nextrans
CONSULTING ENGINEERS

nextrans.ca

Transportation Impact Study Update

PROPOSED MIXED-USE DEVELOPMENT

5061 Stouffville Road
Town of Whitchurch-Stouffville

May 27, 2026
Project No.: NT-23-038
Town/Region File No.: OPA 25.003/ZBA 25.010

Prepared for: Times 4750 Inc.

520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8

Phone: 905-503-2563
www.nextrans.ca

nexTrans ENGINEERING
NextEng Consulting Group Inc

May 27, 2026

Times 4750 Inc.
3985 Highway 7 East, Suite 202
Markham, ON
L3R 2A2

Attention: Hashem Ghadaki

Re: Engineering Service – Transportation Impact Study Update
Proposed Mixed-Use Development
5061 Stouffville Road, Town of Whitchurch-Stouffville
Town/Region File No.: OPA 25.003/ZBA 25.010
Our Project No.: NT-23-038

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study Update in support of Official Plan Amendment Application and Zoning By-law Amendment Applications for a proposed mixed-use development located at the property of 5061 Stouffville Road in the Town of Whitchurch-Stouffville.

The development will introduce five (5) residential buildings of 20 to 32 storeys, with a total of 1,332 dwelling units. A one-storey day care building of 1,116sqm GFA will also be provided.

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

Yours truly,

NEXTRANS CONSULTING ENGINEERS

Prepared by:

John Nhan, P.Eng.
Project Engineer

Approved by:

Richard Pernicky, MITE
Principal

Issues and Revisions Registry

Identification	Date	Description of issued and/or revision
TIS	May 2, 2025	First submission OPA/ZBA.
TIS Update	May 27, 2026	Resubmission.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1. PROPOSED DEVELOPMENT 1
1.2. STUDY METHODOLOGY 3
1.3. STUDY AREA 3
2.0 RESPONSE TO COMMENTS 4
3.0 EXISTING TRANSPORTATION CONDITIONS 10
3.1. ROAD NETWORK 10
3.2. EXISTING TRANSIT FACILITIES 11
3.3. ACTIVE TRANSPORTATION NETWORK 12
3.4. TRANSIT MODE ASSESSMENT 13
3.5. PEDESTRIAN MODE ASSESSMENT 13
3.6. CYCLING MODE ASSESSMENT 14
3.7. TRAFFIC DATA COLLECTION 14
3.8. EXISTING INTERSECTION CAPACITY ANALYSIS 14
4.0 FUTURE BACKGROUND TRAFFIC CONDITIONS 17
4.1. FUTURE ROAD IMPROVEMENTS 17
4.2. PROPOSED ROAD IMPROVEMENTS OF THE SUBJECT DEVELOPMENT 17
4.3. CORRIDOR GROWTH 18
4.4. BACKGROUND DEVELOPMENTS 19
4.5. 2029 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS 20
4.6. 2034 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS 23
5.0 SITE TRAFFIC 27
5.1. TRAVEL MODE SHARE 27
5.2. SITE TRIP GENERATION 27
5.3. TRIP DISTRIBUTION AND ASSIGNMENT 28
6.0 FUTURE TOTAL TRAFFIC CONDITIONS 32
6.1. 2029 FUTURE TOTAL INTERSECTION CAPACITY ANALYSIS 32
6.2. 2034 FUTURE TOTAL INTERSECTION CAPACITY ANALYSIS 34
6.3. MITIGATION MEASURES – 2034 FUTURE TOTAL CONDITION 37

6.3.1. MCCOWAN ROAD AND STOUFFVILLE ROAD 37
6.3.2. STREET 'A' AND STOUFFVILLE ROAD 38
6.3.3. HIGHWAY 48 AND STOUFFVILLE ROAD 40
6.3.4. HIGHWAY 48 AND HOOVER PARK DRIVE 41
6.3.5. CONCLUSIONS AND RECOMMENDATIONS 42

7.0 SITE PLAN REVIEW **43**

7.1. VEHICULAR SITE CIRCULATION **43**
7.2. LOADING SPACE REVIEW **43**
7.3. PEDESTRIAN AND CYCLING CIRCULATION PLAN **43**

8.0 PARKING REVIEW **44**

8.1. PROPOSED PARKING PROVISION **44**
8.2. VEHICULAR PARKING REVIEW – ZONING BY-LAW 2010-001-ZO **44**
8.3. BARRIER-FREE PARKING SPACE REVIEW **45**
8.4. BICYCLE PARKING REVIEW **45**

9.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) **46**

9.1. TDM MEASURES **46**

10.0 CONCLUSIONS AND RECOMMENDATIONS **47**

LIST OF TABLES

Table 1-1: Summary of Building Site Statistics 1
Table 2-1: Existing Transit Level of Service Assessment 13
Table 2-2: Existing Pedestrian Level of Service Assessment 13
Table 2-3: Existing Cycling Level of Service Assessment 14
Table 2-4: Summary of TMC Data Collection 14
Table 2-5: Existing Intersection Capacity Analysis Results 15

Table 3-1: Corridor Growth Rates 18
Table 3-2: Summary of Background Developments 19
Table 3-3: 2029 Future Background Intersection Capacity Analysis Results 21
Table 3-4: 2034 Future Background Intersection Capacity Analysis Results 24
Table 4-1: Travel Mode Share 27
Table 4-2: Site Trip Generation 27
Table 4-4: Residential Directional Trip Distribution 28
Table 4-5: Day Care Directional Trip Distribution 28
Table 5-1: 2029 Future Total Intersection Capacity Analysis Results 32
Table 5-2: 2034 Future Total Intersection Capacity Analysis Results 35
Table 5-3: 2034 Future Total Results of Mitigation Measures – McCowan Road and Stouffville Road 38
Table 5-4: 2034 Future Total Results of Mitigation Measures – Street A and Stouffville Road 39
Table 5-5: 2034 Future Total Results of Mitigation Measures – Highway 48 and Stouffville Road 40
Table 5-6: 2034 Future Total Results of Mitigation Measures – Highway 48 and Hoover Park Drive 41
Table 7-1: Summary of Zoning By-law Vehicular Parking Requirements 44
Table 7-2: Summary of Barrier-Free Parking Requirements 45
Table 8-1: TDM Measures for the Proposed Development 46

LIST OF FIGURES

Figure 1-1: Subject Site Location 1
Figure 1-2: Architectural Site Plan 2
Figure 1-3: Context Plan 2
Figure 2-1: Study Area Intersection Lane Configuration 10
Figure 2-2: Existing Transit Facilities 11
Figure 2-3: Active Transportation Network 12
Figure 2-4: Existing Traffic Volumes 15
Figure 3-1: Functional Plan – Proposed Right-Of-Ways Within 5061 Stouffville Road Lands 18
Figure 3-2: Background Development Traffic Volumes 20
Figure 3-3: 2029 Future Background Traffic Volumes 23
Figure 3-4: 2034 Future Background Traffic Volumes 25
Figure 4-1: Residential Site Traffic Volumes 29
Figure 4-2: Day Care Site Traffic Volumes 30
Figure 4-3: Total Site Traffic Volumes 31
Figure 5-1: 2029 Future Total Traffic Volumes 33
Figure 5-2: 2034 Future Total Traffic Volumes 36

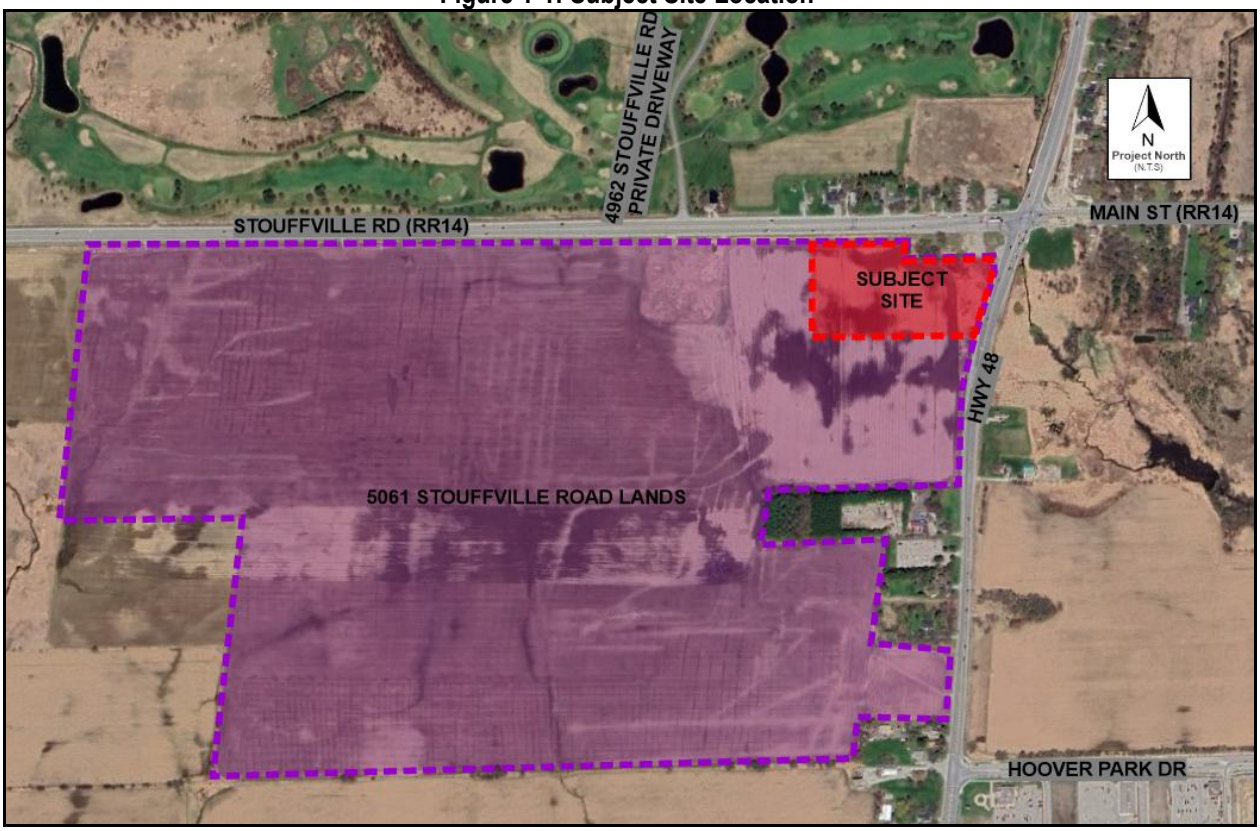
APPENDICES

Appendix A – Reduced Architectural Plans
Appendix B – TIS Terms of Reference
Appendix C – Traffic Data and Background Documents
Appendix D – Synchro Reports
Appendix E – TTS Data
Appendix F – Functional Plan Drawings
Appendix G – Traffic Signal Warrant
Appendix H – Vehicle Movement Diagrams
Appendix I – Pedestrian and Cycling Circulation Plan

1.0 INTRODUCTION

Nextrans Consulting Engineers ("Nextrans"), a Division of NextEng Consulting Group Inc., has been retained by Times 4750 Inc. (the "client") to undertake this Transportation Impact Study (TIS) Update in support of Official Plan Amendment and Zoning By-law Amendment Applications for a proposed mixed-use development located at the lands within the northeast part of the property of 5061 Stouffville Road (northeast part known as the "subject site") in the Town of Whitchurch-Stouffville. The subject site location is provided in **Figure 1-1**.

Figure 1-1: Subject Site Location



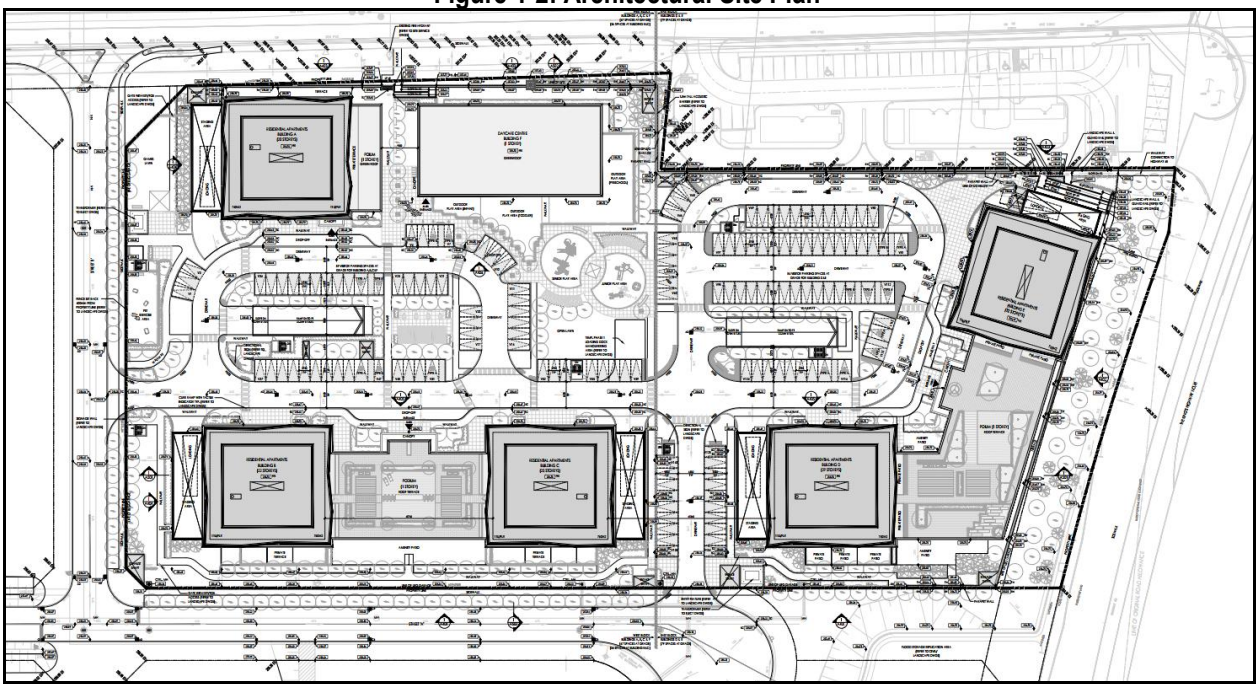
1.1. PROPOSED DEVELOPMENT

The subject site is vacant land. The development will introduce five (5) residential buildings (Buildings A to E) of 20 to 32 storeys with a total of 1,332 dwelling units and a one-storey day care building (Building F) with 1,116sqm (12,013sqft) of GFA. The development will be constructed in two blocks, including the initial west block (Buildings A, B, C, F) and the east block (Buildings D, E). Two (2) new public streets will be provided adjacent to the subject site as part of the proposed development. **Table 1-1** summarizes the site statistics. **Figure 1-2** illustrates the architectural site plan. **Figure 1-3** illustrates the context plan including the proposed public streets. The reduced architectural plans are enclosed in **Appendix A**.

Table 1-1: Summary of Building Site Statistics

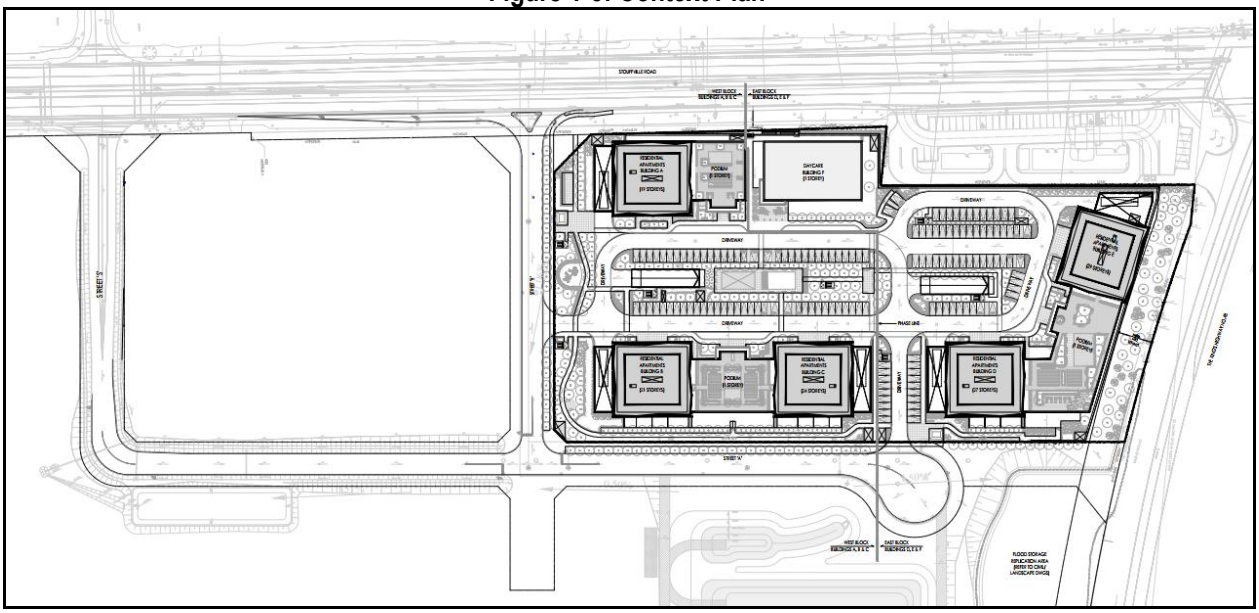
Building	Storeys	Dwelling Units	Commercial GFA	Loading Space	Vehicular Parking
A (Condo)	20	206	-	1 Large Loading Space	1,800 spaces (1,466 residential; 334 shared visitor / day care spaces)
B (Condo)	22	225	-	1 Large Loading Space	
C (Condo)	25	258	-	1 Large Loading Space	
D (Rental)	29	305	-	1 Large Loading Space	
E (Rental)	32	338	-	1 Large Loading Space	
F (Day Care)	1	-	1,116sqm (12,013sqft)	Shared with Building A	
Total	**-**	**1,332**	**1,116sqm (12,013sqft)**	**5 Large Loading Spaces**	**1,800 spaces**

Figure 1-2: Architectural Site Plan



Source: Icke Brochu Architects Inc. (April 29, 2026)

Figure 1-3: Context Plan



Source: Icke Brochu Architects Inc. (January 2025)

Building A will provide a one-storey podium. Buildings B and C will be connected by a one-storey podium. Buildings D and E will be connected by a one-storey podium.

The proposed development will introduce two public streets adjacent to the subject site, including a generally east-west Street “A” and a north-south Street “B”. Street A will connect to Stouffville Road as the south intersection leg opposite to the private driveway for 4962 Stouffville Road (Spring Lakes Golf Club). The Street A and Stouffville Road intersection is proposed as a full moves signalized intersection. Street B will connect to Stouffville Road and will be restricted to right-in/right-out movements. Vehicular access to the subject site will be provided by two full moves driveways along Street A and Street B, for access to Stouffville Road.

A vehicular parking provision of 1,800 parking spaces, including 1,466 resident spaces and 334 visitor spaces (shared with day care use) will be provided within surface and underground parking levels. A bicycle parking provision of 333 spaces will be provided (223 long-term spaces, 110 short-term spaces). Five (5) Type 'G' loading spaces will be provided for waste collection and loading activities, including one (1) loading space per tower. The loading space will be shared between Building A and the day care building (Building F).

1.2. STUDY METHODOLOGY

The study adheres to the York Region Transportation Mobility Plan Guidelines 2025. Traffic operations for the intersection study area were assessed for the existing, future background, and future total conditions during the weekday AM and PM peak hours. Synchro 10 was used for intersection capacity analysis based on Highway Capacity Manual (HCM) 2000 methodology for signalized and unsignalized intersections.

A TIS Terms of Reference (TOR) was confirmed with Town of Whitchurch-Stouffville ("Town") and York Region ("Region") transportation staff. A TOR was provided to MTO but a response was not received. The Terms of Reference and transportation staff comments are enclosed (see **Appendix B**).

1.3. STUDY AREA

The intersection study area was determined by assessing the size of the proposed development and the transportation impact that is anticipated from the proposed development.

The study area includes the following intersections.

- Stouffville Road and McCowan Road (Signalized)
- Stouffville Road and 4962 Stouffville Road Private Driveway / Proposed Street A (Existing Unsignalized)
- Stouffville Road and Proposed Street B (Proposed Unsignalized)
- Stouffville Road / Main Street and Hwy 48 (Signalized)
- Hoover Park Drive and Hwy 48 (Signalized)
- Proposed Street A and Proposed Street B (Unsignalized)
- Proposed Street B and Site Driveway Access (Unsignalized)
- Proposed Street A and Site Driveway Access (Unsignalized)

2.0 RESPONSE TO COMMENTS

York Region

1. As shown in the site plan, exclusive turn lanes will be required on Stouffville Road at the site accesses, conditions will be provided in subsequent development stages.

Response: Noted. Exclusive turn lanes on Stouffville Road are proposed at the site accesses.

2. The development shall protect for vehicular interconnection with the development in the southwest corner of Stouffville Road/Highway 48. The interconnection shall be shown on the site plan.

Response: It is understood that the development in the southwest corner of Stouffville Road / Highway 48 will have an independent access onto the external road network. An interconnection will not be provided.

3. Regarding the proposed intersection of Stouffville Road / Street B, the applicant is advised that the Region does not support unwarranted signals. The applicant is advised that the Region will only consider and permit the installation of unwarranted traffic signals subject to the following conditions are met:
   a) Must meet the criteria outlined in the Region's Access Guidelines.
   b) Must be projected to meet warrant thresholds within the next five years, as per the Region's Traffic and Pedestrian Signal Policy.
   c) Approval from the Region's Commissioner of Public Works is required.
   d) All costs associated with the construction of the signalized intersection and 10-year maintenance will be borne by the applicant.

Response: Noted.

4. The applicant shall provide a basic 36 metre right-of-way for this section of Stouffville Road. As such, all municipal setbacks shall be referenced from a point 18 metres from the centreline of construction on Stouffville Road and any additional lands required for turn lanes at intersections will be conveyed to York Region for public highway purposes, free of all costs and encumbrances, to the satisfaction of York Region Solicitor.

Response: Noted.

5. The applicant is advised that a development on the northside of Stouffville Road is proposed, the access shall be coordinated to ensure there are no offset intersections.

Response: As the subject development is ahead in its development application relative to the northside development, the northside development will need to coordinate with the subject development to ensure that its access does not incur an offset.

6. Transportation Study, Section 8.1, TDM Measures, Table 8-1: TDM Measures for the Proposed Development: The Transit Incentives with estimated amount "One-time Presto card pre-loaded with a monthly weekday cost of $160 …." and "$198,880" both shall be removed, as no cost amounts should be attributed to York Region. The costs borne shall be subject to the sole discretion of region/municipality and subject to change, rather it should be noted as "To be Determined."

Response: Noted. The TDM responsibility for transit incentives has been revised to be "To Be Determined".

7. Section 8.1, TDM Measures, Table 8-1: "Communications strategy and physical location to deliver Presto Cards and Information Packages" is an applicant responsibility and updated accordingly. York Region responsibility shall be removed and no associated costs.

Response: Noted. The TDM responsibility for communications strategy and delivery of transit incentives/ info packages has been revised to be the responsibility of the Applicant.

8. Section 8.1, TDM Measures, Table 8-1: TDM Measures for the Proposed Development: Outreach Programs under Responsibility should be changed to Applicant/Region/Municipality, as some coordination will be required.

Response: Noted. The TDM responsibility for outreach programs has been revised to be the responsibility of the Applicant/Region/Town.

9. Table 8-1 TDM measures "Undertake a TDM Monitoring Initial Survey with residents at 50% condominium occupancy…" and "Undertake a TDM Monitoring Follow-up Survey after the Initial survey and report back…" are not required by the Region and can be removed.

Response: Noted. The TDM measure for surveys has been removed.

10. The applicant has not provided a visual or map illustrating the planned active transportation network within the subject site. YRT strongly recommends including a detailed active transportation network plan in the next submission to support transit accessibility and pedestrian connectivity

Response: Noted. A Pedestrian and Cycling Circulation Plan has been provided within the updated TIS.

Town Development Planning (MTO Comments)

11. The MTO 14m setback should be clearly labeled on all drawings.

Response: Noted. Deferred to architectural plans.

12. Please be advised that the TIS was produced by a non-RAQs qualified consultant. MTO will only review the TIS if the results are reviewed and signed off on by a RAQs-qualified consultant; this can be done in a separate letter.

Response: Nextrans is in the process of obtaining RAQS qualification.

13. The assessment should be conducted at the opening day, 5-year and 10-year horizons. It appears that only the 5 and 10 year horizons as calculated from 2024 were used.

Response: Given the timeline uncertainty of full buildout, 5 years and 10 years were assumed for general study horizons.

14. The analysis uses Synchro V10. Synchro V12 should be used.

Response: The traffic operations analysis will continue to utilize Synchro v10, as the analysis has been undertaken using the HCM 2000 methodology for consistency with the approved study approach and previously completed assessments. Synchro v10 remains compatible with the HCM 2000 procedures and is considered appropriate for the purposes of this study. Accordingly, no changes to the analysis platform are proposed at this time.

15. An updated Terms of Reference should be provided for review by our Traffic team prior to updating the TIS, as they may have additional comments.

Response: A TIS Terms of Reference was provided to MTO in 2024 with no response from MTO. An updated TIS Terms of Reference was provided to MTO as part of this resubmission, in which MTO did not provide a response to the TOR.

Town Engineering Services

16. a) The study states that the TIS terms of reference was confirmed with the Town of Whitchurch-Stouffville (Town) and York Region (Region), however does not mention the Ministry of Transportation (MTO). The MTO is required to be consulted for this study and should also take into consideration the most current MTO TIS Guidelines. b) All electronic synchro files should be provided for review.

Response: a) A TIS Terms of Reference was provided to MTO for comment. b) Synchro files are enclosed in the re-submission.

17. a) The TIS is to adhere to the most current York Region Mobility Plan Guidelines which is dated 2025, whereas the study states it was based on the York Region Transportation Mobility Plan Guidelines 2016.

Response: Noted. The TIS adheres to the York Region Mobility Plan Guidelines dated 2025.

18. a) Highway 48 is described as "Approximately 340 m south of Stouffville Road/Main Street, Highway 48 maintains an existing typical two-lane cross-section (one lane per direction) and posted speed limit of 80 km/h to the north and a four-lane cross-section (two lanes per direction) with a posted speed limit of 70 km/h to the south," however the cross-section description is reversed. The cross-section just south of Stouffville Road/Main Street has a four-lane cross section and reduces to a two-lane cross section south of the above. Please update.

Response: Noted. The typo in the description has been updated accordingly.

19. a) The existing transit level of service only reviewed Highway 48/Hoover Park Drive, however it does not examine the intersection of Highway 48/Main Street which is the most critical intersection in the study area.

Response: The existing transit level of service has been updated. Highway 48/Main Street intersection is not applicable as there are no transit stops at the intersection.

20. a) The existing weekday AM and PM traffic volumes depicted in Figure 2-4 (Existing Traffic Volumes) at the intersection of Highway 48/Stouffville Road/Main Street do not match the data found in Appendix C (Traffic Data and Background Developments). As a result, the operations analysis conducted in Appendix D (Synchro and SimTraffic Reports) and summarized in Table 2-5 (Existing Intersection Capacity Analysis) was also based on the incorrect volumes for this intersection. Please update.

Response: The existing volumes for Highway 48/Stouffville Road have been updated to reflect the traffic data appended to the report. All traffic analysis has been updated accordingly.

21. a) It is unclear whether the corridor growth rate utilized in the study was confirmed with the respective jurisdictions, such as Stouffville Road/McCowan Road with York Region and Highway 48 with MTO. Please confirm.

Response: It was noted in the TOR that historical traffic data will be used to determine growth rates. The growth rates has based on AADT data from York Region and MTO.

22. All background developments with submitted development applications should be included. The following developments should be included within the study horizon years:
    - 1020 Hoover Park Drive.
    - 178 Sam's Way (SPA22.011).
    - Southwest corner of Sam's Way and Rougeview Avenue (SPA23.005).
    - 199 Sam's Way & 0 Highway 48 (19T(W)-22.009).
    - 5262-5318 Main Street.
    - 12049 Highway 48.

- 5262,5270,5286,53118 Main Street.
- 11861 and 12045 McCowan Road (19T(W)22.004). No.
- As the subject site is only part of the 5061 Stouffville Road lands, future development on the rest of the Applicant's lands should be considered as well. Please contact the Town for the traffic studies for the above noted developments. Relevant site traffic excerpts should be included in the TIS.

Response: Further background development documents were requested from the Town as requested, including the following. Any background developments not listed were unavailable or the development was built out already.
- 5182, 5192, 5226 Main Street.
- 5211, 5223, 5241 Stouffville Road.
- 11861 and 12045 McCowan Rd.
- Southwest corner of Sams Way and Rougeview Avenue.
- Schlegal Villages.
- 199 Sams Way.
- 5262-5318 Main Street.
- 12049 Highway 48.

23. a) The trip generation for the proposed day care land use was based on the gross floor area (GFA) as opposed to the number of daycare students. It is our opinion that trip generation should be based on the number of day care students, as students have a more direct correlation with trips generated than GFA. Please update.
    b) According to Table 4-2 (Vehicular Site Trip Generation) lists the daycare GFA as 960 m2 (10,333 SF) instead of 1,116 m2 (12,013 SF) as described in Section 1.1 (Proposed Development). However, as per comment a) trip generation is to be based on the number of students.
    c) Internal interaction was not considered but should be considered between future residents and day care students, which would result in a further reduction of new vehicular trips.
    d) A net calculation of forecasted new site vehicular trips is required to be included in Table 4-2 (Vehicular Site Trip Generation).

Response: a)b) The trip generation for the day care was revised to number of daycare students as the independent variable.
c) Given the scale of the proposed residential development and the inclusion of an on-site daycare facility, a portion of daycare trips are anticipated to originate from residents within the development and therefore remain internal to the site. Accordingly, a conservative 15% internal capture reduction has been applied to the daycare-generated trips. The daycare facility represents a relatively small component compared to the overall residential population anticipated on-site.
d) The trip generation table has been updated accordingly.

24. a) The modal split was based on 2016 Toronto Transportation Survey (TTS), however the data set analyzed was 2006 GTA Zone of Household. The modal split is required to be based on the 2022 TTS and the latest modal split data set available to examine the most current modal split patterns.

Response: The modal split data was updated based on 2022 TTS.

25. a) The total distributions in Table 4-4 (Residential Directional Trip Distribution) either sum up to 99 or 101% and in Table 4-5 (Day Care Directional Trip Distribution) the weekday PM peak hour outbound total % sum up to 99 and 101 instead of 100% respectively. Please update.
    b) In Table 4-5 (Day Care Directional Trip Distribution), approximately 13% to 25% of traffic was assigned to come from the west approach along Stouffville Road/Main Street. However, the site is surrounded by a large golf course and agricultural land uses and minimal residential land uses immediately to the west of the site. Therefore, few day care students or employees are expected to access the site from the west. Further consideration should be given to the existing land uses surrounding the site with respect to distribution.

Response: a) The trip distribution has been updated to ensure 100%. Previously the sum discrepancy was due to rounding.
b) The daycare trip distribution/assignment has been revised to be based on 2022 TTS data with trip purpose filtered for daycare. On this basis, the majority of the distribution is expected to access the site from the east.

26. a) It is stated that a signal warrant analysis was conducted for the intersection of Street A/Stouffville Road under 2029 and 2034 future total conditions and the results are provided in Appendix G. This is consistent with what is shown in the Table Of Contents; however, Appendix G is for vehicle movement diagrams and the traffic signal warrant analysis was not provided in the appendix of the report. Ensure that the traffic signal warrant is based on the most current Ontario Traffic Manual Book 12 (Traffic Signals). Please update

Response: Appendices have been revised accordingly in the TIS Update to reflect the signal warrants.

27. a) The analysis concludes that despite implementing signal timing optimizations, the eastbound left, northbound left, and southbound left turn movements will exceed their respective storage under either weekday AM or PM peak hours. However, no recommendation was made with respect to the required storage space to accommodate the future projected queues at the respective movements. Please update.

Response: Noted. The TIS has been updated to provide recommendations for storage space to accommodate future projected queue accordingly.

28. a) The York Region Mobility Plan Guidelines requires a detailed pedestrian and cycling plan to demonstrate how the development will prioritize connections to Regional Roads. Furthermore, the guidelines also requires each study to identify and recommend transit stops, routes, and network requirements for each horizon year. However, as this is a Region requirement we defer to the Region to comment.

Response: Noted. A Pedestrian and Cycling Circulation Plan has been provided within the updated TIS. It was noted in the TIS that a bus stop for YRT local bus service is recommended to be provided at the Stouffville Road/ Highway 48 intersection.

29. a) The report states that the vehicle movement diagrams are provided in Appendix H, however the report does not have an Appendix H. The vehicle movement diagrams are provided in Appendix G. Please update.

Response: References to the appendices has been updated accordingly.

30. a) According to Town Zoning By-law (ZBL) 2010-001-Z0, if a parking calculation results in a fraction of a parking space, the fraction shall be rounded up to the nearest whole number. In Table 7-1 (Summary of Zoning By-law Vehicular Parking Requirements), ZBL rounding rules were not taken into consideration when determining the spaces required for the Apartment Building – Residential and Day Care Centre Use. As a result, the required Apartment Building – Residential spaces is 1,554 not 1,553 spaces and for Day Care Centre should be 25 not 24 spaces. Therefore, the proposed parking supply of 1553 spaces is one space less than what is required by the ZBL. The proposed residential parking supply is to meet the ZBL requirements or if the proposed parking supply is to be less than the ZBL requirements, justification is required.

Response: Noted.

31. As a result of the rounding rules not being accounted for in Table 7-1 (Summary of Zoning By-law Vehicular Parking Requirements), the total parking spaces required in Table 7-2 (Summary of Barrier-Free Parking Requirements) is 1,887 not 1,888. However, as the required Barrier Free Spaces will remain the same at 30 Barrier Free Spaces (15 Type A, 15 Type B), no further update is required.

Response: Noted.

32. The bicycle parking review was examined based on the City of Markham ZBL requirements as is required by the Town. The proposed 311 bicycle parking spaces is 436 spaces less than what is required by the Town. Please update accordingly.

Response: The parking review has been updated to remove reference to Markham ZBL. The Town of Stouffville does not have bicycle parking requirements. The development will provide 333 bicycle parking spaces.

33. a) The HSU (Delivery Truck) Maneuvering Diagrams examine and confirm that HSU trucks can access the loading space in a forward motion instead of a reverse motion. As trucks typically reverse into loading spaces, the HSU truck maneuvering is required to also examine parking in reverse. Please update. b) Along the main vehicle desire path for passenger vehicles travelling on the aisles and ramps between underground parking garage floors P1, P2, and P3 the passenger vehicle maneuvering diagrams are required to confirm whether the simultaneous movement of two passenger vehicles can be accommodated along the entire route.

Response: a) The HSU truck was shown in forward-in motion into the loading space to simulate front-end waste collection. The swept path analysis has been updated to show HSU truck in reverse-in motion to simulate loading.
b) Passenger vehicle swept paths have been updated to show concurrent movements along the ramps and sample intersections of the underground levels.

3.0 EXISTING TRANSPORTATION CONDITIONS

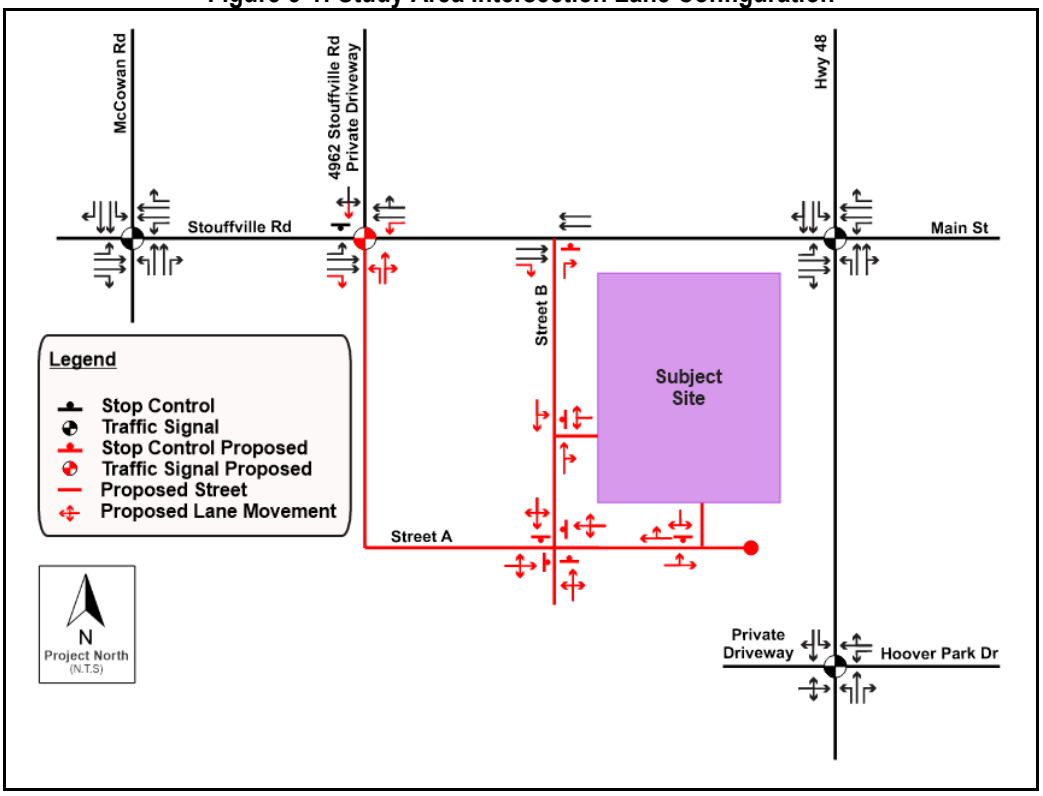
This section will identify and consider the existing transportation conditions for the road, transit, bicycling, and pedestrian networks within the study area. The transportation road network and active transportation facilities are based on Schedule O, Schedule P, and Schedule P-1 of the Town of Whitchurch-Stouffville Official Plan dated May 2024 (see **Appendix C**).

3.1. ROAD NETWORK

This subsection will describe the study area road network. Illustrated in **Figure 3-1** is the existing lane configuration and intersection control of the roads within the study area. The existing road network descriptions are as follows:

- **Stouffville Road / Main Street** is an east-west arterial road with an existing typical five-lane cross-section (two lanes per direction with centre turning lane) within the study area. Stouffville Road (west of Hwy 48) is under the jurisdiction of York Region and Main Street (east of Hwy 48) is under the jurisdiction of the Town of Whitchurch-Stouffville. Within the study area, Main Street maintains a posted speed limit of 50km/h east of Hwy 48. Stouffville Road maintains a posted speed limit of 60km/h west of Hwy 48 and transitions to a posted speed limit of 70km/h approximately 640m west of Hwy 48.
- **Highway 48** is a north-south provincial highway. Highway 48 maintains a four-lane cross-section (two lanes per direction) with a posted speed limit of 70km/h, and approximately 340m south of Stouffville Road / Main Street, Highway 48 transitions to an existing typical two-lane cross-section (one lane per direction) and posted speed limit of 80km/h.
- **McCowan Road** is a north-south regional arterial road with an existing typical two-lane cross-section (one lane per direction) and maintains a posted speed limit of 70km/h.
- **Hoover Park Drive** is an east-west Town collector road with an existing typical four-lane configuration (two lanes per direction) and maintains a posted speed limit of 50km/h.

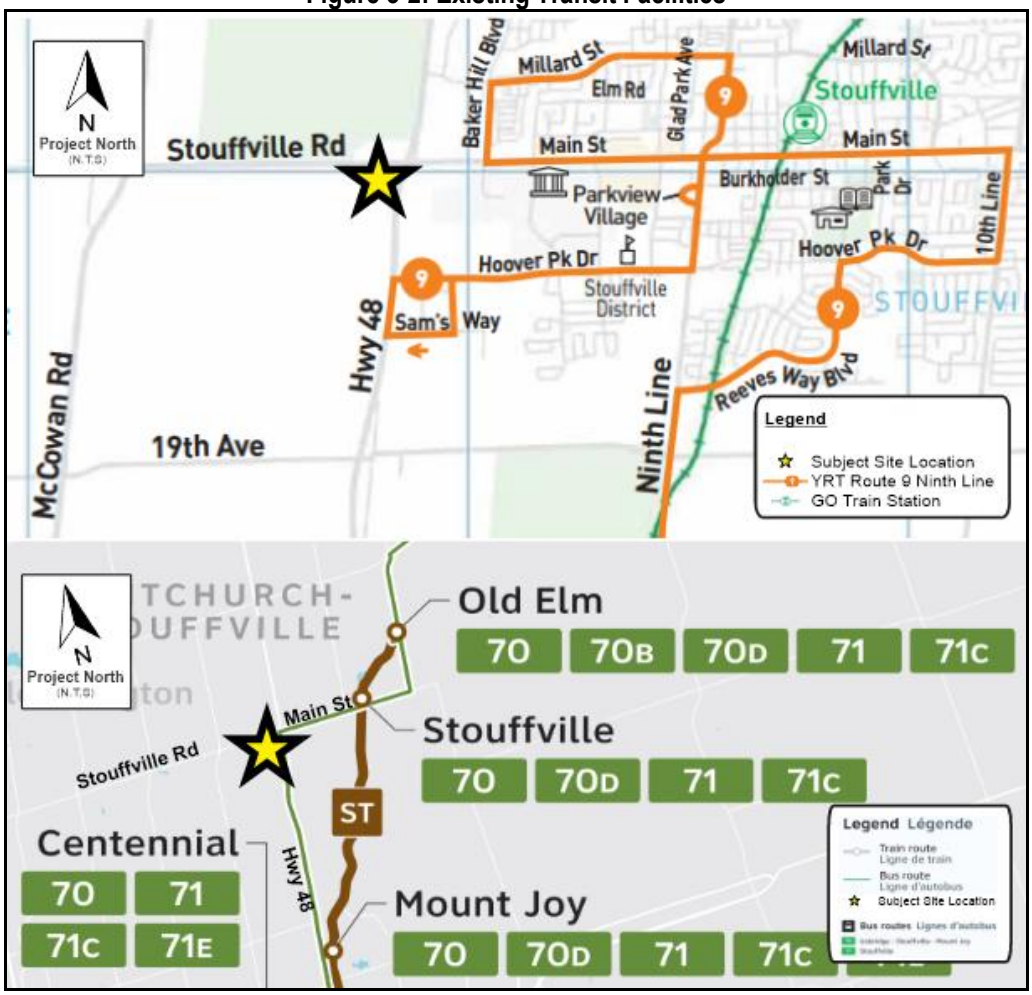
Figure 3-1: Study Area Intersection Lane Configuration



3.2. EXISTING TRANSIT FACILITIES

Within the broader area to the subject site, transit service is offered by York Region Transit (YRT) local bus service and GO Transit bus and commuter rail services. **Figure 3-2** illustrates the transit routes nearby the subject site.

Figure 3-2: Existing Transit Facilities



Source: Top – YRT System Map (May 2026); Bottom – GO Route 70-71 Map (May 2026)

The following transit routes and facilities are available nearest to the subject site and within short walking distance:

- **YRT Bus Route 9 Ninth Line** is a local bus route that operates generally along Ninth Line and provides connection between the Stouffville area and the Ninth Line / Riverwalk Drive / 14th Avenue area in Markham. This route operates weekdays with approximately 35-45-minute headways during AM and PM peak periods. The nearest bus stop is located approximately 600m (9-minute walk) to the subject site at the intersection of Main Street and Baker Hill Boulevard / Ringwood Drive.

  It is noted prior to 2024, YRT Route 9 operated with bus service at the Highway 48 and Main Street intersection based on the YRT 2024 Transit Initiatives (see excerpt in **Appendix C**), in which the bus stop was located approximately 100m (2-minute walk). Since 2024, the service route for Route 9 was revised to its current service routing and discontinued service along the Highway 48 and Main Street intersection area.

