1.3 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 10.0 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | A | | | | | | |
| Approach Delay (s) | 10.0 | 8.9 | 0.0 | | | 0.0 | | |
| Approach LOS | B | A | | | | | | |

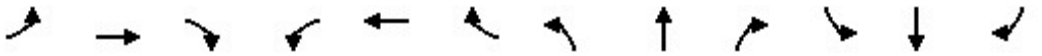
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 33.8% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 350 | 5 | 0 | 265 | 10 | 0 | 0 | 50 | 0 | 0 | 5 |
| Future Volume (Veh/h) | 0 | 350 | 5 | 0 | 265 | 10 | 0 | 0 | 50 | 0 | 0 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 380 | 5 | 0 | 288 | 11 | 0 | 0 | 54 | 0 | 0 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.2 | | | 3.2 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 190 | | | 166 | | | | | | | |
| pX, platoon unblocked | 0.97 | | | | | | 0.97 | 0.97 | | 0.97 | 0.97 | 0.97 |
| vC, conflicting volume | 314 | | | 400 | | | 562 | 712 | 222 | 568 | 708 | 180 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 224 | | | 400 | | | 479 | 634 | 222 | 486 | 631 | 85 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 100 | | | 100 | | | 100 | 100 | 93 | 100 | 100 | 99 |
| cM capacity (veh/h) | 1284 | | | 1142 | | | 434 | 373 | 763 | 401 | 375 | 905 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 253 | 132 | 192 | 107 | 54 | 5 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 5 | 0 | 11 | 54 | 5 |
| cSH | 1700 | 1700 | 1700 | 1700 | 763 | 905 |
| Volume to Capacity | 0.15 | 0.08 | 0.11 | 0.06 | 0.07 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 0.1 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 10.1 | 9.0 |
| Lane LOS | | | | | B | A |
| Approach Delay (s) | 0.0 | | 0.0 | | 10.1 | 9.0 |
| Approach LOS | | | | | B | A |

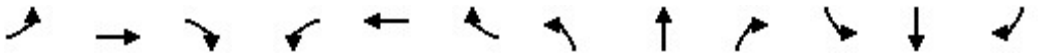
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.8 | | | |
| Intersection Capacity Utilization | 23.5% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 115 | 180 | 70 | 300 | 110 | 285 | 165 | 455 | 255 | 385 | 705 | 80 |
| Future Volume (vph) | 115 | 180 | 70 | 300 | 110 | 285 | 165 | 455 | 255 | 385 | 705 | 80 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.2 | 3.3 | 3.4 | 3.2 | 3.3 | 3.5 | 3.2 | 3.3 | 3.5 | 3.2 |
| Total Lost time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | *0.83 | 1.00 | 1.00 | *0.83 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.98 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1685 | 3461 | 1455 | 1694 | 3461 | 1455 | 1705 | 4587 | 1449 | 1704 | 4587 | 1449 |
| Flt Permitted | 0.68 | 1.00 | 1.00 | 0.53 | 1.00 | 1.00 | 0.32 | 1.00 | 1.00 | 0.36 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1199 | 3461 | 1455 | 943 | 3461 | 1455 | 581 | 4587 | 1449 | 653 | 4587 | 1449 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 125 | 196 | 76 | 326 | 120 | 310 | 179 | 495 | 277 | 418 | 766 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 63 | 0 | 0 | 227 | 0 | 0 | 109 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 125 | 196 | 13 | 326 | 120 | 83 | 179 | 495 | 168 | 418 | 766 | 87 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 36.1 | 24.0 | 24.0 | 53.7 | 38.6 | 38.6 | 61.4 | 48.7 | 48.7 | 78.3 | 62.6 | 62.6 |
| Effective Green, g (s) | 36.1 | 24.0 | 24.0 | 53.7 | 38.6 | 38.6 | 61.4 | 48.7 | 48.7 | 78.3 | 62.6 | 62.6 |
| Actuated g/C Ratio | 0.25 | 0.17 | 0.17 | 0.37 | 0.27 | 0.27 | 0.43 | 0.34 | 0.34 | 0.54 | 0.43 | 0.43 |
| Clearance Time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 341 | 576 | 242 | 490 | 927 | 390 | 346 | 1551 | 490 | 549 | 1994 | 629 |
| v/s Ratio Prot | 0.03 | 0.06 | | c0.12 | 0.03 | | 0.05 | 0.11 | | c0.14 | 0.17 | |
| v/s Ratio Perm | 0.06 | | 0.01 | c0.12 | | 0.06 | 0.17 | | 0.12 | c0.27 | | 0.06 |
| v/c Ratio | 0.37 | 0.34 | 0.05 | 0.67 | 0.13 | 0.21 | 0.52 | 0.32 | 0.34 | 0.76 | 0.38 | 0.14 |
| Uniform Delay, d1 | 43.7 | 53.0 | 50.4 | 35.1 | 40.0 | 40.9 | 26.5 | 35.4 | 35.7 | 20.4 | 27.6 | 24.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.03 | 0.95 | 1.01 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.4 | 0.1 | 3.4 | 0.1 | 0.3 | 1.3 | 0.5 | 1.9 | 6.2 | 0.6 | 0.5 |
| Delay (s) | 44.3 | 53.4 | 50.5 | 38.5 | 40.0 | 41.2 | 28.5 | 34.0 | 37.8 | 26.6 | 28.2 | 24.9 |
| Level of Service | D | D | D | D | D | D | C | C | D | C | C | C |
| Approach Delay (s) | | 50.0 | | | 39.9 | | | 34.1 | | | 27.4 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.8 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 83.1% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

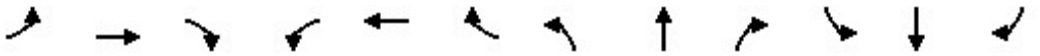
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 50 | 20 | 30 | 25 | 20 | 30 | 115 | 950 | 15 | 95 | 795 | 80 |
| Future Volume (vph) | 50 | 20 | 30 | 25 | 20 | 30 | 115 | 950 | 15 | 95 | 795 | 80 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.91 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1649 | 1638 | | 1649 | 1638 | | 1675 | 4569 | | 1681 | 4482 | |
| Flt Permitted | 0.72 | 1.00 | | 0.72 | 1.00 | | 0.26 | 1.00 | | 0.23 | 1.00 | |
| Satd. Flow (perm) | 1251 | 1638 | | 1251 | 1638 | | 456 | 4569 | | 406 | 4482 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 54 | 22 | 33 | 27 | 22 | 33 | 125 | 1033 | 16 | 103 | 864 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 54 | 55 | 0 | 27 | 55 | 0 | 125 | 1049 | 0 | 103 | 951 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 16.3 | 16.3 | | 16.3 | 16.3 | | 115.7 | 115.7 | | 115.7 | 115.7 | |
| Effective Green, g (s) | 16.3 | 16.3 | | 16.3 | 16.3 | | 115.7 | 115.7 | | 115.7 | 115.7 | |
| Actuated g/C Ratio | 0.11 | 0.11 | | 0.11 | 0.11 | | 0.80 | 0.80 | | 0.80 | 0.80 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 141 | 185 | | 141 | 185 | | 366 | 3671 | | 326 | 3601 | |
| v/s Ratio Prot | | 0.03 | | | 0.03 | | | 0.23 | | | 0.21 | |
| v/s Ratio Perm | c0.04 | | | 0.02 | | | c0.27 | | | 0.25 | | |
| v/c Ratio | 0.38 | 0.30 | | 0.19 | 0.30 | | 0.34 | 0.29 | | 0.32 | 0.26 | |
| Uniform Delay, d1 | 59.2 | 58.6 | | 57.9 | 58.6 | | 3.8 | 3.6 | | 3.7 | 3.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.50 | 1.25 | |
| Incremental Delay, d2 | 1.7 | 0.9 | | 0.7 | 0.9 | | 2.5 | 0.2 | | 2.5 | 0.2 | |
| Delay (s) | 60.9 | 59.5 | | 58.5 | 59.5 | | 6.4 | 3.8 | | 8.1 | 4.6 | |
| Level of Service | E | E | | E | E | | A | A | | A | A | |
| Approach Delay (s) | | 60.2 | | | 59.2 | | | 4.1 | | | 4.9 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 8.8 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.35 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 57.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

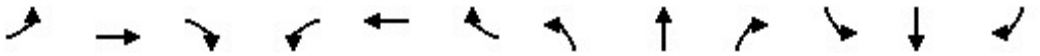
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 50 | 20 | 30 | 25 | 20 | 30 | 115 | 950 | 15 | 95 | 795 | 80 |
| Future Volume (Veh/h) | 50 | 20 | 30 | 25 | 20 | 30 | 115 | 950 | 15 | 95 | 795 | 80 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 54 | 22 | 33 | 27 | 22 | 33 | 125 | 1033 | 16 | 103 | 864 | 87 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1782 | 2442 | 362 | 1859 | 2478 | 382 | 966 | | | 1064 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1782 | 2442 | 362 | 1859 | 2478 | 382 | 966 | | | 1064 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 0 | 95 | 0 | 0 | 95 | 82 | | | 84 | | |
| cM capacity (veh/h) | 0 | 21 | 620 | 0 | 20 | 601 | 700 | | | 643 | | |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 54 | 55 | 27 | 55 | 125 | 413 | 413 | 223 | 103 | 346 | 346 | 260 |
| Volume Left | 54 | 0 | 27 | 0 | 125 | 0 | 0 | 0 | 103 | 0 | 0 | 0 |
| Volume Right | 0 | 33 | 0 | 33 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 87 |
| cSH | 0 | 50 | 0 | 47 | 700 | 1700 | 1700 | 1700 | 643 | 1700 | 1700 | 1700 |
| Volume to Capacity | Err | 1.11 | Err | 1.17 | 0.18 | 0.24 | 0.24 | 0.13 | 0.16 | 0.20 | 0.20 | 0.15 |
| Queue Length 95th (m) | Err | 39.1 | Err | 40.5 | 5.2 | 0.0 | 0.0 | 0.0 | 4.5 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | Err | 294.1 | Err | 323.3 | 11.3 | 0.0 | 0.0 | 0.0 | 11.7 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | F | F | B | | | | B | | | |
| Approach Delay (s) | Err | | Err | | 1.2 | | | | 1.1 | | | |
| Approach LOS | F | | F | | | | | | | | | |