- **GO Bus Routes 70-71 Stouffville** is a commuter bus service. Route 70 operates between Uxbridge, Stouffville GO, and Mount Joy GO. Route 71 operates between Uxbridge to Union Station in Toronto, with connections to a number of GO stations along the route, including Stouffville GO. Routes 70-71 operate all

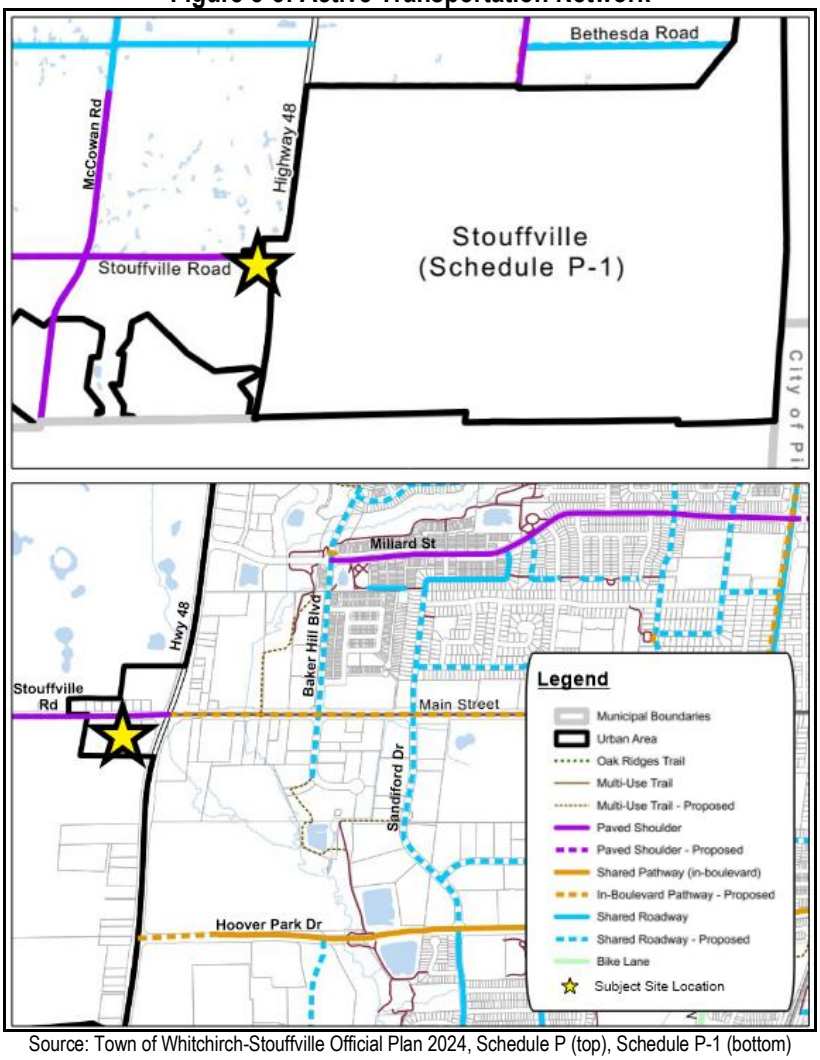
days of the week. The nearest bus stop from the subject site is located approximately 600m (9-minute walk) to the subject site at the intersection of Main Street and Baker Hill Boulevard / Ringwood Drive.

- **Stouffville GO Line** is a commuter rail service operated by GO Transit between Old Elm GO Station and Union Station GO Station. Stouffville GO Station is the nearest GO Train station from the subject site, located approximately 2.6km east. Service is offered all days of the week at Stouffville GO Station. Bus connections to GO Bus Routes 70-71 are provided at Stouffville GO.
- **YRT Mobility On-Request** is a ride-sharing service operated by YRT, that provides on-demand transit within selected service areas within York Region based on mobile app booking. The nearest On-Request service area to the subject site is the Stouffville service area. YRT also provides On-Request 65+ service that provides on-request service for seniors 65 years of age or older for door-to-door service within 5km of the senior's home.

3.3. ACTIVE TRANSPORTATION NETWORK

Figure 3-3 illustrates the active transportation network within the area surrounding the subject site. Within the study area, paved asphalt shoulders are avaialble along Stouffville Road and McCowan Road. Concrete sidewalks are available along Main Street and Hoover Park Drive. Signalized pedestrian crosswalks are available at the Stouffville Road / Main Street and Hwy 48 intersection, Stouffville Road and McCowan Road intersection, and Hoover Park Drive and Hwy 48 intersection.

Figure 3-3: Active Transportation Network



Source: Town of Whitchirch-Stouffville Official Plan 2024, Schedule P (top), Schedule P-1 (bottom)

3.4. TRANSIT MODE ASSESSMENT

The nearest bus transit stop is located approximately 600m east of the subject site at the Main Street and Baker Hill Boulevard intersection and approximately 600m south at the Highway 48 and Hoover Park Drive intersection. It is noted that the subject site is located approximately 2.6km from Stouffville GO Station. Intersection LOS was extracted from the intersection capacity analysis of the critical weekday peak hour from the existing traffic analysis. **Table 3-1** summarizes the transit level of service for intersections with transit stops within the study area based on the criteria detailed in the York Region Transportation Mobility Plan Guidelines. It is noted that there are no transit stops at the intersections of McCowan Road / Stouffville Road and Highway 48 / Stouffville Road.

Table 3-1: Existing Transit Level of Service Assessment

Intersection Transit Stop Location	Direction	Access to Transit Stops LOS	Transit Headways LOS	Intersection Approach LOS
McCowan Road and Stouffville Road	NB	-	-	
	SB	-	-	
	EB	-	-	
	WB	-	-	
Highway 48 and Stouffville Road / Main Street	NB	-	-	
	SB	-	-	
	EB	-	-	
	WB	-	-	
Highway 48 and Hoover Park Drive	NB	E	F	B
	SB	E	F	A
	EB	E	F	A
	WB	-	-	D

The results of the existing transit levels of service indicate that the Highway 48 and Hoover Park Drive intersection provides limited transit facilities and service. Walking distance to the intersection bus stop is greater than 600m and service frequency is greater than 30 minutes. Improved bus facilities, including the re-introduction of a YRT bus stop at the Highway 48 and Stouffville Road / Main Street intersection (closer proximity to the subject site) and shorter bus headways, would improve the connectivity of the subject site and the study area.

3.5. PEDESTRIAN MODE ASSESSMENT

Table 3-2 summarizes the existing pedestrian level of service for the study area based on the criteria detailed in the York Region Transportation Mobility Plan Guidelines.

Table 3-2: Existing Pedestrian Level of Service Assessment

Intersection	Direction	Segment		Intersection LOS
		Description	LOS	
McCowan Road and Stouffville Road	NB	McCowan Road	E	C
	SB	McCowan Road	E	E
	EB	Stouffville Road	E	C
	WB	Stouffville Road	E	C
Highway 48 and Stouffville Road / Main Street	NB	Highway 48	E	C
	SB	Highway 48	E	C
	EB	Stouffville Road / Main Street	E	C
	WB	Stouffville Road / Main Street	E	C
Highway 48 and Hoover Park Drive	NB	Highway 48	F	B
	SB	Highway 48	F	F
	EB	Hoover Park Drive	B	E
	WB	Hoover Park Drive	B	B

The results indicate that pedestrian segment facilities in between intersections are generally limited and can be greatly improved by providing dedicated pedestrian facilities such as concrete sidewalks or multi-use paths.

3.6. CYCLING MODE ASSESSMENT

Table 3-3 summarizes the existing pedestrian level of service for the study area based on the criteria detailed in the York Region Transportation Mobility Plan Guidelines.

Table 3-3: Existing Cycling Level of Service Assessment

Intersection	Direction	Segment		Intersection LOS
		Description	LOS	
McCowan Road and Stouffville Road	NB	McCowan Road	E	E
	SB	McCowan Road	E	E
	EB	Stouffville Road	E	E
	WB	Stouffville Road	E	E
Highway 48 and Stouffville Road / Main Street	NB	Highway 48	F	F
	SB	Highway 48	F	F
	EB	Stouffville Road / Main Street	E	F
	WB	Stouffville Road / Main Street	E	F
Highway 48 and Hoover Park Drive	NB	Highway 48	F	F
	SB	Highway 48	F	F
	EB	Hoover Park Drive	F	F
	WB	Hoover Park Drive	F	F

The results indicate that although paved shoulders exist along McCowan Road and Stouffville Road for cycling, there are limited cycling facilities within the study area.

3.7. TRAFFIC DATA COLLECTION

A turning movement count (TMC) survey was undertaken by Spectrum Traffic Data for the following study area intersections during the weekday AM and PM peak periods.

A summary of the traffic data collection is tabulated in **Table 3-4** below. Existing traffic data including TMC data and traffic signal timing plans is enclosed in **Appendix C**.

Table 3-4: Summary of TMC Data Collection

Intersection	Date of Survey	Time of Survey	Source
McCowan Road and Stouffville Road (Signalized)	Thursday, June 22, 2023	AM: 7:00-10:00 PM: 4:00-7:00	Spectrum Traffic
4962 Stouffville Road Driveway and Stouffville Road / Main Street (Unsignalized)			
Highway 48 and Stouffville Road / Main Street (Signalized)			
Highway 48 and Hoover Park Drive (Signalized)			

3.8. EXISTING INTERSECTION CAPACITY ANALYSIS

The intersection capacity analysis has been conducted for the weekday AM and PM peak hours. **Figure 3-4** illustrates the traffic volumes within the study area road network. The existing intersection capacity and queue analysis results for the intersection study area are summarized in **Figure 3-4**. Detailed Synchro outputs are provided in **Appendix D**.

Figure 3-4: Existing Traffic Volumes

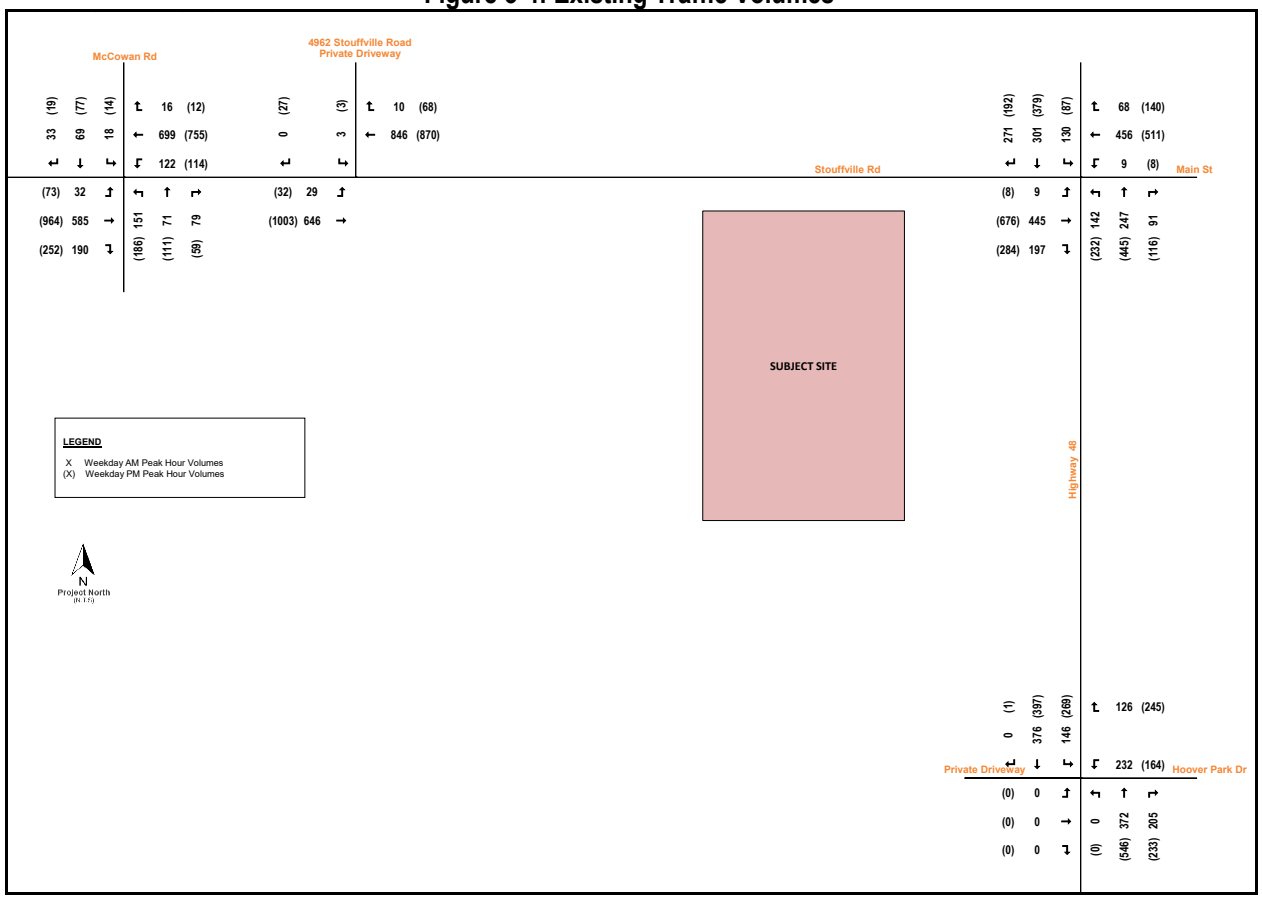


Table 3-5: Existing Intersection Capacity Analysis Results

Intersection	Movement of Interest	Weekday AM Peak Hour				Weekday PM Peak Hour				Estimated Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
1: McCowan Rd & Stouffville Rd (Signalized)	**Overall**	0.45	16	B	-	0.54	16	B	-	-
	EBL	0.10	8	A	10	0.22	10	B	21	105
	EBT	0.31	9	A	57	0.47	12	B	103	-
	EBR	0.15	8	A	10	0.18	9	A	13	170
	WBL	0.33	11	B	34	0.46	16	B	42	125
	WBT	0.37	10	A	71	0.37	10	B	76	-
	WBR	0.01	7	A	0	0.01	8	A	0	65
	NBL	0.69	49	D	50	0.73	50	D	61	140
	NBT	0.12	37	D	12	0.15	35	D	17	-
	NBR	0.10	36	D	13	0.08	35	C	12	150
	SBL	0.08	36	D	9	0.05	35	C	7	75
	SBT	0.12	37	D	12	0.11	35	D	13	-
	SBR	0.03	36	D	5	0.01	34	C	2	110
4: Hwy 48 & Stouffville Rd/Main St	**Overall**	0.43	35	D	-	0.65	35	D	-	-
	EBL	0.09	44	D	6	0.05	36	D	5	45
	EBT	0.74	56	E	84	0.78	49	D	116	-

(Signalized)	EBR	0.14	46	D	21	0.20	38	D	21	135
	WBL	0.08	44	D	6	0.08	37	D	5	60
	WBT	0.76	57	E	86	0.58	44	D	85	-
	WBR	0.05	45	D	7	0.10	37	D	16	105
	NBL	0.30	10	A	31	0.57	18	B	63	50
	NBT	0.20	16	B	44	0.38	24	C	92	-
	SBL	0.24	13	B	28	0.22	19	B	25	45
	SBT	0.34	20	B	66	0.43	29	C	100	-
6: Hwy 48 & Private Driveway/Hoover Park Dr (Signalized)	**Overall**	0.52	22	C	**-**	0.73	30	C	**-**	**-**
	WBL	0.77	59	E	88	0.70	60	E	67	-
	WBR	0.09	42	D	16	0.18	47	D	23	-
	NBT	0.41	15	B	99	0.81	41	D	182	-
	NBR	0.15	12	B	13	0.17	23	C	15	150
	SBL	0.26	8	A	24	0.46	13	B	48	220
	SBT	0.35	9	A	72	0.34	7	A	63	-
2: Stouffville Rd & 4962 Stouffville Rd Private Driveway (Unsignalized)	EBL	0.04	10	B	12	0.05	11	B	1	140
	SBLR	0.01	16	C	5	0.07	13	B	2	-

The following summarizes the existing conditions for the intersection study area.

McCowan Road & Stouffville Road

The intersection operates efficiently during both the weekday AM and PM peak hours at overall LOS B, with all movements operating within acceptable conditions. While northbound and southbound movements experience moderate delays, the 95th queues remain within the available storage lengths.

Highway 48 & Stouffville Road/Main Street

The intersection operates at overall LOS D during both peak periods. The eastbound and westbound through movements operate at LOS E during the weekday AM peak hour and improve to LOS D during the PM peak hour. All 95th queues remain manageable with no identified storage deficiencies.

Highway 48 & Private Driveway/Hoover Park Drive

The intersection operates acceptably at overall LOS C during both peak periods. The westbound left-turn movement operates at LOS E during both peak hours.

Stouffville Road & 4962 Stouffville Road Private Driveway

The unsignalized intersection operates well within acceptable conditions during both peak hours, with low delays, low v/c ratios, and minimal queues for all analyzed movements.

4.0 FUTURE BACKGROUND TRAFFIC CONDITIONS

The future background conditions include the summation of existing traffic volumes, general traffic corridor growth, and site-specific traffic volumes generated from other development applications within the surrounding area. The future background condition also incorporates any planned road improvement works such as road widenings.

A general 5-year horizon (2029) and 10-year horizon (2034) were assessed in this study given the scale of the development and uncertainty of development timeline.

4.1. FUTURE ROAD IMPROVEMENTS

No road improvements are expected that will affect the intersection study area based on the York Region 2024 10-Year Road and Transit Growth Capital Construction Program.

Notwithstanding, based on the Town of Whitchurch-Stouffville Transportation Master Plan Update dated April 3, 2024, Highway 48 is planned to be widened from one lane per direction to two lanes per direction (four-lane cross section) between Donald Cousins Parkway to Stouffville Road within the Town (see excerpt from Town TMP Update in **Appendix C**). The capital project is planned as part of the new capacity expansion on Highway 48 between Major Mackenzie Drive to Bloomington Road and outlined within the province's planning document titled Connecting the GCH: A Transportation Plan for the Greater Golden Horseshoe dated 2022. The road improvements are subject to further study. A timeline for completion of the planned road widening is uncertain at the time of this study. Given the uncertainty, the widening of Highway 48 (affecting the intersection of Highway 48 and Hoover Park Drive / Private Driveway) was assessed as a sensitivity analysis for the 10-year future total condition as part of possible mitigation measures within **Section 5.4.4** in this study.

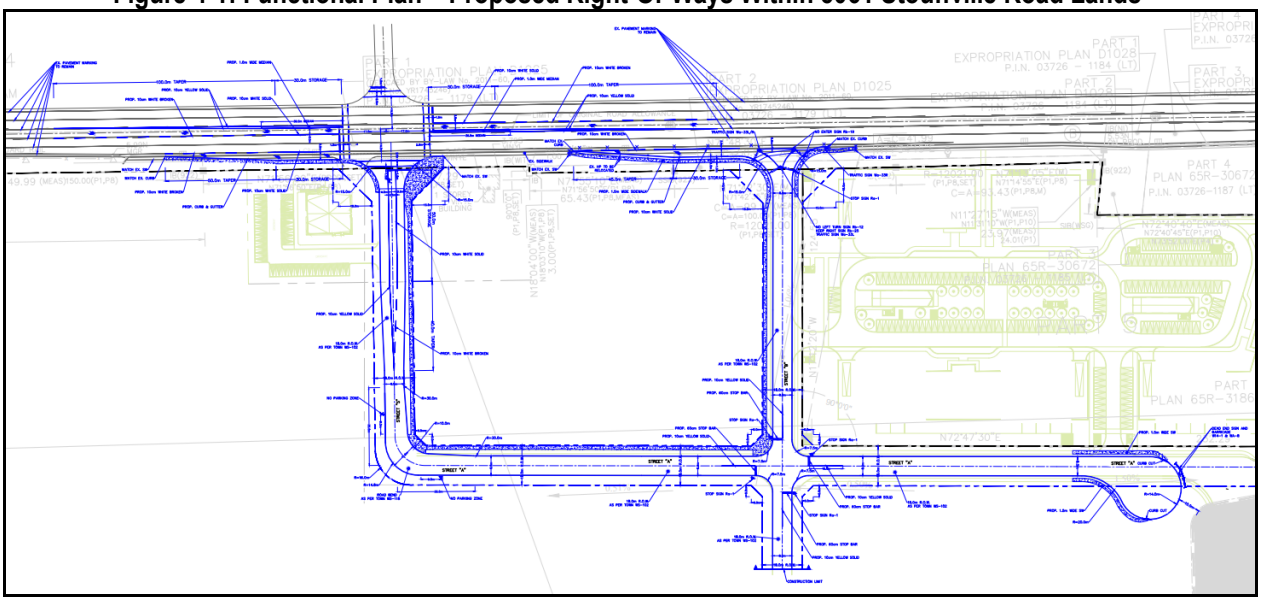
Further, as noted in **Section 1.1** and depicted in the Context Plan in **Appendix A**, two (2) new public streets, Street A and Street B will be provided adjacent to the subject site as part of the proposed development that will be provide site access to the external road network. Street A will connect to Stouffville Road as the south intersection leg opposite to the private driveway for 4962 Stouffville Road (Spring Lakes Golf Club). The Street A and Stouffville Road intersection is proposed as a full moves signalized intersection. Street B will connect to Stouffville Road and will be restricted to right-in/right-out movements. Vehicular access to the subject site will be provided by two full moves driveways along Street A and Street B, for access to Stouffville Road. Street A and Street B will also service future developments that will be proposed within the property of 5061 Stouffville Road. No background development traffic volumes from the foregoing future developments were included within the study as there are no development applications and/or concept development plans for these developments at the time of this study.

4.2. PROPOSED ROAD IMPROVEMENTS OF THE SUBJECT DEVELOPMENT

Within the property of 5061 Stouffville Road and adjacent to the subject site, two public streets (Street A and Street B) are proposed to provide access from Stouffville Road to the subject site and future developments, as shown in **Figure 3-1**.

A Functional Plan was prepared by Nextrans to illustrate the proposed road improvements within the property of 5061 Stouffville Road (see Functional Plan drawings FP-1 to FP-6 in **Appendix F**). **Figure 4-1** depicts the Functional Plan, including the subject site and the adjacent proposed public right-of-ways.

Figure 4-1: Functional Plan – Proposed Right-Of-Ways Within 5061 Stouffville Road Lands



Street A is proposed as an 18.0m public right-of-way with a two-lane cross-section (one lane per direction) that connects to Stouffville Road as the south leg at the intersection of Stouffville Road and 4962 Stouffville Road private driveway (Spring Lakes Golf Club access). A dedicated eastbound right-turn lane, eastbound left-turn lane, and westbound left-turn lane are proposed for the intersection. Street A terminates eastward as a cul-de-sac adjacent to the proposed south site driveway access.

Street B is proposed as a north-south 18.0m public right-of-way that will connect to Stouffville Road through a restricted right-in/right-out access. The intersection of Street B and Stouffville Road will provide a dedicated eastbound right-turn lane and a traffic directional island to enforce right-in/right-out movements.

The Street A and Stouffville Road intersection was assessed as an unsignalized intersection and a signalized intersection within this study. The Street A and Street B intersection is proposed as an unsignalized all-way stop-controlled intersection.

West of Street B, concrete pedestrian sidewalks are proposed along the north and east sides of Street A. North of Street A, concrete sidewalks are proposed along the west side of Street B.

4.3. CORRIDOR GROWTH

Table 4-1 summarizes the corridor growth rates compounded per annum that were applied to the study area roads.

Table 4-1: Corridor Growth Rates

Road Corridor	Growth Rate
McCowan Road	3.29%
Stouffville Road / Main Street	1.62%
Highway 48	0.94%
Hoover Park Drive	2.00%

The corridor growth rates for McCowan Road and Stouffville Road/Main Street were derived from historical York Region AADT data. The growth rate for Highway 48 was derived from MTO historical AADT data for provincial highways. A conservative 2.0% per annum growth rate was applied to Hoover Park Drive as corridor growth and historical traffic data were not available. Corridor growth details are enclosed in **Appendix C**.

4.4. BACKGROUND DEVELOPMENTS

A number of background developments were identified near the subject site. Site-specific traffic volumes from the identified background developments within the surrounding area to the subject site are in the future background condition.

Table 4-2 summarizes the identified background developments that were included as background development traffic volumes. The background developments were confirmed and provided by Town Transportation staff. **Figure 4-2** illustrates the background development traffic volumes within the intersection study area. Relevant background development documents are available in **Appendix C**.

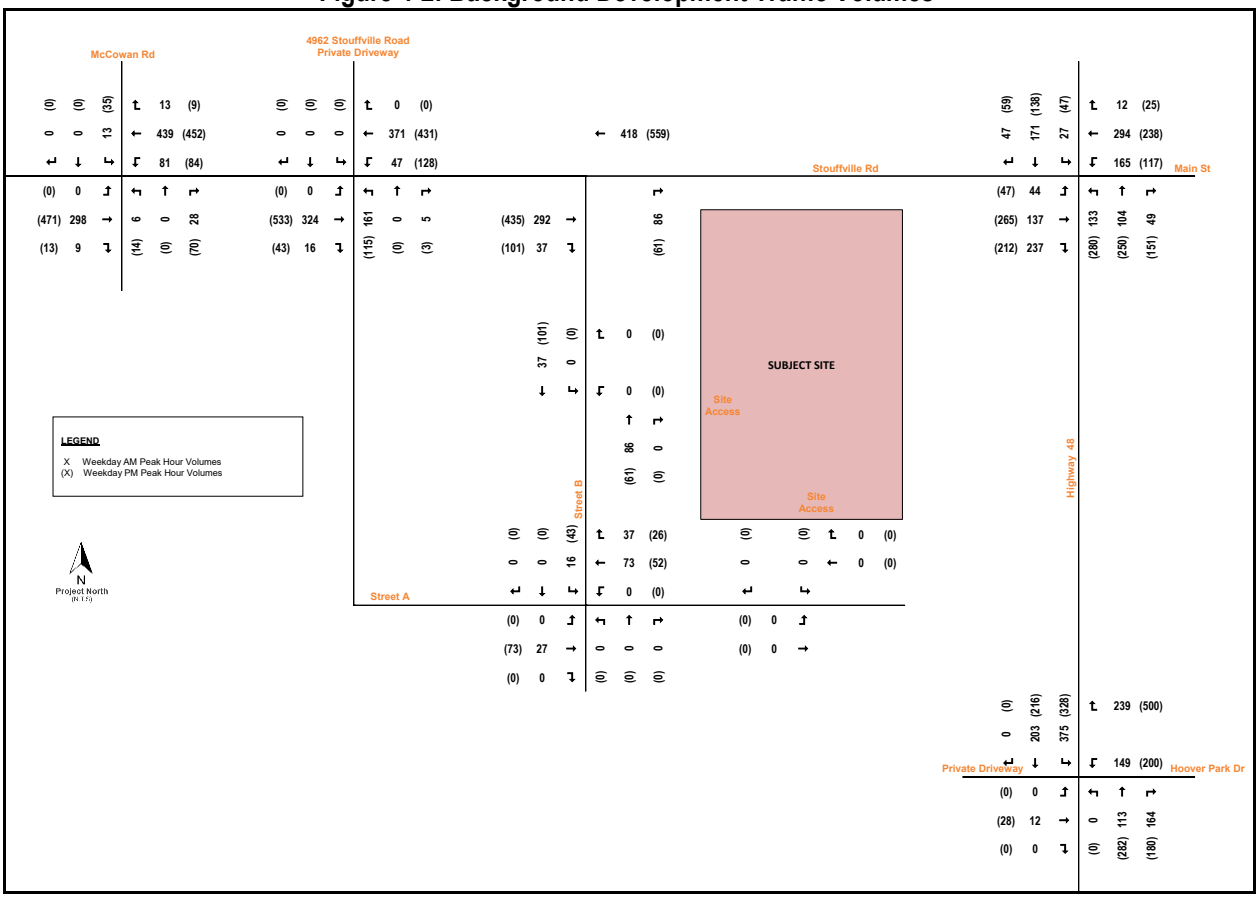
Table 4-2: Summary of Background Developments

No.	Address / Development	Description / Statistics	Source
1	5505 Main Street, Whitchurch-Stouffville [SPA22.029]	Development proposal for a gas station with four-pump gas bar and a convenience store with 125.59sqm of GFA.	n Engineering (Jun 2023)
2	Schlegel Villages, Whitchurch-Stouffville [OPA21.001; ZBA21.002; SPA23.001]	Mixed-use development located along Hoover Park Drive. Consists of one LTC building (192 LTC beds), two retirement home buildings (424 retirement dwelling units, 106 apartment dwelling units).	GHD (Jul 2023)
3	Sam's Way (north side, west of Rougeview Avenue), Whitchurch-Stouffville [SPA22.011]	Two-storey commercial building with 2,120.07sqm of GFA.	CGE (May 2022)
4	11776 Highway 48 (Stouffville Meadows), Whitchurch-Stouffville/Markham	Development proposal located along the Whitchurch-Stouffville and Markham limits, for 352 condominium dwelling units, 445 seniors apartment dwelling units, 2,040sqm of commercial/medical office GFA, and 123 townhouse units.	Crozier (Dec 2020)
5	5472 Main Street, Whitchurch-Stouffville [SPA18.004; ZBA18.003]	Development proposal for 147 townhouse units, located at the northeast corner of Main Street and Baker Hill Boulevard. 31 townhouse units are configured as live-work units, with a total commercial GFA of 505.3sqm.	Aecom (Jan 2019)
6	5531 Main Street, Whitchurch-Stouffville [SPA19.030]	Development proposal for condominium building with 319 dwelling units and 732.35sqm of at-grade retail GFA.	LEA (Mar 2023)
7	5182, 5192, 5226 Main Street (Phase 1) [SPA08.015]	Proposed office development of 417sqm at the northwest corner of Stouffville Road and Highway 48.	Mark Engineering (Apr 2020)
8	5211, 5223, 5241 Stouffville Road [OPA23.001]	Two commercial buildings (GFA of 122.9sqm and 322.5sqm) with drive-thru facilities.	Crozier (Sep 2023)
9	11861 and 12045 McCowan Road [19T(W)22.004]	186 single detached units, 386 townhouse units, 26 mixed-use hub townhouse units, 72 mixed-use hub high-density units, 225 high-density mixed-use units.	Crozier (Apr 2024)
10	Southwest Quadrant of Sams Way & Rougeview Avenue [SPA23.005]	Four-storey medical office building with 3,440.74sqm of GFA.	Paradigm (Dec 2023)
11	199 Sams Way [19T(W)-22.009]	Commercial GFA of 64,483sqft and industrial GFA of 294,931sqft. No TIS. Sourced from April 2024 TIS for 11861 and 12045 McCowan Road as prepared by Crozier.	Crozier (Apr 2024)
12	5262-5318 Main Street [19T(W)16.003]	340 high-rise residential units, 460 mid-rise residential units, 5,000sqft of commercial GFA. Sourced from April 2024 TIS for 11861 and 12045 McCowan Road as prepared by Crozier.	Crozier (Apr 2024)
13	Part of 5061 Stouffville Road	Background developments assumed as part of high-level conceptual master plan of 5061 Stouffville Road based on Applicant correspondence. 1,780 high-density residential units and 105 low-density townhouse units were assumed. All trips were assumed to utilize the subject site roads.	N/A

As the Applicant owns the rest of the lands at the property of 5061 Stouffville Road, a conceptual master plan is proposed that will provide a subdivision with an internal road network and developments with land uses ranging from business/industrial, commercial/retail, schools, day care, and high-density and low-density residential. Given the conceptual nature of the master plan and the uncertainty of the timeline for each parcel, the parcels nearest to the subject site (i.e. adjacent to the roads proposed within this application) were assumed as background developments within this study. The assumed elements included within the master plan as background developments include 1,780 high-density residential units and 105 low-density townhouse units that were assumed to utilize only the proposed roads within this application. Given the latter and the highly conceptual, uncertain layout of the adjacent background developments within the master plan, the study analysis may be conservative.

It is noted that some background developments requested from the Town have already been built out and were not included as background developments within the study, including 5402 Baker Hill Boulevard (known as 25 Baker Hill Boulevard) and 5400, 5472, 5508 Main Street.

Figure 4-2: Background Development Traffic Volumes



4.5. 2029 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS

Figure 4-3 illustrates the 2029 future background traffic volumes. **Table 4-3** summarizes the 2029 future background intersection capacity analysis results. Detailed Synchro results are enclosed in **Appendix D**.

Table 4-3: 2029 Future Background Intersection Capacity Analysis Results

Intersection	Movement of Interest	Weekday AM Peak Hour				Weekday PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
1: McCowan Rd & Stouffville Rd (Signalized)	**Overall**	0.90	20	C	-	1.91	52	D	-	-
	EBL	0.24	12	B	13	0.52	24	C	39	105
	EBT	0.50	11	B	102	0.75	18	B	209	-
	EBR	0.16	8	A	10	0.19	10	A	13	170
	WBL	0.96	66	E	108	2.36	667	F	118	125
	WBT	0.64	14	B	148	0.64	15	B	155	-
	WBR	0.02	7	A	2	0.01	8	A	1	65
	NBL	0.71	50	D	52	0.76	51	D	66	140
	NBT	0.14	36	D	14	0.17	35	C	20	-
	NBR	0.28	38	D	26	0.28	36	D	31	150
	SBL	0.14	36	D	13	0.18	35	C	19	75
	SBT	0.14	36	D	14	0.13	34	C	15	-
	SBR	0.03	35	D	5	0.01	33	C	2	110
4: Hwy 48 & Stouffville Rd/Main St (Signalized)	**Overall**	0.86	50	D	-	1.52	119	F	-	-
	EBL	0.35	33	C	17	0.27	24	C	15	45
	EBT	0.64	42	D	98	0.80	40	D	156	-
	EBR	0.65	44	D	96	0.67	36	D	116	135
	WBL	0.81	55	D	47	0.81	52	D	38	60
	WBT	0.79	46	D	131	0.61	33	C	114	-
	WBR	0.06	32	C	9	0.12	25	C	14	105
	NBL	0.76	44	D	142	2.24	611	F	353	50
	NBT	0.45	34	C	89	1.14	127	F	240	-
	SBL	0.47	33	C	46	0.67	43	D	68	45
	SBT	0.99	79	E	163	0.98	77	E	167	-
6: Hwy 48 & Private Driveway/Hoover Park Dr (Signalized)	**Overall**	1.29	106	F	-	2.62	403	F	-	-
	EBT	0.32	65	E	11	0.50	66	E	19	
	WBL	0.85	54	D	140	0.59	30	C	129	-
	WBR	0.39	35	C	44	1.11	108	F	303	-
	NBT	1.15	136	F	227	1.84	428	F	442	-
	NBR	0.27	37	D	24	0.41	39	D	45	150
	SBL	1.56	305	F	332	4.39	1576	F	383	220
	SBT	0.77	33	C	246	1.06	92	F	263	-
2: Stouffville Rd & 4962 Stouffville Rd Private Driveway (Unsignalized)	EBL	0.07	13	B	2	0.08	14	B	2	130
	WBL	0.08	11	B	2	0.41	23	C	16	130
	NBL	1.10	159	F	73	2.33	771	F	102	50
	NBTR	0.01	13	B	0	0.01	18	C	0	-
	SBLR	0.03	39	E	1	0.16	26	D	5	-
3: Street B & Stouffville Rd	NBR	0.19	14	B	6	0.20	19	C	6	-
8: Street B & Street A	EBLTR	-	7	A	-	-	8	A	-	-
	WBLTR	-	7	A	-	-	7	A	-	-
	NBLTR	-	7	A	-	-	7	A	-	-
	SBLTR	-	8	A	-	-	8	A	-	-

The following summarizes the 2029 future background conditions for the intersection study area.

McCowan Road & Stouffville Road

The intersection is projected to operate at overall LOS C during the weekday AM peak hour and LOS D during the weekday PM peak hour but will operate above capacity in the weekday PM peak hour due to the westbound left-turn movement. The westbound left-turn movement will operate over capacity and LOS F in the PM peak hour, while the movement will operate near capacity (v/c of 0.96) and LOS E in the AM peak hour.

Highway 48 & Stouffville Road/Main Street

The intersection is projected to operate at overall LOS D during the weekday AM peak hour and over capacity at LOS F during the weekday PM peak hour. Several movements, particularly the northbound left-turn, northbound through, and southbound through movements, are forecast to operate over capacity with significant delays and queueing during the PM peak hour due to heavy background development traffic volumes. The southbound through movement is expected to operate at near capacity with a v/c ratio of 0.99 and 0.98 in the AM and PM peak hours, respectively.

Highway 48 & Private Driveway/Hoover Park Drive

The intersection is projected to operate over capacity at overall LOS F during both peak hours. The northbound through and southbound left-turn movements will experience overcapacity, substantial delays, and queueing, particularly during the weekday PM peak hour. The PM peak hour will also experience overcapacity and LOS F for the westbound right and southbound through movements.

Stouffville Road & 4962 Stouffville Road Private Driveway

The northbound left-turn movement is expected to operate over capacity and LOS F from considerable delay and queueing during the AM and PM peak hours.

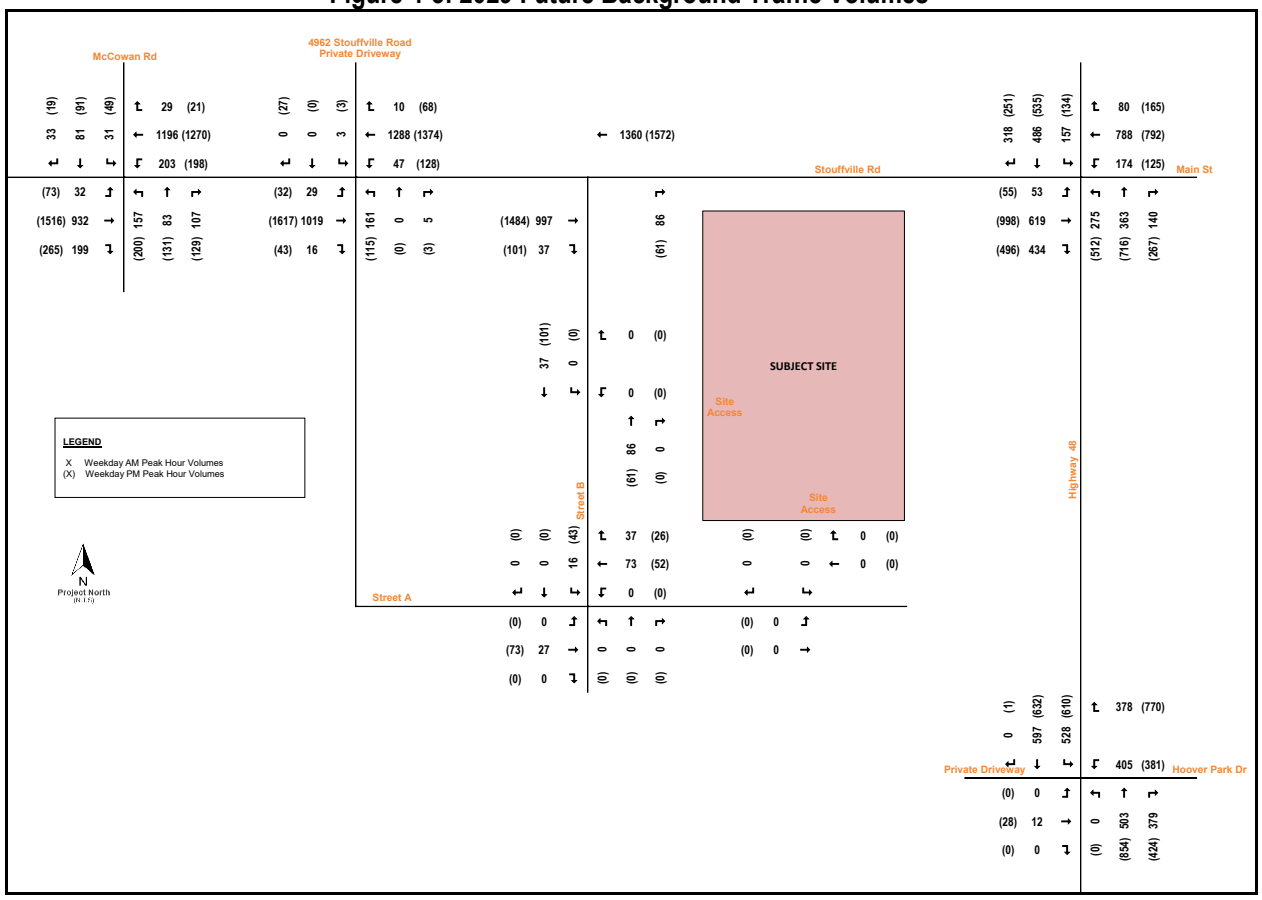
Street B & Stouffville Road

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with critical movements expected to operate at LOS C or better and experiencing minimal delays.

Street B & Street A

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with all movements expected to operate at LOS A.

Figure 4-3: 2029 Future Background Traffic Volumes



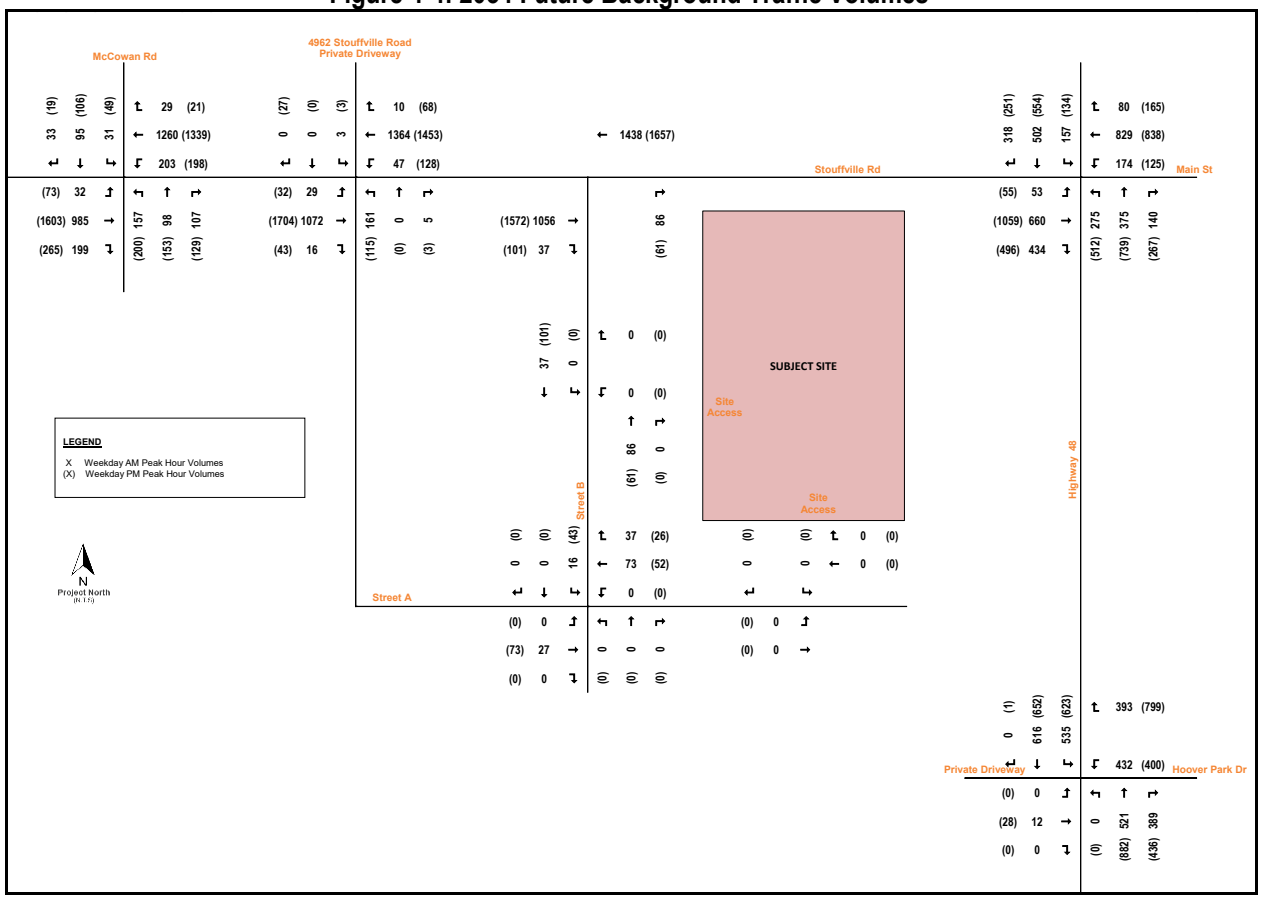
4.6. 2034 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS

Figure 4-4 illustrates the 2034 future background traffic volumes. **Table 4-4** summarizes the 2034 future background intersection capacity analysis results. Detailed Synchro results are enclosed in **Appendix D**.

Table 4-4: 2034 Future Background Intersection Capacity Analysis Results

Intersection	Movement of Interest	Weekday AM Peak Hour				Weekday PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
1: McCowan Rd & Stouffville Rd (Signalized)	**Overall**	0.97	23	C	-	2.36	65	E	-	-
	EBL	0.27	14	B	14	0.60	32	C	43	105
	EBT	0.53	12	B	110	0.80	19	B	251	-
	EBR	0.16	9	A	10	0.19	10	A	13	170
	WBL	1.06	98	F	113	2.99	951	F	126	125
	WBT	0.68	15	B	161	0.67	16	B	169	-
	WBR	0.02	7	A	2	0.01	8	A	1	65
	NBL	0.71	50	D	52	0.76	51	D	67	140
	NBT	0.16	36	D	16	0.20	35	C	23	-
	NBR	0.28	38	D	26	0.28	36	D	31	150
	SBL	0.14	36	D	13	0.19	35	C	19	75
	SBT	0.16	36	D	15	0.14	34	C	17	-
	SBR	0.03	35	D	5	0.01	33	C	2	110
4: Hwy 48 & Stouffville Rd/Main St (Signalized)	**Overall**	0.89	51	D	-	1.62	135	F	-	-
	EBL	0.36	32	C	16	0.27	23	C	14	45
	EBT	0.65	41	D	102	0.81	39	D	168	-
	EBR	0.64	42	D	96	0.65	35	C	117	135
	WBL	0.82	55	E	48	0.84	58	E	50	60
	WBT	0.80	45	D	136	0.62	32	C	121	-
	WBR	0.06	31	C	8	0.12	24	C	13	105
	NBL	0.80	50	D	149	2.51	730	F	355	50
	NBT	0.48	36	D	92	1.21	154	F	248	-
	SBL	0.48	33	C	47	0.71	46	D	71	45
	SBT	1.01	86	F	170	1.01	84	F	174	-
6: Hwy 48 & Private Driveway/Hoover Park Dr (Signalized)	**Overall**	1.36	119	F	-	2.69	419	F	-	-
	EBT	0.32	65	E	11	0.50	66	E	19	
	WBL	0.87	55	D	153	0.61	30	C	136	-
	WBR	0.43	34	C	51	1.17	128	F	322	-
	NBT	1.20	153	F	238	1.89	455	F	460	-
	NBR	0.28	37	D	25	0.44	39	D	50	150
	SBL	1.68	359	F	336	4.49	1619	F	391	220
	SBT	0.81	37	D	259	1.10	104	F	277	-
2: Stouffville Rd & 4962 Stouffville Rd Private Driveway (Unsignalized)	EBL	0.07	14	B	2	0.09	15	C	2	130
	WBL	0.09	12	B	2	0.45	26	D	18	130
	NBL	1.20	199	F	81	2.75	982	F	108	50
	NBTR	0.01	13	B	0	0.01	19	C	0	-
	SBLR	0.03	43	E	1	0.18	29	D	5	-
3: Street B & Stouffville Rd	NBR	0.20	15	B	6	0.22	20	C	6	-
8: Street B & Street A	EBLTR	-	7	A	-	-	8	A	-	-
	WBLTR	-	7	A	-	-	7	A	-	-
	NBLTR	-	7	A	-	-	7	A	-	-
	SBLTR	-	8	A	-	-	8	A	-	-

Figure 4-4: 2034 Future Background Traffic Volumes



The following summarizes the 2034 future background conditions for the intersection study area.