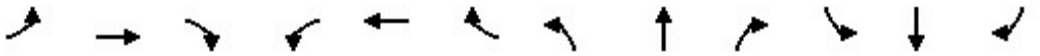
| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| Average Delay | Err | | | | |
| Intersection Capacity Utilization | 41.9% | ICU Level of Service | | A | |
| Analysis Period (min) | 15 | | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 10 | 280 | 30 | 55 | 240 | 20 | 25 | 5 | 35 | 30 | 5 | 5 |
| Future Volume (vph) | 10 | 280 | 30 | 55 | 240 | 20 | 25 | 5 | 35 | 30 | 5 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.4 | 3.3 | 3.4 | 3.4 | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.92 | 1.00 | 1.00 | 0.92 | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.87 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1642 | 3461 | 1430 | 1646 | 3461 | 1430 | 1655 | 1551 | | 1657 | 1676 | |
| Flt Permitted | 0.59 | 1.00 | 1.00 | 0.57 | 1.00 | 1.00 | 0.75 | 1.00 | | 0.73 | 1.00 | |
| Satd. Flow (perm) | 1021 | 3461 | 1430 | 982 | 3461 | 1430 | 1309 | 1551 | | 1271 | 1676 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 11 | 304 | 33 | 60 | 261 | 22 | 27 | 5 | 38 | 33 | 5 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 5 | 0 | 34 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 11 | 304 | 25 | 60 | 261 | 17 | 27 | 9 | 0 | 33 | 6 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 11.6 | 11.6 | | 11.6 | 11.6 | |
| Effective Green, g (s) | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 76.4 | 11.6 | 11.6 | | 11.6 | 11.6 | |
| Actuated g/C Ratio | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.12 | 0.12 | | 0.12 | 0.12 | |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 780 | 2644 | 1092 | 750 | 2644 | 1092 | 151 | 179 | | 147 | 194 | |
| v/s Ratio Prot | | c0.09 | | | 0.08 | | | 0.01 | | | 0.00 | |
| v/s Ratio Perm | 0.01 | | 0.02 | 0.06 | | 0.01 | 0.02 | | | c0.03 | | |
| v/c Ratio | 0.01 | 0.11 | 0.02 | 0.08 | 0.10 | 0.02 | 0.18 | 0.05 | | 0.22 | 0.03 | |
| Uniform Delay, d1 | 2.8 | 3.1 | 2.8 | 3.0 | 3.0 | 2.8 | 39.9 | 39.3 | | 40.1 | 39.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.6 | 0.1 | | 0.8 | 0.1 | |
| Delay (s) | 2.8 | 3.1 | 2.9 | 3.2 | 3.1 | 2.8 | 40.5 | 39.4 | | 40.9 | 39.3 | |
| Level of Service | A | A | A | A | A | A | D | D | | D | D | |
| Approach Delay (s) | | 3.1 | | | 3.1 | | | 39.8 | | | 40.5 | |
| Approach LOS | | A | | | A | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 8.3 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.13 | | |
| Actuated Cycle Length (s) | 100.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 50.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 280 | 30 | 55 | 240 | 20 | 25 | 5 | 35 | 30 | 5 | 5 |
| Future Volume (Veh/h) | 10 | 280 | 30 | 55 | 240 | 20 | 25 | 5 | 35 | 30 | 5 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 11 | 304 | 33 | 60 | 261 | 22 | 27 | 5 | 38 | 33 | 5 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.4 | | | 3.4 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | 356 | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 298 | | | 352 | | | 614 | 759 | 182 | 626 | 770 | 160 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 298 | | | 352 | | | 614 | 759 | 182 | 626 | 770 | 160 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 99 | | | 95 | | | 92 | 98 | 95 | 90 | 98 | 99 |
| cM capacity (veh/h) | 1245 | | | 1189 | | | 338 | 308 | 810 | 318 | 303 | 836 |

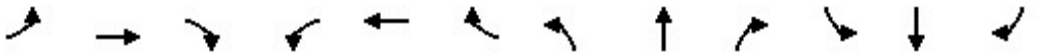
| Direction, Lane # | EB 1 | EB 2 | EB 3 | EB 4 | WB 1 | WB 2 | WB 3 | WB 4 | NB 1 | NB 2 | SB 1 | SB 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 11 | 152 | 152 | 33 | 60 | 130 | 130 | 22 | 27 | 43 | 33 | 10 |
| Volume Left | 11 | 0 | 0 | 0 | 60 | 0 | 0 | 0 | 27 | 0 | 33 | 0 |
| Volume Right | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 22 | 0 | 38 | 0 | 5 |
| cSH | 1245 | 1700 | 1700 | 1700 | 1189 | 1700 | 1700 | 1700 | 338 | 681 | 318 | 445 |
| Volume to Capacity | 0.01 | 0.09 | 0.09 | 0.02 | 0.05 | 0.08 | 0.08 | 0.01 | 0.08 | 0.06 | 0.10 | 0.02 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | 0.0 | 2.1 | 1.6 | 2.7 | 0.6 |
| Control Delay (s) | 7.9 | 0.0 | 0.0 | 0.0 | 8.2 | 0.0 | 0.0 | 0.0 | 16.6 | 10.6 | 17.6 | 13.3 |
| Lane LOS | A | | | | A | | | | C | B | C | B |
| Approach Delay (s) | 0.3 | | | | 1.4 | | | | 12.9 | | 16.6 | |
| Approach LOS | | | | | | | | | B | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 2.7 | | | |
| Intersection Capacity Utilization | 29.6% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 20 | 50 | 980 | 950 | 30 |
| Future Volume (Veh/h) | 0 | 20 | 50 | 980 | 950 | 30 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 22 | 54 | 1065 | 1033 | 33 |
| Pedestrians | 15 | | | 15 | 15 | |
| Lane Width (m) | 3.5 | | | 3.5 | 3.5 | |
| Walking Speed (m/s) | 1.2 | | | 1.2 | 1.2 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 377 | 289 | |
| pX, platoon unblocked | 0.98 | 0.97 | 0.97 | | | |
| vC, conflicting volume | 1542 | 391 | 1081 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1343 | 251 | 965 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 97 | 92 | | | |
| cM capacity (veh/h) | 126 | 707 | 678 | | | |

| Direction, Lane # | EB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 22 | 54 | 355 | 355 | 355 | 413 | 413 | 240 |
| Volume Left | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| cSH | 707 | 678 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.03 | 0.08 | 0.21 | 0.21 | 0.21 | 0.24 | 0.24 | 0.14 |
| Queue Length 95th (m) | 0.8 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 10.3 | 10.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | B | | | | | | |
| Approach Delay (s) | 10.3 | 0.5 | | | | 0.0 | | |
| Approach LOS | B | | | | | | | |

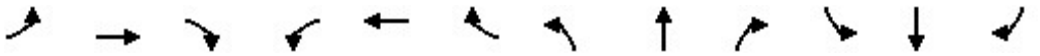
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 36.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 15 | 0 | 0 | 25 | 0 | 905 | 75 | 0 | 965 | 25 |
| Future Volume (Veh/h) | 0 | 0 | 15 | 0 | 0 | 25 | 0 | 905 | 75 | 0 | 965 | 25 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 16 | 0 | 0 | 27 | 0 | 984 | 82 | 0 | 1049 | 27 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 142 | |
| pX, platoon unblocked | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | | 0.95 | | | | | |
| vC, conflicting volume | 1366 | 2158 | 393 | 1421 | 2131 | 317 | 1091 | | | 1081 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1201 | 2036 | 178 | 1259 | 2007 | 317 | 912 | | | 1081 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 98 | 100 | 100 | 96 | 100 | | | 100 | | |
| cM capacity (veh/h) | 123 | 52 | 774 | 114 | 54 | 663 | 698 | | | 634 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 16 | 27 | 281 | 281 | 281 | 223 | 420 | 420 | 237 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 16 | 27 | 0 | 0 | 0 | 82 | 0 | 0 | 27 |
| cSH | 774 | 663 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.02 | 0.04 | 0.17 | 0.17 | 0.17 | 0.13 | 0.25 | 0.25 | 0.14 |
| Queue Length 95th (m) | 0.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.7 | 10.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | | |
| Approach Delay (s) | 9.7 | 10.7 | 0.0 | | | | 0.0 | | |
| Approach LOS | A | B | | | | | | | |

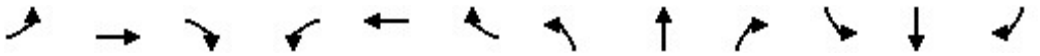
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 31.3% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 35 | 30 | 15 | 80 | 35 | 65 | 65 | 785 | 80 | 135 | 895 | 35 |
| Future Volume (vph) | 35 | 30 | 15 | 80 | 35 | 65 | 65 | 785 | 80 | 135 | 895 | 35 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.90 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1653 | 1730 | | 1648 | 1620 | | 1680 | 4481 | | 1675 | 4543 | |
| Flt Permitted | 0.61 | 1.00 | | 0.73 | 1.00 | | 0.24 | 1.00 | | 0.26 | 1.00 | |
| Satd. Flow (perm) | 1061 | 1730 | | 1258 | 1620 | | 422 | 4481 | | 460 | 4543 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 38 | 33 | 16 | 87 | 38 | 71 | 71 | 853 | 87 | 147 | 973 | 38 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 38 | 36 | 0 | 87 | 58 | 0 | 71 | 940 | 0 | 147 | 1011 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 18.6 | 18.6 | | 18.6 | 18.6 | | 113.4 | 113.4 | | 113.4 | 113.4 | |
| Effective Green, g (s) | 18.6 | 18.6 | | 18.6 | 18.6 | | 113.4 | 113.4 | | 113.4 | 113.4 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.79 | 0.79 | | 0.79 | 0.79 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 137 | 223 | | 162 | 209 | | 332 | 3528 | | 362 | 3577 | |
| v/s Ratio Prot | | 0.02 | | | 0.04 | | | 0.21 | | | 0.22 | |
| v/s Ratio Perm | 0.04 | | | c0.07 | | | 0.17 | | | c0.32 | | |
| v/c Ratio | 0.28 | 0.16 | | 0.54 | 0.28 | | 0.21 | 0.27 | | 0.41 | 0.28 | |
| Uniform Delay, d1 | 56.6 | 55.8 | | 58.7 | 56.6 | | 3.9 | 4.1 | | 4.8 | 4.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.91 | 0.91 | | 1.38 | 0.65 | |
| Incremental Delay, d2 | 1.1 | 0.3 | | 3.4 | 0.7 | | 1.4 | 0.2 | | 3.1 | 0.2 | |
| Delay (s) | 57.7 | 56.1 | | 62.1 | 57.4 | | 5.0 | 3.9 | | 9.7 | 2.9 | |
| Level of Service | E | E | | E | E | | A | A | | A | A | |
| Approach Delay (s) | | 56.8 | | | 59.5 | | | 4.0 | | | 3.8 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.42 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 57.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

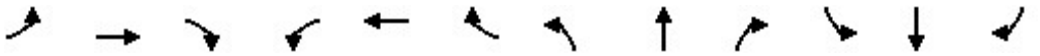
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 35 | 30 | 15 | 80 | 35 | 65 | 65 | 785 | 80 | 135 | 895 | 35 |
| Future Volume (Veh/h) | 35 | 30 | 15 | 80 | 35 | 65 | 65 | 785 | 80 | 135 | 895 | 35 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 38 | 33 | 16 | 87 | 38 | 71 | 71 | 853 | 87 | 147 | 973 | 38 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 313 | |
| pX, platoon unblocked | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | 0.92 | | | | | |
| vC, conflicting volume | 1832 | 2398 | 373 | 1719 | 2374 | 358 | 1026 | | | 955 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1614 | 2226 | 35 | 1492 | 2199 | 358 | 742 | | | 955 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 0 | 98 | 0 | 0 | 89 | 91 | | | 79 | | |
| cM capacity (veh/h) | 0 | 28 | 929 | 0 | 29 | 624 | 787 | | | 707 | | |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 38 | 49 | 87 | 109 | 71 | 341 | 341 | 258 | 147 | 389 | 389 | 233 |
| Volume Left | 38 | 0 | 87 | 0 | 71 | 0 | 0 | 0 | 147 | 0 | 0 | 0 |
| Volume Right | 0 | 16 | 0 | 71 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 38 |
| cSH | 0 | 41 | 0 | 76 | 787 | 1700 | 1700 | 1700 | 707 | 1700 | 1700 | 1700 |
| Volume to Capacity | Err | 1.21 | Err | 1.43 | 0.09 | 0.20 | 0.20 | 0.15 | 0.21 | 0.23 | 0.23 | 0.14 |
| Queue Length 95th (m) | Err | 38.8 | Err | 70.2 | 2.4 | 0.0 | 0.0 | 0.0 | 6.2 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | Err | 365.4 | Err | 349.9 | 10.0 | 0.0 | 0.0 | 0.0 | 11.4 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | F | F | B | | | | B | | | |
| Approach Delay (s) | Err | | Err | | 0.7 | | | | 1.4 | | | |
| Approach LOS | F | | F | | | | | | | | | |