McCowan Road & Stouffville Road

The intersection is projected to operate at overall LOS C and near capacity (v/c of 0.97) during the weekday AM peak hour and overall above capacity with LOS E during the weekday PM peak hour. The westbound left-turn movement is expected to operate over capacity during both peak hours, with considerable delay in the PM peak hour.

Highway 48 & Stouffville Road/Main Street

The intersection is projected to operate at overall v/c of 0.89 (over the York Region critical threshold of 0.85) with LOS D during the weekday AM peak hour and over capacity at LOS F during the weekday PM peak hour. Several critical movements, including the southbound through movement in the AM peak hour, and the northbound left-turn, northbound through, and southbound through movements in the PM peak hour, are expected to operate over capacity with substantial delays and queueing, in particular during the PM peak hour. This is mostly due to the heavy traffic volumes from a number of background developments.

Highway 48 & Private Driveway/Hoover Park Drive

The intersection is projected to operate overall above capacity at LOS F during both peak hours given the substantial turning volumes from background developments. The northbound through and southbound left-turn movements are expected to experience operational deficiencies in the AM peak hour. The northbound left-turn, northbound through, and southbound through movements will operate above capacity with substantial delays and queueing during the PM peak hour.

Stouffville Road & 4962 Stouffville Road Private Driveway

The unsignalized intersection is projected to operate with the northbound left-turn movement above capacity and LOS F with considerable delay during both peak hours due to the assumed heavy background development traffic volumes turning left onto Stouffville Road from the minor road at the unsignalized intersection.

Street B & Stouffville Road

The unsignalized intersection is projected to operate within acceptable conditions during both peak hours

Street B & Street A

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with all movements expected to operate at LOS A.

5.0 SITE TRAFFIC

The following section discusses the calculation, distribution, and assignment of trips generated by the subject site.

5.1. TRAVEL MODE SHARE

Table 5-1 summarizes the travel mode split data based on 2022 Transportation Tomorrow Survey (TTS) data for traffic zones 2707 to 2709 (see **Appendix E**).

Table 5-1: Travel Mode Share

Mode	Auto	HOV	Transit	Walk and Cycle	Total
Mode Share	64%	23%	3%	10%	100%

The travel mode share data is consistent with the mode share for the Town based on the Town of Whitchurch-Stouffville Transportation Master Plan dated March 2018 (see excerpt in **Appendix C**), in which the Town is heavily dependent on automobiles for travel.

5.2. SITE TRIP GENERATION

The vehicular trip generation for proposed development was derived from the Institute of Transportation Engineers (ITE) Trip Generation Manual 12th Edition for the weekday AM and PM peak hour of adjacent street for the following land use codes (LUC). **Table 5-2** summarizes the site auto trip generation.

Given the scale of the proposed residential development and the inclusion of an on-site daycare facility, a portion of daycare trips are anticipated to originate from residents within the development and therefore remain internal to the site. Accordingly, a conservative 15% internal capture reduction has been applied to the daycare-generated trips. The daycare facility represents a relatively small component compared to the overall residential population anticipated on-site.

A 13% non-auto modal split reduction was applied to the residential ITE trip generation rates, based on 2022 Transportation Tomorrow Survey (TTS) data, to account for walking, cycling, and transit trips. No non-auto trips were assumed for daycare land use given the nature of the daycare.

Table 5-2: Site Trip Generation

ITE Land Use	Magnitude	Parameter	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
LUC 222 Multifamily Housing (High-Rise)	1,332 units	Trip Rate	0.06	0.14	0.20	0.16	0.10	0.26
		ITE Trips	77	189	266	211	135	346
		Non-Auto (13%)	10	24	34	26	17	43
		Vehicle Trips	67	165	232	185	118	303
LUC 565 Day Care Center	88 students	Trip Rate	0.42	0.38	0.80	0.38	0.42	0.80
		ITE Trips	37	33	70	33	37	70
		Internal Capture (15%)	6	5	11	5	6	11
		Vehicle Trips	31	28	59	28	31	59
Total Vehicle Trips			98	193	291	213	149	362
Total Non-Auto Trips			10	24	34	26	17	43
Total Trips			108	217	325	239	166	405

The proposed development will generate the following.

- 325 two-way trips (108 in, 217 out) in the AM peak hour and 405 two-way trips (239 in, 166 out) in the PM peak hour.
- 291 two-way auto trips (98 in, 193 out) in the AM peak hour and 362 two-way auto trips (213 in, 149 out) in the PM peak hour.

- 34 two-way non-auto trips (10 in, 24 out) in the AM peak hour and 43 two-way trips (26 in, 17 out) in the PM peak hour.

5.3. TRIP DISTRIBUTION AND ASSIGNMENT

Table 5-3 summarizes the residential trip distribution. **Table 5-4** summarizes the day care trip distribution. The trip distribution was based on TTS data. Residential trip distribution was based on home-based trip purpose. Day care trip distribution was based on trips with daycare as origin or destination. Trip distribution corridor directions with less than 5% were given a nominal 5%, with all other distributions adjusted accordingly, to account for nominal trips. Detailed TTS data is enclosed in **Appendix E**.

Table 5-3: Residential Directional Trip Distribution

Corridor	Direction	Weekday AM Peak Hour		Weekday PM Peak Hour	
		In	Out	In	Out
Hwy 48	Northbound	15%	5%	15%	5%
	Southbound	8%	14%	8%	14%
McCowan Rd	Northbound	5%	5%	5%	5%
	Southbound	13%	17%	13%	17%
Stouffville Rd / Main St	Eastbound	35%	17%	35%	17%
	Westbound	24%	42%	24%	42%
TOTAL		100%	100%	100%	100%

Table 5-4: Day Care Directional Trip Distribution

Corridor	Direction	Weekday AM Peak Hour		Weekday PM Peak Hour	
		In	Out	In	Out
Hwy 48	Northbound	5%	5%	30%	15%
	Southbound	15%	30%	5%	5%
McCowan Rd	Northbound	5%	5%	5%	5%
	Southbound	5%	5%	5%	5%
Stouffville Rd / Main St	Eastbound	5%	50%	5%	65%
	Westbound	65%	5%	50%	5%
TOTAL		100%	100%	100%	100%

Using engineering judgement, extracted data was further reviewed to determine the trip assignment on roads within the study area, based on routes that drivers would likely take to access the subject development site and reflect the configuration of the site access, turning restrictions, and logical routing. The site-generated residential, day care, and total site traffic volumes are illustrated onto the intersection study area in **Figure 5-1**, **Figure 5-2**, and **Figure 5-3**, respectively.

Figure 5-1: Residential Site Traffic Volumes

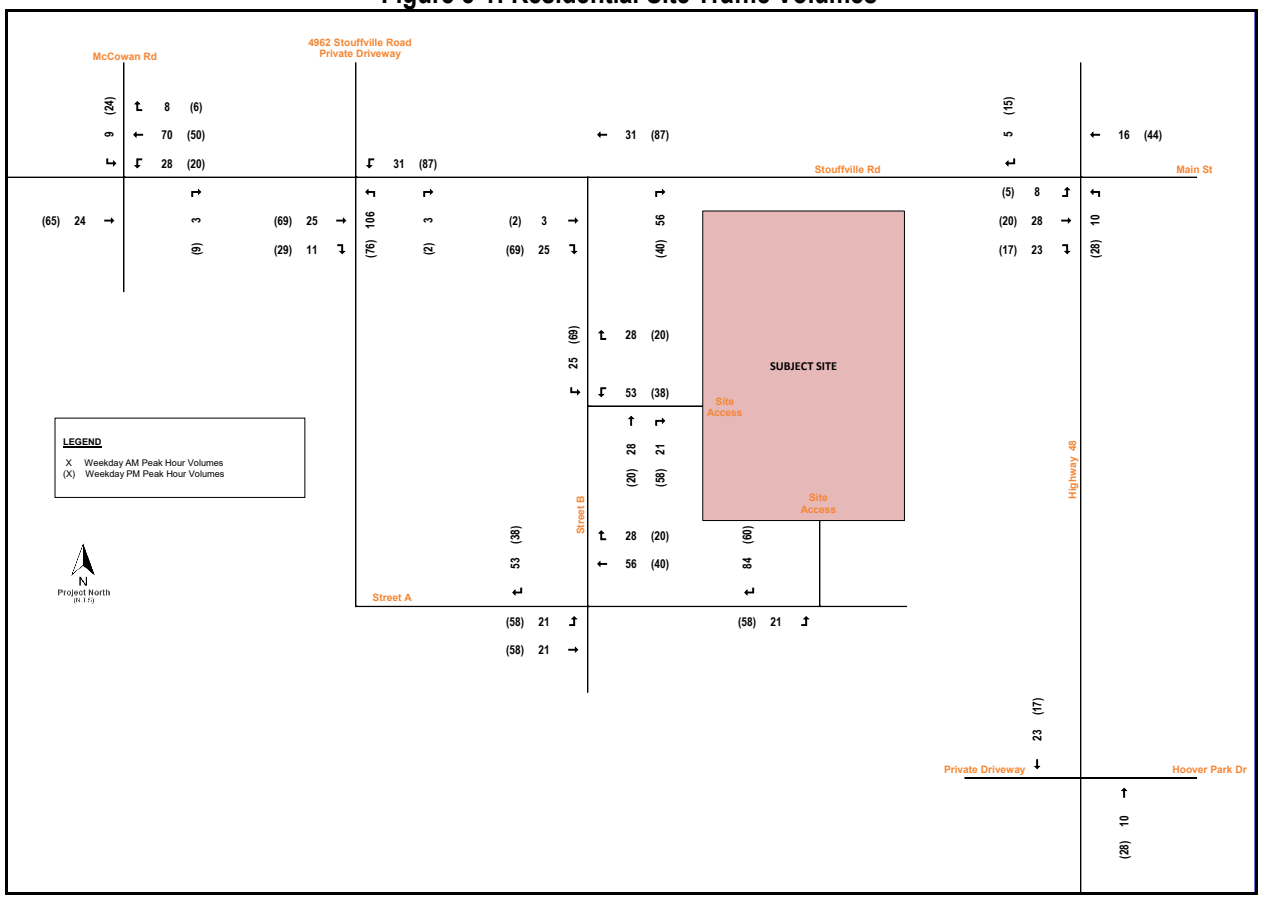


Figure 5-2: Day Care Site Traffic Volumes

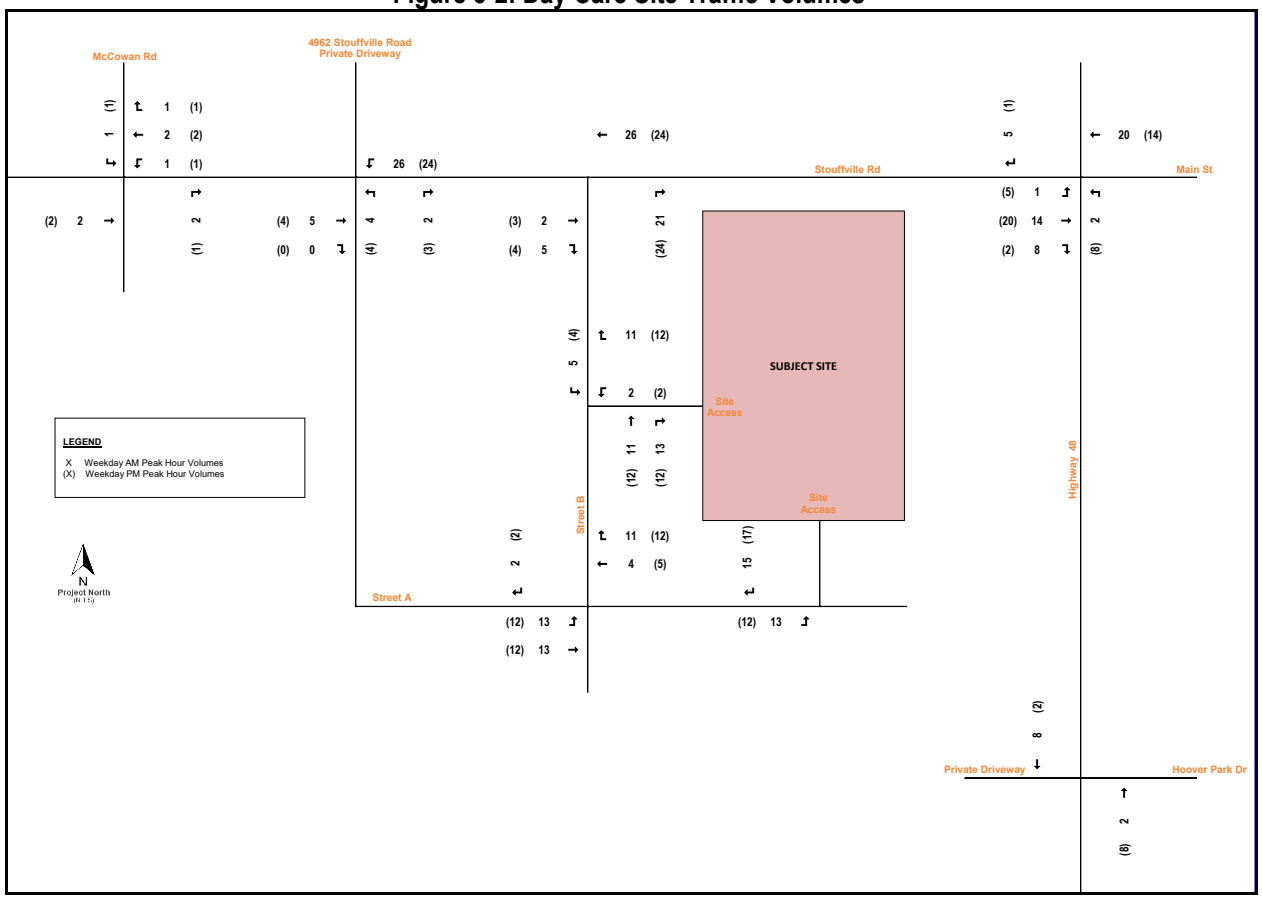
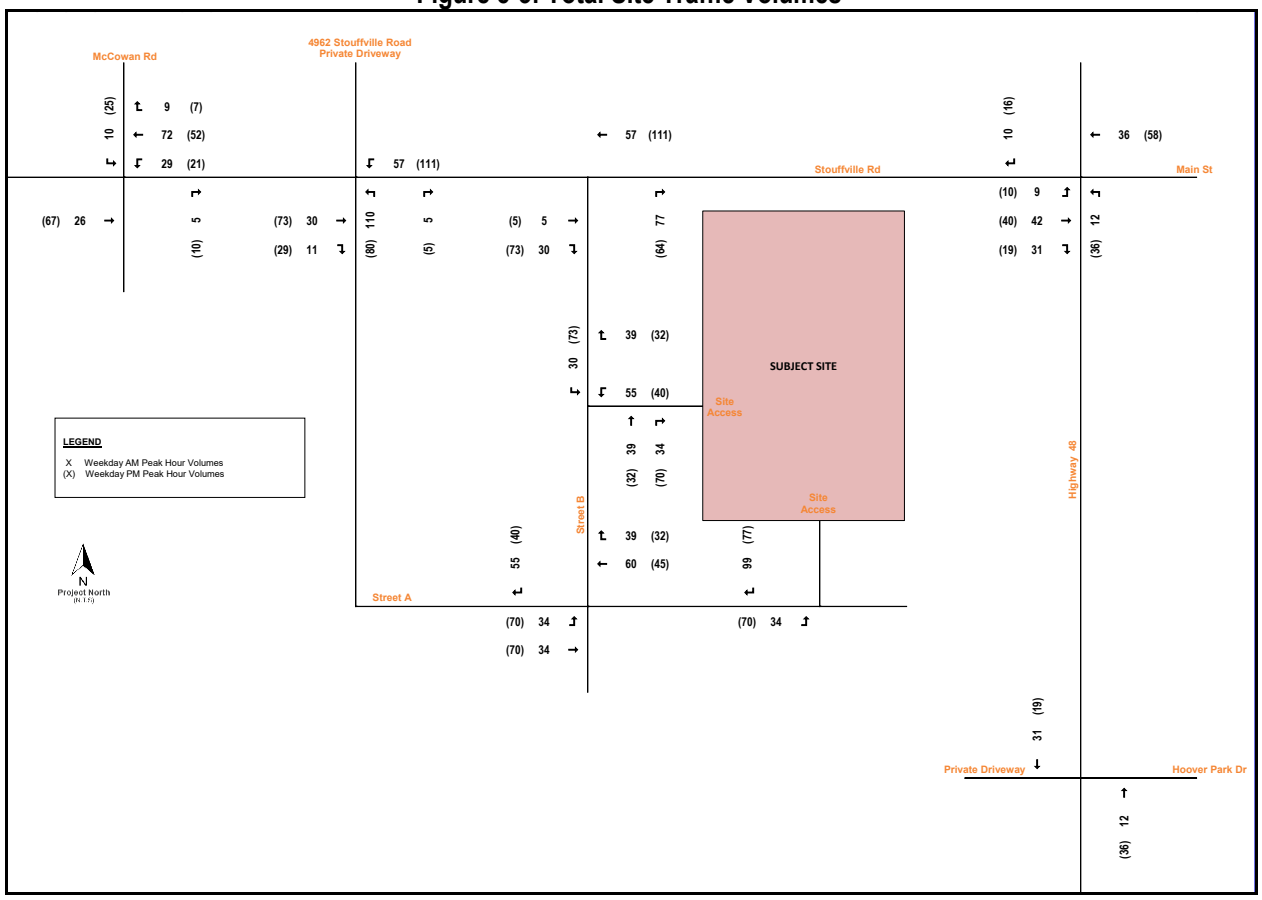


Figure 5-3: Total Site Traffic Volumes



6.0 FUTURE TOTAL TRAFFIC CONDITIONS

The future total traffic conditions include existing traffic volumes, future background traffic volumes, and site-generated auto trips produced by the proposed development.

6.1. 2029 FUTURE TOTAL INTERSECTION CAPACITY ANALYSIS

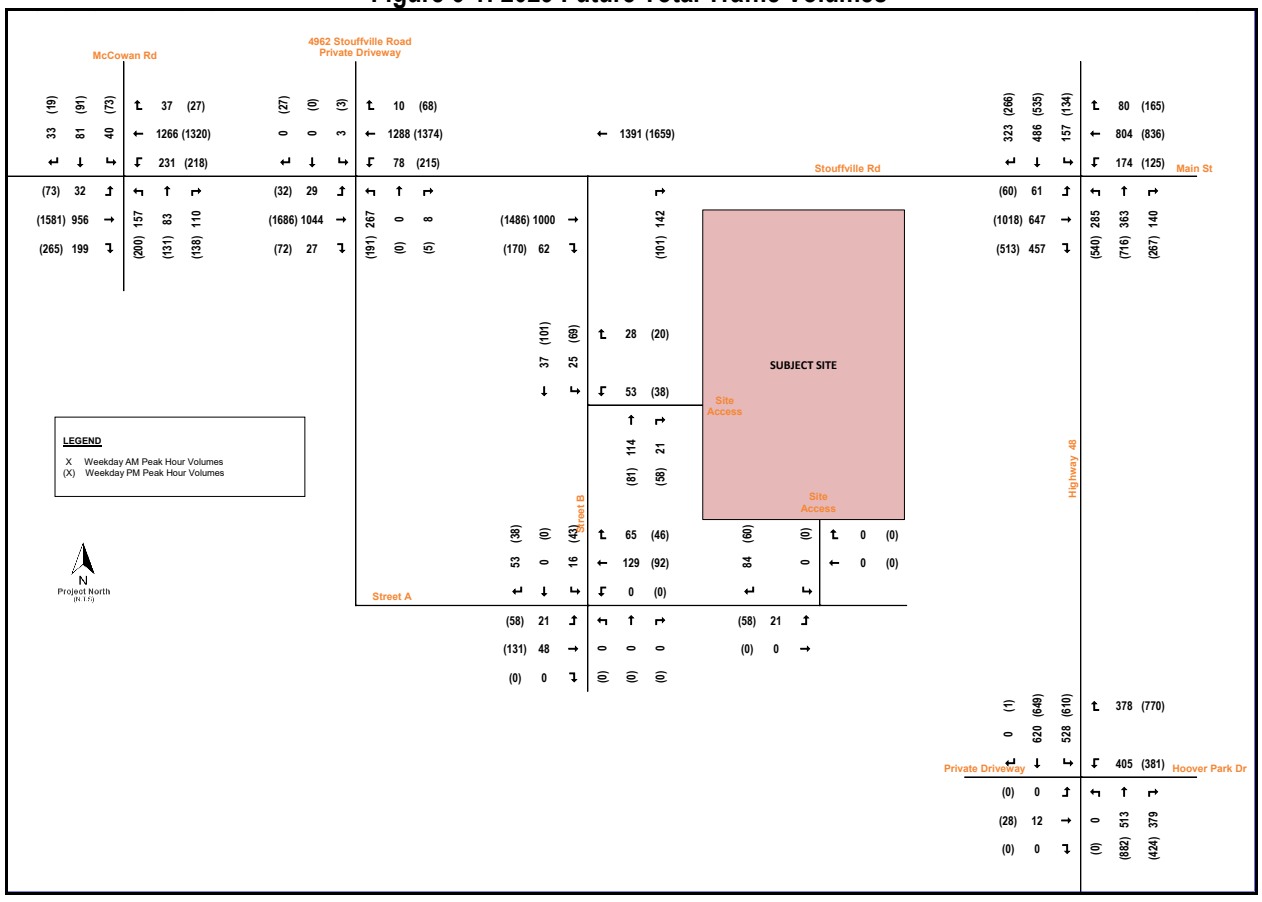
The 2029 future total traffic volumes are illustrated in **Figure 6-1**. The results of the intersection capacity analysis under the 2029 future total conditions are summarized in **Table 6-1**. Detailed Synchro results are available in **Appendix D**.

Table 6-1: 2029 Future Total Intersection Capacity Analysis Results

Intersection	Movement of Interest	Weekday AM Peak Hour				Weekday PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
1: McCowan Rd & Stouffville Rd (Signalized)	**Overall**	1.03	25	C	-	2.41	71	E	-	-
	EBL	0.27	14	B	14	0.57	28	C	42	105
	EBT	0.51	12	B	105	0.78	19	B	245	-
	EBR	0.16	8	A	10	0.19	10	A	13	170
	WBL	1.14	123	F	127	3.04	972	F	136	125
	WBT	0.68	15	B	162	0.66	15	B	166	-
	WBR	0.03	7	A	4	0.02	8	A	2	65
	NBL	0.71	50	D	52	0.76	51	D	66	140
	NBT	0.14	36	D	14	0.17	35	C	20	-
	NBR	0.29	38	D	26	0.31	36	D	34	150
	SBL	0.18	37	D	16	0.27	36	D	26	75
	SBT	0.14	36	D	14	0.13	34	C	15	-
	SBR	0.03	35	D	5	0.01	33	C	2	110
4: Hwy 48 & Stouffville Rd/Main St (Signalized)	**Overall**	0.88	50	D	-	1.62	133	F	-	-
	EBL	0.41	33	C	18	0.31	24	C	16	45
	EBT	0.65	41	D	101	0.80	39	D	159	-
	EBR	0.70	45	D	106	0.69	37	D	123	135
	WBL	0.83	57	E	48	0.82	52	D	38	60
	WBT	0.79	46	D	132	0.63	33	C	121	-
	WBR	0.06	31	C	8	0.12	25	C	13	105
	NBL	0.81	49	D	154	2.48	718	F	374	50
	NBT	0.46	35	C	89	1.16	133	F	240	-
	SBL	0.47	33	C	47	0.69	44	D	71	45
	SBT	0.99	80	E	164	1.00	81	F	171	-
6: Hwy 48 & Private Driveway/Hoover Park Dr (Signalized)	**Overall**	1.29	108	F	-	2.62	409	F	-	-
	EBT	0.32	65	E	11	0.50	66	E	19	
	WBL	0.85	54	D	140	0.59	30	C	129	-
	WBR	0.40	35	D	45	1.12	108	F	304	-
	NBT	1.18	145	F	234	1.89	455	F	460	-
	NBR	0.27	37	D	24	0.43	39	D	49	150
	SBL	1.56	305	F	332	4.39	1576	F	383	220
	SBT	0.80	34	C	261	1.09	101	F	274	-
2: Stouffville Rd & 4962 Stouffville Rd	EBL	0.07	13	B	2	0.08	14	B	2	130
	WBL	0.14	12	B	4	0.76	46	E	47	130

Private Driveway (Unsignalized)	NBL	2.01	528	F	183	>>1.00	Err	F	Err	50
	NBTR	0.02	13	B	1	0.02	18	C	0	-
	SBLR	0.03	45	E	1	1.56	670	F	35	-
3: Street B & Stouffville Rd (Unsignalized)	NBR	0.32	16	C	11	0.33	21	C	12	-
7: Street B & Site Access (Unsignalized)	WBLR	0.11	10	B	3	0.09	11	B	2	
	SBLT	0.02	3	A	1	0.05	3	A	1	
8: Street B & Street A (Unsignalized)	EBLTR	-	8	A	-	-	9	A	-	-
	WBLTR	-	8	A	-	-	8	A	-	-
	NBLTR	-	8	A	-	-	8	A	-	-
	SBLTR	-	8	A	-	-	8	A	-	-
9: Street A & Site Access (Unsignalized)	EBLT	0.01	7	A	0	0.04	7	A	1	-
	SBLR	0.08	9	A	2	0.06	9	A	2	-

Figure 6-1: 2029 Future Total Traffic Volumes



The following summarizes the 2029 future total condition for the intersection study area.

McCowan Road & Stouffville Road

The intersection is expected to operate overall above capacity in both peak hours. The westbound left-turn movement is expected to continue to operate over capacity and LOS F during both peak hours with significant delays and queueing especially in the PM peak hour, similar to the future background condition.

Highway 48 & Stouffville Road/Main Street

The intersection is projected to operate at overall v/c of 0.88 (over the York Region critical threshold of 0.85) with LOS D during the weekday AM peak hour and over capacity at LOS F during the weekday PM peak hour. The southbound through movement in the AM peak hour is expected to operate virtually at capacity (v/c of 0.99). Several critical movements including the northbound left-turn, northbound through, and southbound through movements in the PM peak hour, are expected to operate over capacity with substantial delays and queueing, in particular during the PM peak hour. This is similar to the future background condition and mostly due to the heavy traffic volumes from a number of background developments.

Highway 48 & Private Driveway/Hoover Park Drive

The intersection is expected to operate overall above capacity at LOS F during both the weekday AM and PM peak hours. In the AM peak hour, the northbound through and southbound left-turn movements will operate above capacity with LOS F and considerable delay and queue. In the PM peak hour, the westbound right-turn, northbound through, southbound left-turn, and southbound through movements are expected to experience substantial operational deficiencies, including overcapacity and significant delays and queueing. This is similar to the future background condition due to heavy background development traffic volumes.

Stouffville Road & 4962 Stouffville Road Private Driveway

The unsignalized intersection is expected to operate with the northbound left-turn movement operating well above capacity during both peak hours with excessive delays and queueing, similar to the future background condition due to heavy background development traffic volumes turning left at the unsignalized intersection.

Street B & Stouffville Road

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with movements projected to operate at LOS C with minimal delays and queueing.

Street B & Site Access

The unsignalized intersection is expected to operate with good LOS during both peak hours, with movements operating at LOS B or better with negligible delays and queues.

Street B & Street A

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with all movements expected to operate at LOS A.

Street A & Site Access
The unsignalized intersection is expected to operate well during both peak hours with LOS A and with minimal delays and queues.

6.2. 2034 FUTURE TOTAL INTERSECTION CAPACITY ANALYSIS

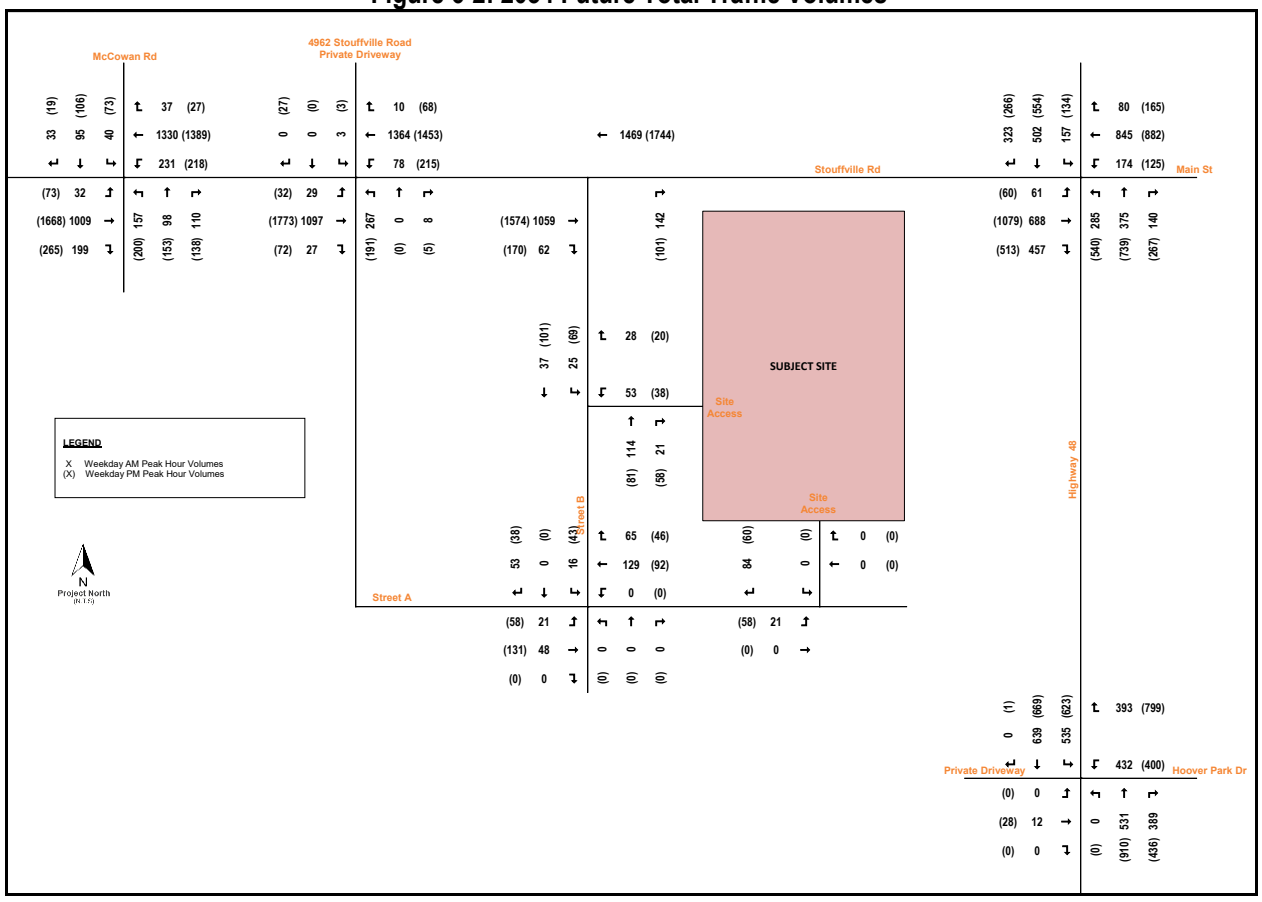
The 2034 future total traffic volumes are illustrated in **Table 6-2**. The results of the 2034 intersection capacity analysis under the future total conditions are summarized in **Table 6-2**. Detailed Synchro results are available in **Appendix D**.

Table 6-2: 2034 Future Total Intersection Capacity Analysis Results

Intersection	Movement of Interest	Weekday AM Peak Hour				Weekday PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
1: McCowan Rd & Stouffville Rd (Signalized)	**Overall**	1.12	29	C	-	2.85	85	F	-	-
	EBL	0.32	16	B	15	0.66	40	D	46	105
	EBT	0.54	12	B	114	0.83	21	C	269	-
	EBR	0.16	9	A	10	0.19	10	A	13	170
	WBL	1.26	169	F	91	3.70	1275	F	141	125
	WBT	0.72	16	B	177	0.70	16	B	181	-
	WBR	0.03	8	A	4	0.02	8	A	2	65
	NBL	0.71	50	D	52	0.76	51	D	67	140
	NBT	0.16	36	D	16	0.20	35	C	23	-
	NBR	0.29	38	D	26	0.31	36	D	34	150
	SBL	0.18	37	D	16	0.28	36	D	26	75
	SBT	0.16	36	D	15	0.14	34	C	17	-
	SBR	0.03	35	D	5	0.01	33	C	2	110
4: Hwy 48 & Stouffville Rd/Main St (Signalized)	**Overall**	0.91	52	D	-	1.72	150	F	-	-
	EBL	0.42	32	C	18	0.31	24	C	15	45
	EBT	0.66	41	D	107	0.82	39	D	172	-
	EBR	0.69	43	D	106	0.68	35	C	125	135
	WBL	0.84	59	E	50	0.85	60	E	51	60
	WBT	0.80	45	D	138	0.64	32	C	130	-
	WBR	0.06	30	C	8	0.12	23	C	13	105
	NBL	0.86	57	E	159	2.76	846	F	374	50
	NBT	0.49	37	D	92	1.22	161	F	248	-
	SBL	0.48	33	C	48	0.72	48	D	71	45
	SBT	1.02	87	F	171	1.03	89	F	179	-
6: Hwy 48 & Private Driveway/Hoover Park Dr (Signalized)	**Overall**	1.36	121	F	-	2.69	426	F	-	-
	EBT	0.32	65	E	11	0.50	66	E	19	
	WBL	0.87	55	D	153	0.61	30	C	136	-
	WBR	0.43	34	C	52	1.17	128	F	323	-
	NBT	1.22	162	F	245	1.95	481	F	477	-
	NBR	0.28	37	D	25	0.46	40	D	54	150
	SBL	1.68	359	F	336	4.49	1619	F	391	220
	SBT	0.84	39	D	274	1.12	114	F	287	-
2: Stouffville Rd & 4962 Stouffville Rd Private Driveway (Unsignalized)	EBL	0.07	14	B	2	0.09	15	C	2	130
	WBL	0.15	12	B	4	0.83	59	F	55	130
	NBL	2.19	613	F	194	>>1.00	Err	F	Err	50
	NBTR	0.02	13	B	1	0.02	19	C	1	-
	SBLTR	0.04	50	F	1	2.41	1209	F	39	-
3: Street B & Stouffville Rd (Unsignalized)	NBR	0.33	17	C	11	0.36	23	C	13	-
7: Street B & Site Access (Unsignalized)	WBLR	0.11	10	B	3	0.09	11	B	2	
	SBLT	0.02	3	A	1	0.05	3	A	1	
8: Street B & Street A (Unsignalized)	EBLTR	-	8	A	-	-	9	A	-	-
	WBLTR	-	8	A	-	-	8	A	-	-
	NBLTR	-	8	A	-	-	8	A	-	-

	SBLTR	-	8	A	-	-	8	A	-	-
9: Street A & Site Access (Unsignalized)	EBLT	0.01	7	A	0	0.04	7	A	1	
	SBLR	0.08	9	A	2	0.06	9	A	2	

Figure 6-2: 2034 Future Total Traffic Volumes



The following summarizes the 2034 future total condition for the intersection study area.

McCowan Road & Stouffville Road

The intersection is expected to operate overall above capacity in both peak hours. The westbound left-turn movement is expected to continue to operate over capacity and LOS F during both peak hours with significant delays and queueing especially in the PM peak hour, similar to the future background condition.

Highway 48 & Stouffville Road/Main Street

The intersection is projected to operate at overall v/c of 0.91 (over the York Region critical threshold of 0.85) with LOS D during the weekday AM peak hour and over capacity at LOS F during the weekday PM peak hour. In the AM peak hour, the southbound through movement is expected to operate slightly over capacity. Several critical movements including the northbound left-turn, northbound through, and southbound through movements in the PM peak hour, are expected to operate over capacity with substantial delays and queueing. This is similar to the future background condition and mostly due to the heavy traffic volumes from a number of background developments.

Highway 48 & Private Driveway/Hoover Park Drive

The intersection is expected to operate overall above capacity at LOS F during both the weekday AM and PM peak hours. In the AM peak hour, the northbound through and southbound left-turn movements will operate above capacity with LOS F and considerable delay and queue. The westbound left-turn movement will operate slightly above the Region critical v/c threshold of 0.85 in the AM peak hour. In the PM peak hour, the westbound right-turn, northbound through, southbound left-turn, and southbound through movements are expected to experience substantial operational deficiencies, including overcapacity and significant delays and queueing. This is similar to the future background condition due to heavy background development traffic volumes.

Stouffville Road & 4962 Stouffville Road Private Driveway

The unsignalized intersection is expected to operate with the northbound left-turn movement operating well above capacity during both peak hours with excessive delays and queueing, similar to the future background condition due to heavy background development traffic volumes turning left at the unsignalized intersection. The southbound movement is expected to operate above capacity with considerable delay in the PM peak hour, with LOS F in both peak hours.

Street B & Stouffville Road

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with movements projected to operate at LOS C with minimal delays and queueing.

Street B & Site Access

The unsignalized intersection is expected to operate with good LOS during both peak hours, with movements operating at LOS B or better with negligible delays and queues.

Street B & Street A

The unsignalized intersection is expected to operate within acceptable conditions during both peak hours, with all movements expected to operate at LOS A.

Street A & Site Access
The unsignalized intersection is expected to operate well during both peak hours with LOS A and with minimal delays and queues.

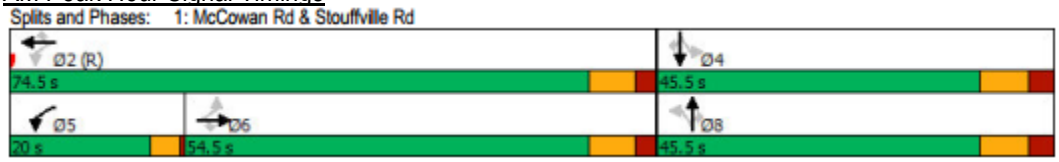
6.3. MITIGATION MEASURES – 2034 FUTURE TOTAL CONDITION

Mitigation measures were considered to improve capacity, levels of service, and queues for the 2034 (ultimate) future total traffic condition in the AM and PM peak hours.

6.3.1. MCCOWAN ROAD AND STOUFFVILLE ROAD

At the McCowan Road and Stouffville Road, signal improvements are proposed to improve capacity and levels of service of the westbound left turn movement and overall intersection. This includes the introduction of a westbound left turn protected-permissive phase in lieu of the existing permissive-only westbound left turn phase. A typical regional cycle length of 120 seconds was provided. **Table 6-3** summarizes the intersection capacity analysis results based on the recommended improvements.

AM Peak Hour Signal Timings



PM Peak Hour Signal Timings



Table 6-3: 2034 Future Total Results of Mitigation Measures – McCowan Road and Stouffville Road

Movement of Interest	AM Peak Hour				PM Peak Hour				Storage (m)
	V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
Overall	0.76	23	C	-	1.03	68	E		**-**
EBL	0.29	26	C	17	0.61	46	D	40	105
EBT	0.75	30	C	160	1.20	129	F	331	-
EBR	0.16	19	B	13	0.19	22	C	16	170
WBL	0.73	35	C	77	0.77	42	D	114	125
WBT	0.70	9	A	118	0.68	21	C	189	-
WBR	0.03	0	A	1	0.02	28	C	1	65
NBL	0.75	57	E	57	0.80	60	E	73	140
NBT	0.17	40	D	17	0.21	38	D	25	-
NBR	0.09	39	D	12	0.13	38	D	19	150
SBL	0.19	40	D	17	0.29	39	D	28	75
SBT	0.17	40	D	17	0.15	38	D	18	-
SBR	0.03	38	D	0	0.01	36	D	0	110

With signal timing improvements and a permissive-protected phase for the westbound left-turn movement, the intersection operations will significantly improve for both peak hours. However, the intersection will operate overall above capacity at LOS E in the PM peak hour as the eastbound through movement will operate above capacity and LOS F. The westbound left-turn movement will operate within capacity for both peak hours. Delays and queues are expected to operate within acceptable conditions.

It is recommended that the Region monitor the intersection and implement traffic signal improvements in the future as the subject development and developments within the surrounding area are built out.

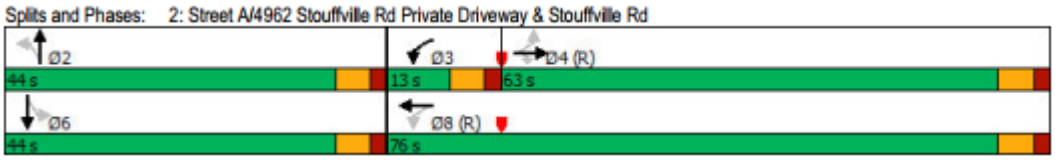
6.3.2. STREET 'A' AND STOUFFVILLE ROAD

The subject development proposes traffic signalization for the intersection of Street A and Stouffville Road.

Given the overcapacity and failing level of service at the intersection of Street A and Stouffville Road in unsignalized intersection scenario in the 2029 and 2034 future total conditions, a signal warrant analysis was undertaken to determine if traffic control signal is warranted. The traffic signal warrant was assessed based on Justification 7 of Ontario Traffic Manual (OTM) Book 12 (OTM Book 12, Section 4.10) to determine if a traffic signal control is justified under the 2029 and 2034 future total conditions. Based on the volume warrant analysis results as enclosed in **Appendix G**, traffic signalization is technically warranted.

A sensitivity analysis with intersection signalization of Street A at Stouffville Road was assessed. The timing plan was assumed with a typical cycle length of 120 seconds and a westbound left-turn permissive-protective phase. **Table 6-4** summarizes the intersection capacity results with traffic signalization for the 2034 future total condition. Detailed Synchro results are enclosed in **Appendix D**.

AM Peak Hour Signal Timings



PM Peak Hour Signal Timings

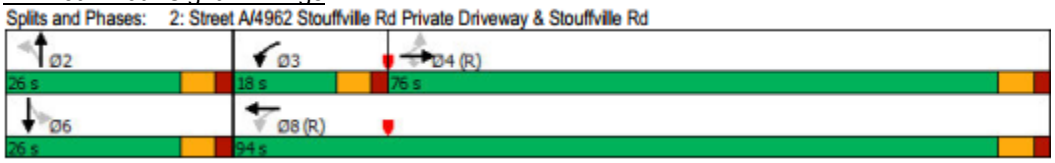


Table 6-4: 2034 Future Total Results of Mitigation Measures – Street A and Stouffville Road

Scenario	Movement of Interest	AM Peak Hour				PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
Scenario A: New Signalized Intersection	**Overall**	0.76	25	C	-	0.98	25	C		-
	EBL	0.23	28	C	10	0.24	7	A	3	130
	EBT	0.63	30	C	153	0.94	25	C	231	-
	EBR	0.02	12	B	1	0.05	9	A	2	30
	WBL	0.34	13	B	16	0.96	87	F	95	130
	WBT	0.67	15	B	167	0.65	9	A	117	-
	NBL	0.83	58	E	94	0.93	91	F	99	50
	NBTR	0.01	34	C	0	-	-	-	-	-
	SBLTR	0.01	34	C	3	0.02	42	D	0	-

Under intersection signalization, the Street A and Stouffville Road intersection is expected to operate with all intersection movements operating with improved capacity, levels of service, and queueing. The northbound left movement will improve in the PM peak hour from overcapacity in the unsignalized scenario, and will operate within capacity and good level of service with signalization. The available storage lengths are expected to generally accommodate the 95th queues.

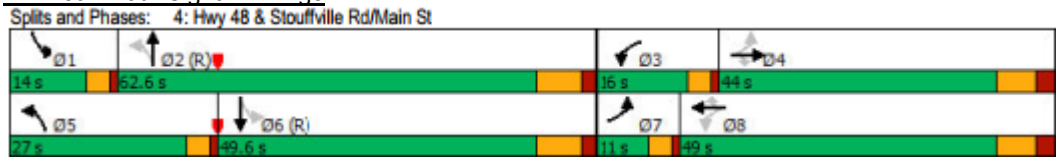
Although traffic signals are unwarranted based on OTM Book 12, traffic signalization of the intersection is strongly recommended to improve capacity, levels of service, and queueing for the intersection movements, in particular for the northbound left turn movement.

It is noted that in the PM peak hour, the intersection approaches capacity, but this is due to the uncertainty of background developments from 5061 Stouffville Road included in this study that were assumed to be reliant on Street A and Street B as proposed for the subject site given the highly conceptual nature of these developments. As these developments are further refined through the development process in the future, it is expected that new additional municipal roads will be proposed as part of these developments that would re-distribute the foregoing background development traffic volumes. As such, although the northbound left-turn 95th queues are expected to exceed the proposed storage length of 50m, the 95th queues are expected to be considerably less with additional roadways associated with the master plan background developments in the future.

6.3.3. HIGHWAY 48 AND STOUFFVILLE ROAD

To mitigate the overcapacity, failing levels of service, and improve 95th percentile queues, the Highway 48 and Stouffville Road intersection was assessed in a scenario with optimized signal timing splits (unchanged cycle length). **Table 6-5** summarizes the intersection capacity results with signal timing split optimization for the 2034 future total condition. Detailed Synchro results are enclosed in **Appendix D**.

AM Peak Hour Signal Timings



PM Peak Hour Signal Timings

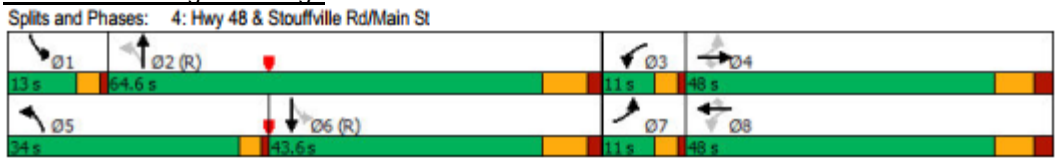


Table 6-5: 2034 Future Total Results of Mitigation Measures – Highway 48 and Stouffville Road

Scenario	Movement of Interest	AM Peak Hour				PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
Scenario A: Optimized Existing Signal Timing Splits	**Overall**	0.94	49	D	-	1.32	90	F	-	-
	EBL	0.50	39	D	22	0.52	38	D	22	45
	EBT	0.85	56	E	132	1.14	122	F	256	-
	EBR	0.56	45	D	77	0.54	41	D	77	135
	WBL	0.83	55	D	69	0.95	97	F	66	60
	WBT	0.89	55	D	172	0.89	54	D	186	-
	WBR	0.06	34	C	3	0.12	34	C	18	105
	NBL	0.92	65	E	116	1.43	247	F	287	50
	NBT	0.42	30	C	73	0.80	41	D	169	-
	SBL	0.47	29	C	39	0.75	49	D	42	45
	SBT	0.82	50	D	145	1.04	92	F	180	-

Under optimized signal timing splits, all intersection movements are expected to operate within capacity in the AM peak hour with acceptable LOS, although the northbound left-turn 95th queue is expected to exceed the available storage length. In the PM peak hour, the intersection operations will significantly improve, however the intersection will continue to operate above capacity overall, with the eastbound through, northbound left-turn, and southbound through movements operating above capacity and LOS F. The northbound left-turn queue will exceed the available storage in the PM peak hour.

However, for all left turn lanes at the intersection, there is additional storage length from the centre two-way left turn lane or median space beyond the dedicated left turn storage lane with the potential to accommodate additional queue length. With an estimated available storage of 150m if the northbound left-turn storage lane is extended, the AM peak hour queue will be able to be accommodated, but the queue in the peak hour will still spill over.

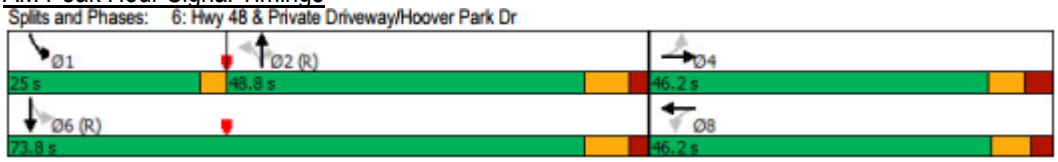
It is recommended that the Region and MTO monitor the intersection and implement traffic signal improvements in the future as the subject development and developments within the surrounding area are built out. The left turn storage lanes for the northbound left-turn lane is recommended to be extended by restriping the pavement markings to provide additional storage length that can accommodate the 95th percentile queue lengths.

6.3.4. HIGHWAY 48 AND HOOVER PARK DRIVE

Highway 48 exists as a typical two-lane cross section (one through lane per direction) at Hoover Park Drive. Based on the Town of Whitchurch-Stouffville Transportation Master Plan Update dated April 3, 2024, Highway 48 is planned to be widened from one lane per direction to two lanes per direction (four-lane cross section) between Donald Cousins Parkway to Stouffville Road within the Town (see excerpt from Town TMP Update in **Appendix C**). The capital project is planned as part of the new capacity expansion on Highway 48 between Major Mackenzie Drive to Bloomington Road and outlined within the province's planning document titled Connecting the GCH: A Transportation Plan for the Greater Golden Horseshoe dated 2022. The road improvements are subject to further study. A timeline for completion of the planned road widening is uncertain at the time of this study. Nonetheless, the study assessed for the road widening of Highway 48 as part of potential mitigation measures. The signal timings were adjusted to remove split phasing of the eastbound and westbound movements. A typical cycle length of 120 seconds was assumed.

Table 6-6 summarizes the intersection capacity results for the foregoing scenarios for the 2034 future total condition. Detailed Synchro results are enclosed in **Appendix D**.

AM Peak Hour Signal Timings



PM Peak Hour Signal Timings

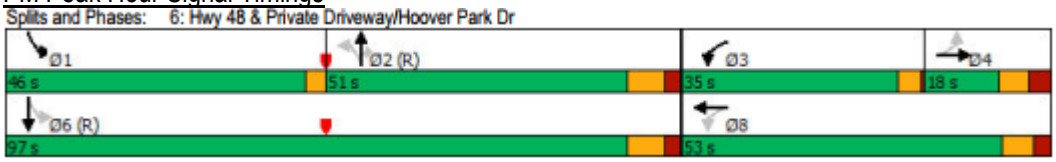


Table 6-6: 2034 Future Total Results of Mitigation Measures – Highway 48 and Hoover Park Drive

Scenario	Movement of Interest	AM Peak Hour				PM Peak Hour				Storage (m)
		V/C	Delay (s)	LOS	95th Queue (m)	V/C	Delay (s)	LOS	95th Queue (m)	
Scenario B: Road Widening of Hwy 48 to 4-Lane Cross Section (2 Through Lanes Per Direction)	**Overall**	1.16	54	D	-	1.27	98	F	-	-
	EBLTR	0.02	27	C	7	0.40	73	E	21	
	WBL	1.06	100	F	197	0.89	63	E	174	-
	WBTR	0.32	30	C	30	1.11	123	F	275	-
	NBT	0.54	35	C	81	1.12	123	F	221	-
	NBR	0.28	31	C	23	0.31	46	D	27	150
	SBL	1.16	115	F	210	1.26	176	F	327	220
	SBT	0.39	17	B	66	0.38	18	B	74	-

Notwithstanding the road widening of Highway 48 and signal improvements, the intersection is expected to continue to operate above capacity overall with multiple movements operating above capacity with LOS F and long delays and queues in both peak hours. This is attributed to the heavy background development turning volumes associated with the Hoover Park Drive area. However, the intersection movements will significantly improve with the proposed mitigation measures in comparison to the baseline scenario.

As there is no definite timeline for the planned road widening of Highway 48, it is recommended that the Region and MTO monitor the intersection and implement traffic signal improvements in the future as the subject development and developments within the surrounding area are built out. The municipal agencies are recommended to also consider dual left-turn and dual right-turn lanes for the intersection, subject to further review, given the heavy turning volumes.

6.3.5. CONCLUSIONS AND RECOMMENDATIONS

The following are conclusions and recommendations for traffic operations.

- At McCowan Road / Stouffville Road, signal timing improvements are recommended, including a new westbound left-turn permissive-protected phasing to mitigate overcapacity and poor LOS of the westbound left-turn movement in both peak hours. As the eastbound through movement will operate above capacity with the improvements, the Region is recommended to monitor the intersection operations and implement traffic signal improvements in the future accordingly.
- At Street A / Stouffville Road, signalization is recommended to mitigate overcapacity and poor LOS of the minor road movements.
- At Highway 48 / Stouffville Road, signal timing split optimization is recommended to improve capacity and LOS. Despite signal improvements, a number of intersection movements will continue to operate above capacity. The Region is recommended to monitor the intersection operations and implement traffic signal improvements in the future accordingly.
- At Highway 48 / Hoover Park Drive, signal timing improvements and a road widening from two to four lanes is recommended to improve intersection operations. Dual left-turn and right-turn lanes are recommended for review and consideration by the municipal agencies given the heavy turning volumes.
- The comparison between future background and future total conditions in both horizons indicates incremental changes in operational performance, with LOS, queue, and capacity constraints already generated primarily from background development traffic volumes in the future background conditions. On this basis, the proposed development is overall anticipated to have an acceptable transportation impact.

7.0 SITE PLAN REVIEW

7.1. VEHICULAR SITE CIRCULATION

A vehicle swept path analysis using AutoTURN was prepared to determine the functionality of the subject site for vehicle access, including drive aisles, access entrances, parking areas, fire routes, loading spaces, and waste collection. Vehicle movement diagrams are enclosed in **Appendix H**. The following vehicles were assessed.

- P TAC-2017 (large passenger car)
- NCHRP Report 659 (2010) Aerial Fire Truck
- HSU TAC-2017 (simulation for front-end waste collection truck and for loading activities)

The swept path analysis determined that the foregoing test vehicles were able to circulate through the subject site accordingly without functional conflicts.

7.2. LOADING SPACE REVIEW

Within Section 3.25 of the Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO, as amended, loading spaces are not required for multi-unit residential apartment buildings and day care facilities. As summarized in T, five (5) large loading spaces (dimensions 15m by 3.6m and vertical clearance of 4.25m) are proposed for the subject site, including one (1) large loading space per residential tower. The proposed day care building (Building F) will share the loading space of Building A. Waste collection from a front-end refuse truck will occur at each loading space.

7.3. PEDESTRIAN AND CYCLING CIRCULATION PLAN

A Pedestrian and Cycling Circulation is enclosed within **Appendix I**, which illustrates the proposed pedestrian and cycling facilities within and immediate to the subject site.

8.0 PARKING REVIEW

This section will review the proposed parking provision for the subject site and compare it to the parking requirements defined in the Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO, as amended.

8.1. PROPOSED PARKING PROVISION

The proposed development will provide 1,800 vehicular parking spaces, including 1,466 residential and 334 visitor spaces, of which 30 visitor spaces will be shared with day care use.

8.2. VEHICULAR PARKING REVIEW – ZONING BY-LAW 2010-001-ZO

The vehicular parking supply requirements for the subject site are based on Section 3.23 of the Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO, as amended. A summary of the minimum zoning by-law parking requirements is provided in **Table 8-1**.

The proposed day care centre will consist of 5 classrooms with a total of 88 children based on the architectural plans.

It is noted that Zoning By-law 2026-030-ZO was recently approved by Council to amend Zoning By-law 2010-001-ZO, including Section 1.2)2) which states that apartment use requires a minimum of 1 parking space per dwelling unit plus 0.25 visitor parking space per unit if located on identified lot within Schedule 70 of HAF 1, which applies to the subject site.

Table 8-1: Summary of Zoning By-law Vehicular Parking Requirements

Use	Parameter	Zoning By-law 2010-001-ZO, As Amended		Proposed Parking Provision	Variance
		Required Parking Rate	Spaces Required		
Apartment Building – Residential	1,332 units	1.00 sp/unit[1]	1,332	1,466	+134
Apartment Building – Visitor		0.25 sp/unit	334	334[1]	-26
Day Care Centre	5 classrooms (88 children)	1.5 sp per classroom plus 1 sp per 5-person capacity	26		
		Total	**1692**	**1800**	**+108**

Note:
1. Rate of 1.00 space per unit as per approved Zoning By-law 2026-030-ZO.
2. Within the provision of 334 visitor parking spaces, 30 visitor parking will be shared non-residential parking for visitor and day care uses.

Based on the parking requirements stipulated in Zoning By-law 2010-001-ZO, as amended by Zoning By-law 2026-030-ZO, a minimum of 1692 parking spaces (1332 residential, 334 visitor, 26 day care) is required for the proposed development.

The development proposes a parking provision of 1,800 parking spaces, including 1466 residential spaces and 334 visitor spaces to be shared with day care use. The proposed parking provision meets the residential parking requirement and visitor parking requirement. Parking justification is provided to support the shared non-residential (daycare) parking provision.

The majority of day care parking (from parents and guardians picking or dropping off children) are expected to occur within a short time period (i.e. within a 15-minute period). The typical day care pick-up/drop-off time periods occur during weekdays between 7:00am and 9:00am in the morning and between 3:00pm and 6:00pm in the afternoon. It is expected that the day care centre will not operate during the weekends. Based on the Recommended Time-of-Day Factors for Weekdays within Table 2-5 of the Urban Land Institute (ULI) Shared Parking, 2nd Edition, the demand of residential visitor parking is expected to be 10% to 20% during the day care peak morning period of 7:00am and 9:00am (i.e. maximum visitor demand of 67 spaces based on prorating minimum zoning by-law requirement, residual parking provision of 267 spaces), and 20% to 60% during the day care peak afternoon period of 3:00pm to 6:00pm

(i.e. maximum visitor demand of 201 spaces, residual parking provision of 133 spaces). Visitor parking demand is expected to be at 100% capacity after 7:00pm until the late evening on weekdays. Given that the peak parking demand times for the visitor use and day care use are expected to occur during different times from each other during a typical weekday, the provision of 30 visitor spaces to be shared for daycare parking use will be able to accommodate the parking demand for both visitor and day care uses at all times of the day.

8.3. BARRIER-FREE PARKING SPACE REVIEW

The proposed development is subject to the barrier-free (accessible) parking space requirements within Section 3.23.2.2 of the Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO, as amended. **Table 8-2** summarizes the minimum barrier-free parking space supply requirement.

Table 8-2: Summary of Barrier-Free Parking Requirements

Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO			Barrier Free Spaces Provided	Variance
Total Parking Spaces Required	Barrier Free Parking Rate	Barrier Free Spaces Required		
1,692	11 sp + 1% total required parking	28 (14 Type A, 14 Type B)	29 (14 Type A, 15 Type B)	+1

A barrier-free parking space provision of 29 spaces, including 14 Type A and 15 Type B spaces, meets the minimum barrier-free parking space requirement of 28 barrier-free spaces, within Zoning By-law 2010-001.

8.4. BICYCLE PARKING REVIEW

The proposed development is not subject to bicycle parking standards as the Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO does not contain bicycle parking space requirements.

Notwithstanding, the proposed development will provide 333 bicycle parking spaces. Consideration for a higher bicycle parking provision is recommended to support and encourage multi-modal trip generation.

9.0 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation demand management (TDM) refers to variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system.

Potential TDM measures may include but are not limited to: TDM supportive land use, bicycle and pedestrian programs and facilities, public transit improvements, and ride sharing.

9.1. TDM MEASURES

Based on Nextrans' review of the proposed development, the following TDM measures and incentives are recommended for the proposed development in **Table 9-1**.

Table 9-1: TDM Measures for the Proposed Development

TDM Measure	Responsibility	Estimated Cost
Transit Incentives (i.e. Pre-loaded Presto Cards).	Region / Town to Consider	TBD
TDM information package (i.e. YRT/GO maps and schedules, Active Transportation maps, etc).	Region / Town to Consider	TBD
Communications strategy and physical location to deliver Presto Cards and Information Packages.	Applicant	$1,500
Outreach Programs.	Applicant / Region / Town to Consider	TBD
Pedestrian Connections, including connections to the adjacent streets.	Applicant	The associated cost will be included in the draft plan agreement.
Cycling Connections, including connections to the adjacent streets.	Applicant	The associated cost will be included in the draft plan agreement.
Bicycle Parking (includes long-term and short-term spaces). A provision of 333 bicycle parking spaces will be provided.	Applicant	The associated cost will be included in the draft plan agreement.
Recommended that on-site bicycle maintenance facilities be provided.	Applicant	The associated cost will be included in the draft plan agreement.

10.0 CONCLUSIONS AND RECOMMENDATIONS

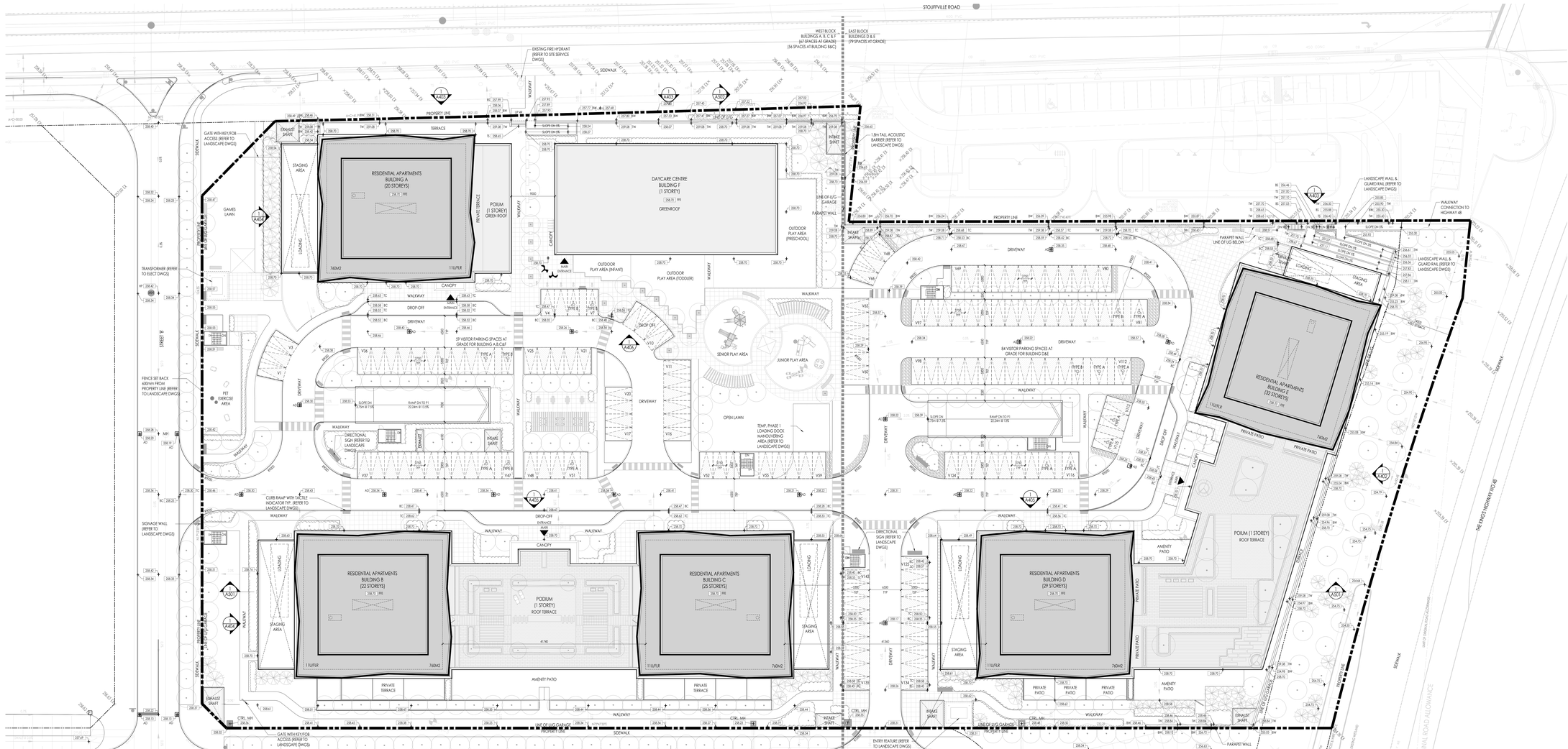
The findings, conclusions, and recommendations of this Transportation Impact Study are summarized as follows:

- The proposed development will generate the following.
    - 325 two-way trips (108 in, 217 out) in the AM peak hour and 405 two-way trips (239 in, 166 out) in the PM peak hour.
    - 291 two-way auto trips (98 in, 193 out) in the AM peak hour and 362 two-way auto trips (213 in, 149 out) in the PM peak hour.
    - 34 two-way non-auto trips (10 in, 24 out) in the AM peak hour and 43 two-way trips (26 in, 17 out) in the PM peak hour.
- The traffic analysis indicates that signal timing improvements will be required to mitigate overcapacity and failing levels of service for intersection movements at the McCowan Road and Stouffville Road intersection, Highway 48 and Stouffville Road intersection, and Highway 48 and Hoover Park Drive intersection. Signalization is also warranted and recommended for the Street A and Stouffville Road intersection to mitigate poor LOS and overcapacity for the minor road movements.
- A protected phase-permissive westbound left-turn phasing is recommended to improve capacity and level of service for the westbound left movement at the McCowan Road and Stouffville Road intersection.
- At the Highway 48 and Stouffville Road intersection, the lane pavement markings of the northbound left-turn storage lane is recommended to be restriped within the median space beyond the left turn lane to accommodate queues.
- Traffic signalization of the proposed Street A and Stouffville Road intersection is recommended despite not meeting the threshold from the OTM Book 12 traffic signal warrant analysis, to mitigate overcapacity, failing level of service, and queue spillover of the northbound left movement.
- Although there is no definite timeline, Highway 48 at Hoover Park Drive is recommended to be increased from two lanes to four lanes (as planned within the Town TMP Update and by MTO) to improve capacity and levels of service.
- Although there are intersection performance improvements, some intersection movements in the noted intersections are expected to continue operating above capacity or with poor LOS. It is recommended that the Town, Region, and MTO monitor the noted intersections and implement traffic signal improvements in the future as the subject development and developments within the surrounding area are built out, and road improvement projects are implemented.
- Further, transit improvements, including increased YRT bus service route coverage and frequency, is recommended to mitigate traffic congestion.
- The comparison between future background and future total conditions in both horizons indicates incremental changes in operational performance, with LOS, queue, and capacity constraints already generated primarily from background development traffic volumes in the future background conditions. On this basis, the proposed development is overall anticipated to have an acceptable transportation impact.
- The proposed residential and visitor parking space provision meets the Town comprehensive zoning by-law minimum parking requirement, as amended by Zoning By-law 2026-030-ZO. Inclusive of the visitor parking provision are 30 spaces that will be for shared non-residential parking (i.e. visitor and day care uses). Given that the peak parking demand times for the visitor use and day care use are expected to occur during different times from each other during a typical weekday, the proposed shared non-residential parking provision will be able to accommodate the parking demand for both visitor and day care uses at all times of the day.
- An accessible parking provision of 29 barrier-free spaces (14 Type A, 15 Type B) meets the Town minimum zoning by-law requirement.

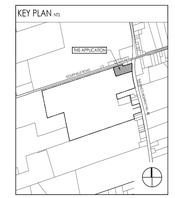
- Although there no are no bicycle parking space requirements within the Town zoning by-law, the development proposes 333 bicycle parking spaces. Consideration for a higher bicycle parking provision is recommended to support and encourage multi-modal trip generation.
- The proposed development will implement the Transportation Demand Management (TDM) measures and incentives identified within this study to target a reduction in single occupancy vehicle trips and support active transportation and transit.

Appendix A

Architectural Plans



KEY PLAN NTS



SURVEY INFORMATION

PLAN OF SURVEY	PART OF LOTS 34 AND 35 CONCESSION 7 TOWN OF WHITCHURCH - STOUFFVILLE (GEOGRAPHIC TOWNSHIP OF MARKHAM) REGIONAL MUNICIPALITY OF YORK
NOTES	BEARINGS SHOWN HEREON ARE GRID BEARINGS AND ARE DERIVED FROM HORIZONTAL CONTROL MONUMENTS No. 20881801097 AND No.20881974017, ZONE 17, CENTRAL MERIDIAN 81° 00' WEST LONGITUDE. 16° UNIVERSAL TRANSVERSE MERCATOR PROJECTION, NAD 83 (CSRS) (1997.0 EPOCH) MON No.: 20881801097 MON No.: 20881974017 N 4860964.733 N 4852666.153 E 637921.780 E 638998.960 DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999804.
ADDITIONAL NOTES	DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.
SURVEY PLOT DATE	DECEMBER 13, 2024
SURVEYOR CONTACT INFORMATION	R. AVIS SURVEYING INC. 235 YORKLAND BOULEVARD, SUITE 203 NORTH YORK, ONTARIO M2J 4Y8 TEL: (416) 495-8500 FAX: (416) 491-6206 www.ravissurveying.com

GENERAL NOTES

1. LOADING SPACE AND STAGING PAD TO BE LEVEL (+ - 2%) AND CONSTRUCTED OF MINIMUM 200mm REINFORCED CONCRETE. MINIMUM 4.1m (UNENCUMBERED) VERTICAL CLEARANCE REQUIRED.
2. ACCESS DRIVEWAYS TO BE USED BY COLLECTION VEHICLES TO HAVE A MINIMUM VERTICAL CLEARANCE OF 4.4m THROUGHOUT.
3. ANY DRIVEWAY OR COLLECTION AREA REQUIRING A MINIMUM TURNING RADIUS OF 12.5m(CW/CCW) OR OTHER SUPPORTED STRUCTURE TO BE RATED TO 124kN/1 SUPPORT THE REQUIRED LOADS

SITE PLAN LEGEND NTS

- MAIN ENTRANCE
- SECONDARY ENTRANCE
- EXISTING GRADE DATUM
- FINISH FLOOR ELEVATION
- ESTABLISHED GRADE
- PROPOSED GRADE DATUM
- EXISTING TREE (REFER TO SURVEY) CANOPY NOT TO SCALE
- PROPOSED TREE (REFER TO LANDSCAPE DWGS)
- EXISTING HYDRANT (REFER TO SURVEY)
- PROPOSED HYDRANT (REFER TO CIVIL DWGS)
- SIAMESE CONNECTION (REFER TO MECH/CIVIL DWGS)
- SANITARY MANHOLE (REFER TO CIVIL DWGS)
- STORM SEWER MANHOLE (REFER TO CIVIL DWGS)
- CATCHBASIN (SEDIMENT TRAP (REFER TO CIVIL DWGS)
- CATCHBASIN (REFER TO CIVIL DWGS)
- EXISTING STREET LIGHT (REFER TO SURVEY/ELEC)
- PROPOSED STREET LIGHT (REFER TO ELEC DWGS)
- TRANSFORMER (REFER TO ELEC DWGS)
- GAS METER (REFER TO MECH DWGS)
- HYDRO METER (REFER TO ELEC DWGS)
- RECEPTACLE (REFER TO ELEC DWGS)
- AREA DRAIN
- HOSE BIB (REFER TO MECH/CIVIL DWGS)
- POST-MOUNTED SIGN (REFER TO TRAFFIC REPORT)
- WALL/CLEARANCE-MOUNTED SIGN (REFER TO TRAFFIC REPORT)

BF = BARRIER FREE PARKING STOP = STOP SIGN
LZ = LOADING ZONE TM = TRUCK MANOEUVERING
NP = NO PARKING CM = CONVEX MIRROR
NS = NO STOPPING FR = FIRE ROUTE

- BL = BOLLARD LIGHTING (REFER TO LANDSCAPE DWGS)
- PL = POLE LIGHTING
- WALL/COLUMN/FENCE-MOUNTED OR CEILING-MOUNTED COVER MIRROR SUBJECT TO ACTUAL CONDITION
- ELECTRIC VEHICLE CHARGER ROUGH-IN (SEE ELEC DWGS)

PARKING LEGEND MTE

NOTE: TYPICAL DRIVE AISLE - MIN 6500 CLEAR

- TYPICAL PARKING SPACE (2750 x 5500)
- TANDEM PARKING SPACE (2750 x 5500)
- TYPICAL VISITOR PARKING SPACE (2750 x 5500)
- TYPICAL PARALLEL PARKING SPACE (2750 x 6700)
- PROPOSED HORIZONTAL BICYCLE PARKING (600X1800) - AODA REFER TO LANDSCAPE DWGS
- TYPE 'A' BARRIER FREE PARKING SPACE (3400 x 5500 + 1500 AISLE*)
  *NOTE: 2 BF SPACE MAY SHARE AISLE
- TYPE 'B' BARRIER FREE PARKING SPACE (2400 x 5500 + 1500 AISLE*)
  *NOTE: 2 BF SPACE MAY SHARE AISLE
- TYP. LOADING SPACE (3600 x 13000)

NO.	DATE	ISSUE	BY
2	APRIL 8, 2026	RE-ISSUED FOR OPA REZONING	AB
1	MAY 2, 2025	ISSUED FOR OPA REZONING	AB

Issued

ICKE | BROCHU
ARCHITECTS INC.
517 Wellington St W., Suite 201, Toronto, Ontario, M5V 1G1
T 647 288 1800 iborchitects.net

5061 STOUFFVILLE ROAD RESIDENTIAL DEVELOPMENT

5061 STOUFFVILLE ROAD — STOUFFVILLE, ONTARIO

Drawing Title: SITE PLAN

TOWN FILE NO.

Date	JANUARY, 2024
Scale	1:250
Project No.	19.17
Plot Date	April 29, 2026
Drawn By	PL
Reviewed By	AB
Drawing No.	A102

THIS DRAWING, AS AN INSTRUMENT OF SERVICE IS PROVIDED BY AND IS THE PROPERTY OF THE ICKE BROCHU ARCHITECTS INC.
THE CONTRACTOR SHALL VERIFY AND ACCEPT RESPONSIBILITY FOR ALL DIMENSIONS AND CONDITIONS ON SITE AND SHALL NOTIFY ICKE BROCHU ARCHITECTS INC. OF ANY VARIATIONS FROM THE SUPPLIED INFORMATION.
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE BUILDING CODES IN FORCE TO APPROPRIATE SURVEY, STRUCTURAL, MECHANICAL, ELECTRICAL, LANDSCAPE, ETC., CONSULTANT DRAWINGS AND SPECIFICATIONS.
CONSTRUCTION MUST CONFORM TO ALL APPLICABLE CODES AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
THIS ARCHITECTURAL DRAWING IS NOT FOR SHOP/FABRICATION DRAWINGS ONLY.
THIS DRAWING IS NOT TO BE SCALED.
THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNTIL COUNTER-SIGNED BY THE ARCHITECT.

ADMENDMENTS:

DRL MECH. CIVIL ARRAC DATE

1. SITE AREA

	SQ. FEET (FT2)	SQ. METER (m2)	ACRES (ac)	HECTARES (ha)
TOTAL	307,632 ft2	28,580 m2	7.06 ac	2.86 ha

2. DENSITY (F.S.I)

GROSS FLOOR AREA (GFA) / LOT AREA	100,510 m2	/	28,580 m2	3.67

3. BUILDING HEIGHT (OVERALL HEIGHT MEASURED FROM GROUND FLOOR)

	BUILDING A	BUILDING B	BUILDING C	BUILDING D	BUILDING E	BUILDING F
PODIUM	1 STOREY	1 STOREY	1 STOREY	1 STOREY	1 STOREY	1 STOREY
TOWER	19 STOREY	21 STOREY	24 STOREY	28 STOREY	31 STOREY	
TOTAL	20 STOREY	22 STOREY	25 STOREY	29 STOREY	32 STOREY	1 STOREY

4. GARBAGE/RECYCLING ROOM

	BUILDING A	BUILDING B	BUILDING C	BUILDING D	BUILDING E	BUILDING F
GARBAGE ROOM	1	1	1	1	1	1
MINIMUM OF 20 m² FOR BUILT ITEMS STORAGE	1	1	1	1	1	1

6. LOCKER STORAGE

	WEST BLOCK				EAST BLOCK			TOTAL
	BUILDING A	BUILDING B	BUILDING C	TOTAL	BUILDING D	BUILDING E	TOTAL	
GROUND	0	0	0	0	0	0	0	0
P1 UNDERGROUND	168	60	4	232	51	40	91	323
P2 UNDERGROUND	222	102	60	434	110	128	243	677
P3 UNDERGROUND					110	128	243	243
TOTAL PROVIDED	390	212	64	666	281	296	577	1,243 (1.0 SP/UNIT)

5. UNIT MIX

| WEST BLOCK | | | | |

LEGEND NTS

- MAIN ENTRANCE
- SECONDARY ENTRANCE
- EXISTING GRADE DATUM
- FINISH FLOOR ELEVATION
- ESTABLISHED GRADE
- PROPOSED GRADE DATUM
- EXISTING TREE (REFER TO SURVEY)
- CANOPY NOT TO SCALE
- PROPOSED TREE (REFER TO LANDSCAPE DWGS)
- EXISTING HYDRANT (REFER TO SURVEY)
- PROPOSED HYDRANT (REFER TO CIVIL DWGS)
- SIAMESE CONNECTION (REFER TO MECH/CIVIL DWGS)
- SANITARY MANHOLE (REFER TO CIVIL DWGS)
- STORM SEWER MANHOLE (REFER TO CIVIL DWGS)
- CATCHBASIN SEDIMENT TRAP (REFER TO CIVIL DWGS)
- CATCHBASIN (REFER TO CIVIL DWGS)

LEGEND CONT. NTS

- EXISTING STREET LIGHT (REFER TO SURVEY/ELEC)
- PROPOSED STREET LIGHT (REFER TO ELEC DWGS)
- TRANSFORMER (REFER TO ELEC DWGS)
- GAS METER (REFER TO MECH DWGS)
- HYDRO METER (REFER TO ELEC DWGS)
- RECEPTACLE (REFER TO ELEC DWGS)
- AREA DRAIN
- HOSE BIB (REFER TO MECH/CIVIL DWGS)
- POST-MOUNTED SIGN (REFER TO TRAFFIC REPORT)
- WALL/COLUMN-MOUNTED SIGN (REFER TO TRAFFIC REPORT)
  - BF = BARRIER FREE PARKING STOP = STOP SIGN
  - LZ = LOADING ZONE TM = TRUCK MANOEUVRING
  - HP = NO PARKING CM = CONVEX MIRROR
  - NS = NO STOPPING FR = FIRE ROUTE
- BL = BOLLARD LIGHTING (REFER TO LANDSCAPE DWGS)
  PL = POLE LIGHTING
- WALL/COLUMN-MOUNTED OR FREE-STANDING CONVEX MIRROR SUBJECT TO ACTUAL CONDITION
- ELECTRIC VEHICLE CHARGER ROUGH-IN (SEE ELEC DWGS)

PARKING LEGEND

- TYPICAL PARKING SPACE (2750 x 5500)
- TANDEM PARKING SPACE (2750 x 5500)
- TYPICAL VISITOR PARKING SPACE (2750 x 5500)
- TYPICAL PARALLEL PARKING SPACE (2750 x 6700)
- PROPOSED HORIZONTAL BICYCLE PARKING (600X1800) - NOT REFER TO LANDSCAPE DWGS
- TYPE 'A' BARRIER FREE PARKING SPACE (2400 x 5500 + 1500 AISLE*) *NOTE: 2 BF SPACE MAY SHARE AISLE
- TYPE 'B' BARRIER FREE PARKING SPACE (2400 x 5500 + 1500 AISLE*) *NOTE: 2 BF SPACE MAY SHARE AISLE
- LOADING — TYP. LOADING SPACE (3400 x 13000)

PARKING

PROPOSED PARKING	WEST BLOCK	EAST BLOCK	TOTAL
VISITOR (0.25 SP/UNIT)	173 (INCLUDES DAYCARE PARKING)	161	334
RESIDENTIAL (1.10 SP/UNIT)	758	1466	
TOTAL (1.35 SP/UNIT)	931	869	1800

WEST BLOCK	BUILDING A		BUILDING B		BUILDING C		BUILDING F (WEST)		BLOCK SUBTOTAL		EAST BLOCK	BUILDING D		BUILDING E		BLOCK SUBTOTAL		TOTAL	
	VISITOR	RES	VISITOR	RES	VISITOR	RES	VISITOR	RES	VISITOR	RES		VISITOR	RES	VISITOR	RES	VISITOR	RES	VISITOR	RES
SURFACE	26	0	15	0	18	0			59	0		31	0	53	0	84	0	143**	0	143*
GROUND FLOOR	0	0	0	0	0	0			0	0		0	0	0	0	0	0	0	0	0
P1 UNDERGROUND	26	98	41	101	47	120			114	319		45	85	32	91	77	176	191	495	686**
P2 UNDERGROUND	0	128	0	147	0	144			0	439		0	125	0	140	0	265	0	704	704
P3 UNDERGROUND	0	0	0	0	0	0			0	0		0	126	0	141	0	267	0	267	267
TOTAL	52	226	56	248	65	264			173	758		76	336	85	372	161	708	334	1,466	
GRAND TOTAL	278		304		329				931			412		457		869		1,800		

* OF WHICH 10 ARE TYPE A AND 6 ARE TYPE B BF SPACES — ** OF WHICH 4 ARE TYPE A AND 5 ARE TYPE B BF SPACES — *** OF WHICH 30 ARE SHARED WITH DAYCARE

BICYCLE PARKING

MIN. PARKING REQUIRED	0.25 SP/UNIT BICYCLES											
	SHORT-TERM						LONG-TERM					TOTAL
	WEST BLOCK			EAST BLOCK			WEST BLOCK			EAST BLOCK		
	BUILDING A	BUILDING B	BUILDING C	BUILDING D	BUILDING E	BUILDING F	BUILDING A	BUILDING B	BUILDING C	BUILDING D	BUILDING E	
SURFACE												
GROUND FLOOR	22	22	22		22	22						110
P1 UNDERGROUND							30	43	42	56	52	223
P2 UNDERGROUND												
P3 UNDERGROUND												
BUILDING SUBTOTAL PROVIDED	22	22	22	0	22	22	30	43	42	56	52	
BLOCK SUBTOTAL PROVIDED	66			44			115			108		
TOTAL PROVIDED	110						223					333

GARBAGE/RECYCLING ROOM

	BUILDING A	BUILDING B	BUILDING C	BUILDING D	BUILDING E	BUILDING F
GARBAGE ROOM	1	1	1	1	1	1
MINIMUM OF 20 M² FOR BULKY ITEMS STORAGE	1	1	1	1	1	1

LOADING AREA

5 PROVIDED (DAYCARE TO SHARE LOADING WITH BUILDING E)

THE DRAWING, AS AN INSTRUMENT OF SERVICE IS PROVIDED BY AND IS THE PROPERTY OF THE ICKE BROCHU GROUP INC.
THE CONTRACTOR SHALL VERIFY AND ACCEPT RESPONSIBILITY FOR ALL DIMENSIONS AND CONDITIONS ON SITE AND SHALL NOTIFY ICKE BROCHU ARCHITECTS INC. OF ANY VARIATIONS FROM THE SUPPLIED INFORMATION.
ALL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE SAFETY, STRUCTURAL, MECHANICAL, ELECTRICAL, MUNICIPAL ETC., CONSULTANT REPORTS AND RECOMMENDATIONS.
CONSTRUCTION MUST CONFORM TO ALL APPLICABLE CODES AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
THE ARCHITECTURAL DRAWINGS ARE FOR GRAPHIC REPRESENTATION ONLY.

THIS DRAWING IS NOT TO BE SCALED.

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNTIL COUNTER SIGNED BY THE ARCHITECT.

AUTHORIZATION
URL ARCH., OAA MRAIC — DATE

NO.	DATE	ISSUE	BY
2	APRIL 8, 2026	RE-ISSUED FOR OPA/REZONING	AB
1	MAY 2, 2025	ISSUED FOR OPA/REZONING	AB

ISSUED

ICKE | BROCHU
DEVELOPMENT CONSULTANTS INC.
517 Wellington St W., Suite 201, Toronto, Ontario, M5V 1G1
T 647 288 1800 IckeBrochu.net

5061 STOUFFVILLE ROAD RESIDENTIAL DEVELOPMENT

5061 STOUFFVILLE ROAD — STOUFFVILLE, ONTARIO

Drawing Title
GROUND FLOOR PLAN

TOWN FILE NO.:

Date	JANUARY, 2024	Drawn By	PL
Scale	1:200	Reviewed By	AB
Project No.	19.17	Drawing No.	A301
Plot Date	April 29, 2026		

Appendix B

Terms of Reference

John Nhan

From: Schleihauf, David <David.Schleihauf@york.ca>
Sent: June 28, 2023 8:17 AM
To: John Nhan
Cc: Wong, Ryan; Monika Dhungana; Bui, Vi; mark.j.white@ontario.ca; Richard Pernicky
Subject: RE: NT-23-038 - Transportation Impact Study Terms of Reference - Highway 48 & Stouffville Road, Town of Whitchurch-Stouffville, York Region

Follow Up Flag: Follow up
Flag Status: Completed

Hello John,

Please see our comments below regarding the terms of reference.

1. The study shall be consistent with the Region's Mobility Plan Guidelines and Access Guidelines. Please note that only one access to Stouffville Road will be permitted.
2. Exclusive turn lanes will be required at the access to Stouffville Road.
3. The applicant shall provide signal warrants for any proposed signalized intersections on Regional Roads.
4. Traffic Counts, signal timings, EMME model printouts, and historic AADTs can be purchased through traffic.data@york.ca (if available).
5. As per the Region's 2023 10-Year Roads and Transit Capital Construction Program, there are no planned road improvements scheduled in the vicinity of the site.
6. The Owner shall provide a basic 36 metre right-of-way for this section of Stouffville Road. As such, all municipal setbacks shall be referenced from a point 18 metres from the centreline of construction on Stouffville Road, and any additional lands required for turn lanes at intersections will be conveyed to York Region for public highway purposes, free of all costs and encumbrances, to the satisfaction of York Region Solicitor.

Please note, this is not an approval, the Region will provide additional detailed comments when a study is submitted for review.

Regards,

Our working hours may be different. Please do not feel obligated to reply outside of your scheduled working hours. Let's work together to help foster healthy work-life boundaries.

David Schleihauf, P.Eng. | Transportation Planner, Transportation Development Planning, Transportation & Infrastructure Planning Branch, Public Works Department

---

1-877-464-9675 ext. 77857

Our Mission: **Working together to serve our thriving communities – today and tomorrow**

From: John Nhan <john@nextrans.ca>
Sent: Friday, June 16, 2023 3:06 PM
To: Monika Dhungana <monika.dhungana@townofws.ca>; Bui, Vi <Vi.Bui@york.ca>; mark.j.white@ontario.ca
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: NT-23-038 - Transportation Impact Study Terms of Reference - Highway 48 & Stouffville Road, Town of Whitchurch-Stouffville, York Region

CAUTION! This is an external email. Verify the sender's email address and carefully examine any links or attachments before clicking. If you believe this may be a phishing email, forward it to isitsafe@york.ca then delete it from your inbox. If you think you may have clicked on a phishing link, report it to the IT Service Desk, ext. 71111, and notify your supervisor immediately.

Hi Monika, Vi, and Mark,

Nextrans has been retained to undertake a Transportation Impact Study for a proposed development located southwest of Stouffville Road (RR14) and Highway 48, known municipally as 5061 Stouffville Road, in the Town of Whitchurch-Stouffville, York Region. The proposal will introduce five (5) 18-storey high-rise buildings with 1,121 residential dwelling units and 1,525sqm of ground floor commercial GFA.

Please find attached our Terms of Reference for your review. Please let me know if you have any comments with our work plan.

Thanks,

John Nhan, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext.223
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

John Nhan

From: Monika Dhungana <monika.dhungana@townofws.ca>
Sent: June 20, 2023 9:44 AM
To: John Nhan; Bui, Vi; mark.j.white@ontario.ca
Cc: Richard Pernicky
Subject: RE: NT-23-038 - Transportation Impact Study Terms of Reference - Highway 48 & Stouffville Road, Town of Whitchurch-Stouffville, York Region

Follow Up Flag: Follow up
Flag Status: Completed

Hello John
Town has no comments on the TOR provided.
I will be sending a FTP link with requested project TIS report in another email. Please be considerate that the Town can only share reports that are final.

Regards,

Stouffville

MONIKA DHUNGANA
Development Engineer| Development Services
111 Sandiford Drive, Stouffville, Ontario L4A 0Z8
t: 905-640-1900 ext. 2291 | **tf:** 855-642-TOWN | townofws.ca

This email and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are not the intended recipient or the person responsible for delivering the email to the intended recipient, be advised that you have received this email in error and that any use, dissemination, forwarding, printing, or copying of this email is strictly prohibited. If you have received this email in error, please immediately notify me by telephone at (905) 640-1900 ext. 2291.

From: John Nhan <john@nextrans.ca>
Sent: Friday, June 16, 2023 3:06 PM
To: Monika Dhungana <monika.dhungana@townofws.ca>; Bui, Vi <Vi.Bui@york.ca>; mark.j.white@ontario.ca
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: NT-23-038 - Transportation Impact Study Terms of Reference - Highway 48 & Stouffville Road, Town of Whitchurch-Stouffville, York Region

Hi Monika, Vi, and Mark,

Nextrans has been retained to undertake a Transportation Impact Study for a proposed development located southwest of Stouffville Road (RR14) and Highway 48, known municipally as 5061 Stouffville Road, in the Town of Whitchurch-Stouffville, York Region. The proposal will introduce five (5) 18-storey high-rise buildings with 1,121 residential dwelling units and 1,525sqm of ground floor commercial GFA.

Please find attached our Terms of Reference for your review. Please let me know if you have any comments with our work plan.