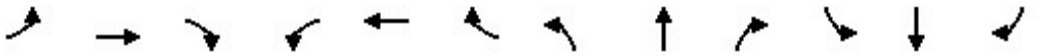
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | Err | | | |
| Intersection Capacity Utilization | 43.4% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 15 | 0 | 0 | 60 | 0 | 815 | 70 | 0 | 1050 | 25 |
| Future Volume (Veh/h) | 0 | 0 | 15 | 0 | 0 | 60 | 0 | 815 | 70 | 0 | 1050 | 25 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 16 | 0 | 0 | 65 | 0 | 886 | 76 | 0 | 1141 | 27 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 154 | | | 160 | |
| pX, platoon unblocked | 0.92 | 0.92 | 0.90 | 0.92 | 0.92 | 0.96 | 0.90 | | | 0.96 | | |
| vC, conflicting volume | 1545 | 2146 | 424 | 1350 | 2122 | 363 | 1183 | | | 977 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 984 | 1641 | 0 | 772 | 1614 | 195 | 799 | | | 833 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 98 | 100 | 100 | 91 | 100 | | | 100 | | |
| cM capacity (veh/h) | 163 | 89 | 949 | 250 | 92 | 764 | 726 | | | 756 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 16 | 65 | 354 | 354 | 253 | 456 | 456 | 255 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 16 | 65 | 0 | 0 | 76 | 0 | 0 | 27 |
| cSH | 949 | 764 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.02 | 0.09 | 0.21 | 0.21 | 0.15 | 0.27 | 0.27 | 0.15 |
| Queue Length 95th (m) | 0.4 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 8.9 | 10.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | |
| Approach Delay (s) | 8.9 | 10.2 | 0.0 | | | 0.0 | | |
| Approach LOS | A | B | | | | | | |

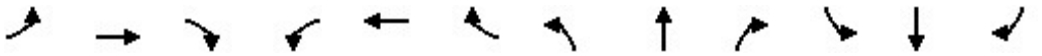
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 33.0% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 20 | 0 | 0 | 15 | 0 | 820 | 35 | 0 | 1150 | 35 |
| Future Volume (Veh/h) | 0 | 0 | 20 | 0 | 0 | 15 | 0 | 820 | 35 | 0 | 1150 | 35 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 22 | 0 | 0 | 16 | 0 | 891 | 38 | 0 | 1250 | 38 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | 0.94 | 0.94 | | 0.94 | 0.94 | 0.94 | | | | 0.94 | | |
| vC, conflicting volume | 1612 | 2228 | 466 | 1379 | 2228 | 346 | 1303 | | | 944 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1412 | 2070 | 466 | 1162 | 2070 | 58 | 1303 | | | 697 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 96 | 100 | 100 | 98 | 100 | | | 100 | | |
| cM capacity (veh/h) | 87 | 49 | 531 | 129 | 49 | 910 | 521 | | | 827 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 22 | 16 | 356 | 356 | 216 | 500 | 500 | 288 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 22 | 16 | 0 | 0 | 38 | 0 | 0 | 38 |
| cSH | 531 | 910 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.04 | 0.02 | 0.21 | 0.21 | 0.13 | 0.29 | 0.29 | 0.17 |
| Queue Length 95th (m) | 1.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 12.1 | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | A | | | | | | |
| Approach Delay (s) | 12.1 | 9.0 | 0.0 | | | 0.0 | | |
| Approach LOS | B | A | | | | | | |

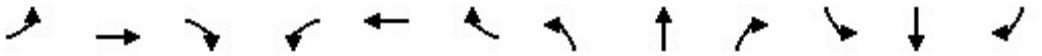
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 35.1% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 335 | 10 | 0 | 315 | 40 | 0 | 0 | 30 | 0 | 0 | 0 |
| Future Volume (Veh/h) | 0 | 335 | 10 | 0 | 315 | 40 | 0 | 0 | 30 | 0 | 0 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 364 | 11 | 0 | 342 | 43 | 0 | 0 | 33 | 0 | 0 | 0 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.2 | | | 3.2 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 190 | | | 166 | | | | | | | |
| pX, platoon unblocked | 0.98 | | | | | | 0.98 | 0.98 | | 0.98 | 0.98 | 0.98 |
| vC, conflicting volume | 400 | | | 390 | | | 570 | 784 | 218 | 608 | 768 | 222 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 360 | | | 390 | | | 533 | 750 | 218 | 571 | 734 | 179 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 100 | | | 100 | | | 100 | 100 | 96 | 100 | 100 | 100 |
| cM capacity (veh/h) | 1164 | | | 1152 | | | 407 | 326 | 769 | 365 | 333 | 801 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 243 | 132 | 228 | 157 | 33 | 0 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 11 | 0 | 43 | 33 | 0 |
| cSH | 1700 | 1700 | 1700 | 1700 | 769 | 1700 |
| Volume to Capacity | 0.14 | 0.08 | 0.13 | 0.09 | 0.04 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 9.9 | 0.0 |
| Lane LOS | | | | | A | A |
| Approach Delay (s) | 0.0 | | 0.0 | | 9.9 | 0.0 |
| Approach LOS | | | | | A | A |

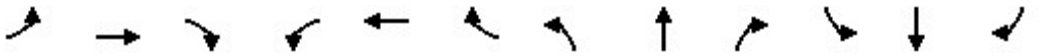
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 22.7% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 100 | 385 | 150 | 330 | 595 | 130 | 80 | 910 | 165 | 165 | 385 | 70 |
| Future Volume (vph) | 100 | 385 | 150 | 330 | 595 | 130 | 80 | 910 | 165 | 165 | 385 | 70 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.2 | 3.3 | 3.4 | 3.2 | 3.3 | 3.5 | 3.2 | 3.3 | 3.5 | 3.2 |
| Total Lost time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | *0.83 | 1.00 | 1.00 | *0.83 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1704 | 3461 | 1455 | 1706 | 3461 | 1455 | 1697 | 4587 | 1449 | 1711 | 4587 | 1449 |
| Flt Permitted | 0.41 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | 0.48 | 1.00 | 1.00 | 0.17 | 1.00 | 1.00 |
| Satd. Flow (perm) | 726 | 3461 | 1455 | 470 | 3461 | 1455 | 855 | 4587 | 1449 | 299 | 4587 | 1449 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 109 | 418 | 163 | 359 | 647 | 141 | 87 | 989 | 179 | 179 | 418 | 76 |
| RTOR Reduction (vph) | 0 | 0 | 135 | 0 | 0 | 98 | 0 | 0 | 67 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 109 | 418 | 28 | 359 | 647 | 43 | 87 | 989 | 112 | 179 | 418 | 76 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 35.3 | 25.0 | 25.0 | 55.9 | 42.6 | 42.6 | 66.9 | 59.0 | 59.0 | 76.1 | 65.2 | 65.2 |
| Effective Green, g (s) | 35.3 | 25.0 | 25.0 | 55.9 | 42.6 | 42.6 | 66.9 | 59.0 | 59.0 | 76.1 | 65.2 | 65.2 |
| Actuated g/C Ratio | 0.25 | 0.17 | 0.17 | 0.39 | 0.30 | 0.30 | 0.46 | 0.41 | 0.41 | 0.53 | 0.45 | 0.45 |
| Clearance Time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 247 | 600 | 252 | 421 | 1023 | 430 | 443 | 1879 | 593 | 296 | 2076 | 656 |
| v/s Ratio Prot | 0.03 | 0.12 | | c0.16 | 0.19 | | 0.01 | 0.22 | | c0.06 | 0.09 | |
| v/s Ratio Perm | 0.08 | | 0.02 | c0.17 | | 0.03 | 0.08 | | 0.08 | c0.26 | | 0.05 |
| v/c Ratio | 0.44 | 0.70 | 0.11 | 0.85 | 0.63 | 0.10 | 0.20 | 0.53 | 0.19 | 0.60 | 0.20 | 0.12 |
| Uniform Delay, d1 | 43.8 | 55.9 | 50.1 | 35.2 | 43.9 | 36.8 | 21.8 | 32.0 | 27.2 | 20.4 | 23.7 | 22.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.27 | 1.10 | 1.47 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.3 | 3.5 | 0.2 | 15.3 | 1.3 | 0.1 | 0.2 | 1.0 | 0.7 | 3.5 | 0.2 | 0.4 |
| Delay (s) | 45.1 | 59.5 | 50.3 | 50.5 | 45.2 | 36.9 | 27.8 | 36.1 | 40.5 | 23.9 | 23.9 | 23.1 |
| Level of Service | D | E | D | D | D | D | C | D | D | C | C | C |
| Approach Delay (s) | | 55.0 | | | 45.8 | | | 36.2 | | | 23.8 | |
| Approach LOS | | E | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 40.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 75.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