Thanks,

John Nhan, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext.223
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

John Nhan

From: John Nhan
Sent: April 23, 2026 11:16 AM
To: 'Mulrenin, Colin (MTO)'
Cc: Nick Pileggi; Richard Pernicky
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - Part of 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [OPA 25.003/ZBA 25.010]

Hi Colin,

Thank you for confirming MTO's requirement that a TIS is to be prepared or reviewed by a RAQS-qualified consultant. The MTO comments were received within the comments package.

We understand and respect this requirement. Our firm has been in the RAQS application process since last year and continues to work toward certification. However, as we await a response for RAQs certification, approval timelines remain outside of our control. Each RAQS submission we have made has addressed MTO comments and represents further refinements to our application. We currently hold active RAQS qualifications for CRF Qualification Form and Traffic Engineering - QC Documentation, and are awaiting a decision on the remaining Traffic Impact Analysis specialty. It is our understanding that a response from MTO is anticipated in the next few weeks.

We would also like to clarify that the subject development does not include any direct access to Highway 48, with all site access to be provided from Stouffville Road. In this context, we are seeking to coordinate with MTO in a manner that reflects the indirect nature of potential impacts.

At present, Town comments have also directed us to consult with MTO. However, without TOR-level input from MTO, we are unable to confirm study scope and assumptions, which creates a coordination gap and potential re-work/delay for all parties.

Given this, we would appreciate clarification on how MTO would like projects in this situation to proceed. Specifically, could you please confirm if the following approach would be acceptable:

- Provision of TOR-level input from MTO, recognizing that a formal TIS review would be completed under RAQS requirements; and
- Proceeding with Town/Region circulation at this stage, recognizing that our RAQS certification is anticipated in the near term, and committing to resubmit a RAQS-compliant TIS to MTO upon approval.

In the absence of a defined path forward, the project is effectively unable to address any MTO-related requirements while also advancing through the Town/Region review process.

We appreciate your direction on how best to proceed.

Thank you.

Regards,
John Nhan, P.Eng.
Project Engineer
o: 905-503-2563 ext.223
c: 647-233-3596
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Sent: April 23, 2026 9:24 AM
To: John Nhan <john@nextrans.ca>
Cc: Nick Pileggi <pileggi@mshplan.ca>; Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - Part of 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [OPA 25.003/ZBA 25.010]

Hi John,

I provided comments back to the municipality last year advising that MTO will no longer review TIS produced by non-RAQs qualified consultants, and have not received any further submissions since. Were the comments in the attached not forwarded to your team?

Regards,

Colin Mulrenin (He/Him)
Senior Project Manager (York) | Highway Corridor Management Section
Ministry Of Transportation | Ontario Public Service
437-533-9427 | colin.mulrenin@ontario.ca

7th Floor
159 Sir William Hearst Avenue
Toronto ON Postal Code M3M 0B7

Ontario

Taking pride in strengthening Ontario, its places and its people

From: John Nhan <john@nextrans.ca>
Sent: April 22, 2026 6:32 PM
To: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Cc: Nick Pileggi <pileggi@mshplan.ca>; Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - Part of 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [OPA 25.003/ZBA 25.010]

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.
Hi Colin,

Hope you're doing well.

I'm circling back to this correspondence from 2024 for confirmation/comments to our TIS Terms of Reference in support of OPA/ZBA Applications for a proposed development at the property known as part of 5061 Stouffville Road in the Town of Whitchurch-Stouffville (Town/Region File # OPA 25.003/ZBA 25.010).

For background, Nextrans sent a TIS TOR to the Town, Region, and MTO in 2024. Discussion with MTO veered towards access onto Hwy 48 instead and a TOR response from MTO was never received. The Hwy 48 access was eventually removed, with proposed accesses onto the external road network via Stouffville Road. TOR responses were received from the Town and Region. A TIS was prepared by Nextrans dated May 2025 for first submission. First submission comments have since been received from the Town/Region.

As part of Town comments and to follow up, I'd like to request if MTO could please review and provide confirmation/comments for the attached TOR for a TIS Update that is being prepared for second submission.

The following SharePoint provides the May 2025 TIS and first submission Town/Region comments, for your reference.
260422 MTO TOR

Thank you.

Regards,
John Nhan, P.Eng.
Project Engineer
o: 905-503-2563 ext.223
c: 647-233-3596
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Sent: March 18, 2024 11:17 AM
To: John Nhan <john@nextrans.ca>
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [Town File No. PRE22.094]

Good morning John,

The TOR have been circulated to our Traffic office for comment, but the RIRO entrance would not be acceptable as the spacing would be insufficient to accommodate an auxiliary right turn lane and taper. For reference, the desirable lane length would be 60m with a 75m taper (measured from the end of the entrance radius) and there would also need to be sufficient distance from the taper to the intersection to minimize weaving.

Regards,

Colin Mulrenin | Corridor Management Planner (East)
Highway Corridor Management Section | Central Operations | Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor, Toronto, ON. M3M 0B7
Telephone: 437-533-9427| Email: colin.mulrenin@ontario.ca

From: John Nhan <john@nextrans.ca>
Sent: March 18, 2024 9:13 AM
To: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [Town File No. PRE22.094]

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Colin,

I'd like to follow up on if MTO has any comments for the TIS Terms of Reference, if the proposed right-in/right-out municipal street onto Hwy 48 is acceptable, and if MTO can provide details if an exclusive right turn lane is required for the municipal street connection onto Hwy 48 (e.g. ROW width on Hwy 48, design standards, etc.)

Thanks,

John Nhan, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext.223
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: John Nhan
Sent: Tuesday, March 12, 2024 4:15 PM
To: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [Town File No. PRE22.094]

Hi Colin,

Please see the attached Nextrans' Transportation Opinion Letter that speaks to the proposed access spacing from Stouffville Road and from Highway 48.

Thanks,

John Nhan, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext.223
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Sent: Tuesday, March 12, 2024 3:38 PM
To: John Nhan <john@nextrans.ca>
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: RE: [URGENT] NT-23-038 - TIS Terms of Reference - 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [Town File No. PRE22.094]

Good afternoon,

Please provide measurements for the spacing between Stouffville Road and Highway 48.

Regards,

Colin Mulrenin | Corridor Management Planner (East)
Highway Corridor Management Section | Central Operations | Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor, Toronto, ON. M3M 0B7
Telephone: 437-533-9427| Email: colin.mulrenin@ontario.ca

From: John Nhan <john@nextrans.ca>
Sent: March 12, 2024 10:58 AM
To: Mulrenin, Colin (MTO) <Colin.Mulrenin@ontario.ca>
Cc: Richard Pernicky <richard@nextrans.ca>
Subject: [URGENT] NT-23-038 - TIS Terms of Reference - 5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region [Town File No. PRE22.094]
Importance: High

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Colin,

Nextrans has been retained to undertake a Transportation Impact Study (TIS) for an Official Plan Amendment Application and Zoning By-law Amendment Application for a proposed development at the property of 5061 Stouffville Road in the Town of Whitchurch-Stouffville.

The development proposes five (5) residential buildings of 19 to 27 storeys and a one-storey building for day care use. Access will be provided through a proposed north-south municipal street with right-in/right-out access onto Stouffville Road. A second proposed municipal street will provide access to the subject development with right-in/right-out access onto Highway 48 to the east and as a full moves signalized access as the south intersection leg of Stouffville Road/ 4962 Stouffville Road access (Spring Lakes Golf Club entrance) to the west.

As right-in/right-out access is proposed onto Highway 48 (MTO-controlled), please see the attached TIS Terms of Reference, for your review and comment. For reference, I have attached the TIS TOR responses from York Region and Town staff.

In addition, can you provide comment on the following:

- Any requirement for right-turn auxiliary lanes for the right-in/right-out access onto Hwy 48.
- ROW for Hwy 48 along the proposed intersecting access.

Thanks,

John Nhan, B.Eng., EIT

Transportation Analyst

o: 905-503-2563 ext.223
e: john@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8

Phone: 905-503-2563
www.nextrans.ca

nexTrans CONSULTING ENGINEERS
NextEng Consulting Group Inc.

To: Monika Dhungana, Town of Whitchurch-Stouffville
Vi Bui, York Region
Mark White, Ministry of Transportation

From: John Nhan, Nextrans Consulting Engineers

Date: June 16, 2023

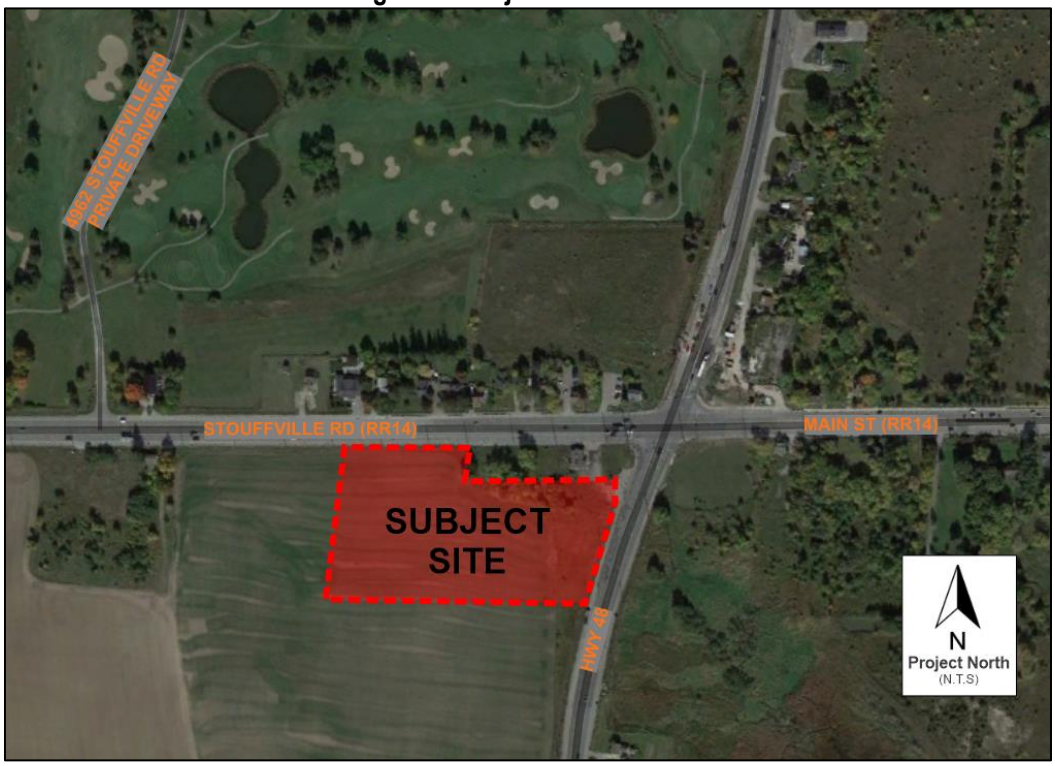
Re: **Terms of Reference – Transportation Impact Study**
Proposed Mixed-Use Development
5061 Stouffville Road, Town of Whitchurch-Stouffville, York Region
Town/Region File No. PRE22.094
Our Project No. NT-23-038

INTRODUCTION

We wish to confirm the following work plan for a Transportation Impact Study (TIS) in support of an Official Plan Amendment (OPA) Application and Zoning By-law Amendment (ZBA) Application for a proposed mixed-use development located at the southwest corner of the intersection of Highway 48 and Stouffville Road / Main Street, known municipally as 5061 Stouffville Road (herein referred to as the "subject site") within the Town of Whitchurch-Stouffville, York Region.

Figure 1 illustrates the subject site location. The proposed site plan is enclosed in **Attachment 1**.

Figure 1: Subject Site Location



Please note that Building A (170m^2), Building B (295m^2), and Building C (210m^2) as denoted on the enclosed site plan are not part of the proposed development nor are the foregoing buildings located on the subject lands (i.e. different developer and development application). The unrelated development is municipally located at 5211 Stouffville Road, 5223 Stouffville Road, and 5241 Stouffville Road and will be included as a background development that will use the proposed site driveways for access onto the external road network.

Based on the latest site plan, the development proposes five (5) 18-storey buildings for a total of 1,121 residential dwelling units and 1,525m^2 of ground floor commercial GFA.

Three (3) vehicular accesses are proposed.

- A full moves access will be introduced as the south leg at the intersection of Stouffville Road and the private driveway for 4962 Stouffville Road (Spring Lakes Golf Club entrance) approximately 490m west of the intersection of Stouffville Road / Main Street and Highway 48. Traffic signalization of the foregoing intersection is proposed.
- A right-in/right-out driveway is proposed along Stouffville Road.
- A right-in/right-out driveway is proposed along Highway 48.

The TIS for the proposed development will be conducted following York Region Transportation Mobility Plan Guidelines dated November 2016 and Ministry of Transportation General Guidelines for the Preparation of Traffic Impact Studies dated February 2021. The following outlines the proposed Terms of Reference for the study.

STUDY AREA & TRAFFIC DATA

The study will assess the weekday AM and PM peak hours. The proposed study area will include the analysis of the following intersections.

- Stouffville Road / Main Street & Highway 48 (signalized);
- Stouffville Road & 4962 Stouffville Road Private Driveway (unsignalized);
- Stouffville Road & McCowan Road (signalized); and
- Stouffville Road & Hoover Park Drive / Private Road (signalized).

A Turning Movement Count (TMC) survey will be undertaken for the studied intersections during the weekday AM and PM peak periods of 7:00am-10:00am and 4:00pm-7:00pm.

TRAFFIC ASSESSMENT & STUDY HORIZON YEAR

The study will focus on weekday AM and PM peak hour traffic operations. Synchro version 10 and SimTraffic will be used to assess intersection operations and queueing during the peak hours.

Along with the existing year of 2023, a 5-year study horizon of 2028 and 10-year study horizon of 2033 will be assessed given the preliminary nature of the development.

BACKGROUND TRAFFIC

General Corridor Growth Rate – Nextrans will review historical traffic data and consult with reviewing agency staff to determine corridor growth rates.

Road Network Improvements – Nextrans will note any road network improvements identified within the study area and account for any traffic diversions associated with these improvements within in our analysis.

It is Nextrans' understanding that there are no currently planned road improvements for the proposed study area.

Background Development Traffic – Nextrans will review the Town's online interactive Development Activity Map for any relevant background developments to be considered within the study.

Nextrans requests from the Town the relevant transportation documents from the following development applications as applicable to include as background development traffic volumes within the study.

- 5182, 5192, 5226 Stouffville Road (SPA08.015);
- 5262, 5270, 5286, 5318 Main Street (19T(W)16.003);
- 5472 Main Street (SPA18.004);
- 5531 Main Street (SPA19.030);
- 12049 Highway 48 (OPA21.005);
- Hoover Park Drive (SPA23.001);
- 11776 Highway 48 (19T(W)-20.004);
- Sam's Way (north side), west of Rougeview Ave (SPA22.011);
- 5505 Main Street (SPA22.029)
- Automall NW corner & Millard (SPA22.040); and
- Automall Boulevard (SPA18.027).

TRIP GENERATION, DISTRIBUTION, & ASSIGNMENT

Nextrans proposes to use the Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition to determine the site traffic volumes of the proposed development onto the surrounding road network.

The residential and commercial directional trip distribution will be based on 2016 Transportation Tomorrow Survey data, unless otherwise noted.

Trip assignment will be completed accordingly to reflect the configuration of the proposed site accesses, turning restrictions, and logical routings.

REMEDIAL MEASURES

Under future conditions, any movements that exceed an individual movement or overall intersection v/c ratio of 0.85 will be identified, in which remedial actions such as intersection road improvements or signal timing split optimization will be identified. Queueing will be assessed against available storage space. If remedial measures are to be employed, a scenario will be provided demonstrating the intersection remedial measures.

SITE PLAN REVIEW

Nextrans will review the proposed site plan and undertake a vehicle swept path analysis to determine site circulation and functionality of the access driveway entrance, internal driveway aisles, loading space provision, and vehicular parking provision, as necessary.

The proposed site accesses will be reviewed in accordance with York Region Access Guidelines (2020).

A preliminary functional plan of a proposed full moves signalized site access along Stouffville Road at the Spring Lakes Golf Club entrance. Applicable signage and pavement markings will be included.

PARKING & LOADING

The site is currently subject to Town of Whitchurch-Stouffville Zoning By-law 2010-001-ZO and will be reviewed for parking and loading requirements.

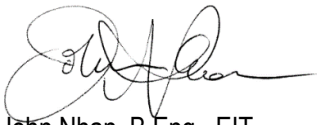
TRANSPORTATION DEMAND MANAGEMENT

A review of existing nearby transportation facilities and possible initiatives and policies to promote and encourage modes of transportation in lieu of single occupant vehicle (SOV) trips will be made to influence the travel behaviour of residents and visitors to reduce travel demand and create a more efficient transportation network.

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

Yours truly,

NEXTRANS CONSULTING ENGINEERS

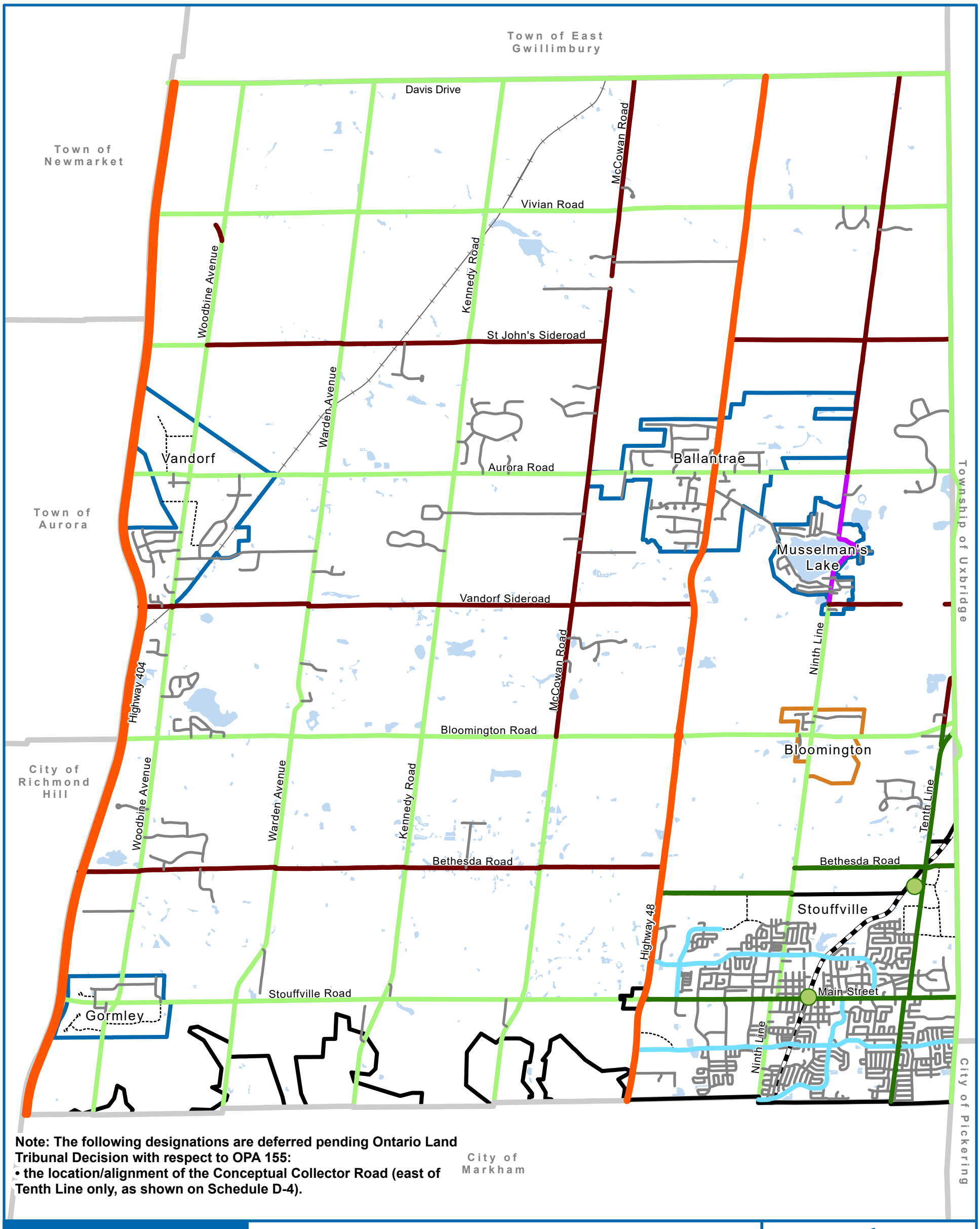


John Nhan, B.Eng., EIT
Transportation Analyst

Enclosed: Attachment 1: Proposed Site Plan

Appendix C

Traffic Data and Background Documents



Note: The following designations are deferred pending Ontario Land Tribunal Decision with respect to OPA 155:
• the location/alignment of the Conceptual Collector Road (east of Tenth Line only, as shown on Schedule D-4).

Schedule O
Transportation Plan

Town of Whitchurch-Stouffville
Official Plan

- Municipal Boundaries
- Urban Area
- Community Area
- Hamlet Area
- GO Train Station
- GO Train Route
- Potential Road
- Provincial Highway

Regional Road Classification and Planned Widths

- Regional Arterial Road (up to 30 metres)
- Regional Arterial Road (up to 36 metres)

Town Road Classification and Planned Widths

- Arterial Road (30 to 45 metres)
- Collector Road (up to 27 metres)
- Local Road (up to 20 metres)
- Rural Arterial (up to 27 metres)

0 1 2 3
Kilometres

Sources: MNRF, York Region & Town of Whitchurch-Stouffville
Projection: UTM NAD83 Zone 17
Adopted by Council May 2024

Stouffville

This map is illustrative only . Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation. The Town of Whitchurch-Stouffville shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

Schedule P
Active Transportation Plan

Town of Whitchurch-Stouffville
Official Plan

Town of East Gwillimbury
Town of Newmarket
Town of Aurora
City of Richmond Hill
City of Markham
Township of Uxbridge
City of Pickering

Vivian Road
St John's Sideroad
Aurora Road
Vandorf Sideroad
Bloomington Road
Bethesda Road
Stouffville Road

McCowan Road
York/Durham Line
Woodbine Avenue
Warden Avenue
Kennedy Road
Highway 404
Highway 48
Ninth Line
Tenth Line

Ballantrae
Musselman's Lake
Bloomington
Vandorf
Gormley

Stouffville
(Schedule P-1)

- Municipal Boundaries
- Urban Area
- Community Area
- Hamlet Area
- Oak Ridges Trail
- Multi-Use Trail
- Multi-Use Trail - Proposed
- Paved Shoulder
- Paved Shoulder - Proposed
- Shared Pathway (in-boulevard)
- In-Boulevard Pathway - Proposed
- Shared Roadway
- Shared Roadway - Proposed
- Bike Lane

0 1 2 3
Kilometres

Sources: MNRF, York Region & Town of Whitchurch-Stouffville
Projection: UTM NAD83 Zone 17
Adopted by Council May 2024

Stouffville

This map is illustrative only . Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation. The Town of Whitchurch-Stouffville shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

Town of Whitchurch-Stouffville
Official Plan

Schedule P-1
Stouffville Active Transportation Plan

Bethesda Road
Bethesda Road
Bethesda Road
Highway 48
Ninth Line
York/Durham Line
Tenth Line
Main Street
Main Street
Ninth Line
Tenth Line

- Municipal Boundaries
- Urban Area
- Oak Ridges Trail
- Multi-Use Trail
- Multi-Use Trail - Proposed
- Paved Shoulder
- Paved Shoulder - Proposed
- Shared Pathway (in-boulevard)
- In-Boulevard Pathway - Proposed
- Shared Roadway
- Shared Roadway - Proposed
- Bike Lane

0 325 650 975
Metres

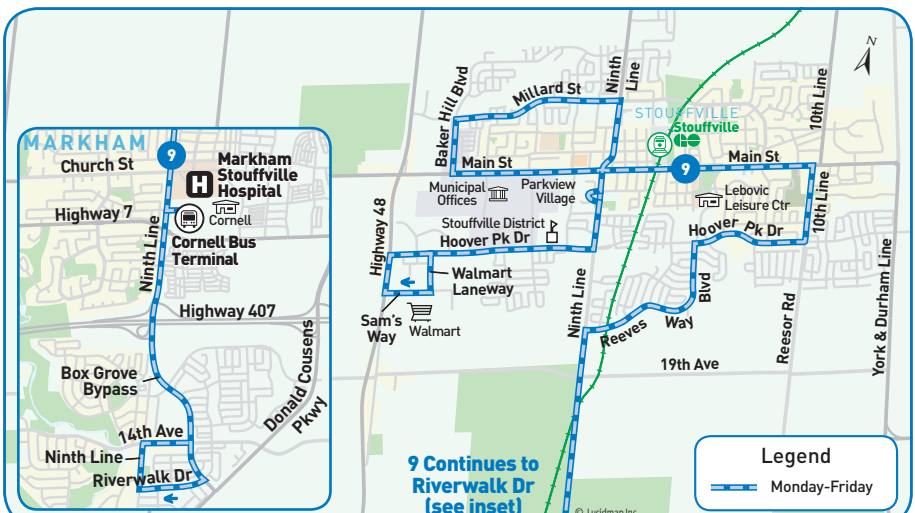
Sources: MNRF, York Region & Town of Whitchurch-Stouffville
Projection: UTM NAD83 Zone 17
Adopted by Council May 2024

Stouffville

This map is illustrative only . Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation. The Town of Whitchurch-Stouffville shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

9 Ninth Line

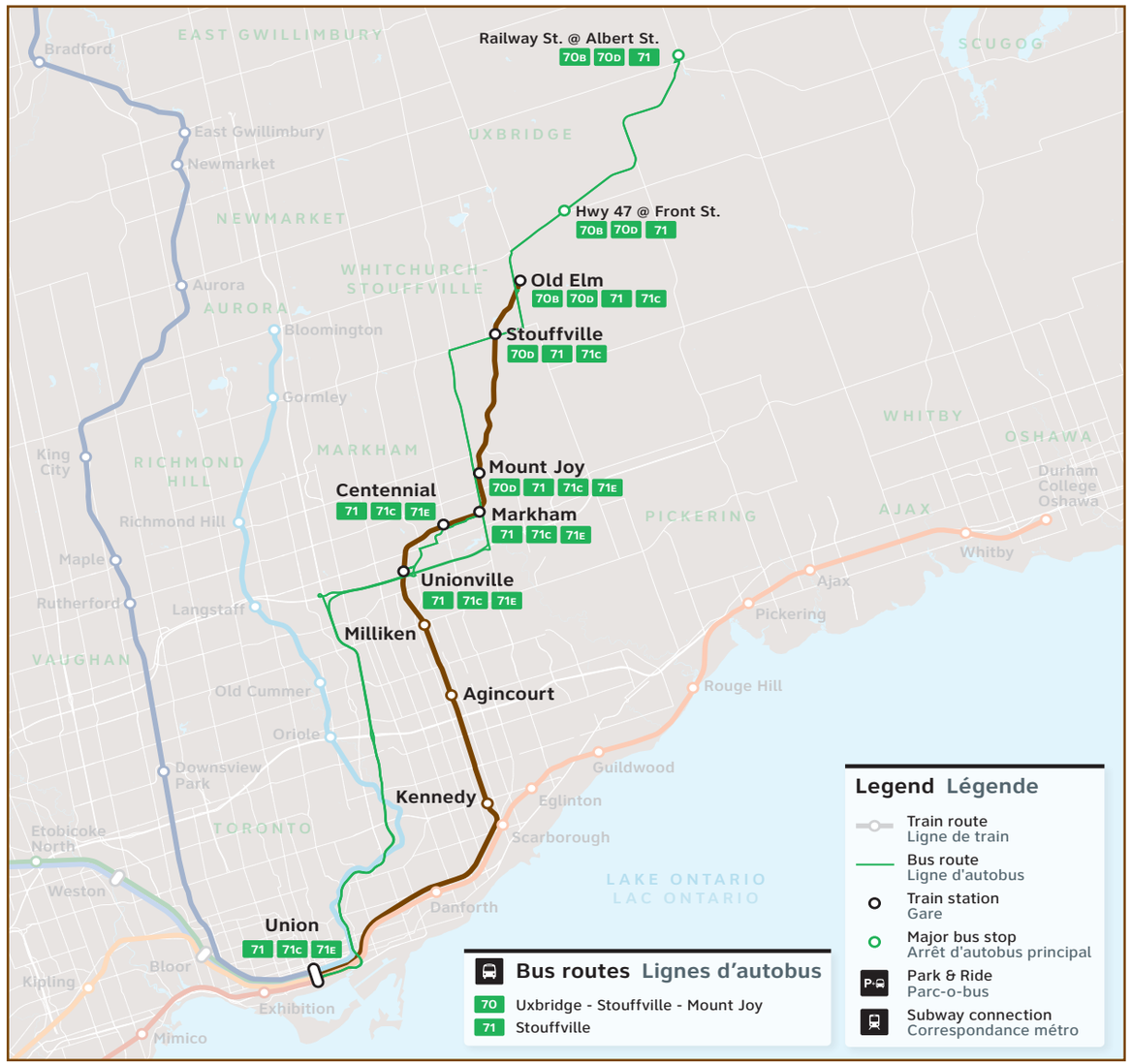
YORK REGION TRANSIT



70-71

Route number
Numéro du trajet

Stouffville



CONTACT US

1-888-438-6646
416-869-3200
TTY: #711 or call
1 (800) 855-0511

gotransit.com/schedules

@GOtransitST

See Something?
Say Something.
24/7 Transit Safety Dispatch:
1-877-297-0642

prestocard.ca

Sign-up for email or text alerts/ Inscrivez-vous pour recevoir des alertes par courriel ou message texte.
gotransit.com/OnTheGO

Stouffville

GO Train and Bus Schedule/
Horaire des trains et des autobus GO

METROLINX

ST **70** **71**

- Uxbridge
- Goodwood
- Old Elm GO
- Stouffville GO
- Mount Joy GO
- Markham GO
- Centennial GO
- Unionville GO
- Milliken GO
- Agincourt GO
- Kennedy GO
- Union Station

Daily / Quotidiennement
Includes GO Bus routes 70 and 71/
Inclut les trajets 70 et 71d'autobus GO

Effective / À partir de:
27 & 28 APRIL AVRIL 2024

How to read our schedules

Step 1
Find the station or terminal you are departing from. Stops are listed across the top in the order they are served.

Step 2
The upper left corner tells you what day the schedule is for and the direction of travel.

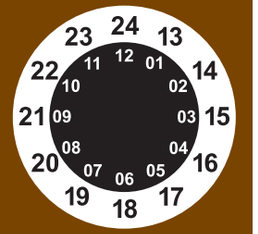
Step 3
Look across the rows for available departure times.

Step 4
Not all trains or buses stop at every station. If you see → the train or bus will not stop at that station.

Schedule times shown in 24-hour clock

Midnight to noon
00 01 - 12 00

Noon to midnight
12 01 - 24 00



Legend

Train trips

Bus trips

→ Trip does not serve this location.

↓ Check below for connecting trips.

GO Train service is accessible to passengers using mobility devices at this location.

GO Bus service is accessible to passengers using mobility devices at this location.

GO Train & GO Bus service is accessible to passengers using mobility devices at this location.

Parking available.

For the latest schedule information and updates, please visit gotransit.com/schedules.

Notes

h Trip holds for connection from train.

S GO Bus services GO Station from bus stop on street.

Bicycles

1. Bicycles are not allowed in Union Station or on-board trains during morning rush hour (6:30-9:30) and evening rush hour (15:30-18:30), Monday to Friday.

2. Foldable bicycles are allowed on-board trains at all times.

Comment lire nos horaires

Étape 1
Trouvez votre gare ou terminus de départ. La liste des arrêts est donnée en haut dans l'ordre dans lequel ils sont desservis.

Étape 2
Le coin supérieur gauche vous indique le jour pour lequel l'horaire est donné et la direction de circulation.

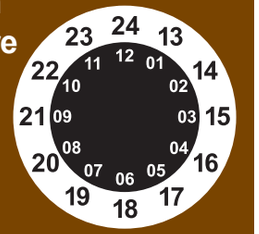
Étape 3
Regardez dans les rangées pour obtenir les heures de départ offertes.

Étape 4
Les trains ou les autobus ne s'arrêtent pas tous à chaque gare. Si vous voyez le symbole → le train ou l'autobus ne s'arrêtera pas à cette gare.

Indications selon un système horaire de 24 heures

De minuit à midi:
00 01 - 12 00

De midi à minuit:
12 01 - 24 00



Légende

Horaire des trains

Horaire des autobus

→ Trajet ne sert pas cette station.

↓ Vérifiez les trajets de correspondance cidessous.

Service de trains GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.

Service d'autobus GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.

Les services de trains et d'autobus GO sont accessibles aux utilisateurs d'un appareil d'aide à la mobilité à cet endroit.

Stationnement disponible.

Pour consulter les horaires les plus récents et les mises à jour, veuillez visiter gotransit.com/schedules.

Notes

h Les départ de l'autobus est retardé pour assurer la correspondance avec le service de trains.

S Les autobus GO desservent la gare à partir de l'arrêt situé sur la rue.

Vélos

1. Les vélos ne sont pas autorisés dans la gare Union ou à bord des trains du lundi au vendredi, pendant l'heure de pointe (6:30-9:30) et pendant l'heure de pointe du soir (15:30-18:30).

2. Les vélos pliables sont permis à bord des trains en tout temps.

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

SOUTHBOUND / EN DIRECTION SUD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone →	Uxbridge 76 Dp	Goodwood 75	Stouffville 74 Dp	Stouffville 74	Markham 73 Dp	Markham 72	Markham 72	Markham 71	Scarborough 70	Scarborough 7	Scarborough 77	Toronto 2 Ar
			Railway St. @ Albert St.	Hwy. 47 @ Front St.	Old Elm GO	Stouffville GO s	Mount Joy GO	Markham GO s	Centennial GO s	Unionville GO	Milliken GO	Agincourt GO	Kennedy GO	Union Station
71	71050		04 20	04 31	04 40	04 46	05 00	05 04	05 08	05 15	→	→	→	05 45
	7705				05 18	05 23	05 33	05 37	05 43	05 48	05 54	06 01	06 09	06 29
70B	70060		05 43	05 54	06 03↓									
	7707				06 18	06 23	06 33	06 37	06 43	06 48	06 54	07 01	07 09	07 29
	7907				06 48	06 53	07 03	07 07	07 13	07 18	07 24	07 31	07 39	07 59
70B	70110		06 43	06 54	07 03↓									
	7709				07 18	07 23	07 33	07 37	07 43	07 48	07 54	08 01	08 09	08 29
	7909				07 48	07 53	08 03	08 07	08 13	08 18	08 24	08 31	08 39	08 59
	7711				08 18	08 23	08 33	08 37	08 43	08 48	08 54	09 01	09 09	09 29
70B	70220		08 44	08 55	09 04↓									
	7713				09 19	09 24	09 34	09 38	09 43	09 48	09 54	10 01	10 09	10 29
	7415						10 34	10 38	10 43	10 48	10 54	11 01	11 09	11 29
70D	70300		10 36	10 47	10 56	11 02	11 19↓							
	7417						11 34	11 38	11 43	11 48	11 54	12 01	12 09	12 29
	7419						12 34	12 38	12 43	12 48	12 54	13 01	13 09	13 29
70D	70380		12 36	12 47	12 56	13 02	13 19↓							
	7421						13 34	13 38	13 43	13 48	13 54	14 01	14 09	14 29
	7423						14 34	14 38	14 43	14 48	14 54	15 01	15 09	15 29
70D	70460		14 36	14 47	14 56	15 02	15 19↓							
	7425						15 34	15 38	15 43	15 48	15 54	16 01	16 09	16 29
71	71620		15 30	15 41	15 50	15 56	16 15	16 20	16 26	16 40	→	→	→	17 35
71E	71650						16 45	16 50	16 56	17 10	→	→	→	18 05
71	71670		16 35	16 46	16 55	17 01	17 20	17 25	17 31	17 45	→	→	→	18 35
71C	71710				17 55	18 01	18 20	18 25	18 31	18 40	→	→	→	19 25
70D	70680		18 36	18 47	18 56	19 02	19 19↓							
	7433						19 34	19 38	19 43	19 48	19 54	20 01	20 09	20 29
	7435						20 34	20 38	20 43	20 48	20 54	21 01	21 09	21 29
70D	70760		20 39	20 50	20 59	21 05	21 19↓							
	7437						21 34	21 38	21 43	21 48	21 54	22 01	22 09	22 29
	7439						22 34	22 38	22 43	22 48	22 54	23 01	23 09	23 29
71	71840		22 45	22 56	23 05	23 11	23 25	23 29	23 33	23 40	→	→	→	00 10
71C	71910				01 10	01 16	01 30	01 34	01 38	01 45	→	→	→	02 15

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

NORTHBOUND / EN DIRECTION NORD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone →	Toronto 2 Dp	Scarborough 77	Scarborough 7	Scarborough 70	Markham 71	Markham 72	Markham 72	Markham 73 Ar	Stouffville 74	Stouffville 74 Ar	Goodwood 75	Uxbridge 76 Ar
			Union Station	Kennedy GO	Agincourt GO	Milliken GO	Unionville GO	Centennial GO s	Markham GO s	Mount Joy GO	Stouffville GO s	Old Elm GO	Hwy. 47 @ Front St.	Railway St. @ Albert St.
71C	71111		06 43	→	→	→	07 13	07 20	07 25	07 33	07 45	07 53		
71	71171		07 43	→	→	→	08 18	08 25	08 30	08 38	08 53	09 03	09 09	09 28
	7410		09 12	09 31	09 39	09 46	09 52	09 57	10 02	10 07↓				
70D	70261									10 15**h**	10 28	10 38	10 44	11 00
	7412		10 12	10 31	10 39	10 46	10 52	10 57	11 02	11 07↓				
70D	70331									11 15**h**	11 28	11 38	11 44	12 00
	7414		11 12	11 31	11 39	11 46	11 52	11 57	12 02	12 07↓				
	7416		12 12	12 31	12 39	12 46	12 52	12 57	13 02	13 07↓				
70D	70411									13 15**h**	13 28	13 38	13 44	14 00
	7418		13 12	13 31	13 39	13 46	13 52	13 57	14 02	14 07↓				
	7420		14 12	14 31	14 39	14 46	14 52	14 57	15 02	15 07↓				
70D	70491									15 15**h**	15 30	15 40	15 46	16 02
	7622		15 12	15 31	15 39	15 46	15 52	15 57	16 02	16 07	16 18	16 24		
	7624		16 12	16 31	16 39	16 46	16 52	16 57	17 02	17 07	17 18	17 24↓		
70B	70651											17 32**h**	17 38	17 52
	7824		16 42	17 01	17 09	17 16	17 22	17 27	17 32	17 37	17 48	17 54		
	7626		17 12	17 31	17 39	17 46	17 52	17 57	18 02	18 07	18 18	18 24		
	7826		17 42	18 01	18 09	18 16	18 22	18 27	18 32	18 37	18 48	18 54		
	7428		18 12	18 31	18 39	18 46	18 52	18 57	19 02	19 07↓				
70D	70721									19 15**h**	19 28	19 34	19 40	19 54
	7430		19 12	19 31	19 39	19 46	19 52	19 57	20 02	20 07↓				
70D	70741									20 15**h**	20 27	20 35	20 41	20 55
	7432		20 12	20 31	20 39	20 46	20 52	20 57	21 02	21 07↓				
70D	70791									21 15**h**	21 27	21 35	21 41	21 55
	7434		21 12	21 31	21 39	21 46	21 52	21 57	22 02	22 07				
	7436		22 12	22 31	22 39	22 46	22 52	22 57	23 02	23 07↓				
70D	70861									23 15**h**	23 27	23 35	23 41	23 55
	7638		23 12	23 31	23 39	23 46	23 52	23 57	00 02	00 07	00 18	00 24		
	7640		00 12	00 31	00 39	00 46	00 52	00 57	01 02	01 07	01 18	01 24↓		
70B	70651											01 32**h**	01 38	01 52
71C	71901		01 10	→	→	→	01 35	01 40	01 45	01 50	02 00	02 10		
71C	71961		02 43	→	→	→	03 08	03 13	03 18	03 23	03 33	03 43		

Saturday and Sunday
Samedi et dimanche

SOUTHBOUND / EN DIRECTION SUD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone →	Uxbridge 76 Dp Railway St. @ Albert St.	Goodwood 75 Hwy. 47 @ Front St.	Stouffville 74 Dp Old Elm GO	Stouffville 74 Stouffville GO	Markham 73 Dp Mount Joy GO	Markham 72 Markham GO	Markham 72 Centennial GO	Markham 71 Unionville GO	Scarborough 70 Milliken GO	Scarborough 7 Agincourt GO	Scarborough 77 Kennedy GO	Toronto 2 Ar Union Station
71	71140		05 45	05 58	06 05	06 11	06 25	06 29	06 33	06 40	→	→	→	07 10
	7709				07 19	07 23	07 33	07 37	07 42	07 47	07 53	08 00	08 08	08 28
70B	70160		07 44	07 57	08 04↓									
	7711				08 19	08 23	08 33	08 37	08 42	08 47	08 53	09 00	09 08	09 28
	7713				09 19	09 23	09 33	09 37	09 42	09 47	09 53	10 00	10 08	10 28
70D	70260		09 35	09 48	09 55	10 01	10 18↓							
	7415						10 33	10 37	10 42	10 47	10 53	11 00	11 08	11 28
	7417						11 33	11 37	11 42	11 47	11 53	12 00	12 08	12 28
70D	70340		11 35	11 48	11 55	12 01	12 18↓							
	7419						11 33	12 37	12 42	12 47	12 53	13 00	13 08	13 28
	7421						13 33	13 37	13 42	13 47	13 53	14 00	14 08	14 28
70D	70420		13 35	13 48	13 55	14 01	14 18↓							
	7423						14 33	14 37	14 42	14 47	14 53	15 00	15 08	15 28
	7425						15 33	15 37	15 42	15 47	15 53	16 00	16 08	16 28
70D	70510		15 35	15 48	15 55	16 01	16 18↓							
	7427						16 33	16 37	16 42	16 47	16 53	17 00	17 08	17 28
	7429						17 33	17 37	17 42	17 47	17 53	18 00	18 08	18 28
70D	70630		17 35	17 48	17 55	18 01	18 18							
	7431						18 33	18 37	18 42	18 47	18 53	19 00	19 08	19 28
	7433						19 33	19 37	19 42	19 47	19 53	20 00	20 08	20 28
71E	71780						20 05	20 10	20 16	20 25	→	→	→	20 55
70D	70720		19 38	19 51	19 58	20 04	20 18							
	7435						20 33	20 37	20 42	20 47	20 53	21 00	21 08	21 28
	7437						21 33	21 37	21 42	21 47	21 53	22 00	22 08	22 28
71	71840		21 45	21 58	22 05	22 11	22 25	22 29	22 33	22 40	→	→	→	23 10
71C	71880				23 00	23 06	23 20	23 24	23 28	23 35	→	→	→	00 05
71C	71910				01 10	01 16	01 30	01 34	01 38	01 45	→	→	→	02 10

Saturday and Sunday
Samedi et dimanche

NORTHBOUND / EN DIRECTION NORD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone →	Toronto 2 Dp Union Station	Scarborough 6 Kennedy GO	Scarborough 7 Agincourt GO	Scarborough 70 Milliken GO	Markham 71 Unionville GO	Markham 72 Centennial GO	Markham 72 Markham GO	Markham 73 Ar Mount Joy GO	Stouffville 74 Stouffville GO	Stouffville 74 Old Elm GO	Goodwood 75 Hwy. 47 @ Front St.	Uxbridge 76 Ar Railway St. @ Albert St.
71	71171		07 43	→	→	→	08 13	08 19	08 23	08 28	08 40	08 48	08 54	09 13
	7410		09 11	09 30	09 38	09 45	09 51	09 56	10 01	10 06↓				
70D	70291									10 14**h**	10 27	10 37	10 43	10 59
	7412		10 11	10 30	10 38	10 45	10 51	10 56	11 01	11 06				
	7414		11 11	11 30	11 38	11 45	11 51	11 56	12 01	12 06↓				
70D	70371									12 14**h**	12 27	12 37	12 43	12 59
	7416		12 11	12 30	12 38	12 45	12 51	12 56	13 01	13 06				
	7418		13 11	13 30	13 38	13 45	13 51	13 56	14 01	14 06↓				
70D	70451									14 14**h**	14 27	17 37	14 43	14 59
	7420		14 11	14 30	14 38	14 45	14 51	14 56	15 01	15 06				
	7422		15 11	15 30	15 38	15 45	15 51	15 56	16 01	16 06↓				
70D	70551									16 14**h**	16 27	16 37	16 43	16 59
	7424		16 11	16 30	16 38	16 45	16 51	16 56	17 01	17 06				
	7626		17 11	17 30	17 38	17 45	17 51	17 56	18 01	18 06↓				
70D	70671									18 14**h**	18 27	18 37	18 43	18 59
	7628		18 11	18 30	18 38	18 45	18 51	18 56	19 01	19 06				
	7630		19 11	19 30	19 38	19 45	19 51	19 56	20 01	20 06↓				
70D	70751									20 14**h**	20 27	20 37	20 43	20 57
	7432		20 11	20 30	20 38	20 45	20 51	20 56	21 01	21 06				
	7634		21 11	21 30	21 38	21 45	21 51	21 56	22 01	22 06	22 17	22 23↓		
70B	70831											22 31**h**	22 37	22 51
	7636		22 11	22 30	22 38	22 45	22 51	22 56	23 01	23 06	23 17	23 23		
	7638		23 11	23 30	23 38	23 45	23 51	23 56	00 01	00 06	00 17	00 23↓		
70B	70891											00 31**h**	00 37	00 51
71C	71891		00 20	→	→	→	00 50	00 55	01 00	01 05	01 15	01 25		
71C	71901		01 20	→	→	→	01 50	01 55	02 00	02 05	02 15	02 25		
71C	71961		02 43	→	→	→	03 08	03 13	03 18	03 23	03 33	03 43		

LOCATION:	**Hwy 48 & Hoover Park Dr**	***MUNICIPALITY:***	**Whitchurch-Stouffville**
CTCS:	**701 (MTO Signal)**	***COMPUTER SYSTEM:***	**Centracs**
MODE/COMMENT:	**SA**	***CONTROLLER/CABINET TYPE:***	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**MQL**		
PREPARATION DATE:	**February 27, 2019**	***DESIGN WALK SPEED:***	
IMPLEMENTATION DATE:	**March 20, 2019**	***CHANNEL/DROP:***	

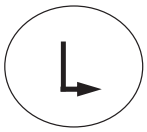
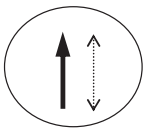
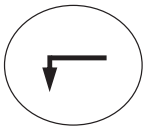
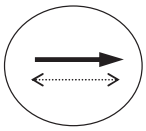
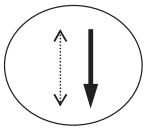
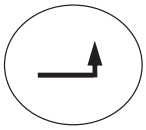
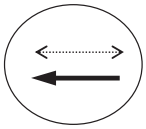
N

NEMA Phase (MTO)	Normal Time	Free 24 hrs, 7 days Pattern 99 Plan 99	Phase Mode (Fixed/Demanded/Callable)	Remarks
1. S/B Left Turn Arrow	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 0 SPLIT	**0**	Callable/Extendable by stopbar loop 5 secs detector delay	Pedestrian Minimums: NSWK = 15 sec., NSFD = 25 sec. EWWK = 7 sec., EWFD = 25 sec. **Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Northbound Hwy 48	WLK 15 FDW 25 MIN 40 EXT 4.6 MAX1 50 MAX2 0 AMB 5.4 ALR 2.3 SPLIT	**0**	Veh Min Recall & Ped Recall	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green. If a pedestrian call is received, the pedestrian minimum will be served.
3. W/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**		**Please see reverse page for Pretime.** Timing changes based on new timing plans provided by MTO dated Feb 19, 2019.
4. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**		
5. N/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT			
6. Southbound Hwy 48	WLK 15 FDW 25 MIN 40 EXT 4.6 MAX1 50 MAX2 0 AMB 5.4 ALR 2.3 SPLIT	**0**	Veh Min Recall & Ped Recall No ped crossing	
7. EB Fully Protected Hoover Park Dr	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 4.1 ALR 3.4 SPLIT		Callable/Extendable by stopbar loop 10 secs detector delay	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal
8. WB Fully Protected Hoover Park Dr	WLK 7 FDW 25 MIN 10 EXT 3 MAX1 25 MAX2 0 AMB 4.5 ALR 2.7 SPLIT	**0**	Callable/Extendable by stopbar loop 10 secs detector delay	
	CL OF VP	**0 (FREE)** **0 (FREE)** **0 (FREE)**		

NOTES:

LOCATION:	**Hwy 48 & Stouffville Rd (YR 14)/ Main St**	***MUNICIPALITY:***	**Whitchurch-Stouffville**
CTCS:	**430 (MTO Signal)**	***COMPUTER SYSTEM:***	**Centracs**
MODE/COMMENT:	**SA**	***CONTROLLER/CABINET TYPE:***	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**MQL**		
PREPARATION DATE:	**February 19, 2019**	***DESIGN WALK SPEED:***	
IMPLEMENTATION DATE:	**April 4, 2019**	***CHANNEL/DROP:***	

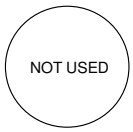
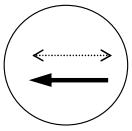
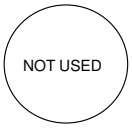
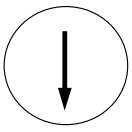
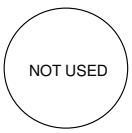
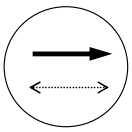
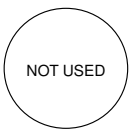
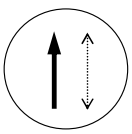
N

NEMA Phase (MTO)	Normal Time	Free 24 hrs, 7 days Pattern 99 Plan 99	Phase Mode (Fixed/Demanded/Callable)	Remarks
1. S/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	**0**	Callable/Extendable by setback loop	Pedestrian Minimums: NSWK = 19 sec., NSFD = 14 sec. EWWK = 19 sec., EWFD = 14 sec. **Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Northbound  Hwy 48	WLK 19 FDW 14 MIN 33 EXT 4.6 MAX1 36 MAX2 0 AMB 5.9 ALR 2.0 SPLIT	**0**	Veh Min Recall & Ped Recall MAX Int = 30 secs with 2 secs increment	**Emergency vehicle pre-emption 4:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction. EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green. If a pedestrian call is received, the pedestrian minimum will be served.
3. W/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	**0**	Callable/Extendable by setback loop	**Please see reverse page for Pretime.**
4. Eastbound  Stouffville Rd	WLK 19 FDW 14 MIN 10 EXT 3 MAX1 40 MAX2 0 AMB 5.0 ALR 2.7 SPLIT	**0**	Callable/Extendable by stopbar loop	
5. N/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT		Callable/Extendable by setback loop	
6. Southbound  Hwy 48	WLK 19 FDW 14 MIN 33 EXT 4.6 MAX1 36 MAX2 0 AMB 5.9 ALR 2.0 SPLIT	**0**	Veh Min Recall & Ped Recall MAX Int = 30 secs with 2 secs increment	
7. E/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT		Callable/Extendable by setback loop	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal
8. Westbound  Main St	WLK 19 FDW 14 MIN 10 EXT 3 MAX1 40 MAX2 0 AMB 5.0 ALR 2.7 SPLIT	**0**	Callable/Extendable by stopbar loop	
	CL OF VP	**0 (FREE)** **0 (FREE)** **0 (FREE)**		

NOTES:

LOCATION:	**Stouffville Rd (YR 14) & McCowan Rd (YR 67)**	***MUNICIPALITY:***	**Town of Whitchurch-Stouffville**
CTCS:	**94**	***COMPUTER SYSTEM:***	**Centracs**
MODE/COMMENT:	**SA**	***CONTROLLER/CABINET TYPE:***	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**JS**	***CONFLICT FLASH:***	**Red & Red**
PREPARATION DATE:	**June 4, 2020**	***DESIGN WALK SPEED:***	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**October 5, 2020**	***CHANNEL/DROP:***	

N

NEMA Phase (York)		**FREE** **All Day**	**Phase Mode (Fixed/Demanded/Callable)**	**Remarks**
	Local Plan	Pattern 99		
	System Plan	Plan 99		
1.  	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT			Pedestrian Minimums: EWWK = 7 sec., EWFD = 32 sec. NSWK = 7 sec., NSFD = 30 sec.
				Emergency vehicle pre-emption 3: Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Westbound  Stouffville Rd (YR 14)	WLK 7 FDW 32 MIN 39 EXT 0 MAX1 39 MAX2 0 AMB 5.5 ALR 2.5 SPLIT	**0**	Fixed	**Emergency vehicle pre-emption 4:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
3.  	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT			NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is served. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or serves MAX1 during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
4. Southbound  McCowan Rd (YR 67)	WLK 7 FDW 30 MIN 10 EXT 3 MAX1 30 MAX2 0 AMB 5.5 ALR 3.0 SPLIT	**0**	Callable by stopbar loop Extendable by stopbar loop.	During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
				During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand.
5.  	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT			EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
6. Eastbound  Stouffville Rd (YR 14)	WLK 7 FDW 32 MIN 39 EXT 0 MAX1 39 MAX2 0 AMB 5.5 ALR 2.5 SPLIT	**0**	Fixed	
7.  	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT			**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Northbound  McCowan Rd (YR 67)	WLK 7 FDW 30 MIN 10 EXT 3 MAX1 30 MAX2 0 AMB 5.5 ALR 3.0 SPLIT	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	**0 (FREE)** **0 (FREE)** 0 (FREE)		

NOTES: **No pedestrain crossing on West leg**

Spectrum

Turning Movement Count
Location Name: HWY 48 & HOOVER PARK DR
Date: Thu, Jun 22, 2023 Deployment Lead: Walter Fugaj

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (4 . HWY 48 & HOOVER PARK DR)

Start Time	N Approach HWY 48						E Approach HOOVER PARK DR						S Approach HWY 48						W Approach PRIVATE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	51	7	0	0	58	35	0	25	0	0	60	26	74	0	0	0	100	0	0	0	0	0	0	218	
07:15:00	0	82	7	0	0	89	33	0	36	0	0	69	27	77	0	0	0	104	0	0	0	0	0	0	262	
07:30:00	0	73	22	0	0	95	36	0	55	0	0	91	25	63	0	0	0	88	0	0	0	0	0	0	274	
07:45:00	0	103	22	0	0	125	40	0	67	0	0	107	42	86	0	0	0	128	0	0	0	0	0	0	360	1114
08:00:00	0	92	19	0	0	111	34	0	51	0	0	85	31	107	0	0	0	138	0	0	0	0	0	0	334	1230
08:15:00	0	78	29	0	0	107	25	0	63	0	0	88	50	90	0	0	0	140	0	0	0	0	0	0	335	1303
08:30:00	0	112	45	0	0	157	38	0	43	0	0	81	52	87	0	0	0	139	0	0	0	0	0	0	377	1406
08:45:00	0	87	42	1	0	130	31	0	75	0	0	106	60	109	0	0	0	169	0	0	0	0	0	0	405	1451
09:00:00	0	99	30	1	0	130	32	0	51	0	0	83	43	86	0	0	0	129	0	0	0	0	0	0	342	1459
09:15:00	0	68	20	0	0	88	22	0	42	0	0	64	31	73	0	0	0	104	0	0	0	0	0	0	256	1380
09:30:00	0	83	35	0	0	118	30	0	42	0	0	72	24	101	0	0	0	125	0	0	0	0	0	0	315	1318
09:45:00	0	82	38	0	0	120	27	0	41	0	0	68	44	100	0	0	0	144	0	0	0	0	0	0	332	1245
BREAK																										
16:00:00	0	86	47	0	0	133	55	0	39	0	0	94	51	143	0	0	0	194	1	0	0	0	0	1	422	
16:15:00	0	91	48	0	0	139	42	0	35	0	0	77	70	135	0	0	0	205	0	0	0	0	0	0	421	
16:30:00	0	103	55	0	0	158	44	0	42	0	0	86	58	149	0	0	0	207	0	0	0	0	0	0	451	
16:45:00	0	103	66	0	0	169	57	0	34	0	0	91	54	119	0	0	0	173	0	0	0	0	0	0	433	1727
17:00:00	1	83	65	0	1	149	77	0	42	0	1	119	56	125	0	0	0	181	0	0	0	0	1	0	449	1754
17:15:00	0	108	83	0	0	191	67	0	46	0	0	113	65	153	0	0	0	218	0	0	0	0	0	0	522	1855
17:30:00	0	97	66	0	0	163	44	0	48	0	0	92	58	128	0	0	0	186	0	0	1	0	0	1	442	1846
17:45:00	0	84	63	0	0	147	51	0	32	0	0	83	52	127	0	0	0	179	0	0	0	0	0	0	409	1822
18:00:00	0	74	57	0	0	131	30	0	34	0	0	64	53	148	0	0	0	201	0	0	0	0	0	0	396	1769
18:15:00	0	66	58	0	0	124	32	0	39	0	0	71	43	98	1	0	0	142	0	0	0	0	0	0	337	1584
18:30:00	1	76	42	0	0	119	43	0	30	0	0	73	35	98	0	0	0	133	1	0	1	0	0	2	327	1469
18:45:00	0	52	46	0	0	98	36	0	34	0	0	70	51	91	0	0	0	142	0	0	0	0	0	0	310	1370
Grand Total	2	2033	1012	2	1	3049	961	0	1046	0	1	2007	1101	2567	1	0	0	3669	2	0	2	0	1	4	**8729**	-
Approach%	0.1%	66.7%	33.2%	0.1%		-	47.9%	0%	52.1%	0%		-	30%	70%	0%	0%		-	50%	0%	50%	0%		-	**-**	-
Totals %	0%	23.3%	11.6%	0%		34.9%	11%	0%	12%	0%		23%	12.6%	29.4%	0%	0%		42%	0%	0%	0%	0%		0%	**-**	-
Heavy	1	107	28	0		-	24	0	27	0		-	35	135	0	0		-	1	0	0	0		-	**-**	-
Heavy %	50%	5.3%	2.8%	0%		-	2.5%	0%	2.6%	0%		-	3.2%	5.3%	0%	0%		-	50%	0%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Peak Hour: 08:15 AM - 09:15 AM **Weather: Clear Sky (16.37 °C)**

Start Time	N Approach HWY 48						E Approach HOOVER PARK DR						S Approach HWY 48						W Approach PRIVATE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:15:00	0	78	29	0	0	107	25	0	63	0	0	88	50	90	0	0	0	140	0	0	0	0	0	0	335
08:30:00	0	112	45	0	0	157	38	0	43	0	0	81	52	87	0	0	0	139	0	0	0	0	0	0	377
08:45:00	0	87	42	1	0	130	31	0	75	0	0	106	60	109	0	0	0	169	0	0	0	0	0	0	405
09:00:00	0	99	30	1	0	130	32	0	51	0	0	83	43	86	0	0	0	129	0	0	0	0	0	0	342
Grand Total	0	376	146	2	0	524	126	0	232	0	0	358	205	372	0	0	0	577	0	0	0	0	0	0	**1459**
Approach%	0%	71.8%	27.9%	0.4%		-	35.2%	0%	64.8%	0%		-	35.5%	64.5%	0%	0%		-	0%	0%	0%	0%		-	**-**
Totals %	0%	25.8%	10%	0.1%		35.9%	8.6%	0%	15.9%	0%		24.5%	14.1%	25.5%	0%	0%		39.5%	0%	0%	0%	0%		0%	**-**
PHF	0	0.84	0.81	0.5		0.83	0.83	0	0.77	0		0.84	0.85	0.85	0	0		0.85	0	0	0	0		0	**-**
Heavy	0	26	8	0		34	3	0	9	0		12	8	32	0	0		40	0	0	0	0		0	**-**
Heavy %	0%	6.9%	5.5%	0%		6.5%	2.4%	0%	3.9%	0%		3.4%	3.9%	8.6%	0%	0%		6.9%	0%	0%	0%	0%		0%	**-**
Lights	0	349	138	2		489	123	0	223	0		346	197	340	0	0		537	0	0	0	0		0	**-**
Lights %	0%	92.8%	94.5%	100%		93.3%	97.6%	0%	96.1%	0%		96.6%	96.1%	91.4%	0%	0%		93.1%	0%	0%	0%	0%		0%	**-**
Single-Unit Trucks	0	14	6	0		20	1	0	7	0		8	4	23	0	0		27	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	3.7%	4.1%	0%		3.8%	0.8%	0%	3%	0%		2.2%	2%	6.2%	0%	0%		4.7%	0%	0%	0%	0%		0%	**-**
Buses	0	1	1	0		2	2	0	2	0		4	3	4	0	0		7	0	0	0	0		0	**-**
Buses %	0%	0.3%	0.7%	0%		0.4%	1.6%	0%	0.9%	0%		1.1%	1.5%	1.1%	0%	0%		1.2%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	11	1	0		12	0	0	0	0		0	1	5	0	0		6	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.9%	0.7%	0%		2.3%	0%	0%	0%	0%		0%	0.5%	1.3%	0%	0%		1%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

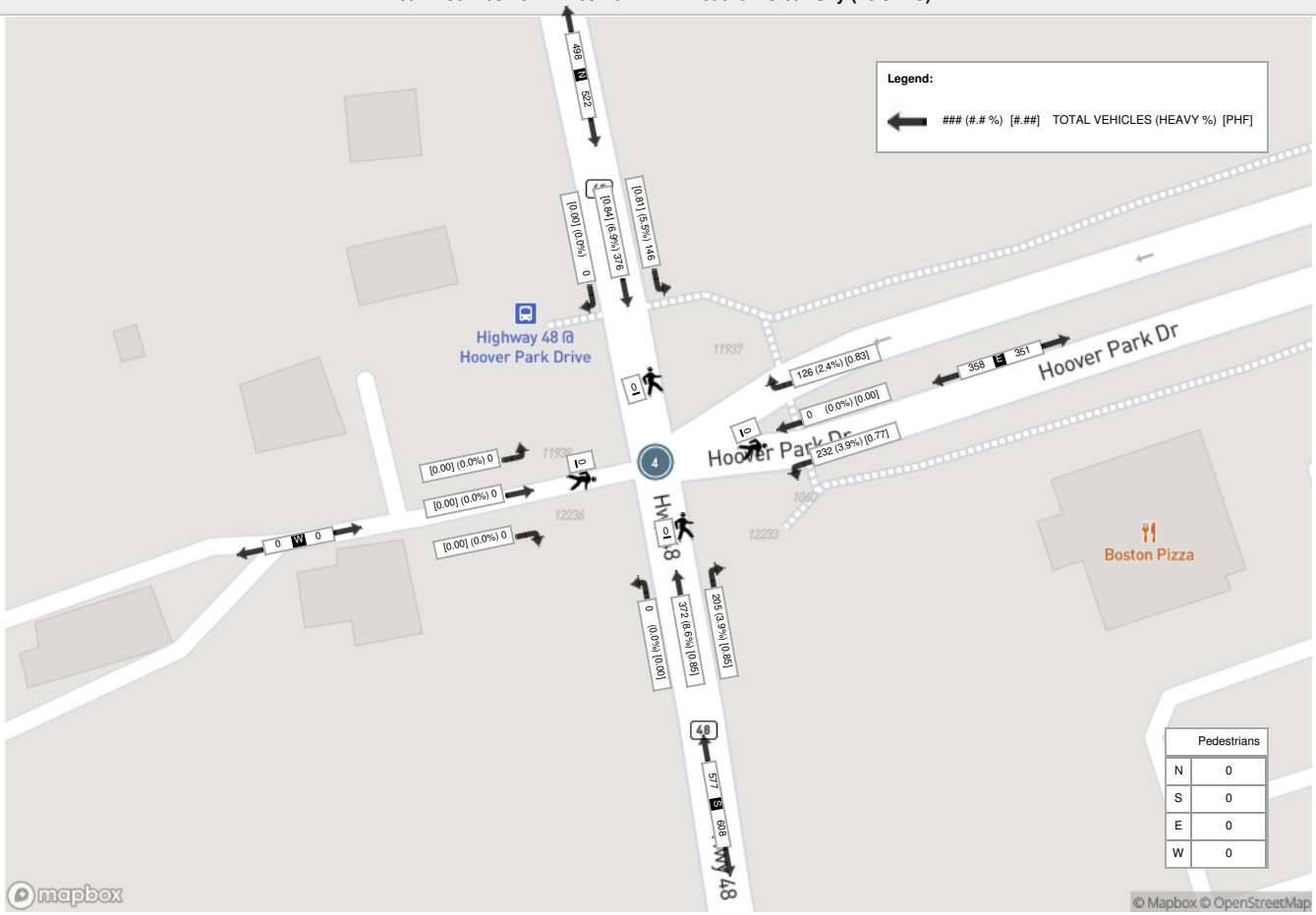
Turning Movement Count
Location Name: HWY 48 & HOOVER PARK DR
Date: Thu, Jun 22, 2023 Deployment Lead: Walter Fugaj

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

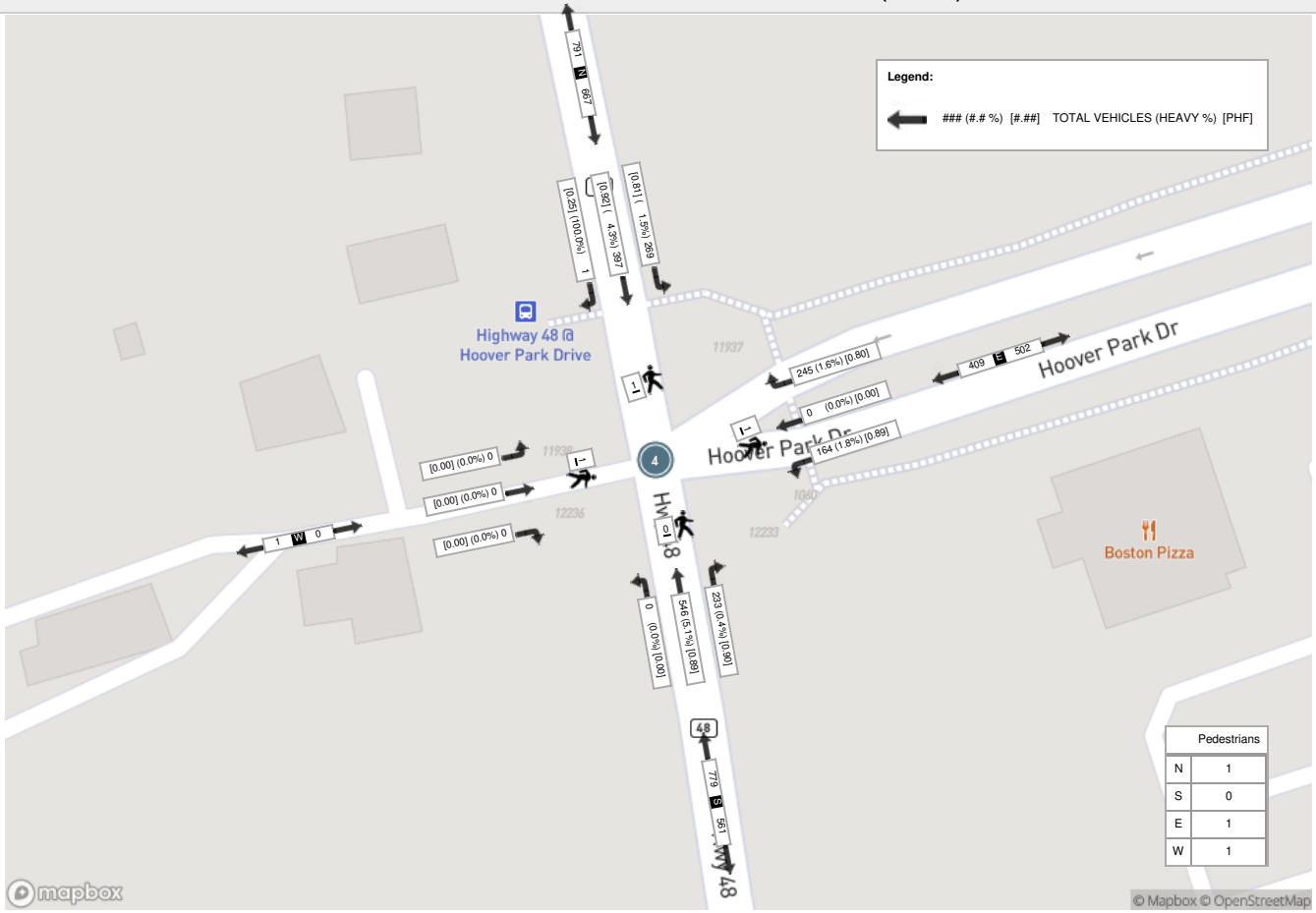
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (24.02 °C)

Start Time	N Approach HWY 48						E Approach HOOVER PARK DR						S Approach HWY 48						W Approach PRIVATE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	0	103	55	0	0	158	44	0	42	0	0	86	58	149	0	0	0	207	0	0	0	0	0	0	451
16:45:00	0	103	66	0	0	169	57	0	34	0	0	91	54	119	0	0	0	173	0	0	0	0	0	0	433
17:00:00	1	83	65	0	1	149	77	0	42	0	1	119	56	125	0	0	0	181	0	0	0	0	1	0	449
17:15:00	0	108	83	0	0	191	67	0	46	0	0	113	65	153	0	0	0	218	0	0	0	0	0	0	522
Grand Total	1	397	269	0	1	667	245	0	164	0	1	409	233	546	0	0	0	779	0	0	0	0	1	0	**1855**
Approach%	0.1%	59.5%	40.3%	0%		-	59.9%	0%	40.1%	0%		-	29.9%	70.1%	0%	0%		-	0%	0%	0%	0%		-	**-**
Totals %	0.1%	21.4%	14.5%	0%		36%	13.2%	0%	8.8%	0%		22%	12.6%	29.4%	0%	0%		42%	0%	0%	0%	0%		0%	**-**
PHF	0.25	0.92	0.81	0		0.87	0.8	0	0.89	0		0.86	0.9	0.89	0	0		0.89	0	0	0	0		0	**-**
Heavy	1	17	4	0		22	4	0	3	0		7	1	28	0	0		29	0	0	0	0		0	**-**
Heavy %	100%	4.3%	1.5%	0%		3.3%	1.6%	0%	1.8%	0%		1.7%	0.4%	5.1%	0%	0%		3.7%	0%	0%	0%	0%		0%	**-**
Lights	0	380	265	0		645	241	0	161	0		402	232	518	0	0		750	0	0	0	0		0	**-**
Lights %	0%	95.7%	98.5%	0%		96.7%	98.4%	0%	98.2%	0%		98.3%	99.6%	94.9%	0%	0%		96.3%	0%	0%	0%	0%		0%	**-**
Single-Unit Trucks	0	10	3	0		13	4	0	1	0		5	0	22	0	0		22	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	2.5%	1.1%	0%		1.9%	1.6%	0%	0.6%	0%		1.2%	0%	4%	0%	0%		2.8%	0%	0%	0%	0%		0%	**-**
Buses	0	4	1	0		5	0	0	2	0		2	1	3	0	0		4	0	0	0	0		0	**-**
Buses %	0%	1%	0.4%	0%		0.7%	0%	0%	1.2%	0%		0.5%	0.4%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	1	3	0	0		4	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	**-**
Articulated Trucks %	100%	0.8%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	33.3%		-	-	-	-	0%		-	-	-	-	33.3%		**-**

Peak Hour: 08:15 AM - 09:15 AM **Weather: Clear Sky (16.37 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Scattered Clouds (24.02 °C)**



Spectrum

Turning Movement Count
Location Name: HWY 48 & STOUFFVILLE RD / MAIN ST
Date: Thu, Jun 22, 2023 Deployment Lead: Walter Fugaj

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (2 . HWY 48 & STOUFFVILLE RD / MAIN ST)

Start Time	N Approach HWY 48						E Approach MAIN ST						S Approach HWY 48						W Approach STOUFFVILLE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	64	48	15	0	0	127	10	123	1	0	0	134	19	50	38	0	0	107	6	29	2	0	0	37	405	
07:15:00	74	77	23	0	0	174	7	116	5	0	0	128	12	60	34	0	0	106	4	17	2	0	0	23	431	
07:30:00	100	78	31	0	0	209	8	153	1	0	0	162	15	41	31	0	0	87	11	22	1	0	0	34	492	
07:45:00	82	110	36	0	0	228	13	129	6	0	0	148	16	67	44	0	0	127	7	27	1	0	0	35	538	1866
08:00:00	61	105	39	0	0	205	6	137	3	0	0	146	24	64	47	0	0	135	5	23	0	0	0	28	514	1975
08:15:00	82	97	31	0	0	210	13	116	2	0	0	131	24	67	36	0	0	127	9	25	0	0	0	34	502	2046
08:30:00	74	105	40	0	0	219	19	127	2	0	0	148	20	68	37	0	0	125	57	97	2	0	0	156	648	2202
08:45:00	83	63	27	0	0	173	19	100	0	0	0	119	25	67	39	0	0	131	54	136	3	0	0	193	616	2280
09:00:00	58	81	36	0	0	175	14	107	5	0	0	126	29	64	40	0	0	133	49	100	0	0	0	149	583	2349
09:15:00	56	52	27	0	0	135	16	122	2	0	0	140	17	48	26	0	0	91	37	112	4	0	0	153	519	2366
09:30:00	62	69	21	0	0	152	21	98	4	0	0	123	17	73	38	0	0	128	46	119	4	0	0	169	572	2290
09:45:00	48	74	21	0	0	143	27	104	3	0	0	134	22	73	37	0	0	132	39	102	1	0	0	142	551	2225
BREAK																										
16:00:00	38	63	21	0	0	122	26	123	4	0	0	153	32	126	53	0	0	211	58	159	3	0	0	220	706	
16:15:00	35	80	23	0	0	138	38	133	2	0	0	173	31	106	40	0	0	177	62	179	2	0	0	243	731	
16:30:00	46	79	26	0	0	151	36	124	1	0	0	161	29	109	59	0	0	197	72	164	2	0	0	238	747	
16:45:00	47	106	20	0	0	173	32	109	3	0	0	144	21	91	51	0	0	163	58	168	3	0	0	229	709	2893
17:00:00	43	85	20	0	0	148	40	137	2	0	0	179	25	120	60	0	0	205	71	166	1	0	0	238	770	2957
17:15:00	56	109	21	0	0	186	32	141	2	0	0	175	41	125	62	0	0	228	83	178	2	0	0	263	852	3078
17:30:00	43	92	21	0	0	156	33	120	2	0	0	155	35	83	58	0	0	176	76	179	0	0	0	255	742	3073
17:45:00	38	69	28	0	0	135	25	106	3	0	0	134	33	118	40	0	0	191	64	182	2	0	0	248	708	3072
18:00:00	43	69	24	0	0	136	31	91	4	0	0	126	36	97	40	0	0	173	60	170	2	0	0	232	667	2969
18:15:00	37	60	14	0	0	111	36	114	0	0	0	150	15	78	43	0	0	136	67	170	3	0	0	240	637	2754
18:30:00	41	65	22	0	0	128	32	114	3	0	0	149	30	64	44	0	0	138	54	150	7	0	0	211	626	2638
18:45:00	30	46	16	0	0	92	20	93	1	0	0	114	28	64	37	0	0	129	52	160	1	0	0	213	548	2478
Grand Total	1341	1882	603	0	0	3826	554	2837	61	0	0	3452	596	1923	1034	0	0	3553	1101	2834	48	0	0	3983	**14814**	-
Approach%	35%	49.2%	15.8%	0%		-	16%	82.2%	1.8%	0%		-	16.8%	54.1%	29.1%	0%		-	27.6%	71.2%	1.2%	0%		-	**-**	-
Totals %	9.1%	12.7%	4.1%	0%		25.8%	3.7%	19.2%	0.4%	0%		23.3%	4%	13%	7%	0%		24%	7.4%	19.1%	0.3%	0%		26.9%	**-**	-
Heavy	57	100	27	0		-	15	77	5	0		-	38	82	40	0		-	30	82	1	0		-	**-**	-
Heavy %	4.3%	5.3%	4.5%	0%		-	2.7%	2.7%	8.2%	0%		-	6.4%	4.3%	3.9%	0%		-	2.7%	2.9%	2.1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

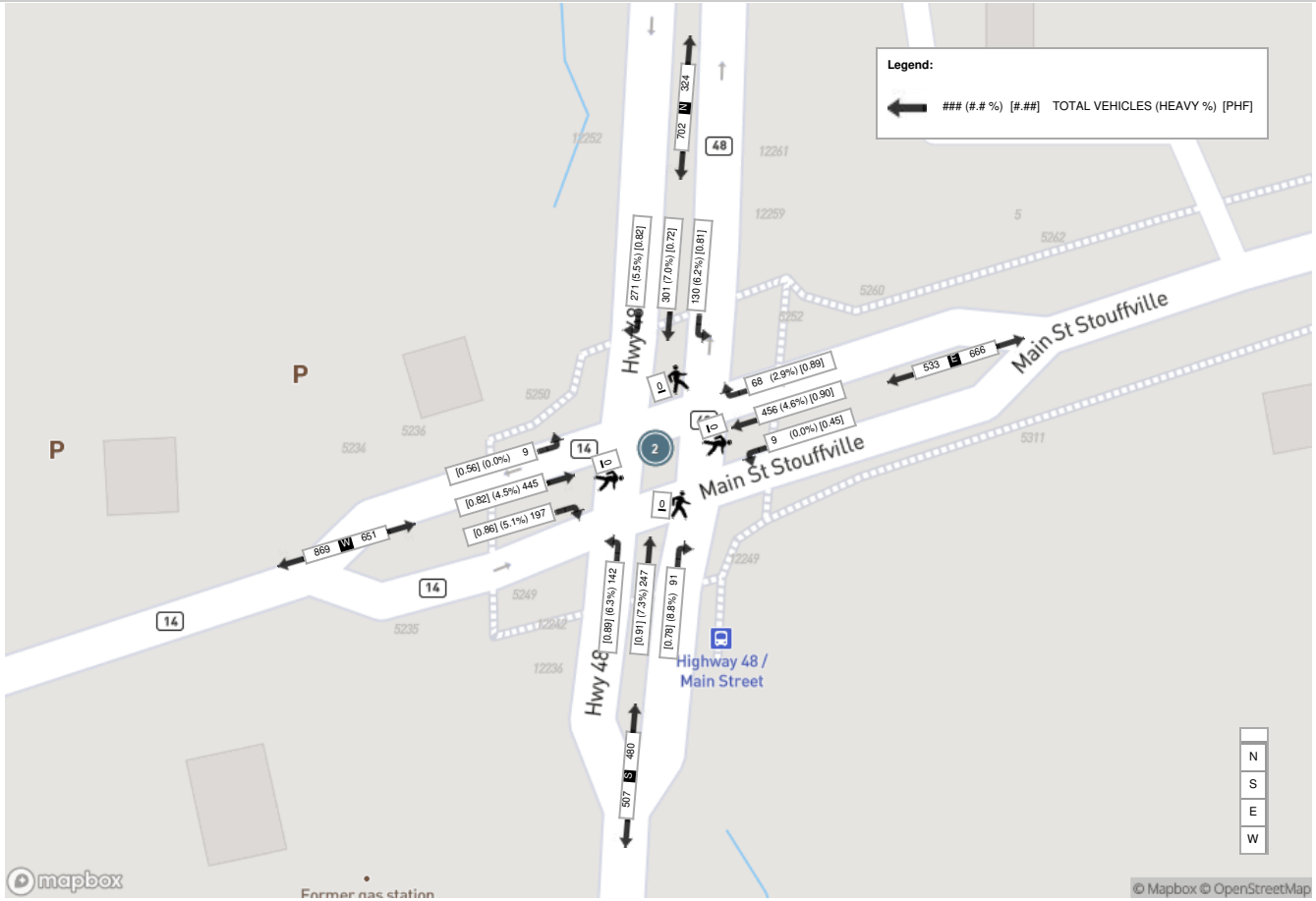
Peak Hour: 08:30 AM - 09:30 AM Weather: Clear Sky (16.37 °C)

Start Time	N Approach HWY 48						E Approach MAIN ST						S Approach HWY 48						W Approach STOUFFVILLE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	74	105	40	0	0	219	19	127	2	0	0	148	20	68	37	0	0	125	57	97	2	0	0	156	648
08:45:00	83	63	27	0	0	173	19	100	0	0	0	119	25	67	39	0	0	131	54	136	3	0	0	193	616
09:00:00	58	81	36	0	0	175	14	107	5	0	0	126	29	64	40	0	0	133	49	100	0	0	0	149	583
09:15:00	56	52	27	0	0	135	16	122	2	0	0	140	17	48	26	0	0	91	37	112	4	0	0	153	519
Grand Total	271	301	130	0	0	702	68	456	9	0	0	533	91	247	142	0	0	480	197	445	9	0	0	651	**2366**
Approach%	38.6%	42.9%	18.5%	0%		-	12.8%	85.6%	1.7%	0%		-	19%	51.5%	29.6%	0%		-	30.3%	68.4%	1.4%	0%		-	**-**
Totals %	11.5%	12.7%	5.5%	0%		29.7%	2.9%	19.3%	0.4%	0%		22.5%	3.8%	10.4%	6%	0%		20.3%	8.3%	18.8%	0.4%	0%		27.5%	**-**
PHF	0.82	0.72	0.81	0		0.8	0.89	0.9	0.45	0		0.9	0.78	0.91	0.89	0		0.9	0.86	0.82	0.56	0		0.84	**-**
Heavy	15	21	8	0		44	2	21	0	0		23	8	18	9	0		35	10	20	0	0		30	**-**
Heavy %	5.5%	7%	6.2%	0%		6.3%	2.9%	4.6%	0%	0%		4.3%	8.8%	7.3%	6.3%	0%		7.3%	5.1%	4.5%	0%	0%		4.6%	**-**
Lights	256	280	122	0		658	66	435	9	0		510	83	229	133	0		445	187	424	9	0		620	**-**
Lights %	94.5%	93%	93.8%	0%		93.7%	97.1%	95.4%	100%	0%		95.7%	91.2%	92.7%	93.7%	0%		92.7%	94.9%	95.3%	100%	0%		95.2%	**-**
Single-Unit Trucks	10	14	4	0		28	2	14	0	0		16	5	13	5	0		23	6	14	0	0		20	**-**
Single-Unit Trucks %	3.7%	4.7%	3.1%	0%		4%	2.9%	3.1%	0%	0%		3%	5.5%	5.3%	3.5%	0%		4.8%	3%	3.1%	0%	0%		3.1%	**-**
Buses	0	1	2	0		3	0	6	0	0		6	3	1	2	0		6	1	5	0	0		6	**-**
Buses %	0%	0.3%	1.5%	0%		0.4%	0%	1.3%	0%	0%		1.1%	3.3%	0.4%	1.4%	0%		1.3%	0.5%	1.1%	0%	0%		0.9%	**-**
Articulated Trucks	5	6	2	0		13	0	1	0	0		1	0	4	2	0		6	3	1	0	0		4	**-**
Articulated Trucks %	1.8%	2%	1.5%	0%		1.9%	0%	0.2%	0%	0%		0.2%	0%	1.6%	1.4%	0%		1.3%	1.5%	0.2%	0%	0%		0.6%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	**-**

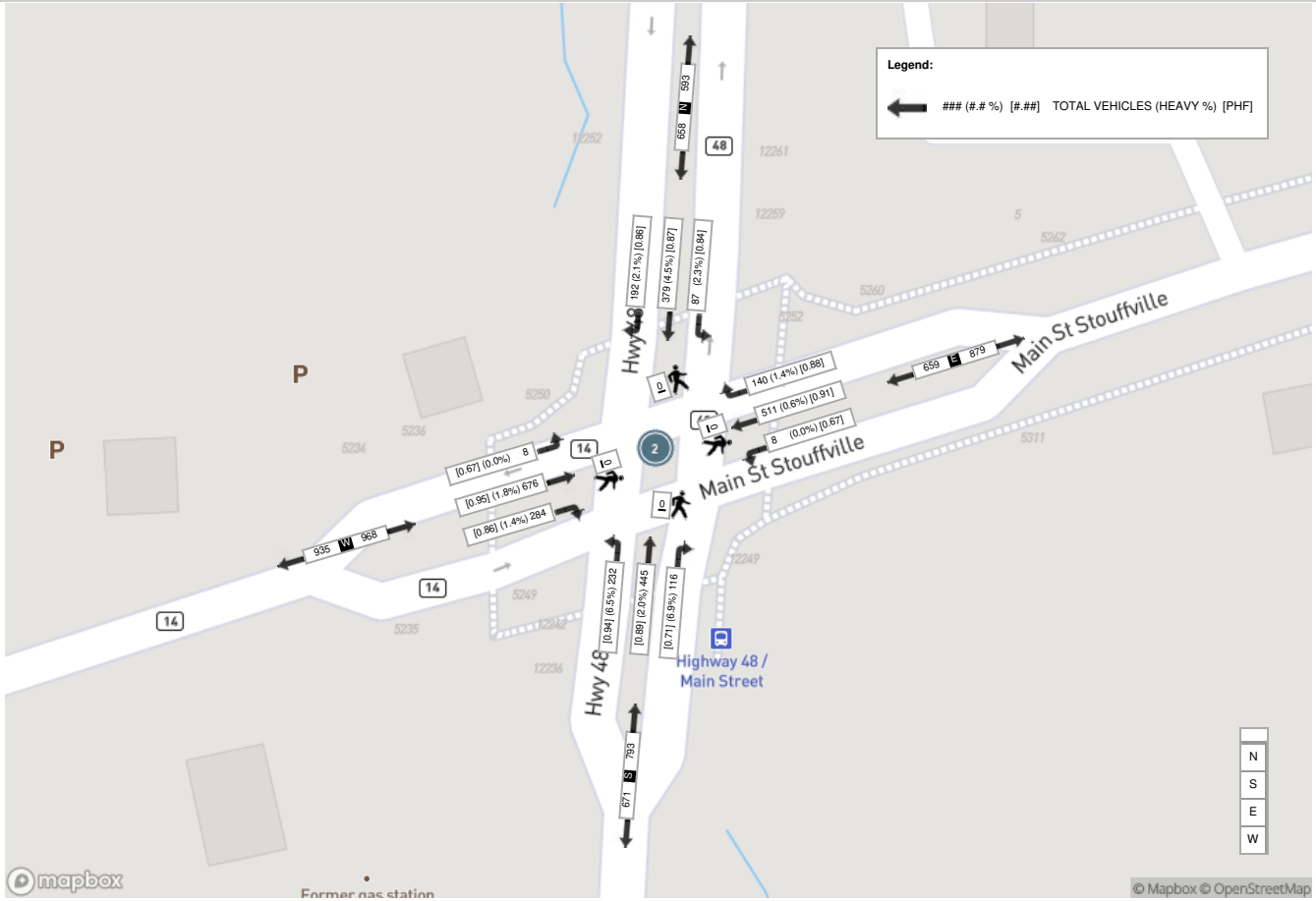
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (24.02 °C)

Start Time	N Approach HWY 48						E Approach MAIN ST						S Approach HWY 48						W Approach STOUFFVILLE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	46	79	26	0	0	151	36	124	1	0	0	161	29	109	59	0	0	197	72	164	2	0	0	238	747
16:45:00	47	106	20	0	0	173	32	109	3	0	0	144	21	91	51	0	0	163	58	168	3	0	0	229	709
17:00:00	43	85	20	0	0	148	40	137	2	0	0	179	25	120	60	0	0	205	71	166	1	0	0	238	770
17:15:00	56	109	21	0	0	186	32	141	2	0	0	175	41	125	62	0	0	228	83	178	2	0	0	263	852
Grand Total	192	379	87	0	0	658	140	511	8	0	0	659	116	445	232	0	0	793	284	676	8	0	0	968	**3078**
Approach%	29.2%	57.6%	13.2%	0%		-	21.2%	77.5%	1.2%	0%		-	14.6%	56.1%	29.3%	0%		-	29.3%	69.8%	0.8%	0%		-	**-**
Totals %	6.2%	12.3%	2.8%	0%		21.4%	4.5%	16.6%	0.3%	0%		21.4%	3.8%	14.5%	7.5%	0%		25.8%	9.2%	22%	0.3%	0%		31.4%	**-**
PHF	0.86	0.87	0.84	0		0.88	0.88	0.91	0.67	0		0.92	0.71	0.89	0.94	0		0.87	0.86	0.95	0.67	0		0.92	**-**
Heavy	4	17	2	0		23	2	3	0	0		5	8	9	15	0		32	4	12	0	0		16	**-**
Heavy %	2.1%	4.5%	2.3%	0%		3.5%	1.4%	0.6%	0%	0%		0.8%	6.9%	2%	6.5%	0%		4%	1.4%	1.8%	0%	0%		1.7%	**-**
Lights	188	362	85	0		635	138	508	8	0		654	108	436	217	0		761	280	664	8	0		952	**-**
Lights %	97.9%	95.5%	97.7%	0%		96.5%	98.6%	99.4%	100%	0%		99.2%	93.1%	98%	93.5%	0%		96%	98.6%	98.2%	100%	0%		98.3%	**-**
Single-Unit Trucks	4	10	1	0		15	2	3	0	0		5	6	7	13	0		26	2	7	0	0		9	**-**
Single-Unit Trucks %	2.1%	2.6%	1.1%	0%		2.3%	1.4%	0.6%	0%	0%		0.8%	5.2%	1.6%	5.6%	0%		3.3%	0.7%	1%	0%	0%		0.9%	**-**
Buses	0	4	0	0		4	0	0	0	0		0	2	0	1	0		3	1	2	0	0		3	**-**
Buses %	0%	1.1%	0%	0%		0.6%	0%	0%	0%	0%		0%	1.7%	0%	0.4%	0%		0.4%	0.4%	0.3%	0%	0%		0.3%	**-**
Articulated Trucks	0	3	1	0		4	0	0	0	0		0	0	2	1	0		3	1	3	0	0		4	**-**
Articulated Trucks %	0%	0.8%	1.1%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.4%	0.4%	0%		0.4%	0.4%	0.4%	0%	0%		0.4%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

Peak Hour: 08:30 AM - 09:30 AM **Weather: Clear Sky (16.37 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Scattered Clouds (24.02 °C)**



Spectrum

Turning Movement Count
Location Name: STOUFFVILLE RD & MCCOWAN RD (RR67)
Date: Thu, Jun 22, 2023 Deployment Lead: Walter Fugaj

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (1 . STOUFFVILLE RD & MCCOWAN RD (RR67))