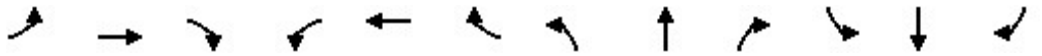
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 15 | 5 | 95 | 20 | 0 | 5 | 105 | 930 | 5 | 5 | 800 | 0 |
| Future Volume (vph) | 15 | 5 | 95 | 20 | 0 | 5 | 105 | 930 | 5 | 5 | 800 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.86 | | 1.00 | 0.85 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1646 | 1521 | | 1653 | 1506 | | 1671 | 4581 | | 1680 | 4587 | |
| Flt Permitted | 0.75 | 1.00 | | 0.62 | 1.00 | | 0.28 | 1.00 | | 0.24 | 1.00 | |
| Satd. Flow (perm) | 1307 | 1521 | | 1071 | 1506 | | 500 | 4581 | | 419 | 4587 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 16 | 5 | 103 | 22 | 0 | 5 | 114 | 1011 | 5 | 5 | 870 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 16 | 108 | 0 | 22 | 5 | 0 | 114 | 1016 | 0 | 5 | 870 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 18.9 | 18.9 | | 18.9 | 18.9 | | 113.1 | 113.1 | | 113.1 | 113.1 | |
| Effective Green, g (s) | 18.9 | 18.9 | | 18.9 | 18.9 | | 113.1 | 113.1 | | 113.1 | 113.1 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.79 | 0.79 | | 0.79 | 0.79 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 171 | 199 | | 140 | 197 | | 392 | 3597 | | 329 | 3602 | |
| v/s Ratio Prot | | c0.07 | | | 0.00 | | | 0.22 | | | 0.19 | |
| v/s Ratio Perm | 0.01 | | | 0.02 | | | c0.23 | | | 0.01 | | |
| v/c Ratio | 0.09 | 0.54 | | 0.16 | 0.03 | | 0.29 | 0.28 | | 0.02 | 0.24 | |
| Uniform Delay, d1 | 55.0 | 58.5 | | 55.5 | 54.5 | | 4.3 | 4.3 | | 3.4 | 4.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.63 | |
| Incremental Delay, d2 | 0.2 | 3.0 | | 0.5 | 0.1 | | 1.9 | 0.2 | | 0.1 | 0.2 | |
| Delay (s) | 55.3 | 61.5 | | 56.0 | 54.6 | | 6.2 | 4.5 | | 2.3 | 2.7 | |
| Level of Service | E | E | | E | D | | A | A | | A | A | |
| Approach Delay (s) | | 60.7 | | | 55.7 | | | 4.6 | | | 2.7 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 7.7 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.33 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 56.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 450 | 55 | 115 | 630 | 0 | 145 | 0 | 125 | 40 | 0 | 15 |
| Future Volume (vph) | 0 | 450 | 55 | 115 | 630 | 0 | 145 | 0 | 125 | 40 | 0 | 15 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.4 | 3.3 | 3.4 | 3.4 | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.92 | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 0.97 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 0.85 | | 1.00 | 0.85 | |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3461 | 1430 | 1661 | 3461 | | 1656 | 1514 | | 1661 | 1514 | |
| Flt Permitted | | 1.00 | 1.00 | 0.47 | 1.00 | | 0.75 | 1.00 | | 0.64 | 1.00 | |
| Satd. Flow (perm) | | 3461 | 1430 | 828 | 3461 | | 1302 | 1514 | | 1124 | 1514 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 489 | 60 | 125 | 685 | 0 | 158 | 0 | 136 | 43 | 0 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 112 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 489 | 42 | 125 | 685 | 0 | 158 | 24 | 0 | 43 | 3 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | | 70.3 | 70.3 | 70.3 | 70.3 | | 17.7 | 17.7 | | 17.7 | 17.7 | |
| Effective Green, g (s) | | 70.3 | 70.3 | 70.3 | 70.3 | | 17.7 | 17.7 | | 17.7 | 17.7 | |
| Actuated g/C Ratio | | 0.70 | 0.70 | 0.70 | 0.70 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 2433 | 1005 | 582 | 2433 | | 230 | 267 | | 198 | 267 | |
| v/s Ratio Prot | | 0.14 | | | c0.20 | | | 0.02 | | | 0.00 | |
| v/s Ratio Perm | | | 0.03 | 0.15 | | | c0.12 | | | 0.04 | | |
| v/c Ratio | | 0.20 | 0.04 | 0.21 | 0.28 | | 0.69 | 0.09 | | 0.22 | 0.01 | |
| Uniform Delay, d1 | | 5.1 | 4.5 | 5.2 | 5.5 | | 38.6 | 34.4 | | 35.2 | 33.9 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.2 | 0.1 | 0.8 | 0.3 | | 8.2 | 0.1 | | 0.6 | 0.0 | |
| Delay (s) | | 5.3 | 4.6 | 6.0 | 5.8 | | 46.8 | 34.6 | | 35.8 | 33.9 | |
| Level of Service | | A | A | A | A | | D | C | | D | C | |
| Approach Delay (s) | | 5.2 | | | 5.8 | | | 41.1 | | | 35.3 | |
| Approach LOS | | A | | | A | | | D | | | D | |

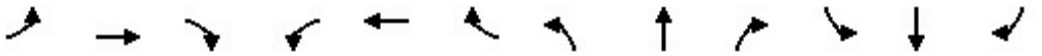
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.36 | | |
| Actuated Cycle Length (s) | 100.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 65.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 5 | 10 | 940 | 800 | 5 |
| Future Volume (Veh/h) | 0 | 5 | 10 | 940 | 800 | 5 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 5 | 11 | 1022 | 870 | 5 |
| Pedestrians | 15 | | | 15 | 15 | |
| Lane Width (m) | 3.5 | | | 3.5 | 3.5 | |
| Walking Speed (m/s) | 1.2 | | | 1.2 | 1.2 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 377 | 289 | |
| pX, platoon unblocked | 0.98 | 0.98 | 0.98 | | | |
| vC, conflicting volume | 1265 | 322 | 890 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1066 | 239 | 818 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 99 | 99 | | | |
| cM capacity (veh/h) | 205 | 729 | 781 | | | |

| Direction, Lane # | EB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 5 | 11 | 341 | 341 | 341 | 348 | 348 | 179 |
| Volume Left | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| cSH | 729 | 781 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.01 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.11 |
| Queue Length 95th (m) | 0.2 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 10.0 | 9.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | | | | | | |
| Approach Delay (s) | 10.0 | 0.1 | | | | 0.0 | | |
| Approach LOS | A | | | | | | | |

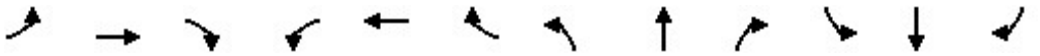
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.1 | | |
| Intersection Capacity Utilization | 30.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 10 | 0 | 0 | 25 | 0 | 935 | 5 | 0 | 795 | 10 |
| Future Volume (Veh/h) | 0 | 0 | 10 | 0 | 0 | 25 | 0 | 935 | 5 | 0 | 795 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 11 | 0 | 0 | 27 | 0 | 1016 | 5 | 0 | 864 | 11 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 142 | |
| pX, platoon unblocked | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | 0.96 | | | | | |
| vC, conflicting volume | 1180 | 1920 | 324 | 1348 | 1924 | 286 | 890 | | | 1036 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1049 | 1818 | 158 | 1222 | 1821 | 286 | 747 | | | 1036 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 96 | 100 | | | 100 | | |
| cM capacity (veh/h) | 161 | 72 | 808 | 123 | 72 | 694 | 815 | | | 659 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 11 | 27 | 290 | 290 | 290 | 150 | 346 | 346 | 184 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 11 | 27 | 0 | 0 | 0 | 5 | 0 | 0 | 11 |
| cSH | 808 | 694 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.04 | 0.17 | 0.17 | 0.17 | 0.09 | 0.20 | 0.20 | 0.11 |
| Queue Length 95th (m) | 0.3 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.5 | 10.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | | |
| Approach Delay (s) | 9.5 | 10.4 | 0.0 | | | | 0.0 | | |
| Approach LOS | A | B | | | | | | | |

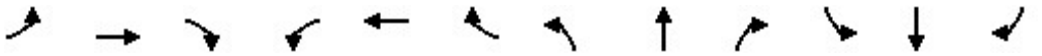
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 27.7% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 90 | 5 | 10 | 40 | 10 | 75 | 10 | 940 | 10 | 60 | 755 | 45 |
| Future Volume (vph) | 90 | 5 | 10 | 40 | 10 | 75 | 10 | 940 | 10 | 60 | 755 | 45 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.87 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1652 | 1608 | | 1646 | 1544 | | 1671 | 4574 | | 1681 | 4522 | |
| Flt Permitted | 0.67 | 1.00 | | 0.75 | 1.00 | | 0.28 | 1.00 | | 0.23 | 1.00 | |
| Satd. Flow (perm) | 1160 | 1608 | | 1295 | 1544 | | 499 | 4574 | | 410 | 4522 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 98 | 5 | 11 | 43 | 11 | 82 | 11 | 1022 | 11 | 65 | 821 | 49 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 98 | 6 | 0 | 43 | 22 | 0 | 11 | 1033 | 0 | 65 | 870 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 19.1 | 19.1 | | 19.1 | 19.1 | | 112.9 | 112.9 | | 112.9 | 112.9 | |
| Effective Green, g (s) | 19.1 | 19.1 | | 19.1 | 19.1 | | 112.9 | 112.9 | | 112.9 | 112.9 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.78 | 0.78 | | 0.78 | 0.78 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 153 | 213 | | 171 | 204 | | 391 | 3586 | | 321 | 3545 | |
| v/s Ratio Prot | | 0.00 | | | 0.01 | | | c0.23 | | | 0.19 | |
| v/s Ratio Perm | c0.08 | | | 0.03 | | | 0.02 | | | 0.16 | | |
| v/c Ratio | 0.64 | 0.03 | | 0.25 | 0.11 | | 0.03 | 0.29 | | 0.20 | 0.25 | |
| Uniform Delay, d1 | 59.2 | 54.4 | | 56.0 | 54.9 | | 3.4 | 4.3 | | 4.0 | 4.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.01 | 0.98 | | 1.52 | 1.32 | |
| Incremental Delay, d2 | 8.8 | 0.1 | | 0.8 | 0.2 | | 0.1 | 0.2 | | 1.3 | 0.2 | |
| Delay (s) | 68.0 | 54.4 | | 56.8 | 55.2 | | 3.6 | 4.5 | | 7.4 | 5.6 | |
| Level of Service | E | D | | E | E | | A | A | | A | A | |
| Approach Delay (s) | | 66.1 | | | 55.7 | | | 4.5 | | | 5.8 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 58.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

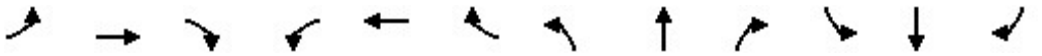
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 10 | 0 | 0 | 55 | 0 | 1100 | 5 | 0 | 850 | 15 |
| Future Volume (Veh/h) | 0 | 0 | 10 | 0 | 0 | 55 | 0 | 1100 | 5 | 0 | 850 | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 11 | 0 | 0 | 60 | 0 | 1196 | 5 | 0 | 924 | 16 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 154 | | | 160 | |
| pX, platoon unblocked | 0.97 | 0.97 | 0.96 | 0.97 | 0.97 | 0.95 | 0.96 | | | 0.95 | | |
| vC, conflicting volume | 1421 | 2163 | 346 | 1548 | 2168 | 431 | 955 | | | 1216 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1018 | 1784 | 157 | 1149 | 1790 | 202 | 794 | | | 1031 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 92 | 100 | | | 100 | | |
| cM capacity (veh/h) | 164 | 77 | 804 | 141 | 76 | 745 | 778 | | | 627 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 11 | 60 | 478 | 478 | 244 | 370 | 370 | 201 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 11 | 60 | 0 | 0 | 5 | 0 | 0 | 16 |
| cSH | 804 | 745 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.08 | 0.28 | 0.28 | 0.14 | 0.22 | 0.22 | 0.12 |
| Queue Length 95th (m) | 0.3 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.5 | 10.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | |
| Approach Delay (s) | 9.5 | 10.3 | 0.0 | | | 0.0 | | |
| Approach LOS | A | B | | | | | | |

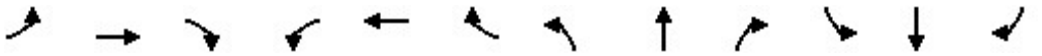
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.3 | | | |
| Intersection Capacity Utilization | 34.6% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 1125 | 15 | 0 | 620 | 5 |
| Future Volume (Veh/h) | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 1125 | 15 | 0 | 620 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 1223 | 16 | 0 | 674 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | | | | 0.85 | | |
| vC, conflicting volume | 1163 | 1946 | 257 | 1486 | 1940 | 446 | 694 | | | 1254 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 572 | 1493 | 257 | 952 | 1487 | 0 | 694 | | | 679 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 95 | 100 | | | 100 | | |
| cM capacity (veh/h) | 311 | 101 | 725 | 175 | 102 | 900 | 887 | | | 764 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 0 | 49 | 489 | 489 | 261 | 270 | 270 | 140 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 49 | 0 | 0 | 16 | 0 | 0 | 5 |
| cSH | 1700 | 900 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 0.05 | 0.29 | 0.29 | 0.15 | 0.16 | 0.16 | 0.08 |
| Queue Length 95th (m) | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 0.0 | 9.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | | | | | | |
| Approach Delay (s) | 0.0 | 9.2 | 0.0 | | | 0.0 | | |
| Approach LOS | A | A | | | | | | |