Start Time	N Approach MCCOWAN RD (RR 67)						E Approach STOUFFVILLE RD (RR 14)						S Approach MCCOWAN RD (RR 67)						W Approach STOUFFVILLE RD (RR 14)						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	3	17	14	0	0	34	27	114	61	0	0	202	9	7	19	0	0	35	93	2	50	0	0	145	416	
07:15:00	0	28	9	0	0	37	52	5	161	0	0	218	17	29	4	3	0	53	14	1	7	0	0	22	330	
07:30:00	0	38	14	0	0	52	80	1	169	0	0	250	19	57	0	4	0	80	3	2	2	0	0	7	389	
07:45:00	0	42	16	1	0	59	82	1	183	1	0	267	21	56	1	3	0	81	3	1	0	1	0	5	412	1547
08:00:00	0	30	10	0	0	40	74	0	175	0	0	249	16	60	0	2	0	78	0	1	0	0	0	1	368	1499
08:15:00	1	30	18	0	0	49	64	10	161	0	0	235	16	51	0	1	0	68	2	5	1	0	4	8	360	1529
08:30:00	11	28	6	0	0	45	5	196	29	0	0	230	27	15	62	0	0	104	69	152	6	0	0	227	606	1746
08:45:00	7	16	5	0	0	28	7	171	35	0	1	213	16	19	31	0	0	66	37	168	6	0	0	211	518	1852
09:00:00	6	11	3	0	0	20	1	174	26	1	0	202	17	17	30	0	0	64	39	136	8	0	0	183	469	1953
09:15:00	9	14	4	0	0	27	3	158	32	0	0	193	19	20	28	0	0	67	45	129	12	0	0	186	473	2066
09:30:00	7	9	1	0	0	17	3	177	18	0	0	198	8	14	27	0	0	49	44	148	11	0	0	203	467	1927
09:45:00	8	23	6	0	0	37	1	161	28	0	0	190	10	9	17	0	0	36	32	132	11	0	0	175	438	1847
BREAK																										
16:00:00	5	11	4	0	0	20	2	203	17	0	0	222	20	23	45	0	0	88	36	197	10	0	0	243	573	
16:15:00	0	16	2	0	0	18	10	165	13	1	0	189	17	35	46	0	0	98	48	218	25	0	0	291	596	
16:30:00	5	12	2	0	1	19	3	204	28	0	0	235	21	28	49	0	0	98	64	204	23	0	0	291	643	
16:45:00	5	12	3	0	0	20	3	167	20	0	0	190	13	33	57	0	0	103	57	220	20	0	0	297	610	2422
17:00:00	4	23	4	0	0	31	3	192	35	0	0	230	21	21	33	0	0	75	59	223	24	0	0	306	642	2491
17:15:00	6	21	2	0	0	29	5	208	28	0	0	241	17	30	51	0	0	98	72	271	9	0	0	352	720	2615
17:30:00	4	21	5	0	0	30	1	188	31	0	0	220	8	27	45	0	0	80	64	250	20	1	0	335	665	2637
17:45:00	6	12	0	0	0	18	3	155	32	0	0	190	13	14	26	0	0	53	48	207	20	0	0	275	536	2563
18:00:00	5	13	1	0	0	19	3	149	21	0	0	173	16	17	27	0	0	60	45	225	10	0	0	280	532	2453
18:15:00	3	10	3	0	0	16	5	172	16	0	0	193	13	17	29	0	0	59	48	203	10	0	0	261	529	2262
18:30:00	1	9	2	0	0	12	4	177	22	0	0	203	14	27	32	0	0	73	27	187	9	0	0	223	511	2108
18:45:00	2	11	2	0	0	15	4	134	20	0	0	158	23	12	18	0	0	53	24	170	7	0	0	201	427	1999
Grand Total	98	457	136	1	1	692	445	3282	1361	3	1	5091	391	638	677	13	0	1719	973	3452	301	2	4	4728	**12230**	-
Approach%	14.2%	66%	19.7%	0.1%		-	8.7%	64.5%	26.7%	0.1%		-	22.7%	37.1%	39.4%	0.8%		-	20.6%	73%	6.4%	0%		-	**-**	-
Totals %	0.8%	3.7%	1.1%	0%		5.7%	3.6%	26.8%	11.1%	0%		41.6%	3.2%	5.2%	5.5%	0.1%		14.1%	8%	28.2%	2.5%	0%		38.7%	**-**	-
Heavy	8	24	5	0		-	15	103	49	0		-	16	18	31	2		-	45	90	14	0		-	**-**	-
Heavy %	8.2%	5.3%	3.7%	0%		-	3.4%	3.1%	3.6%	0%		-	4.1%	2.8%	4.6%	15.4%		-	4.6%	2.6%	4.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: STOUFFVILLE RD & MCCOWAN RD (RR67)
Date: Thu, Jun 22, 2023 Deployment Lead: Walter Fugaj

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 08:30 AM - 09:30 AM **Weather: Clear Sky (16.37 °C)**

Start Time	N Approach MCCOWAN RD (RR 67)						E Approach STOUFFVILLE RD (RR 14)						S Approach MCCOWAN RD (RR 67)						W Approach STOUFFVILLE RD (RR 14)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	11	28	6	0	0	45	5	196	29	0	0	230	27	15	62	0	0	104	69	152	6	0	0	227	606
08:45:00	7	16	5	0	0	28	7	171	35	0	1	213	16	19	31	0	0	66	37	168	6	0	0	211	518
09:00:00	6	11	3	0	0	20	1	174	26	1	0	202	17	17	30	0	0	64	39	136	8	0	0	183	469
09:15:00	9	14	4	0	0	27	3	158	32	0	0	193	19	20	28	0	0	67	45	129	12	0	0	186	473
Grand Total	33	69	18	0	0	120	16	699	122	1	1	838	79	71	151	0	0	301	190	585	32	0	0	807	**2066**
Approach%	27.5%	57.5%	15%	0%		-	1.9%	83.4%	14.6%	0.1%		-	26.2%	23.6%	50.2%	0%		-	23.5%	72.5%	4%	0%		-	**-**
Totals %	1.6%	3.3%	0.9%	0%		5.8%	0.8%	33.8%	5.9%	0%		40.6%	3.8%	3.4%	7.3%	0%		14.6%	9.2%	28.3%	1.5%	0%		39.1%	**-**
PHF	0.75	0.62	0.75	0		0.67	0.57	0.89	0.87	0.25		0.91	0.73	0.89	0.61	0		0.72	0.69	0.87	0.67	0		0.89	**-**
Heavy	5	6	1	0		12	1	35	9	0		45	5	5	7	0		17	14	26	1	0		41	**-**
Heavy %	15.2%	8.7%	5.6%	0%		10%	6.3%	5%	7.4%	0%		5.4%	6.3%	7%	4.6%	0%		5.6%	7.4%	4.4%	3.1%	0%		5.1%	**-**
Lights	28	60	17	0		105	15	664	113	1		793	74	64	144	0		282	176	558	31	0		765	**-**
Lights %	84.8%	87%	94.4%	0%		87.5%	93.8%	95%	92.6%	100%		94.6%	93.7%	90.1%	95.4%	0%		93.7%	92.6%	95.4%	96.9%	0%		94.8%	**-**
Single-Unit Trucks	4	5	0	0		9	1	19	9	0		29	3	5	3	0		11	6	18	1	0		25	**-**
Single-Unit Trucks %	12.1%	7.2%	0%	0%		7.5%	6.3%	2.7%	7.4%	0%		3.5%	3.8%	7%	2%	0%		3.7%	3.2%	3.1%	3.1%	0%		3.1%	**-**
Buses	0	1	1	0		2	0	7	0	0		7	0	0	3	0		3	4	5	0	0		9	**-**
Buses %	0%	1.4%	5.6%	0%		1.7%	0%	1%	0%	0%		0.8%	0%	0%	2%	0%		1%	2.1%	0.9%	0%	0%		1.1%	**-**
Articulated Trucks	1	0	0	0		1	0	9	0	0		9	2	0	1	0		3	4	3	0	0		7	**-**
Articulated Trucks %	3%	0%	0%	0%		0.8%	0%	1.3%	0%	0%		1.1%	2.5%	0%	0.7%	0%		1%	2.1%	0.5%	0%	0%		0.9%	**-**
Bicycles on Road	0	3	0	0		3	0	0	0	0		0	0	2	0	0		2	0	1	0	0		1	**-**
Bicycles on Road %	0%	4.3%	0%	0%		2.5%	0%	0%	0%	0%		0%	0%	2.8%	0%	0%		0.7%	0%	0.2%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**

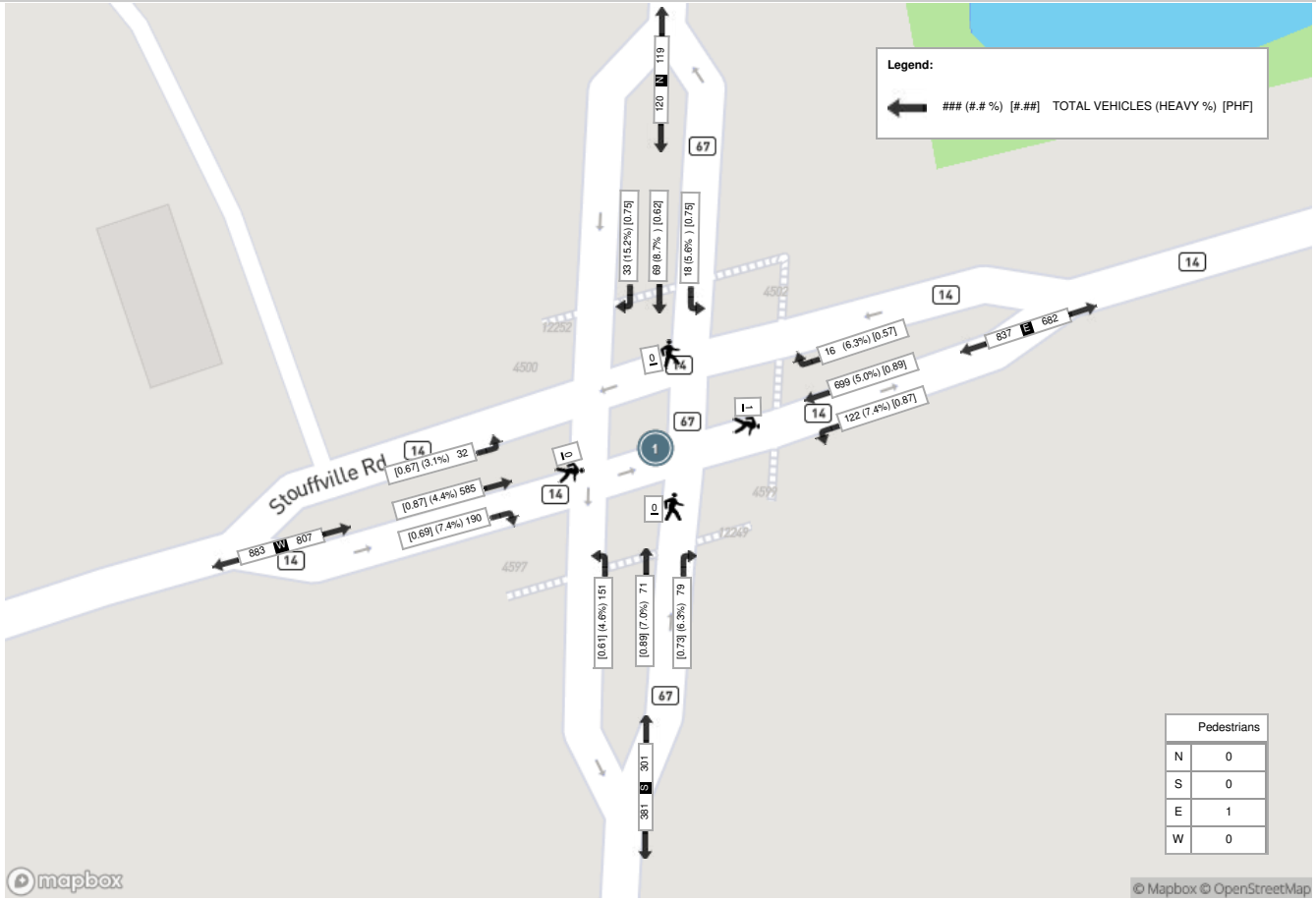
NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (24.02 °C)

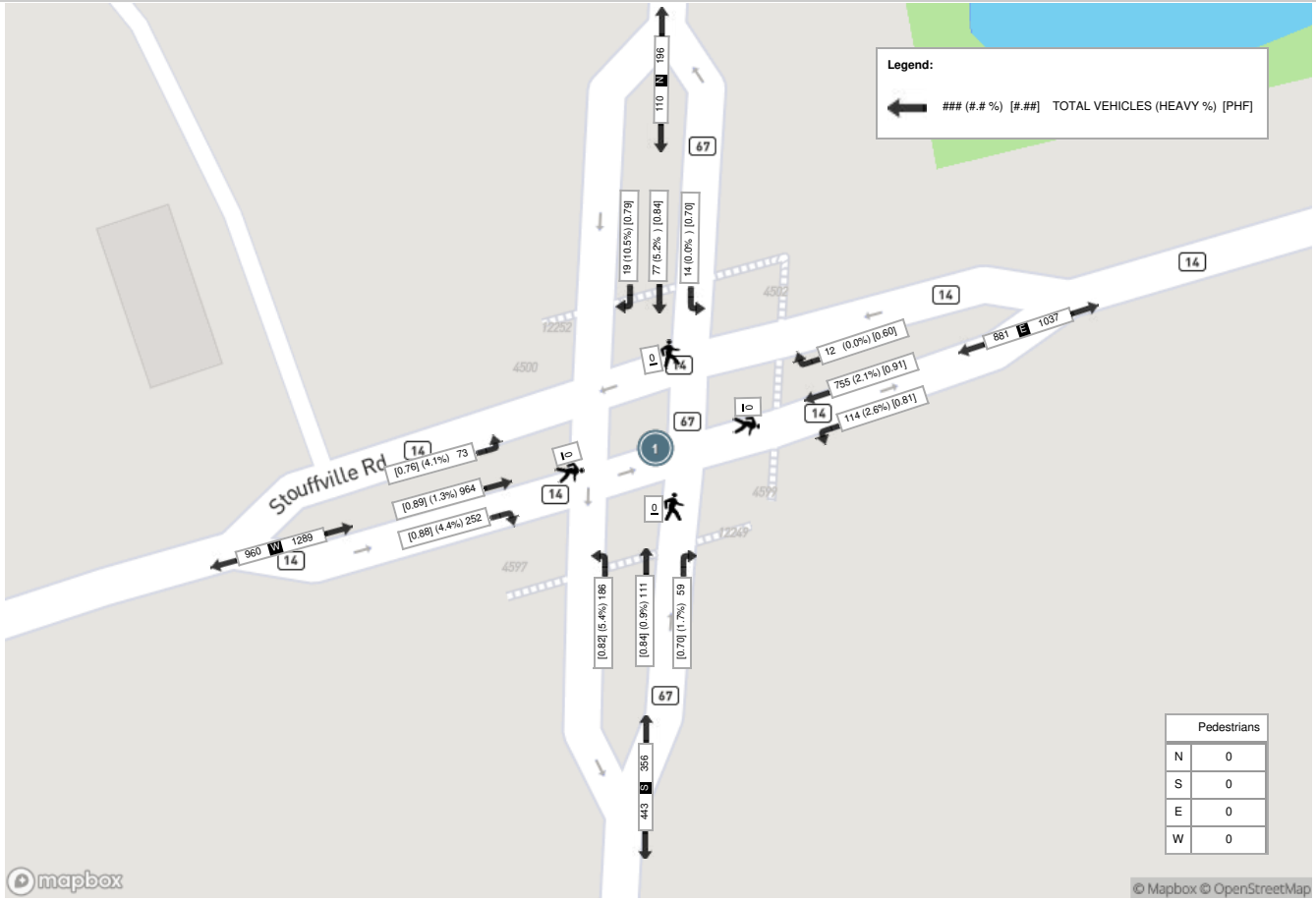
Start Time	N Approach MCCOWAN RD (RR 67)						E Approach STOUFFVILLE RD (RR 14)						S Approach MCCOWAN RD (RR 67)						W Approach STOUFFVILLE RD (RR 14)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	5	12	3	0	0	20	3	167	20	0	0	190	13	33	57	0	0	103	57	220	20	0	0	297	610
17:00:00	4	23	4	0	0	31	3	192	35	0	0	230	21	21	33	0	0	75	59	223	24	0	0	306	642
17:15:00	6	21	2	0	0	29	5	208	28	0	0	241	17	30	51	0	0	98	72	271	9	0	0	352	720
17:30:00	4	21	5	0	0	30	1	188	31	0	0	220	8	27	45	0	0	80	64	250	20	1	0	335	665
Grand Total	19	77	14	0	0	110	12	755	114	0	0	881	59	111	186	0	0	356	252	964	73	1	0	1290	**2637**
Approach%	17.3%	70%	12.7%	0%		-	1.4%	85.7%	12.9%	0%		-	16.6%	31.2%	52.2%	0%		-	19.5%	74.7%	5.7%	0.1%		-	**-**
Totals %	0.7%	2.9%	0.5%	0%		4.2%	0.5%	28.6%	4.3%	0%		33.4%	2.2%	4.2%	7.1%	0%		13.5%	9.6%	36.6%	2.8%	0%		48.9%	**-**
PHF	0.79	0.84	0.7	0		0.89	0.6	0.91	0.81	0		0.91	0.7	0.84	0.82	0		0.86	0.88	0.89	0.76	0.25		0.92	**-**
Heavy	2	4	0	0		6	0	16	3	0		19	1	1	10	0		12	11	13	3	0		27	**-**
Heavy %	10.5%	5.2%	0%	0%		5.5%	0%	2.1%	2.6%	0%		2.2%	1.7%	0.9%	5.4%	0%		3.4%	4.4%	1.3%	4.1%	0%		2.1%	**-**
Lights	17	73	14	0		104	12	739	111	0		862	58	109	176	0		343	241	951	70	1		1263	**-**
Lights %	89.5%	94.8%	100%	0%		94.5%	100%	97.9%	97.4%	0%		97.8%	98.3%	98.2%	94.6%	0%		96.3%	95.6%	98.7%	95.9%	100%		97.9%	**-**
Single-Unit Trucks	2	4	0	0		6	0	15	2	0		17	1	0	8	0		9	10	8	2	0		20	**-**
Single-Unit Trucks %	10.5%	5.2%	0%	0%		5.5%	0%	2%	1.8%	0%		1.9%	1.7%	0%	4.3%	0%		2.5%	4%	0.8%	2.7%	0%		1.6%	**-**
Buses	0	0	0	0		0	0	1	1	0		2	0	1	0	0		1	0	2	0	0		2	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.1%	0.9%	0%		0.2%	0%	0.9%	0%	0%		0.3%	0%	0.2%	0%	0%		0.2%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	1	3	1	0		5	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.1%	0%		0.6%	0.4%	0.3%	1.4%	0%		0.4%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 08:30 AM - 09:30 AM **Weather: Clear Sky (16.37 °C)**



Peak Hour: 04:45 PM - 05:45 PM **Weather: Scattered Clouds (24.02 °C)**



NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (3 . STOUFFVILLE RD (RR14) & 4962 STOUFFVILLE RD)

Start Time	N Approach 4962 STOUFFVILLE RD (SPRING LAKES GOLF CLUB DRIVEW					E Approach STOUFFVILLE RD (RR14)					W Approach STOUFFVILLE RD (RR14)					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	1	0	0	0	1	5	218	0	0	223	25	0	0	0	25	249	
07:15:00	0	0	0	0	0	1	221	0	0	222	24	3	0	0	27	249	
07:30:00	0	0	0	0	0	1	277	0	0	278	32	4	0	0	36	314	
07:45:00	0	0	0	0	0	1	250	0	0	251	31	5	0	0	36	287	1099
08:00:00	1	2	0	0	3	3	240	0	0	243	26	3	0	0	29	275	1125
08:15:00	0	0	0	0	0	3	229	0	0	232	32	6	0	0	38	270	1146
08:30:00	0	0	0	0	0	2	235	0	0	237	170	9	0	0	179	416	1248
08:45:00	0	1	0	0	1	3	216	0	0	219	183	7	0	0	190	410	1371
09:00:00	0	2	0	0	2	2	200	0	0	202	147	5	0	0	152	356	1452
09:15:00	0	0	0	0	0	3	195	1	0	199	146	8	0	0	154	353	1535
09:30:00	1	0	0	0	1	1	198	2	0	201	157	1	0	0	158	360	1479
09:45:00	6	0	0	0	6	2	187	1	0	190	145	7	0	0	152	348	1417
BREAK																	
16:00:00	2	1	0	0	3	3	207	0	0	210	215	9	0	0	224	437	
16:15:00	8	2	0	0	10	0	203	0	0	203	251	5	0	0	256	469	
16:30:00	3	0	0	1	3	2	224	1	0	227	218	4	0	0	222	452	
16:45:00	3	1	0	0	4	14	194	0	0	208	225	9	0	0	234	446	1804
17:00:00	3	2	0	0	5	17	228	0	0	245	255	8	0	0	263	513	1880
17:15:00	12	0	0	0	12	22	242	0	0	264	266	6	0	0	272	548	1959
17:30:00	9	0	0	0	9	15	206	0	0	221	257	9	0	0	266	496	2003
17:45:00	5	2	0	0	7	3	177	0	0	180	228	3	0	0	231	418	1975
18:00:00	3	3	0	0	6	2	171	0	0	173	239	1	0	0	240	419	1881
18:15:00	6	0	1	0	7	0	191	0	0	191	212	4	1	0	217	415	1748
18:30:00	1	1	0	0	2	1	196	0	0	197	212	0	0	0	212	411	1663
18:45:00	4	6	0	0	10	1	152	0	0	153	189	0	0	0	189	352	1597
Grand Total	68	23	1	1	92	107	5057	5	0	5169	3885	116	1	0	4002	**9263**	-
Approach%	73.9%	25%	1.1%		-	2.1%	97.8%	0.1%		-	97.1%	2.9%	0%		-	**-**	-
Totals %	0.7%	0.2%	0%		1%	1.2%	54.6%	0.1%		55.8%	41.9%	1.3%	0%		43.2%	**-**	-
Heavy	0	0	0		-	0	172	0		-	109	0	0		-	**-**	-
Heavy %	0%	0%	0%		-	0%	3.4%	0%		-	2.8%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Peak Hour: 08:30 AM - 09:30 AM Weather: Clear Sky (16.37 °C)

Start Time	N Approach 4962 STOUFFVILLE RD (SPRING LAKES GOLF CLUB DRIVEW					E Approach STOUFFVILLE RD (RR14)					W Approach STOUFFVILLE RD (RR14)					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	0	0	0	0	0	2	235	0	0	237	170	9	0	0	179	416
08:45:00	0	1	0	0	1	3	216	0	0	219	183	7	0	0	190	410
09:00:00	0	2	0	0	2	2	200	0	0	202	147	5	0	0	152	356
09:15:00	0	0	0	0	0	3	195	1	0	199	146	8	0	0	154	353
Grand Total	0	3	0	0	3	10	846	1	0	857	646	29	0	0	675	**1535**
Approach%	0%	100%	0%		-	1.2%	98.7%	0.1%		-	95.7%	4.3%	0%		-	**-**
Totals %	0%	0.2%	0%		0.2%	0.7%	55.1%	0.1%		55.8%	42.1%	1.9%	0%		44%	**-**
PHF	0	0.38	0		0.38	0.83	0.9	0.25		0.9	0.88	0.81	0		0.89	**-**
Heavy	0	0	0		0	0	44	0		44	31	0	0		31	**-**
Heavy %	0%	0%	0%		0%	0%	5.2%	0%		5.1%	4.8%	0%	0%		4.6%	**-**
Lights	0	3	0		3	10	802	1		813	614	29	0		643	**-**
Lights %	0%	100%	0%		100%	100%	94.8%	100%		94.9%	95%	100%	0%		95.3%	**-**
Single-Unit Trucks	0	0	0		0	0	29	0		29	21	0	0		21	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	3.4%	0%		3.4%	3.3%	0%	0%		3.1%	**-**
Buses	0	0	0		0	0	7	0		7	6	0	0		6	**-**
Buses %	0%	0%	0%		0%	0%	0.8%	0%		0.8%	0.9%	0%	0%		0.9%	**-**
Articulated Trucks	0	0	0		0	0	8	0		8	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0.9%	0%		0.9%	0.6%	0%	0%		0.6%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	1	0	0		1	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0.2%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (24.02 °C)

Start Time	N Approach 4962 STOUFFVILLE RD (SPRING LAKES GOLF CLUB DRIVEW					E Approach STOUFFVILLE RD (RR14)					W Approach STOUFFVILLE RD (RR14)					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	3	1	0	0	4	14	194	0	0	208	225	9	0	0	234	446
17:00:00	3	2	0	0	5	17	228	0	0	245	255	8	0	0	263	513
17:15:00	12	0	0	0	12	22	242	0	0	264	266	6	0	0	272	548
17:30:00	9	0	0	0	9	15	206	0	0	221	257	9	0	0	266	496
Grand Total	27	3	0	0	30	68	870	0	0	938	1003	32	0	0	1035	**2003**
Approach%	90%	10%	0%		-	7.2%	92.8%	0%		-	96.9%	3.1%	0%		-	**-**
Totals %	1.3%	0.1%	0%		1.5%	3.4%	43.4%	0%		46.8%	50.1%	1.6%	0%		51.7%	**-**
PHF	0.56	0.38	0		0.63	0.77	0.9	0		0.89	0.94	0.89	0		0.95	**-**
Heavy	0	0	0		0	0	19	0		19	12	0	0		12	**-**
Heavy %	0%	0%	0%		0%	0%	2.2%	0%		2%	1.2%	0%	0%		1.2%	**-**
Lights	27	3	0		30	68	851	0		919	991	32	0		1023	**-**
Lights %	100%	100%	0%		100%	100%	97.8%	0%		98%	98.8%	100%	0%		98.8%	**-**
Single-Unit Trucks	0	0	0		0	0	17	0		17	7	0	0		7	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	2%	0%		1.8%	0.7%	0%	0%		0.7%	**-**
Buses	0	0	0		0	0	2	0		2	2	0	0		2	**-**
Buses %	0%	0%	0%		0%	0%	0.2%	0%		0.2%	0.2%	0%	0%		0.2%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	3	0	0		3	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0.3%	0%	0%		0.3%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 08:30 AM - 09:30 AM Weather: Clear Sky (16.37 °C)



NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (24.02 °C)



Ontario

Ministry of Transportation | Highway Standards Branch | Traffic Office

Provincial Highways

Traffic Volumes 1988-2019

King's Highways / Secondary Highways / Tertiary Roads

Ministry Contact:
Provincial Traffic Office (905)-704-2960

Abstract:
This annual publication contains averaged traffic volume information for each of the sections of highway under MTO jurisdiction.

Key Words:
Annual Average Daily Traffic volume (AADT), Summer Average Daily Traffic volume (SADT), Summer Average Weekday Traffic volume (SAWDT), Winter Average Daily Traffic volume (WADT)

Highway	Location Description	Dist (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT
41			2017	UC	5150	5100	5150	4950
41			2018	UC	5250	5200	5300	5050
41			2019	UC	5250	5150	5250	5050
41	HWY 17 START OF NA	1.0	9999					
41	RENFREW RD 19 END OF NA HWY END		9999					
48	MARKHAM RD START OF NA	14.1	9999					
48	YORK RD 25 MAJOR MACKENZIE DR	6.1	1988	CR	10800	13800	13000	8950
48			1989	CR	11000	14100	13100	9250
48			1990	CR	11300	14000	13000	10200
48			1991	CR	11300	13900	13000	10200
48			1992	CR	11300	13900	12900	10200
48			1993	CR	11300	13900	13000	10200
48			1994	CR	11600	14300	13200	10400
48			1995	CR	11700	14500	13800	10100
48			1996	IR	13200	16400	14700	11200
48			1997	IC	12000	13400	13600	10600
48			1998	IC	12200	13700	13700	10900
48			1999	IC	11700	13100	13100	10400
48			2000	IC	11100	12400	12400	9900
48			2001	IC	11200	12500	12600	9900
48			2002	IC	10900	12200	12200	9600
48			2003	IC	10700	11900	12000	9500
48			2004	IC	10700	12000	12000	9450
48			2005	IC	11300	12600	12700	9950
48			2006	IC	10400	11600	11700	9200
48			2007	IC	11700	13000	13400	10300
48			2008	IC	13000	14400	13900	11500
48			2009	IC	11700	13000	13100	10400
48			2010	IC	13200	14600	14700	11700
48			2011	IC	14000	15400	16000	12600
48			2012	IC	14000	15500	15000	12400
48			2013	IC	12600	13900	13900	11200
48			2014	CTR	12600	15400	15500	10700
48			2015	CTR	12700	15500	15600	10800
48			2016	CTR	12800	15600	15700	10900
48			2017	CTR	12900	17200	17200	10500
48			2018	CTR	12900	17200	17200	10500
48			2019	CTR	13000	17300	17200	10600
48	HWY 47 YORK RD 14 WHITCHURCH/STOUFFVILLE	4.1	1988	CR	9100	11600	10900	7550
48			1989	CR	9250	11800	11000	7750
48			1990	CR	9350	11600	10800	8400
48			1991	CR	9300	11400	10700	8350
48			1992	CR	9300	11400	10600	8350
48			1993	CR	9250	11400	10600	8300
48			1994	CR	9750	12000	11100	8800

Highway	Location Description	Dist (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT
48			1995	CR	9900	12300	11700	8500
48			1996	HT	10100	19100	17400	4600
48			1997	IC	10200	11400	11500	9000
48			1998	IC	10400	11600	11600	9250
48			1999	IC	10500	11800	11800	9350
48			2000	IC	10500	11800	11800	9350
48			2001	IC	10600	11900	11900	9350
48			2002	IC	10500	11700	11800	9250
48			2003	IC	10700	11900	12000	9500
48			2004	IC	10800	12100	12100	9550
48			2005	IC	11000	12200	12300	9700
48			2006	IC	11000	12200	12300	9750
48			2007	IC	10900	12100	12500	9650
48			2008	IC	11200	12400	12000	9900
48			2009	IC	11200	12400	12500	9950
48			2010	IC	11300	12500	12600	10000
48			2011	IC	11400	12500	13000	10200
48			2012	IC	11500	12700	12400	10200
48			2013	IR	11600	13800	14800	9850
48			2014	IR	11700	13900	14000	9950
48			2015	IR	11800	14000	14100	10000
48			2016	IR	11900	14200	14200	10100
48			2017	IR	12000	14600	14500	10200
48			2018	IR	12100	14700	14600	10300
48			2019	IR	12200	14800	14800	10400
48	HWY 47 (E) YORK RD 40 BLOOMINGTON RD (W)	4.2	1988	IR	9400	12200	10300	7500
48			1989	IR	9500	12300	10500	7800
48			1990	IR	9700	12300	10800	7950
48			1991	IR	9300	11700	10300	7700
48			1992	IR	8900	10900	9800	7550
48			1993	IR	8350	10300	8650	6850
48			1994	IR	9050	11100	9950	7600
48			1995	IR	9000	11100	9900	7650
48			1996	IR	8750	10900	9750	7450
48			1997	IR	8950	11200	10000	7600
48			1998	IR	8950	11100	10000	7500
48			1999	IR	9000	11200	10000	7550
48			2000	CR	9000	11100	10500	7650
48			2001	CR	8950	11000	10500	7550
48			2002	CR	8950	11000	10500	7550
48			2003	CR	8950	10900	10500	7550
48			2004	IR	8950	11100	9900	7550
48			2005	IR	8950	10800	9800	7650
48			2006	IC	8950	9950	10000	7950
48			2007	IC	8800	9800	10100	7800

AADT Midblocks Report

Description	2012	2014	2015	2016	2017	2019	2022
McCowan Road btwn McCowan Lane & Stouffville Road	3581	6320	6123	7042	6731	2152	1111

AADT Midblocks Report

Description	2012	2014	2016	2018	2022
Stouffville Road btwn Main Street/Highway 48 & McCowan Road	15185	15840	16895	16127	18185

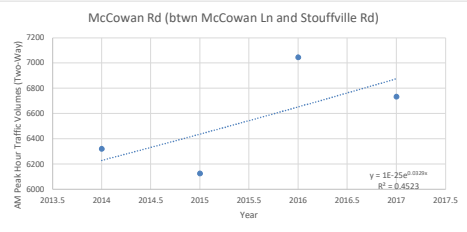
CORRIDOR TRAFFIC GROWTH
5061 Stouffville Road

McCowan Rd (btwn McCowan Ln and Stouffville Rd)

Year	AADT
2012	3581
2014	6320
2015	6123
2016	7042
2017	6731
2019	2152
2022	1111

*Grey Data Years excluded given large discrepancy relative to other years.

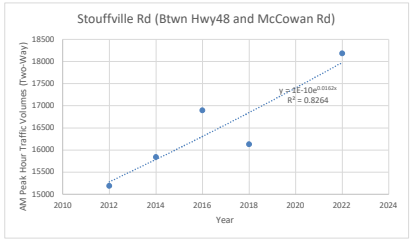
Growth Rate Per Annum: 3.29%



Stouffville Rd (btwn Main St/Hwy 48 and McCowan Rd)

Year	AADT
2012	15185
2014	15840
2016	16895
2018	16127
2022	18185

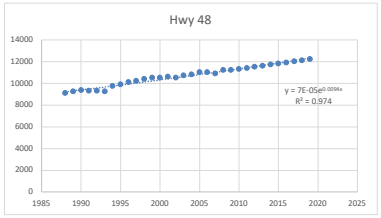
Growth Rate Per Annum: 1.62%



Hwy 48 (at Stouffville Rd)

Year	AADT
1988	9100
1989	9250
1990	9350
1991	9300
1992	9300
1993	9250
1994	9750
1995	9900
1996	10100
1997	10200
1998	10400
1999	10500
2000	10500
2001	10600
2002	10500
2003	10700
2004	10800
2005	11000
2006	11000
2007	10900
2008	11200
2009	11200
2010	11300
2011	11400
2012	11500
2013	11600
2014	11700
2015	11800
2016	11900
2017	12000
2018	12100
2019	12200

Growth Rate Per Annum: 0.94%



Hoover Park Dr (at Hwy 48)

Assumed Growth Per Annum 2%

PROPOSED COMMERCIAL DEVELOPMENT

5505 MAIN STREET, WHITCHURCH STOUFFVILLE, ONTARIO

TRAFFIC IMPACT STUDY

PROJECT No. n 2166

Prepared By:

n Engineering Inc

9120 Leslie Street, Suite-208
Richmond Hill, Ontario L4B 3J9
T: 905-597-5937
www.nengineering.com

June 06, 2023

7 Trip Generation

The trip generation rates from ITE Trip Generation Manual were used for the Weekday AM and Weekday PM Peak Hour Periods of the proposed development.

- Land use codes for Gasoline/Service Station (LUC 944), was used for the proposed development. The total estimated trips for this proposed land use were rounded up before applying the inbound and outbound directional split.
- Pass-by trips are required for the proposed commercial development. These are calculated using the ITE Manual as each property type has a percent of pass-by trips.
- These pass-by trips are reduced from the site generated trips. Two separate trip assignments have been completed: one for pass-by trips and one for new trips. The sum of these two produce the total trips generated for the proposed development.

Table 16 below shows the necessary calculations required to generate trips for each property type.

Table 16 - ITE Trip Generation from Proposed Development

Gasoline/Service Station (LUC 944)	**AM Peak Hour**			**PM Peak Hour**		
	Average rate*	IN	OUT	Average rate*	IN	OUT
1286.28 sq. ft	84.55	50%	50%	109.27	50%	50%
Trips	109	55	55	141	71	71
Pass-by Trips	34%	**19**	**19**	34%	**24**	**24**
Site-Generated Trips	**72**	**36**	**36**	**94**	**47**	**47**

No modal split was applied to these trips generated due to the type of development being proposed. Heavy vehicle traffic volumes were included in the Synchro simulation.

7.1 Trip Distribution and Assignment

Trip distribution of site generated traffic was based on the orientation of the site with respect to road network; existing traffic volumes split percentages; and travel patterns. Table 17 below shows the percent of trips based on the direction of travel for AM and PM peak hours.

Table 17 - Trip Distribution for AM & PM Peak Hours

Direction of Travel	AM		PM	
	IN (%)	OUT (%)	IN (%)	OUT (%)
Eastbound on Main St	21.6	17.6	16.9	24.4
Westbound on Main St	20.9	32.8	28.5	19.8
Northbound on Hwy 48	22.8	10.1	12.4	18.0
Southbound on Hwy 48	15.0	18.0	16.5	15.7
Northbound on Baker Hill Blvd	6.0	3.5	4.7	5.4
Southbound on Ringwood Dr	1.8	3.5	5.4	4.0
Northbound on Sandale Rd	5.6	4.7	5.8	6.5
Southbound on Sandiford Dr	6.3	9.7	9.8	6.0
Total	100.0	100.0	100.0	100.0

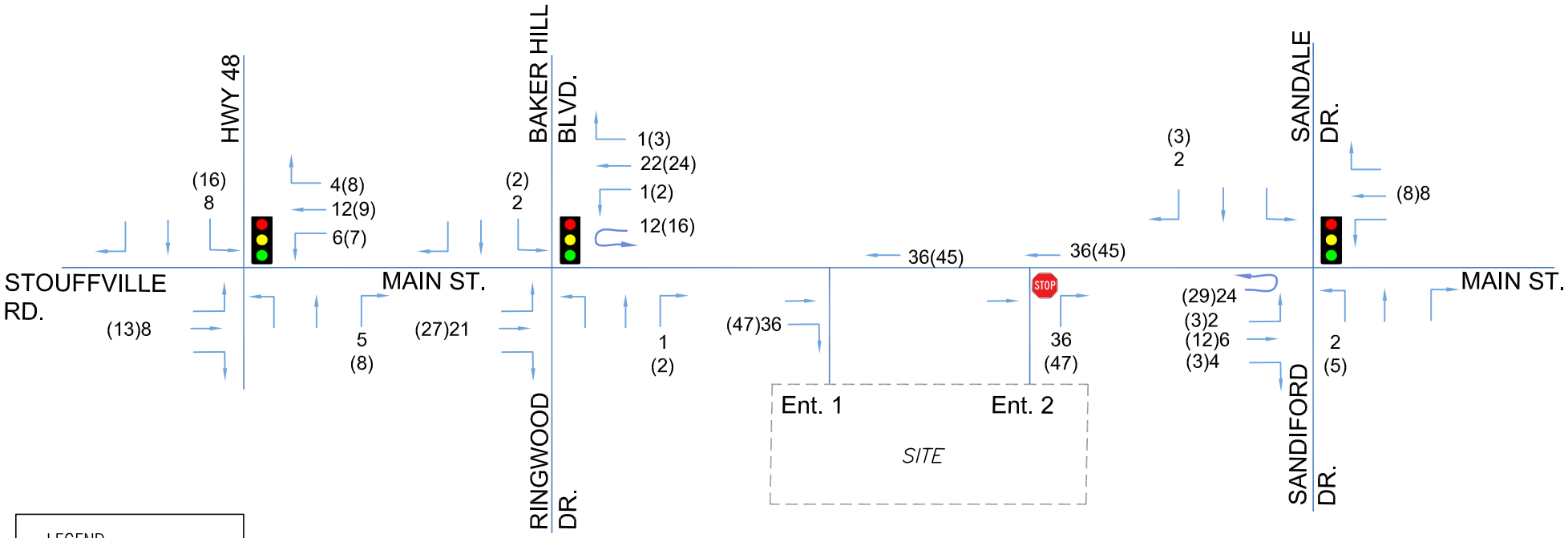
Table 18 below shows the number of trips assigned in the all directions entering and exiting the proposed site development.

Table 18 - Trip Assignment for AM & PM Peak Hours

Direction of Travel	AM		PM	
	IN	OUT	IN	OUT
Eastbound on Main St	8	6	8	12
Westbound on Main St	8	12	13	9
Northbound on Hwy 48	8	4	6	8
Southbound on Hwy 48	5	6	8	7
Northbound on Baker Hill Blvd	2	1	2	3
Southbound on Ringwood Dr	1	1	2	2
Northbound on Sandale Rd	2	2	3	3
Southbound on Sandiford Dr	2	4	5	3
Total	**36**	**36**	**47**	**48**

The site generated trips are distributed and shown in Figure 8.

Trip distribution of pass-by trips reflect the predominant commuting travel patterns on adjacent and nearby roadways. The pass-by trips are distributed and shown in Figure 9.



n Engineering Inc
9120 Leslie Street, Suite-208
Richmond Hill, Ontario, L4B 3J9
T: 416.258.9741
E: info@narchitecture.com
www.narchitecture.com

PROJECT:

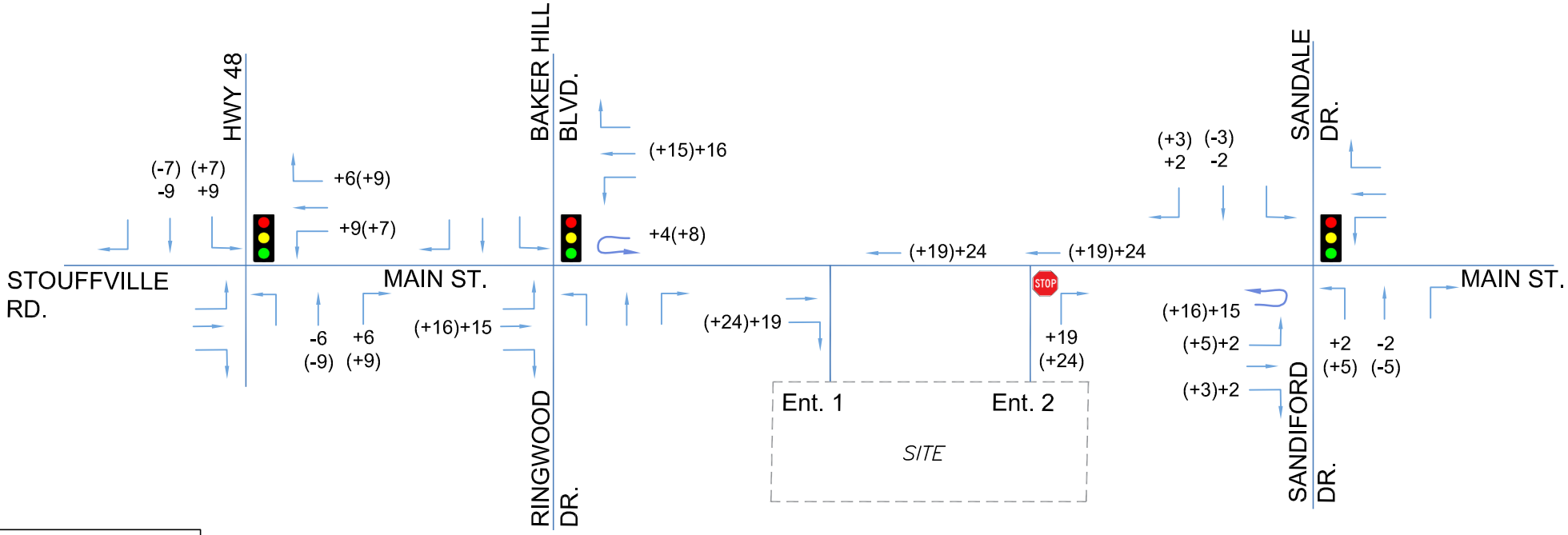
GAS STATION AT 5505 MAIN ST., WHITCHURCH-STOUFFVILLE,ON.

DRAWING TITLE:

SITE GENERATED TRIPS

DRAWN BY: SA	DATE: 27 APRIL 2023
CHECKED BY: AZ	SCALE: NTS
PROJECT NO.: **21-66**	DRAWING NO.: **FIG-8**

N (GEODETIC NORTH)
PROJECT NORTH



LEGEND

100	WEEKDAY AM
(100)	WEEKDAY PM
	SIGNALIZED INTERSECTIONS
STOP	STOP CONTROL
	PROPOSED DEVELOPMENT

n Engineering Inc
9120 Leslie Street, Suite-208
Richmond Hill, Ontario, L4B 3J9
T: 416.258.9741
E: info@narchitecture.com
www.narchitecture.com

PROJECT:

GAS STATION AT 5505 MAIN ST., WHITCHURCH-STOUFFVILLE,ON.