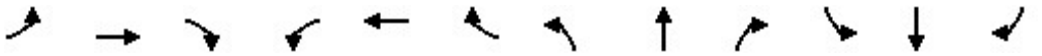
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 35.0% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 590 | 25 | 0 | 740 | 5 | 0 | 0 | 45 | 0 | 0 | 5 |
| Future Volume (Veh/h) | 0 | 590 | 25 | 0 | 740 | 5 | 0 | 0 | 45 | 0 | 0 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 641 | 27 | 0 | 804 | 5 | 0 | 0 | 49 | 0 | 0 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.2 | | | 3.2 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 190 | | | 166 | | | | | | | |
| pX, platoon unblocked | 0.84 | | | 0.96 | | | 0.86 | 0.86 | 0.96 | 0.86 | 0.86 | 0.84 |
| vC, conflicting volume | 824 | | | 683 | | | 1092 | 1494 | 364 | 1206 | 1504 | 434 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 411 | | | 598 | | | 591 | 1059 | 267 | 724 | 1072 | 0 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 100 | | | 100 | | | 100 | 100 | 93 | 100 | 100 | 99 |
| cM capacity (veh/h) | 951 | | | 930 | | | 320 | 187 | 689 | 240 | 184 | 891 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 427 | 241 | 536 | 273 | 49 | 5 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 27 | 0 | 5 | 49 | 5 |
| cSH | 1700 | 1700 | 1700 | 1700 | 689 | 891 |
| Volume to Capacity | 0.25 | 0.14 | 0.32 | 0.16 | 0.07 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 0.1 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 10.6 | 9.1 |
| Lane LOS | | | | | B | A |
| Approach Delay (s) | 0.0 | | 0.0 | | 10.6 | 9.1 |
| Approach LOS | | | | | B | A |

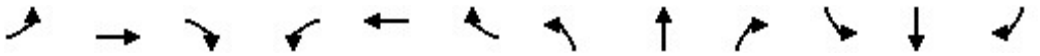
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.4 | | | |
| Intersection Capacity Utilization | 32.7% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 95 | 645 | 100 | 315 | 480 | 180 | 180 | 665 | 255 | 225 | 935 | 70 |
| Future Volume (vph) | 95 | 645 | 100 | 315 | 480 | 180 | 180 | 665 | 255 | 225 | 935 | 70 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.2 | 3.3 | 3.4 | 3.2 | 3.3 | 3.5 | 3.2 | 3.3 | 3.5 | 3.2 |
| Total Lost time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | *0.83 | 1.00 | 1.00 | *0.83 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1701 | 3461 | 1455 | 1711 | 3461 | 1455 | 1710 | 4587 | 1449 | 1708 | 4587 | 1449 |
| Flt Permitted | 0.46 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 | 0.14 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 |
| Satd. Flow (perm) | 821 | 3461 | 1455 | 211 | 3461 | 1455 | 260 | 4587 | 1449 | 412 | 4587 | 1449 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 103 | 701 | 109 | 342 | 522 | 196 | 196 | 723 | 277 | 245 | 1016 | 76 |
| RTOR Reduction (vph) | 0 | 0 | 70 | 0 | 0 | 126 | 0 | 0 | 74 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 103 | 701 | 39 | 342 | 522 | 70 | 196 | 723 | 203 | 245 | 1016 | 76 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 43.6 | 33.6 | 33.6 | 64.6 | 51.6 | 51.6 | 61.2 | 45.8 | 45.8 | 67.4 | 49.0 | 49.0 |
| Effective Green, g (s) | 43.6 | 33.6 | 33.6 | 64.6 | 51.6 | 51.6 | 61.2 | 45.8 | 45.8 | 67.4 | 49.0 | 49.0 |
| Actuated g/C Ratio | 0.30 | 0.23 | 0.23 | 0.45 | 0.36 | 0.36 | 0.43 | 0.32 | 0.32 | 0.47 | 0.34 | 0.34 |
| Clearance Time (s) | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 309 | 807 | 339 | 386 | 1240 | 521 | 265 | 1458 | 460 | 360 | 1560 | 493 |
| v/s Ratio Prot | 0.02 | 0.20 | | c0.17 | 0.15 | | c0.08 | 0.16 | | c0.09 | 0.22 | |
| v/s Ratio Perm | 0.08 | | 0.03 | c0.23 | | 0.05 | c0.23 | | 0.14 | 0.23 | | 0.05 |
| v/c Ratio | 0.33 | 0.87 | 0.12 | 0.89 | 0.42 | 0.13 | 0.74 | 0.50 | 0.44 | 0.68 | 0.65 | 0.15 |
| Uniform Delay, d1 | 37.3 | 53.1 | 43.5 | 41.0 | 34.9 | 31.1 | 29.1 | 39.8 | 39.0 | 25.2 | 40.3 | 33.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.32 | 1.02 | 1.08 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.6 | 9.8 | 0.2 | 20.8 | 0.2 | 0.1 | 10.1 | 1.2 | 3.0 | 5.2 | 2.1 | 0.7 |
| Delay (s) | 37.9 | 62.9 | 43.6 | 61.8 | 35.1 | 31.3 | 48.4 | 41.8 | 44.9 | 30.5 | 42.4 | 33.7 |
| Level of Service | D | E | D | E | D | C | D | D | D | C | D | C |
| Approach Delay (s) | | 57.8 | | | 43.0 | | | 43.6 | | | 39.7 | |
| Approach LOS | | E | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 45.2 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.82 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 77.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

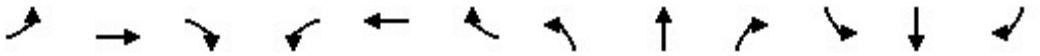
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 10 | 0 | 125 | 10 | 0 | 0 | 170 | 945 | 10 | 15 | 1060 | 10 |
| Future Volume (vph) | 10 | 0 | 125 | 10 | 0 | 0 | 170 | 945 | 10 | 15 | 1060 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.96 | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.98 | | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.85 | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1645 | 1506 | | 1656 | | | 1688 | 4574 | | 1682 | 4576 | |
| Flt Permitted | 0.76 | 1.00 | | 0.53 | | | 0.20 | 1.00 | | 0.23 | 1.00 | |
| Satd. Flow (perm) | 1311 | 1506 | | 922 | | | 349 | 4574 | | 407 | 4576 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 11 | 0 | 136 | 11 | 0 | 0 | 185 | 1027 | 11 | 16 | 1152 | 11 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 11 | 136 | 0 | 11 | 0 | 0 | 185 | 1038 | 0 | 16 | 1163 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 19.7 | 19.7 | | 19.7 | | | 112.3 | 112.3 | | 112.3 | 112.3 | |
| Effective Green, g (s) | 19.7 | 19.7 | | 19.7 | | | 112.3 | 112.3 | | 112.3 | 112.3 | |
| Actuated g/C Ratio | 0.14 | 0.14 | | 0.14 | | | 0.78 | 0.78 | | 0.78 | 0.78 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 179 | 206 | | 126 | | | 272 | 3567 | | 317 | 3568 | |
| v/s Ratio Prot | | c0.09 | | | | | | 0.23 | | | 0.25 | |
| v/s Ratio Perm | 0.01 | | | 0.01 | | | c0.53 | | | 0.04 | | |
| v/c Ratio | 0.06 | 0.66 | | 0.09 | | | 0.68 | 0.29 | | 0.05 | 0.33 | |
| Uniform Delay, d1 | 54.1 | 59.0 | | 54.3 | | | 7.4 | 4.5 | | 3.6 | 4.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 | | 0.53 | 0.67 | |
| Incremental Delay, d2 | 0.1 | 7.7 | | 0.3 | | | 12.9 | 0.2 | | 0.3 | 0.2 | |
| Delay (s) | 54.2 | 66.7 | | 54.6 | | | 20.3 | 4.7 | | 2.2 | 3.3 | |
| Level of Service | D | E | | D | | | C | A | | A | A | |
| Approach Delay (s) | | 65.7 | | | 54.6 | | | 7.1 | | | 3.3 | |
| Approach LOS | | E | | | D | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 8.9 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 60.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 15 | 720 | 100 | 140 | 570 | 0 | 90 | 0 | 90 | 25 | 0 | 5 |
| Future Volume (vph) | 15 | 720 | 100 | 140 | 570 | 0 | 90 | 0 | 90 | 25 | 0 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.3 | 3.4 | 3.4 | 3.3 | 3.4 | 3.4 | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.92 | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flpb, ped/bikes | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 0.85 | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1669 | 3461 | 1430 | 1680 | 3461 | | 1655 | 1514 | | 1659 | 1514 | |
| Flt Permitted | 0.42 | 1.00 | 1.00 | 0.35 | 1.00 | | 0.75 | 1.00 | | 0.69 | 1.00 | |
| Satd. Flow (perm) | 732 | 3461 | 1430 | 612 | 3461 | | 1314 | 1514 | | 1211 | 1514 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 16 | 783 | 109 | 152 | 620 | 0 | 98 | 0 | 98 | 27 | 0 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 84 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 16 | 783 | 80 | 152 | 620 | 0 | 98 | 14 | 0 | 27 | 1 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | | 14.6 | 14.6 | | 14.6 | 14.6 | |
| Effective Green, g (s) | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | | 14.6 | 14.6 | | 14.6 | 14.6 | |
| Actuated g/C Ratio | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | | 0.15 | 0.15 | | 0.15 | 0.15 | |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 537 | 2540 | 1049 | 449 | 2540 | | 191 | 221 | | 176 | 221 | |
| v/s Ratio Prot | | 0.23 | | | 0.18 | | | 0.01 | | | 0.00 | |
| v/s Ratio Perm | 0.02 | | 0.06 | c0.25 | | | c0.07 | | | 0.02 | | |
| v/c Ratio | 0.03 | 0.31 | 0.08 | 0.34 | 0.24 | | 0.51 | 0.06 | | 0.15 | 0.00 | |
| Uniform Delay, d1 | 3.6 | 4.6 | 3.7 | 4.7 | 4.3 | | 39.4 | 36.8 | | 37.3 | 36.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.1 | 0.3 | 0.1 | 2.0 | 0.2 | | 2.3 | 0.1 | | 0.4 | 0.0 | |
| Delay (s) | 3.7 | 4.9 | 3.9 | 6.7 | 4.5 | | 41.7 | 36.9 | | 37.7 | 36.5 | |
| Level of Service | A | A | A | A | A | | D | D | | D | D | |
| Approach Delay (s) | | 4.7 | | | 5.0 | | | 39.3 | | | 37.5 | |
| Approach LOS | | A | | | A | | | D | | | D | |

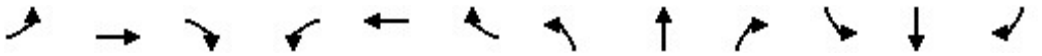
| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 8.9 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.37 | | | | |
| Actuated Cycle Length (s) | 100.0 | Sum of lost time (s) | | 12.0 | |
| Intersection Capacity Utilization | 58.7% | ICU Level of Service | | B | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 5 | 25 | 930 | 1080 | 15 |
| Future Volume (Veh/h) | 0 | 5 | 25 | 930 | 1080 | 15 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 5 | 27 | 1011 | 1174 | 16 |
| Pedestrians | 15 | | | 15 | 15 | |
| Lane Width (m) | 3.5 | | | 3.5 | 3.5 | |
| Walking Speed (m/s) | 1.2 | | | 1.2 | 1.2 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 377 | 289 | |
| pX, platoon unblocked | 0.97 | 0.95 | 0.95 | | | |
| vC, conflicting volume | 1603 | 429 | 1205 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1285 | 216 | 1033 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 99 | 96 | | | |
| cM capacity (veh/h) | 141 | 731 | 628 | | | |

| Direction, Lane # | EB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 5 | 27 | 337 | 337 | 337 | 470 | 470 | 251 |
| Volume Left | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| cSH | 731 | 628 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.04 | 0.20 | 0.20 | 0.20 | 0.28 | 0.28 | 0.15 |
| Queue Length 95th (m) | 0.2 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 10.0 | 11.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | |
| Approach Delay (s) | 10.0 | 0.3 | | | | 0.0 | | |
| Approach LOS | A | | | | | | | |

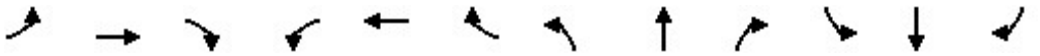
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.2 | | |
| Intersection Capacity Utilization | 37.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 5 | 0 | 0 | 35 | 0 | 900 | 30 | 0 | 1090 | 30 |
| Future Volume (Veh/h) | 0 | 0 | 5 | 0 | 0 | 35 | 0 | 900 | 30 | 0 | 1090 | 30 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 5 | 0 | 0 | 38 | 0 | 978 | 33 | 0 | 1185 | 33 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 142 | |
| pX, platoon unblocked | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | | 0.93 | | | | | |
| vC, conflicting volume | 1514 | 2242 | 442 | 1424 | 2242 | 291 | 1233 | | | 1026 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1304 | 2084 | 156 | 1208 | 2084 | 291 | 1003 | | | 1026 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 94 | 100 | | | 100 | | |
| cM capacity (veh/h) | 100 | 48 | 786 | 124 | 48 | 689 | 634 | | | 665 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|---|
| Volume Total | 5 | 38 | 279 | 279 | 279 | 173 | 474 | 474 | 270 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 5 | 38 | 0 | 0 | 0 | 33 | 0 | 0 | 33 |
| cSH | 786 | 689 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.06 | 0.16 | 0.16 | 0.16 | 0.10 | 0.28 | 0.28 | 0.16 |
| Queue Length 95th (m) | 0.2 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 9.6 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | | |
| Approach Delay (s) | 9.6 | 10.5 | 0.0 | | | | 0.0 | | |
| Approach LOS | A | B | | | | | | | |

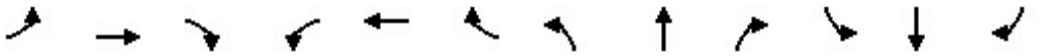
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 33.9% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 55 | 20 | 5 | 60 | 15 | 125 | 25 | 875 | 35 | 190 | 1055 | 60 |
| Future Volume (vph) | 55 | 20 | 5 | 60 | 15 | 125 | 25 | 875 | 35 | 190 | 1055 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.2 | 3.5 | 3.2 | 3.2 | 3.5 | 3.2 | 3.3 | 3.5 | 3.5 | 3.3 | 3.5 | 3.5 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | *0.83 | | 1.00 | *0.83 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.97 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1658 | 1778 | | 1647 | 1540 | | 1690 | 4542 | | 1678 | 4525 | |
| Flt Permitted | 0.46 | 1.00 | | 0.74 | 1.00 | | 0.19 | 1.00 | | 0.25 | 1.00 | |
| Satd. Flow (perm) | 800 | 1778 | | 1282 | 1540 | | 330 | 4542 | | 434 | 4525 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 60 | 22 | 5 | 65 | 16 | 136 | 27 | 951 | 38 | 207 | 1147 | 65 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 60 | 23 | 0 | 65 | 33 | 0 | 27 | 989 | 0 | 207 | 1212 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 18.3 | 18.3 | | 18.3 | 18.3 | | 113.7 | 113.7 | | 113.7 | 113.7 | |
| Effective Green, g (s) | 18.3 | 18.3 | | 18.3 | 18.3 | | 113.7 | 113.7 | | 113.7 | 113.7 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.79 | 0.79 | | 0.79 | 0.79 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 101 | 225 | | 162 | 195 | | 260 | 3586 | | 342 | 3572 | |
| v/s Ratio Prot | | 0.01 | | | 0.02 | | | 0.22 | | | 0.27 | |
| v/s Ratio Perm | c0.07 | | | 0.05 | | | 0.08 | | | c0.48 | | |
| v/c Ratio | 0.59 | 0.10 | | 0.40 | 0.17 | | 0.10 | 0.28 | | 0.61 | 0.34 | |
| Uniform Delay, d1 | 59.3 | 55.6 | | 57.8 | 56.1 | | 3.5 | 4.1 | | 6.1 | 4.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 2.59 | 1.33 | |
| Incremental Delay, d2 | 9.0 | 0.2 | | 1.6 | 0.4 | | 0.8 | 0.2 | | 6.0 | 0.2 | |
| Delay (s) | 68.4 | 55.8 | | 59.4 | 56.5 | | 4.3 | 4.2 | | 21.8 | 6.0 | |
| Level of Service | E | E | | E | E | | A | A | | C | A | |
| Approach Delay (s) | | 64.5 | | | 57.4 | | | 4.2 | | | 8.3 | |
| Approach LOS | | E | | | E | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.60 | | |
| Actuated Cycle Length (s) | 144.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 70.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

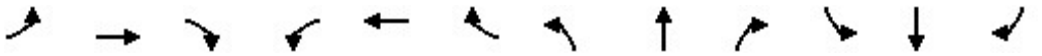
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 1025 | 30 | 0 | 1305 | 45 |
| Future Volume (Veh/h) | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 1025 | 30 | 0 | 1305 | 45 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 1114 | 33 | 0 | 1418 | 49 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 154 | | | 160 | |
| pX, platoon unblocked | 0.84 | 0.84 | 0.82 | 0.84 | 0.84 | 0.95 | 0.82 | | | 0.95 | | |
| vC, conflicting volume | 1926 | 2620 | 527 | 1633 | 2628 | 418 | 1482 | | | 1162 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1079 | 1901 | 0 | 732 | 1910 | 219 | 823 | | | 999 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 89 | 100 | | | 100 | | |
| cM capacity (veh/h) | 124 | 56 | 869 | 250 | 56 | 731 | 651 | | | 649 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 0 | 82 | 446 | 446 | 256 | 567 | 567 | 333 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 82 | 0 | 0 | 33 | 0 | 0 | 49 |
| cSH | 1700 | 731 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 0.11 | 0.26 | 0.26 | 0.15 | 0.33 | 0.33 | 0.20 |
| Queue Length 95th (m) | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 0.0 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | |
| Approach Delay (s) | 0.0 | 10.5 | 0.0 | | | 0.0 | | |
| Approach LOS | A | B | | | | | | |

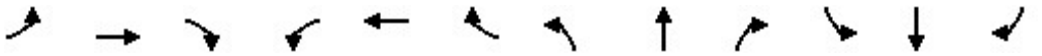
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.3 | | | |
| Intersection Capacity Utilization | 38.4% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 910 | 30 | 0 | 1230 | 25 |
| Future Volume (Veh/h) | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 910 | 30 | 0 | 1230 | 25 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 989 | 33 | 0 | 1337 | 27 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.2 | | | 3.2 | | | 3.5 | | | 3.5 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | 0.89 | 0.89 | | 0.89 | 0.89 | 0.89 | | | | 0.89 | | |
| vC, conflicting volume | 1737 | 2402 | 489 | 1481 | 2400 | 376 | 1379 | | | 1037 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1380 | 2132 | 489 | 1091 | 2128 | 0 | 1379 | | | 590 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 97 | 100 | | | 100 | | |
| cM capacity (veh/h) | 85 | 42 | 513 | 144 | 43 | 938 | 488 | | | 860 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 0 | 27 | 396 | 396 | 231 | 535 | 535 | 294 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 27 | 0 | 0 | 33 | 0 | 0 | 27 |
| cSH | 1700 | 938 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 0.03 | 0.23 | 0.23 | 0.14 | 0.31 | 0.31 | 0.17 |
| Queue Length 95th (m) | 0.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s) | 0.0 | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | | | | | | |
| Approach Delay (s) | 0.0 | 9.0 | 0.0 | | | 0.0 | | |
| Approach LOS | A | A | | | | | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.1 | | | |
| Intersection Capacity Utilization | 36.4% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 810 | 25 | 0 | 705 | 25 | 0 | 0 | 30 | 0 | 0 | 5 |
| Future Volume (Veh/h) | 0 | 810 | 25 | 0 | 705 | 25 | 0 | 0 | 30 | 0 | 0 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| 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) | 0 | 880 | 27 | 0 | 766 | 27 | 0 | 0 | 33 | 0 | 0 | 5 |
| Pedestrians | | 15 | | | 15 | | | 15 | | | 15 | |
| Lane Width (m) | | 3.4 | | | 3.4 | | | 3.2 | | | 3.2 | |
| Walking Speed (m/s) | | 1.2 | | | 1.2 | | | 1.2 | | | 1.2 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 190 | | | 166 | | | | | | | |
| pX, platoon unblocked | 0.89 | | | 0.93 | | | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.89 |
| vC, conflicting volume | 808 | | | 922 | | | 1312 | 1716 | 484 | 1282 | 1716 | 426 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 536 | | | 760 | | | 824 | 1262 | 287 | 793 | 1262 | 107 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| 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 % | 100 | | | 100 | | | 100 | 100 | 95 | 100 | 100 | 99 |
| cM capacity (veh/h) | 905 | | | 778 | | | 234 | 153 | 643 | 236 | 153 | 806 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 587 | 320 | 511 | 282 | 33 | 5 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 27 | 0 | 27 | 33 | 5 |
| cSH | 1700 | 1700 | 1700 | 1700 | 643 | 806 |
| Volume to Capacity | 0.35 | 0.19 | 0.30 | 0.17 | 0.05 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 0.1 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 10.9 | 9.5 |
| Lane LOS | | | | | B | A |
| Approach Delay (s) | 0.0 | | 0.0 | | 10.9 | 9.5 |
| Approach LOS | | | | | B | A |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 35.6% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

# Appendix D:
# Signal Warrants

# Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Whites Road & Smoothrock Avenue & Dusk Owl Circle - Interim Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

## Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban **Population >= 10,000 AND Speed < 70 km/hr**

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

| Hour Ending | Main Northbound Approach | | | Minor Eastbound Approach | | | Main Southbound Approach | | | Minor Westbound Approach | | | Pedestrians Crossing Main Road |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | |
| 08:00 | 22 | 498 | 2 | 100 | 38 | 56 | 17 | 586 | 8 | 43 | 10 | 52 | |
| 09:00 | 25 | 700 | 5 | 105 | 40 | 50 | 50 | 755 | 25 | 45 | 10 | 55 | |
| 10:00 | 8 | 312 | 2 | 20 | 7 | 9 | 17 | 320 | 8 | 8 | 2 | 10 | |
| 12:00 | 13 | 360 | 3 | 39 | 15 | 17 | 29 | 387 | 15 | 17 | 4 | 21 | |
| 13:00 | 29 | 337 | 4 | 17 | 7 | 11 | 24 | 307 | 19 | 9 | 7 | 10 | |
| 17:00 | 93 | 789 | 12 | 49 | 20 | 33 | 78 | 662 | 63 | 25 | 20 | 30 | |
| 18:00 | 115 | 950 | 15 | 50 | 20 | 30 | 95 | 795 | 80 | 25 | 20 | 30 | |
| 19:00 | 78 | 686 | 10 | 70 | 28 | 36 | 64 | 590 | 56 | 35 | 28 | 42 | |
| **Total** | **383** | **4,632** | **52** | **450** | **175** | **242** | **373** | **4,402** | **274** | **206** | **100** | **250** | **0** |

## Justification 5: Collision Experience

| Preceding Months | Number of Collisions* |
|---|---|
| 1-12 | |
| 13-24 | |
| 25-36 | |

* Include only collisions that are susceptable to correction through the installation of traffic signal control

## Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | | | | | | | | | |
| **Factored 8 hour pedestrian volume** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to crossing rate** | | | | | | | | | |
| **Net 8 Hour Pedestrian Volume at Crossing** | | | | | | | | | 0 |
| **Net 8 Hour Vehicular Volume on Street Being Crossed** | | | | | | | | | |

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Total 8 hour pedestrians delayed greater than 10 seconds** | | | | | | | | | |
| **Factored volume of total pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **Factored volume of delayed pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to Crossing Rate** | 0% | | 0% | | 0% | | 0% | | |
| **Net 8 Hour Volume of Total Pedestrians** | | | | | | | | | 0 |
| **Net 8 Hour Volume of Delayed Pedestrians** | | | | | | | | | 0 |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Smoothrock Avenue & Dusk Owl Circle - Interi Count Date:

## Justification 1: Minimum Vehicle Volumes

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Lanes | | 2 or More Lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 1A | 480 | 720 | 600 | 900 | 1,430 | 1,865 | 723 | 918 | 781 | 1,872 | 2,225 | 1,723 | | |
| | COMPLIANCE % | | | | 100 | 100 | 80 | 100 | 87 | 100 | 100 | 100 | 767 | 96 |
| 1B | 120 | 170 | 120 | 170 | 299 | 305 | 56 | 112 | 61 | 176 | 175 | 238 | | |
| | COMPLIANCE % | | | | 100 | 100 | 33 | 66 | 36 | 100 | 100 | 100 | 635 | 79 |
| **Restricted Flow Signal Justification 1:** | | | | | Both 1A and 1B 100% Fulfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |
| | | | | | Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |

## Justification 2: Delay to Cross Traffic

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 lanes | | 2 or More lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 2A | 480 | 720 | 600 | 900 | 1,132 | 1,560 | 666 | 806 | 720 | 1,696 | 2,050 | 1,484 | | |
| | COMPLIANCE % | | | | 100 | 100 | 74 | 90 | 80 | 100 | 100 | 100 | 744 | 93 |
| 2B | 50 | 75 | 50 | 75 | 181 | 190 | 35 | 71 | 33 | 93 | 95 | 133 | | |
| | COMPLIANCE % | | | | 100 | 100 | 47 | 95 | 44 | 100 | 100 | 100 | 686 | 86 |
| **Restricted Flow Signal Justification 2:** | | | | | Both 2A and 2B 100% fulfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |
| | | | | | Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☑ No ☐ | | | | | | | | | |

## Justification 3: Combination

**Combination Justification 1 and 2**

| | Justification Satisfied 80% or More | | | Two Justifications Satisfied 80% or More | |
|---|---|---|---|---|---|
| Justification 1 | Minimum Vehicle Volume | YES ☐ | NO ☑ | YES ☐ | NO ☑ |
| Justification 2 | Delay Cross Traffic | YES ☑ | NO ☐ | | NOT JUSTIFIED |

## Justification 4: Four Hour Volume

| Justification | Time Period | Total Volume of Both Approaches (Main) | Heaviest Minor Approach | Required Value | Average % Compliance | Overall % Compliance |
|---|---|---|---|---|---|---|
| | | X | Y (actual) | Y (warrant threshold) | | |
| Justification 4 | 09:00 | 1,560 | 195 | 115 | 100 % | 94 % |
| | 17:00 | 1,696 | 102 | 115 | 89 % | |
| | 18:00 | 2,050 | 100 | 115 | 87 % | |
| | 19:00 | 1,484 | 134 | 115 | 100 % | |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Smoothrock Avenue & Dusk Owl Circle - Interi Count Date:

## Justification 5: Collision Experience

| Justification | Preceding Months | % Fulfillment | Overall % Compliance |
|---|---|---|---|
| Justification 5 | 1-12 | 0 % | 0 % |
| | 13-24 | 0 % | |
| | 25-36 | 0 % | |

## Justification 6: Pedestrian Volume

### Pedestrian Volume Analysis

| 8 Hour Vehicular Volume $V_8$ | | Net 8 Hour Pedestrian Volume | | | | |
|---|---|---|---|---|---|---|
| | | < 200 | 200 - 275 | 276 - 475 | 476 - 1000 | >1000 |
| Justification 6A | < 1440 | Not Justified | | | | |
| | 1440 - 2600 | | | | | |
| | 2601 - 7000 | | | | | |
| | > 7000 | | | | | |

### Pedestrian Delay Analysis

| Net Total 8 Hour Volume of Total Pedestrians | | Net Total 8 Hour Volume of Delayed Pedestrians | | |
|---|---|---|---|---|
| | | < 75 | 75 - 130 | > 130 |
| Justification 6B | < 200 | Not Justified | | |
| | 200 - 300 | | | |
| | > 300 | | | |

# Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Smoothrock Avenue & Dusk Owl Circ Count Date:

## Summary Results

| Justification | | | Compliance | | Signal Justified? YES | Signal Justified? NO |
|---|---|---|---|---|---|---|
| 1. Minimum Vehicular Volume | A | Total Volume | 96 | % | ☐ | ☑ |
| | B | Crossing Volume | 79 | % | | |
| 2. Delay to Cross Traffic | A | Main Road | 93 | % | ☐ | ☑ |
| | B | Crossing Road | 86 | % | | |
| 3. Combination | A | Justificaton 1 | 79 | % | ☐ | ☑ |
| | B | Justification 2 | 86 | % | | |
| 4. 4-Hr Volume | | | 94 | % | ☐ | ☑ |
| 5. Collision Experience | | | 0 | % | ☐ | ☑ |
| 6. Pedestrians | A | Volume | Justification not met | | ☐ | ☑ |
| | B | Delay | Justification not met | | | |

# Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Whites Road & Daleena Street & Street 18AM - Interim Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

## Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban  Population >= 10,000  AND  Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

| Hour Ending | Main Northbound Approach | | | Minor Eastbound Approach | | | Main Southbound Approach | | | Minor Westbound Approach | | | Pedestrians Crossing Main Road |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | |
| 08:00 | 36 | 505 | 10 | 79 | 28 | 51 | 18 | 473 | 17 | 29 | 14 | 41 | |
| 09:00 | 25 | 805 | 20 | 70 | 20 | 40 | 40 | 680 | 10 | 35 | 10 | 45 | |
| 10:00 | 7 | 373 | 20 | 12 | 3 | 7 | 34 | 309 | 3 | 29 | 2 | 16 | |
| 12:00 | 11 | 468 | 35 | 23 | 6 | 12 | 58 | 370 | 4 | 67 | 3 | 35 | |
| 13:00 | 18 | 310 | 44 | 14 | 12 | 6 | 65 | 339 | 9 | 71 | 14 | 50 | |
| 17:00 | 55 | 679 | 66 | 43 | 40 | 20 | 109 | 768 | 29 | 81 | 43 | 68 | |
| 18:00 | 65 | 785 | 80 | 35 | 30 | 15 | 135 | 895 | 35 | 80 | 35 | 65 | |
| 19:00 | 38 | 604 | 59 | 51 | 35 | 18 | 97 | 684 | 21 | 82 | 51 | 77 | |
| **Total** | **254** | **4,530** | **334** | **328** | **174** | **168** | **556** | **4,517** | **128** | **475** | **172** | **397** | **0** |

## Justification 5: Collision Experience

| Preceding Months | Number of Collisions* |
|---|---|
| 1-12 | |
| 13-24 | |
| 25-36 | |

* Include only collisions that are susceptable to correction through the installation of traffic signal control

## Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | | | | | | | | | |
| **Factored 8 hour pedestrian volume** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to crossing rate** | | | | | | | | | |
| **Net 8 Hour Pedestrian Volume at Crossing** | | | | | | | | | 0 |
| **Net 8 Hour Vehicular Volume on Street Being Crossed** | | | | | | | | | |

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Total 8 hour pedestrians delayed greater than 10 seconds** | | | | | | | | | |
| **Factored volume of total pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **Factored volume of delayed pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to Crossing Rate** | 0% | | 0% | | 0% | | 0% | | |
| **Net 8 Hour Volume of Total Pedestrians** | | | | | | | | | 0 |
| **Net 8 Hour Volume of Delayed Pedestrians** | | | | | | | | | 0 |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Daleena Street & Street 18AM - Interim Condi Count Date:

## Justification 1: Minimum Vehicle Volumes

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Lanes | | 2 or More Lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 1A | 480 | 720 | 600 | 900 | 1,301 | 1,800 | 815 | 1,091 | 954 | 2,002 | 2,255 | 1,816 | | |
| | COMPLIANCE % | | | | 100 | 100 | 91 | 100 | 100 | 100 | 100 | 100 | 791 | 99 |
| 1B | 120 | 170 | 120 | 170 | 241 | 220 | 69 | 145 | 168 | 297 | 260 | 313 | | |
| | COMPLIANCE % | | | | 100 | 100 | 41 | 85 | 99 | 100 | 100 | 100 | 725 | 91 |

| | | | |
|---|---|---|---|
| **Restricted Flow Signal Justification 1:** | Both 1A and 1B 100% Fulfilled each of 8 hours | Yes ☐ | No ☑ |
| | Lesser of 1A or 1B at least 80% fulfilled each of 8 hours | Yes ☑ | No ☐ |

## Justification 2: Delay to Cross Traffic

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 lanes | | 2 or More lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 2A | 480 | 720 | 600 | 900 | 1,060 | 1,580 | 745 | 946 | 786 | 1,705 | 1,995 | 1,503 | | |
| | COMPLIANCE % | | | | 100 | 100 | 83 | 100 | 87 | 100 | 100 | 100 | 770 | 96 |
| 2B | 50 | 75 | 50 | 75 | 136 | 125 | 45 | 96 | 100 | 168 | 218 | 183 | | |
| | COMPLIANCE % | | | | 100 | 100 | 60 | 100 | 100 | 100 | 100 | 100 | 760 | 95 |

| | | | |
|---|---|---|---|
| **Restricted Flow Signal Justification 2:** | Both 2A and 2B 100% fulfilled each of 8 hours | Yes ☐ | No ☑ |
| | Lesser of 2A or 2B at least 80% fulfilled each of 8 hours | Yes ☑ | No ☐ |

## Justification 3: Combination

**Combination Justification 1 and 2**

| Justification Satisfied 80% or More | | | | Two Justifications Satisfied 80% or More | |
|---|---|---|---|---|---|
| Justification 1 | Minimum Vehicle Volume | YES ☑ | NO ☐ | YES ☑ | NO ☐ |
| Justification 2 | Delay Cross Traffic | YES ☑ | NO ☐ | JUSTIFIED | |

## Justification 4: Four Hour Volume

| Justification | Time Period | Total Volume of Both Approaches (Main) | Heaviest Minor Approach | Required Value | Average % Compliance | Overall % Compliance |
|---|---|---|---|---|---|---|
| | | X | Y (actual) | Y (warrant threshold) | | |
| Justification 4 | 09:00 | 1,580 | 130 | 115 | 100 % | 100 % |
| | 17:00 | 1,705 | 193 | 115 | 100 % | |
| | 18:00 | 1,995 | 180 | 115 | 100 % | |
| | 19:00 | 1,503 | 209 | 115 | 100 % | |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Daleena Street & Street 18AM - Interim Condi Count Date:

## Justification 5: Collision Experience

| Justification | Preceding Months | % Fulfillment | Overall % Compliance |
|---|---|---|---|
| Justification 5 | 1-12 | 0 % | 0 % |
| | 13-24 | 0 % | |
| | 25-36 | 0 % | |

## Justification 6: Pedestrian Volume

### Pedestrian Volume Analysis

| 8 Hour Vehicular Volume $V_8$ | | Net 8 Hour Pedestrian Volume | | | | |
|---|---|---|---|---|---|---|
| | | < 200 | 200 - 275 | 276 - 475 | 476 - 1000 | >1000 |
| Justification 6A | < 1440 | Not Justified | | | | |
| | 1440 - 2600 | | | | | |
| | 2601 - 7000 | | | | | |
| | > 7000 | | | | | |

### Pedestrian Delay Analysis

| Net Total 8 Hour Volume of Total Pedestrians | | Net Total 8 Hour Volume of Delayed Pedestrians | | |
|---|---|---|---|---|
| | | < 75 | 75 - 130 | > 130 |
| Justification 6B | < 200 | Not Justified | | |
| | 200 - 300 | | | |
| | > 300 | | | |

# Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Whites Road & Daleena Street & Street 18AM - Interi Count Date:

## Summary Results

| Justification | | | Compliance | | Signal Justified? YES | Signal Justified? NO |
|---|---|---|---|---|---|---|
| 1. Minimum Vehicular Volume | A | Total Volume | 99 | % | ☐ | ☑ |
| | B | Crossing Volume | 91 | % | | |
| 2. Delay to Cross Traffic | A | Main Road | 96 | % | ☐ | ☑ |
| | B | Crossing Road | 95 | % | | |
| 3. Combination | A | Justificaton 1 | 91 | % | ☑ | ☐ |
| | B | Justification 2 | 95 | % | | |
| 4. 4-Hr Volume | | | 100 | % | ☑ | ☐ |
| 5. Collision Experience | | | 0 | % | ☐ | ☑ |
| 6. Pedestrians | A | Volume | Justification not met | | ☐ | ☑ |
| | B | Delay | Justification not met | | | |

# Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Alexander Knox Road & Silvermoon Drive & Begonia Place - Interim Cond

What is the direction of the Main Road street? East-West

When was the data collected?

## Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban  Population >= 10,000  AND  Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

| Hour Ending | Main Eastbound Approach | | | Minor Northbound Approach | | | Main Westbound Approach | | | Minor Southbound Approach | | | Pedestrians Crossing Main Road |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | |
| 08:00 | 2 | 191 | 48 | 71 | 9 | 102 | 114 | 182 | 2 | 46 | 27 | 4 | |
| 09:00 | 5 | 225 | 20 | 55 | 5 | 75 | 50 | 215 | 5 | 55 | 15 | 5 | |
| 10:00 | 2 | 130 | 5 | 8 | 1 | 12 | 13 | 124 | 2 | 9 | 2 | 1 | |
| 12:00 | 4 | 117 | 7 | 15 | 1 | 20 | 21 | 112 | 4 | 18 | 3 | 2 | |
| 13:00 | 3 | 151 | 11 | 8 | 2 | 11 | 22 | 133 | 6 | 7 | 2 | 1 | |
| 17:00 | 10 | 276 | 34 | 27 | 8 | 38 | 64 | 236 | 20 | 20 | 8 | 3 | |
| 18:00 | 10 | 280 | 30 | 25 | 5 | 35 | 55 | 240 | 20 | 30 | 5 | 5 | |
| 19:00 | 9 | 252 | 20 | 16 | 1 | 22 | 35 | 216 | 18 | 28 | 1 | 5 | |
| **Total** | **45** | **1,622** | **175** | **225** | **32** | **315** | **374** | **1,458** | **77** | **213** | **63** | **26** | **0** |

## Justification 5: Collision Experience

| Preceding Months | Number of Collisions* |
|---|---|
| 1-12 | |
| 13-24 | |
| 25-36 | |

* Include only collisions that are susceptable to correction through the installation of traffic signal control

## Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | | | | | | | | | |
| **Factored 8 hour pedestrian volume** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to crossing rate** | | | | | | | | | |
| **Net 8 Hour Pedestrian Volume at Crossing** | | | | | | | | | 0 |
| **Net 8 Hour Vehicular Volume on Street Being Crossed** | | | | | | | | | |

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

| | Zone 1 | | Zone 2 | | Zone 3 (if needed) | | Zone 4 (if needed) | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | Assisted | Unassisted | |
| **Total 8 hour pedestrian volume** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Total 8 hour pedestrians delayed greater than 10 seconds** | | | | | | | | | |
| **Factored volume of total pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **Factored volume of delayed pedestrians** | 0 | | 0 | | 0 | | 0 | | |
| **% Assigned to Crossing Rate** | 0% | | 0% | | 0% | | 0% | | |
| **Net 8 Hour Volume of Total Pedestrians** | | | | | | | | | 0 |
| **Net 8 Hour Volume of Delayed Pedestrians** | | | | | | | | | 0 |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Alexander Knox Road & Silvermoon Drive & Begonia Place - I Count Date:

## Justification 1: Minimum Vehicle Volumes

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Lanes | | 2 or More Lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 1A | 480 | 720 | 600 | 900 | 798 | 730 | 309 | 324 | 357 | 744 | 740 | 623 | | |
| | COMPLIANCE % | | | | 89 | 81 | 34 | 36 | 40 | 83 | 82 | 69 | 514 | 64 |
| 1B | 120 | 170 | 120 | 170 | 259 | 210 | 33 | 59 | 31 | 104 | 105 | 73 | | |
| | COMPLIANCE % | | | | 100 | 100 | 19 | 35 | 18 | 61 | 62 | 43 | 438 | 55 |

| | | | |
|---|---|---|---|
| **Restricted Flow Signal Justification 1:** | Both 1A and 1B 100% Fulfilled each of 8 hours | Yes ☐ | No ☑ |
| | Lesser of 1A or 1B at least 80% fulfilled each of 8 hours | Yes ☐ | No ☑ |

## Justification 2: Delay to Cross Traffic

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 lanes | | 2 or More lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☐ | FREE FLOW ☐ | RESTR. FLOW ☑ | 08:00 | 09:00 | 10:00 | 12:00 | 13:00 | 17:00 | 18:00 | 19:00 | | |
| 2A | 480 | 720 | 600 | 900 | 539 | 520 | 276 | 265 | 326 | 640 | 635 | 550 | | |
| | COMPLIANCE % | | | | 60 | 58 | 31 | 29 | 36 | 71 | 71 | 61 | 417 | 52 |
| 2B | 50 | 75 | 50 | 75 | 144 | 125 | 19 | 36 | 17 | 55 | 60 | 45 | | |
| | COMPLIANCE % | | | | 100 | 100 | 25 | 48 | 23 | 73 | 80 | 60 | 509 | 64 |

| | | | |
|---|---|---|---|
| **Restricted Flow Signal Justification 2:** | Both 2A and 2B 100% fulfilled each of 8 hours | Yes ☐ | No ☑ |
| | Lesser of 2A or 2B at least 80% fulfilled each of 8 hours | Yes ☐ | No ☑ |

## Justification 3: Combination

**Combination Justification 1 and 2**

| | Justification Satisfied 80% or More | | | Two Justifications Satisfied 80% or More | |
|---|---|---|---|---|---|
| Justification 1 | Minimum Vehicle Volume | YES ☐ | NO ☑ | YES ☐ | NO ☑ |
| Justification 2 | Delay Cross Traffic | YES ☐ | NO ☑ | | NOT JUSTIFIED |

## Justification 4: Four Hour Volume

| Justification | Time Period | Total Volume of Both Approaches (Main) | Heaviest Minor Approach | Required Value | Average % Compliance | Overall % Compliance |
|---|---|---|---|---|---|---|
| | | X | Y (actual) | Y (warrant threshold) | | |
| Justification 4 | 08:00 | 539 | 182 | 424 | 43 % | 23 % |
| | 17:00 | 640 | 73 | 362 | 20 % | |
| | 18:00 | 635 | 65 | 365 | 18 % | |
| | 19:00 | 550 | 39 | 417 | 9 % | |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Alexander Knox Road & Silvermoon Drive & Begonia Place - I Count Date:

## Justification 5: Collision Experience

| Justification | Preceding Months | % Fulfillment | Overall % Compliance |
|---|---|---|---|
| Justification 5 | 1-12 | 0 % | 0 % |
| | 13-24 | 0 % | |
| | 25-36 | 0 % | |

## Justification 6: Pedestrian Volume

### Pedestrian Volume Analysis

| 8 Hour Vehicular Volume $V_8$ | | Net 8 Hour Pedestrian Volume | | | | |
|---|---|---|---|---|---|---|
| | | < 200 | 200 - 275 | 276 - 475 | 476 - 1000 | >1000 |
| Justification 6A | < 1440 | Not Justified | | | | |
| | 1440 - 2600 | | | | | |
| | 2601 - 7000 | | | | | |
| | > 7000 | | | | | |

### Pedestrian Delay Analysis

| Net Total 8 Hour Volume of Total Pedestrians | | Net Total 8 Hour Volume of Delayed Pedestrians | | |
|---|---|---|---|---|
| | | < 75 | 75 - 130 | > 130 |
| Justification 6B | < 200 | Not Justified | | |
| | 200 - 300 | | | |
| | > 300 | | | |

# Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Alexander Knox Road & Silvermoon Drive & Begonia Count Date:

## Summary Results

| Justification | | | Compliance | | Signal Justified? YES | Signal Justified? NO |
|---|---|---|---|---|---|---|
| 1. Minimum Vehicular Volume | A | Total Volume | 64 | % | ☐ | ☑ |
| | B | Crossing Volume | 55 | % | | |
| 2. Delay to Cross Traffic | A | Main Road | 52 | % | ☐ | ☑ |
| | B | Crossing Road | 64 | % | | |
| 3. Combination | A | Justificaton 1 | 55 | % | ☐ | ☑ |
| | B | Justification 2 | 52 | % | | |
| 4. 4-Hr Volume | | | 23 | % | ☐ | ☑ |
| 5. Collision Experience | | | 0 | % | ☐ | ☑ |
| 6. Pedestrians | A | Volume | Justification not met | | ☐ | ☑ |
| | B | Delay | Justification not met | | | |