DRAWING TITLE:

PASS-BY TRIPS

DRAWN BY: SA	DATE: 27 APRIL 2023
CHECKED BY: AZ	SCALE: NTS
PROJECT NO.: **21-66**	DRAWING NO.: **FIG-9**

N (GEODETIC NORTH)
PROJECT NORTH

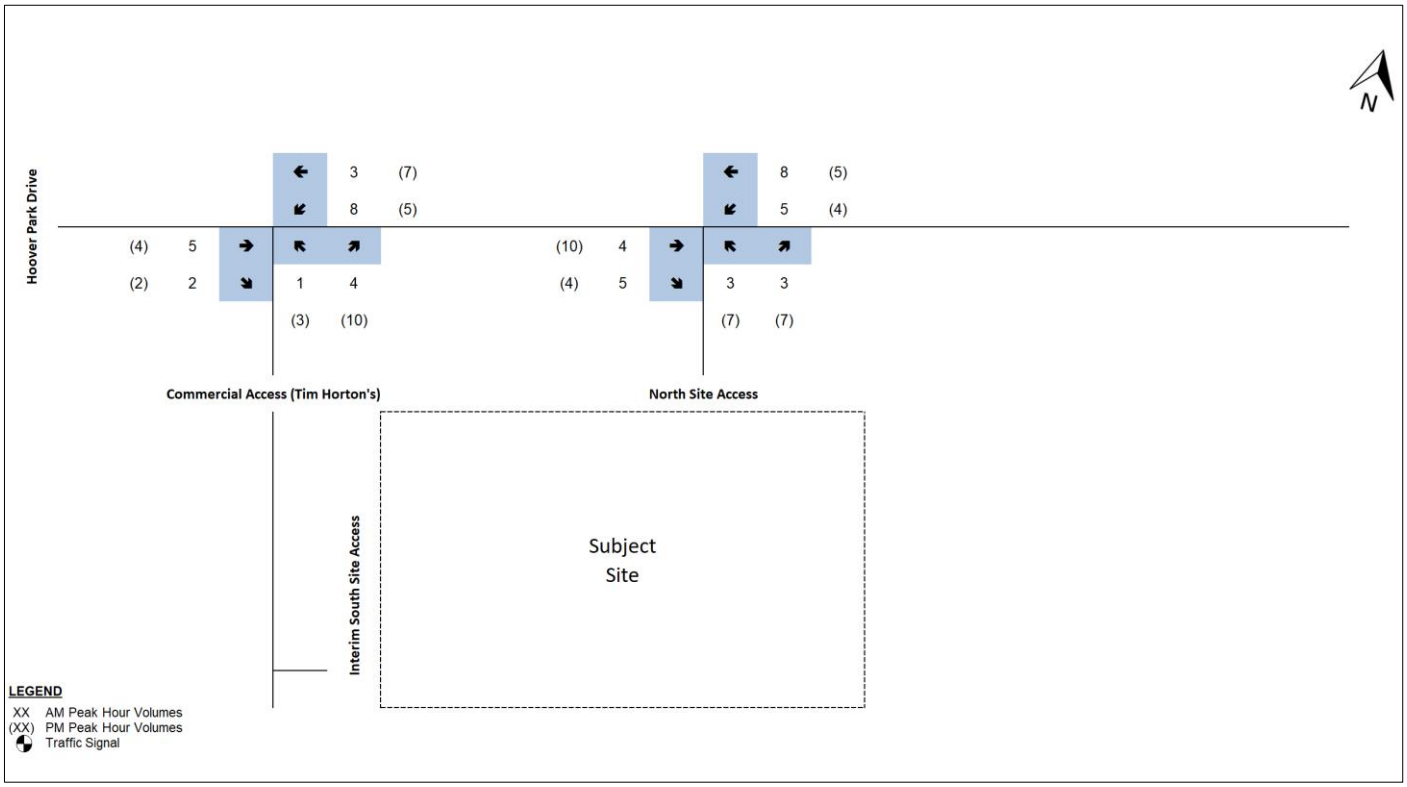


Figure 13 Phase 1 Site Trips

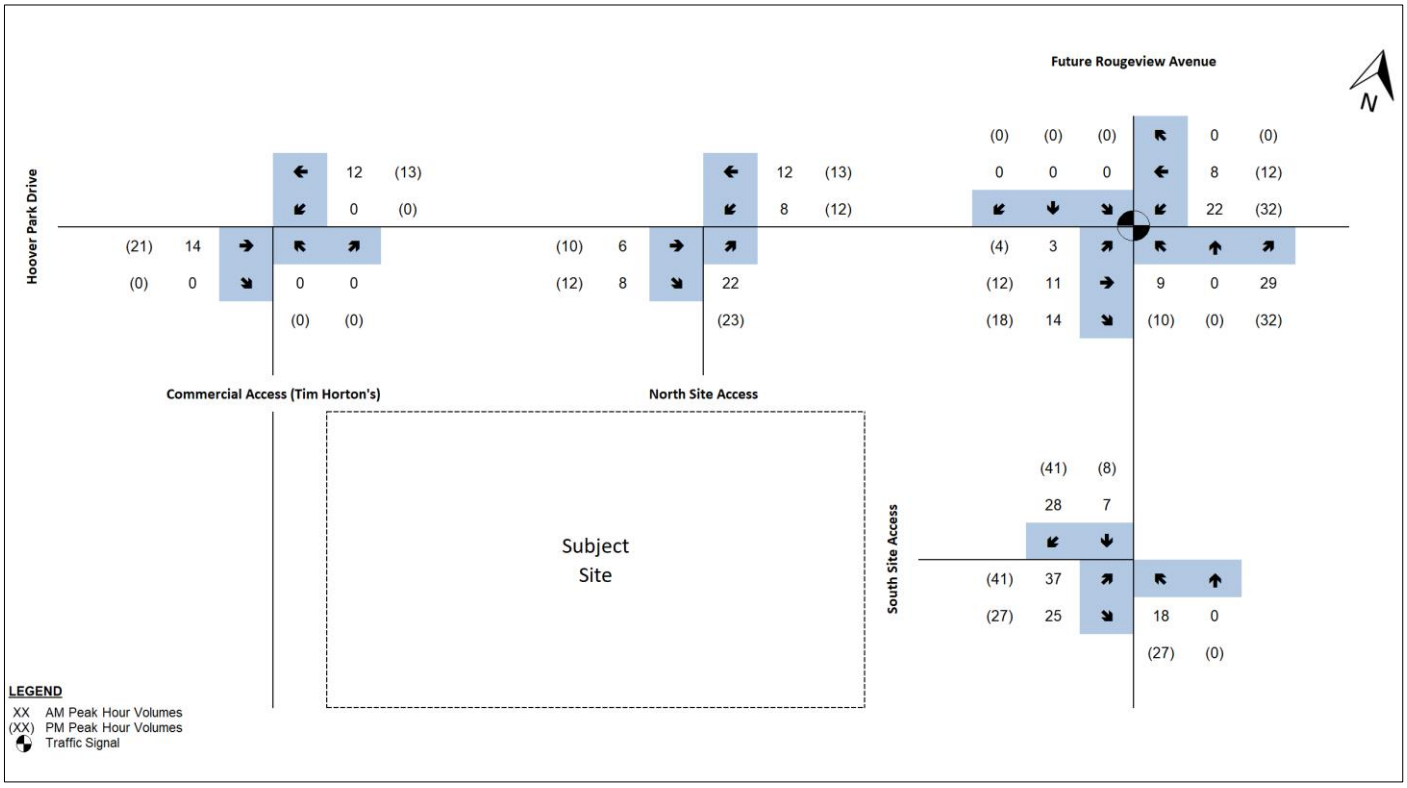


Figure 14 Full Build-out Site Trips

May 18, 2022

Long & MCQuade Limited
722 Rosebank Road
Pickering ON L1W 4B2

Attention: Mr. Stephan Leenheer

Re: Transportation Study
Proposed Commercial Development
Sam's Way – East of HWY 48
Town of Whitchurch-Stouffville, York Region

CGE Transportation Consulting is pleased to submit this Transportation Study for the proposed two storey commercial building located at the north side of Sam's Way approximately 450 metres east of HWY 48, in the Town Whitchurch-Stouffville.

This report concludes that the incremental site traffic generated by the proposed development can be accommodated by the existing transportation network, no roadway improvements are required. The proposed site accesses can adequately support the forecasted traffic operations.

Should you have any questions regarding this study, please do not hesitate to contact the undersigned.

Yours truly,

CGE TRANSPORTATION CONSULTING



Casey Ge, P.Eng.
President

4.2 Site Traffic Projection

4.2.1 Trip Generation

The projection of new additional traffic volumes generated by the development proposal is estimated based on the *Trip Generation Manual, 10th Edition,* published by the Institute of Transportation Engineers (ITE) for Commercial land use. There isn't exactly a music store land use in the Manual; therefore, for a conservative approach we used "Shopping Center" for the entire site. In addition, no reductions (non-auto modes or pass-by trips) were applied.

Table 2 summarizes the total site trip generation for the proposed development.

Table 2 Site Trip Generation

Parameters	Peak Hour Trip Generation for LUC 820 Shopping Centre					
	Weekday PM			Saturday Peak		
	In	Out	Total	In	Out	Total
Trips	87	95	182	96	89	185
Rates	3.81	4.17	7.98	4.21	3.90	8.11

Based on the foregoing, the development proposal is anticipated to generate 182 two-way trips during the weekday afternoon peak hour and 185 two-way trips during the Saturday peak hour.

4.2.2 Trip Distribution

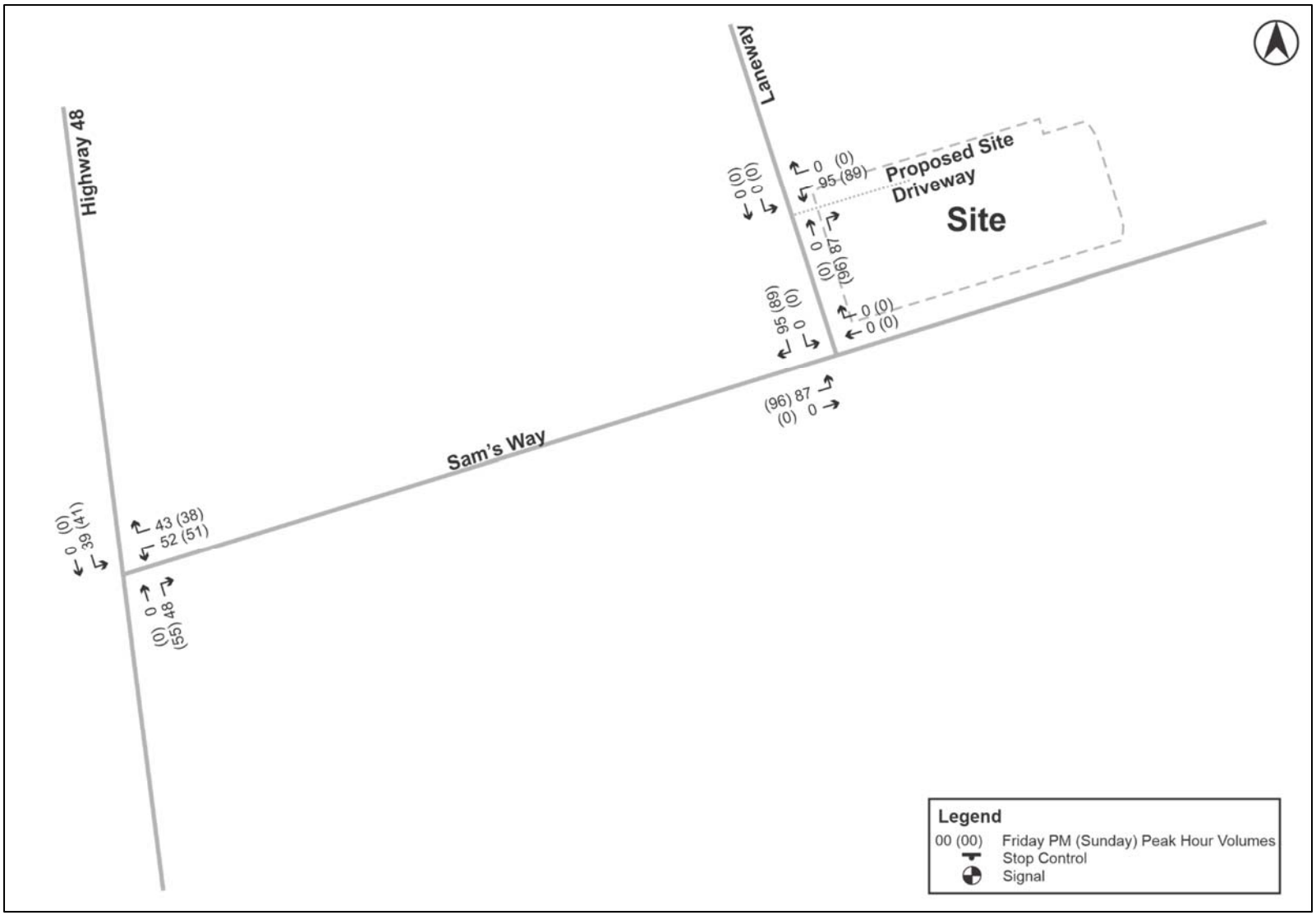
The directional orientation of the site traffic has been estimated on the basis of the observed traffic patterns in the study area and the population distribution within commuting distance.

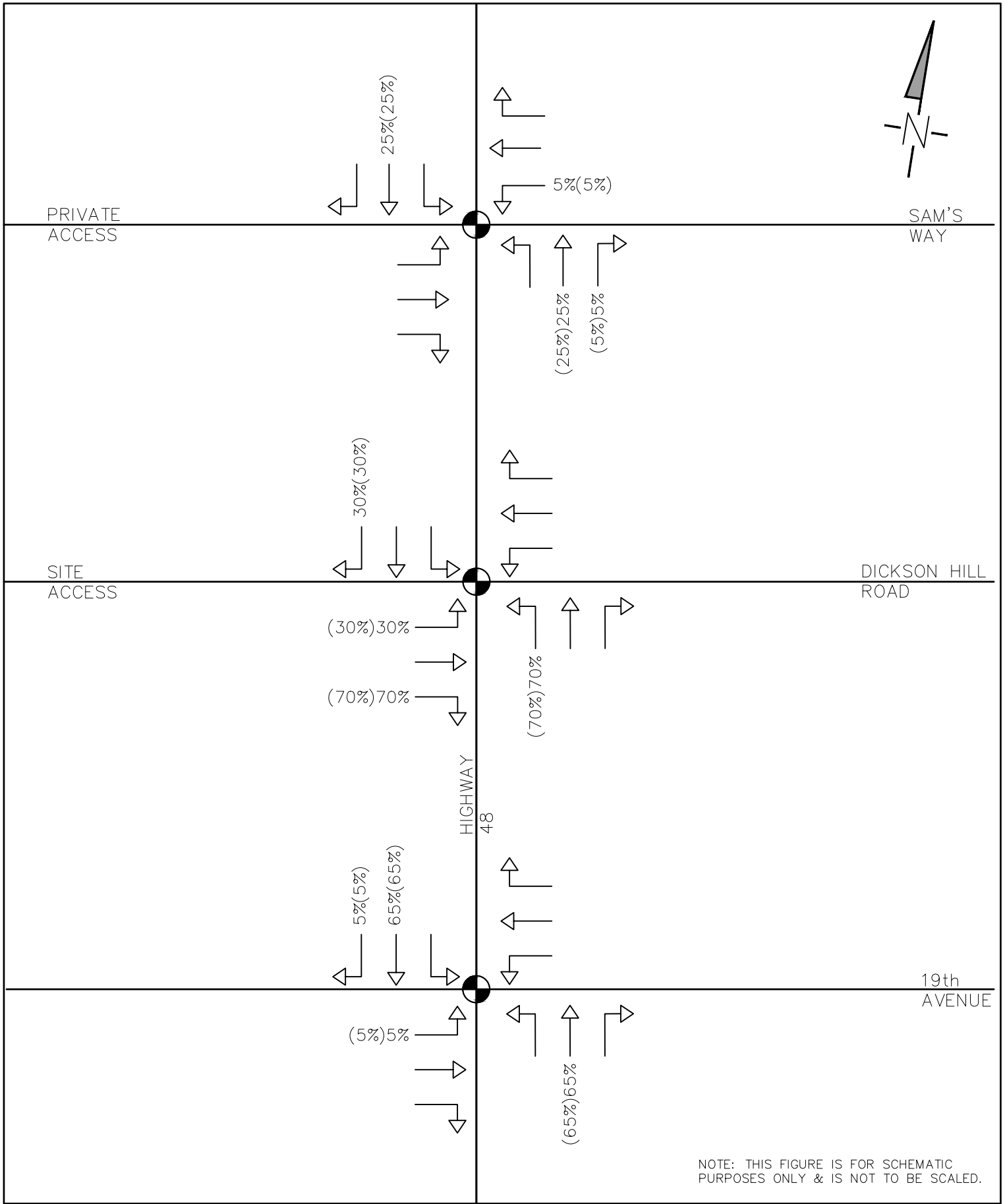
Table 3 summaries the applied trip distribution pattern and new site traffic volumes are illustrated in **Figure 8**.

Table 3 Site Trip Distribution

Direction	Weekday PM Peak Hour	Saturday Peak Hour
	In / Out	
North (HWY 48)	45%	43%
South (HWY 48)	55%	57%
Total	100%	100%

Figure 8 New Site Traffic Volumes





Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project: FLATO UPPER MARKHAM VILLAGE
TOWN OF WHITCHURCH–STOUFFVILLE

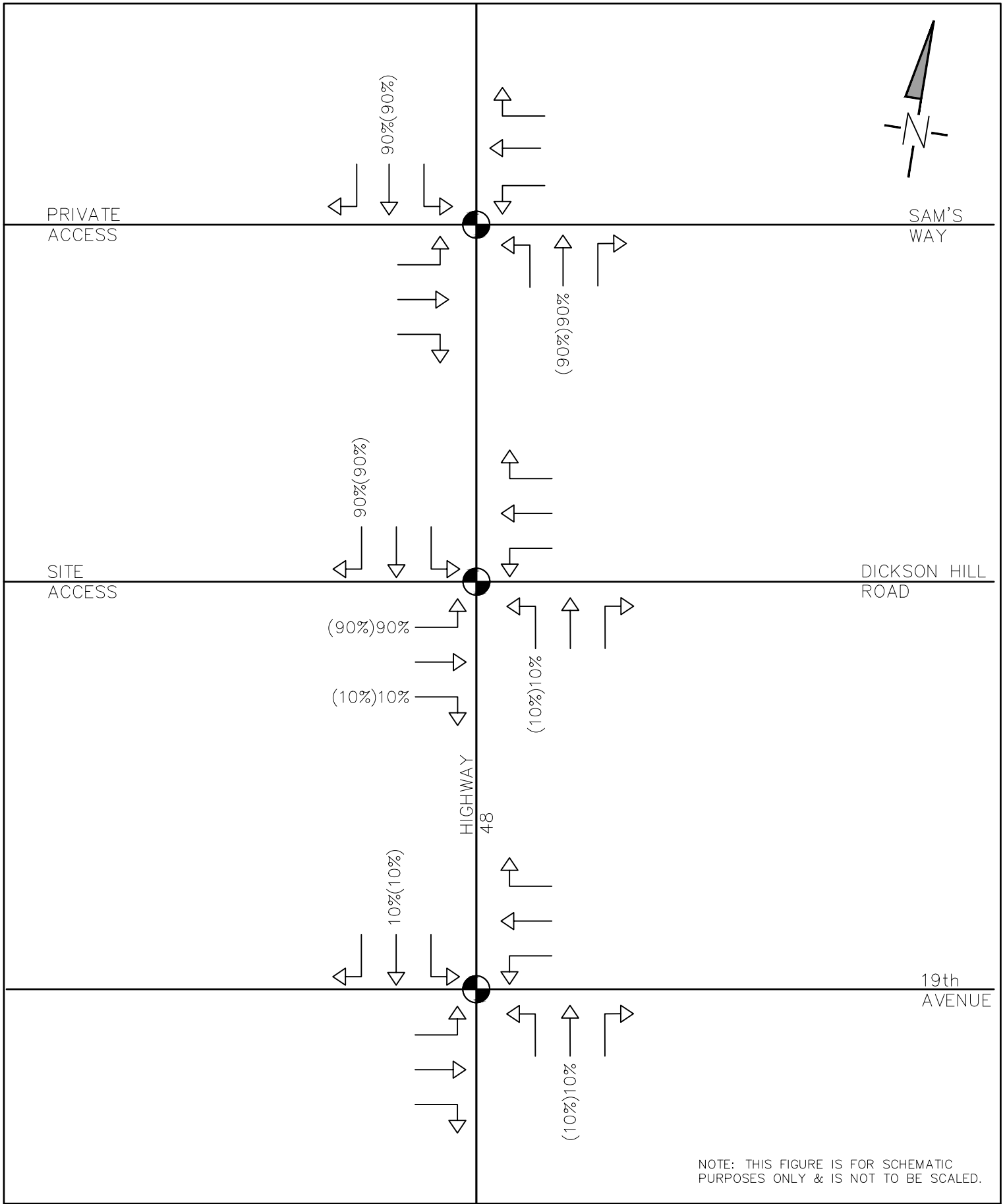
Drawing: RESIDENTIAL TRIP DISTRIBUTION

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project
S.K.	M.F.	1060–5609

Scale	Date	Check By	Drawing
N.T.S.	2020/11/30	A.F.	FIG. 9

J:\1000\1060-Flato Dev\5609-Flato Markham Stouffville\CAD\TRANSPORTATION_Sheets\5609_Figures.dwg, FIG 9, 2020-12-01 4:24:27 PM, skerr



Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

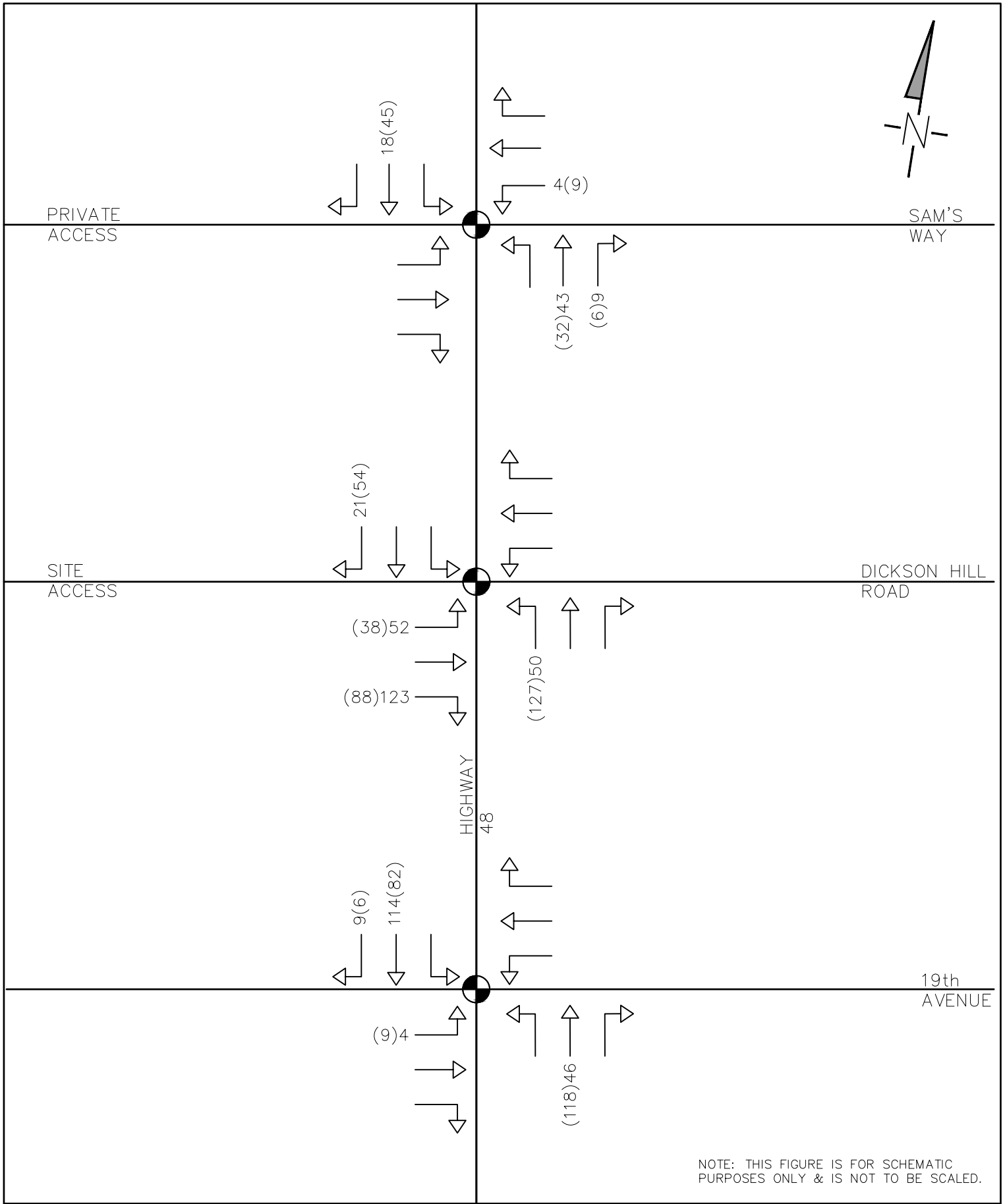
Project: FLATO UPPER MARKHAM VILLAGE
TOWN OF WHITCHURCH–STOUFFVILLE

Drawing: MEDICAL TRIP DISTRIBUTION

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	Scale	Date	Check By	Drawing
S.K.	M.F.	1060–5609	N.T.S.	2020/11/30	A.F.	FIG. 10

J:\1000\1060-Flato Dev\5609-Flato Markham Stouffville\CAD\TRANSPORTATION_Sheets\5609_Figures.dwg, FIG 10, 2020-12-01 4:24:32 PM, skerr



Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

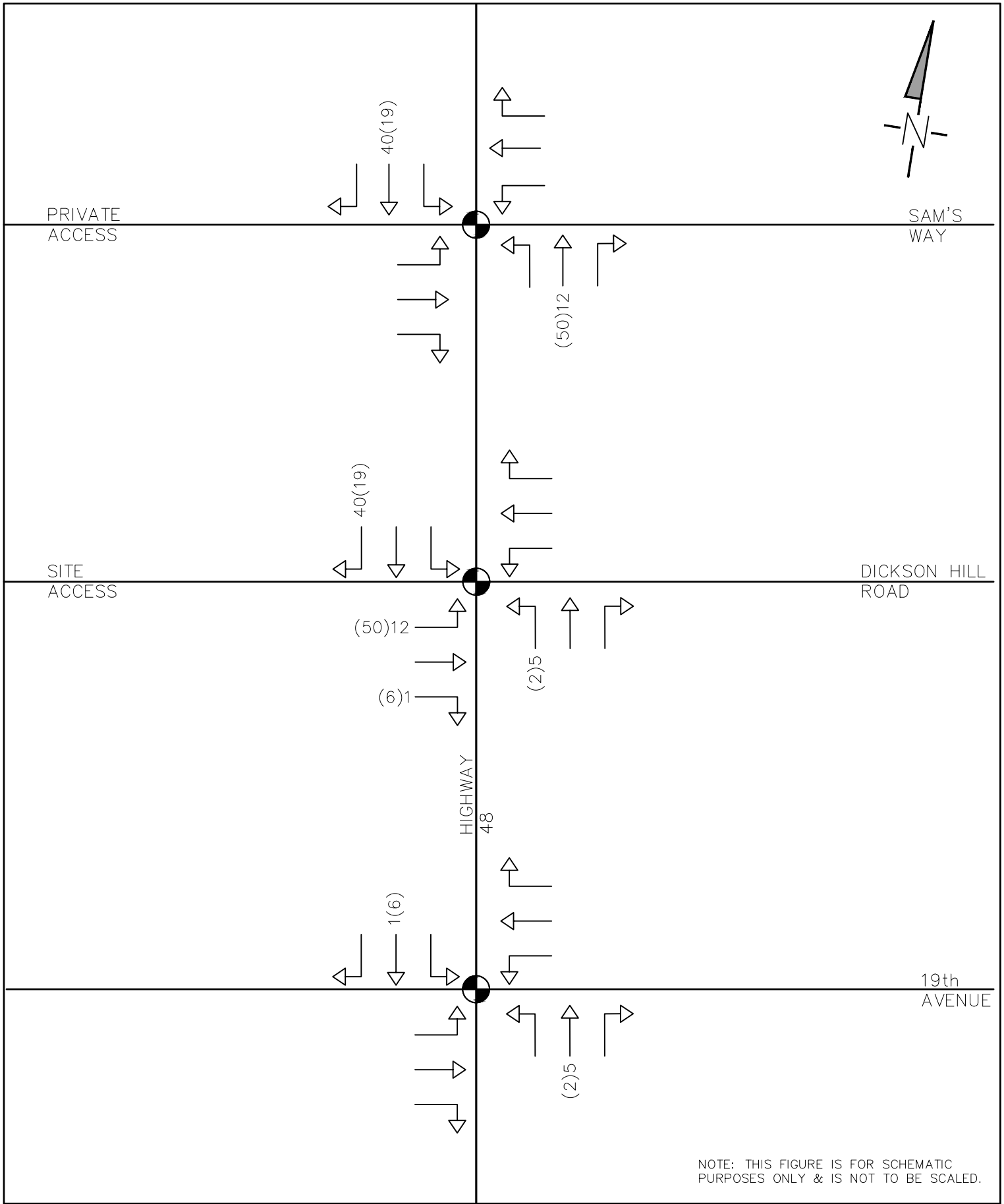
Project: FLATO UPPER MARKHAM VILLAGE
TOWN OF WHITCHURCH–STOUFFVILLE

Drawing: RESIDENTIAL TRIP ASSIGNMENT

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	Scale	Date	Check By	Drawing
S.K.	M.F.	1060–5609	N.T.S.	2020/11/30	A.F.	FIG. 11

J:\1000\1060-Flato Dev\5609-Flato Markham Stouffville\CAD\TRANSPORTATION_Sheets\5609_Figures.dwg, FIG 11, 2020-12-01 4:24:37 PM, skerr



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project: FLATO UPPER MARKHAM VILLAGE
TOWN OF WHITCHURCH–STOUFFVILLE

Drawing: MEDICAL TRIP ASSIGNMENT

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	Scale	Date	Check By	Drawing
S.K.	M.F.	1060–5609	N.T.S.	2020/11/30	A.F.	FIG. 12

J:\1000\1060-Flato Dev\5609-Flato Markham Stouffville\CAD\TRANSPORTATION_Sheets\5609_Figures.dwg, FIG 12, 2020-12-01 4:24:42 PM, skerr

Baker Hill Development 5400, 5472 and 5508 Main Street, Stouffville

Traffic Impact Study

Project Number: 60528715

January, 2019

Norstar Baker Hill Inc.
7077 Keele Street, Suite 102
Concord, ON L4K 0B6

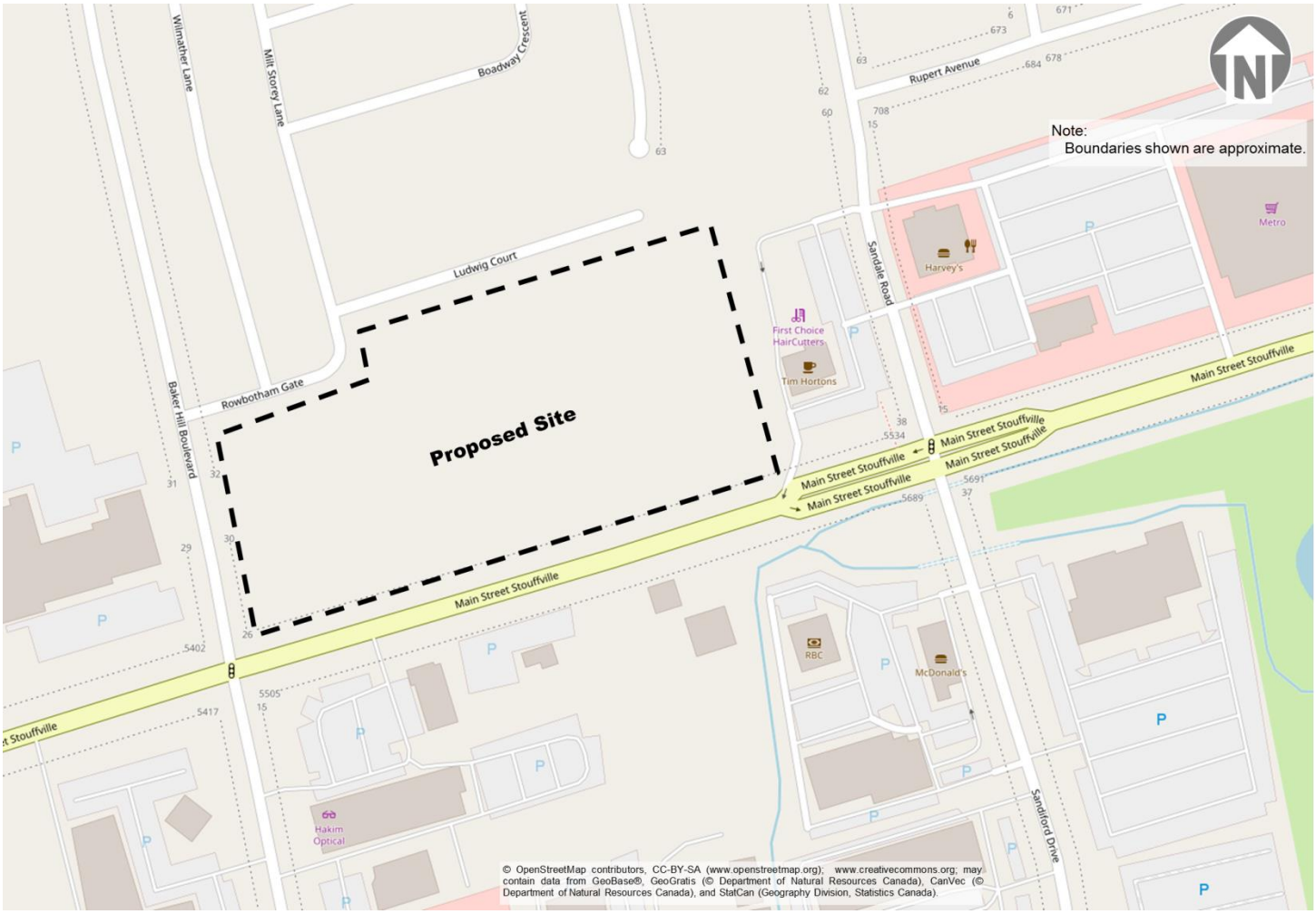


Figure 1-1: Study Area

1.3 Development Proposal

The proposed residential development is planned to consist of 147 townhouse units. The 31 townhouse units fronting Main Street are configured as live-work units. Each unit has approximately 16.3 m^2 (175 ft^2) commercial space on the ground floor for a total of 505.3 m^2 (5,425 ft^2). A total of 21 and 10 parking spaces are provided for residential visitors and commercial purposes, respectively. In addition, the site includes an entry plaza on the NE corner of the Main Street / Baker Hill Boulevard intersection and outdoor amenity space with an area of 640m^2 (6,889 ft^2). Site accesses are proposed on the south side of the property on Main Street and the northwest side of the site at the Rowbotham Gate/Wilmather Lane intersection. The proposed draft site plan for the residential development is attached in **Appendix A**.

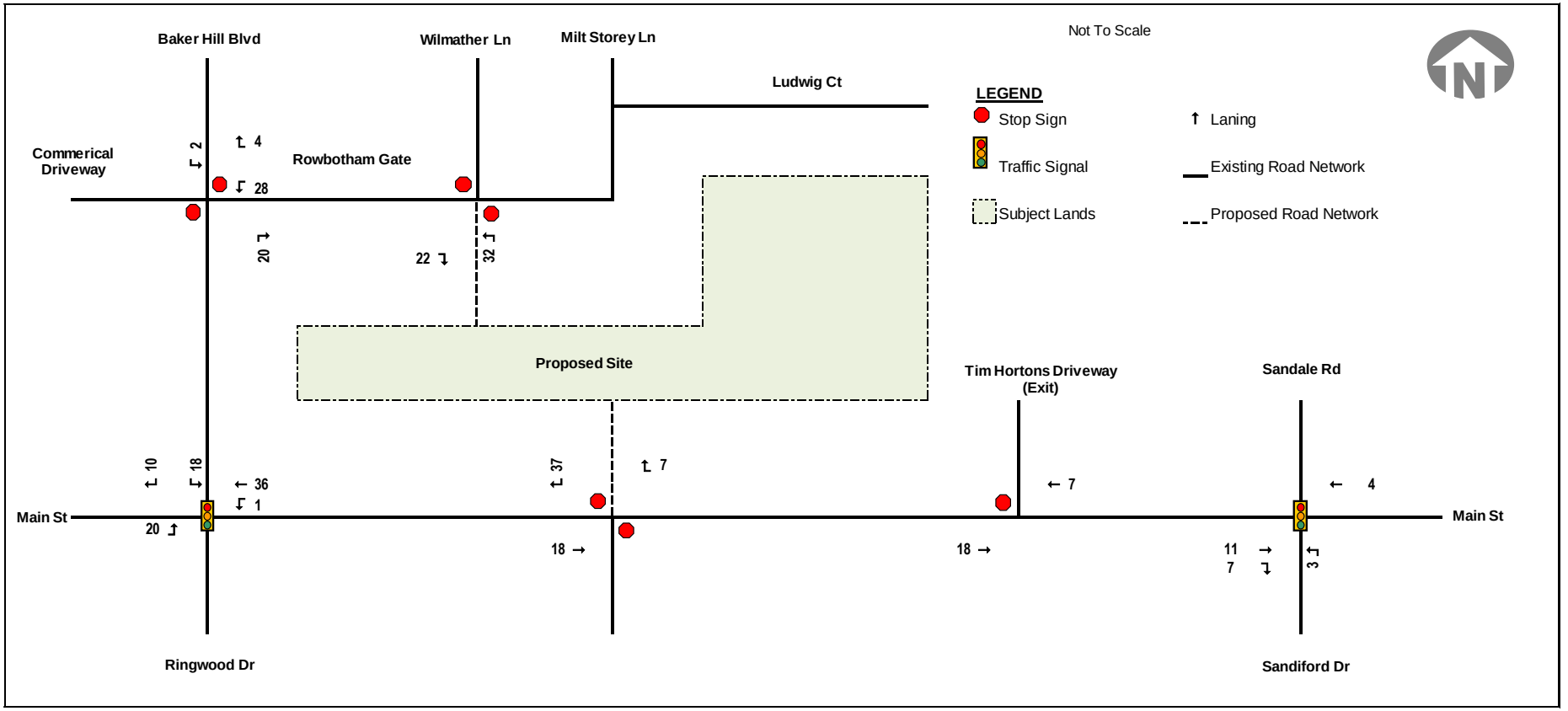


Figure 6-4: Site Traffic AM Peak Hour

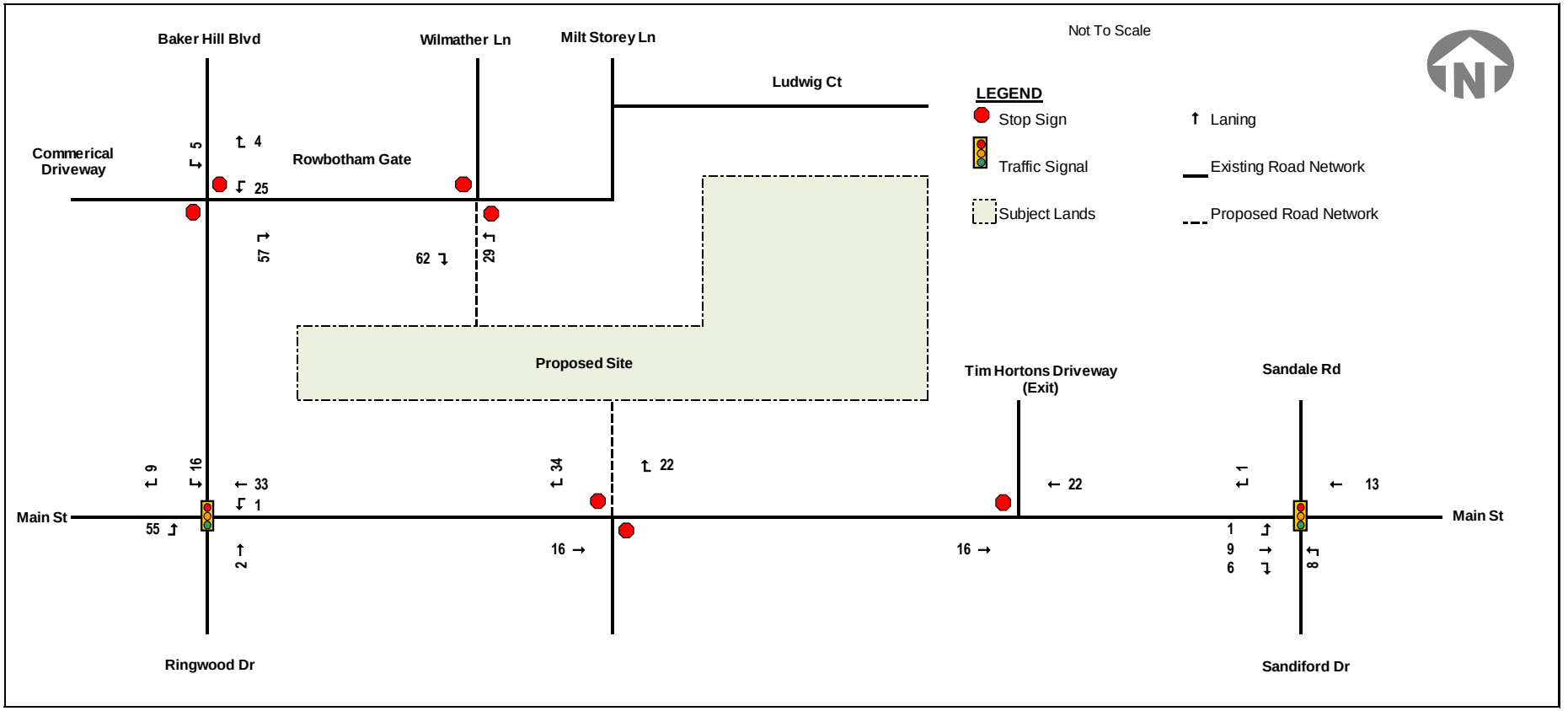


Figure 6-5: Site Traffic PM Peak Hour

LEA Consulting Ltd.
425 University Ave, Suite 400
Toronto, ON, M5G 1T6 Canada
T | 905 470 0015 F | 905 470 0030
WWW.LEA.CA

March 8th, 2023

Reference Number: 19347

Thomas Yeung
Senior Project Director
TopFar Developments
50 Acadia Avenue, Suite 100
Markham, ON L3R 0B3

Dear Mr. Yeung,

RE: 5531 Main Street Transportation Mobility Plan (TMP) – SPA Resubmission Letter

LEA Consulting Ltd. (LEA) is pleased to submit this TMP SPA letter for the proposed development at 5531 Main Street in Whitchurch-Stouffville, Ontario. By way of background, LEA prepared a TMP dated October 2019, as well as updated TMP reports in July 2020, December 2020, October 2021, and March 2022 in response to comments received from the Town and peer reviewers. A June 2022 resubmission letter was also provided to support a rezoning submission. The following letter provides a response to the peer reviewer comments received on the March 2022 TIS resubmission.

Since March 2022, the development proposal has been slightly revised. A comparison of the site statistics between the previous and current proposals is provided below in **Table 1-1.**

Table 1-1: Site Statistics Comparison

Land Use	Previous Statistics (March 2022)	Current Statistics (March 2023)	Difference
Residential	309 units	319 units	+10 units
Retail GFA	814.17 sq. m.	732.35 sq. m.	-81.82 sq.m.
Vehicular Parking	329 Residential (1.06 per unit) 25 Retail (3 per 100 sq. m.) 78 Visitor (0.25 per unit)	330 Residential (1.03 per unit) 22 Retail (3 per 100 sq. m.) 80 Visitor (0.25 per unit)	+1 Residential -3 Retail +2 Visitor

2.3 SITE TRIP GENERATION

Site trip generation was undertaken using the same methodology applied as part of the previous TIS report, utilizing the latest site statistics. **Table 2-1** details the updated site vehicle trip generation.

Table 2-1: Site Vehicle Trip Generation

	Weekday AM Peak Hour			Weekday PM Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Condominium (319 Units)						
ITE Trip Rates – LUC 222 (per unit)	0.07	0.24	0.31	0.22	0.14	0.36
Residential External Auto Trips	22	77	99	70	45	115
Conversion to Person Trips	28	87	115	84	57	141
Internal Person Trips	0	1	1	5	2	7
Residential External Auto Trips	22	76	98	66	43	109
Retail (732.35 m^2 or 7883 ft^2)						
ITE Trip Rates – LUC 820 (per 1000 ft^2)	0.58	0.36	0.94	1.83	1.98	3.81
Retail Baseline Trips	5	2	7	14	16	30
Conversion to Person Trips	6	2	8	17	19	36
Internal Person Trips	1	0	1	2	5	7
Conversion to Auto Trips	4	2	6	12	12	24
Pass-by Trips (AM: 0%; PM: 34%)				4	4	8
Retail External Auto Trips	4	2	6	8	8	16
Total ITE Trip Gen. External Auto Trips	**26**	**78**	**104**	**74**	**51**	**125**
GO Train Riders via Auto		2	2	5		5
Total External Auto Trips	**26**	**80**	**106**	**79**	**51**	**130**
Previous Development Concept (March 2022)	*26*	*78*	*104*	*79*	*49*	*128*
Net Difference	-	+2	+2	-	+2	+2

The site is predicted to generate 106 and 130 two-way vehicle trips during the weekday AM and PM peak hour respectively. This represents an additional 2 vehicle trips per hour relative to the previous TIS report.

Site traffic was assigned based on the provision of an outbound access on to Ringwood Drive and a right-in/right-out access on Main Street.

Figure 2-3 details the assignment of site traffic, including the commercial passby trip adjustment at the site access on Main Street. **Figure 2-4** details future total traffic during the weekday AM and PM peak hour.

Figure 2-3: Site Traffic – Weekday AM (PM) Peak Hour

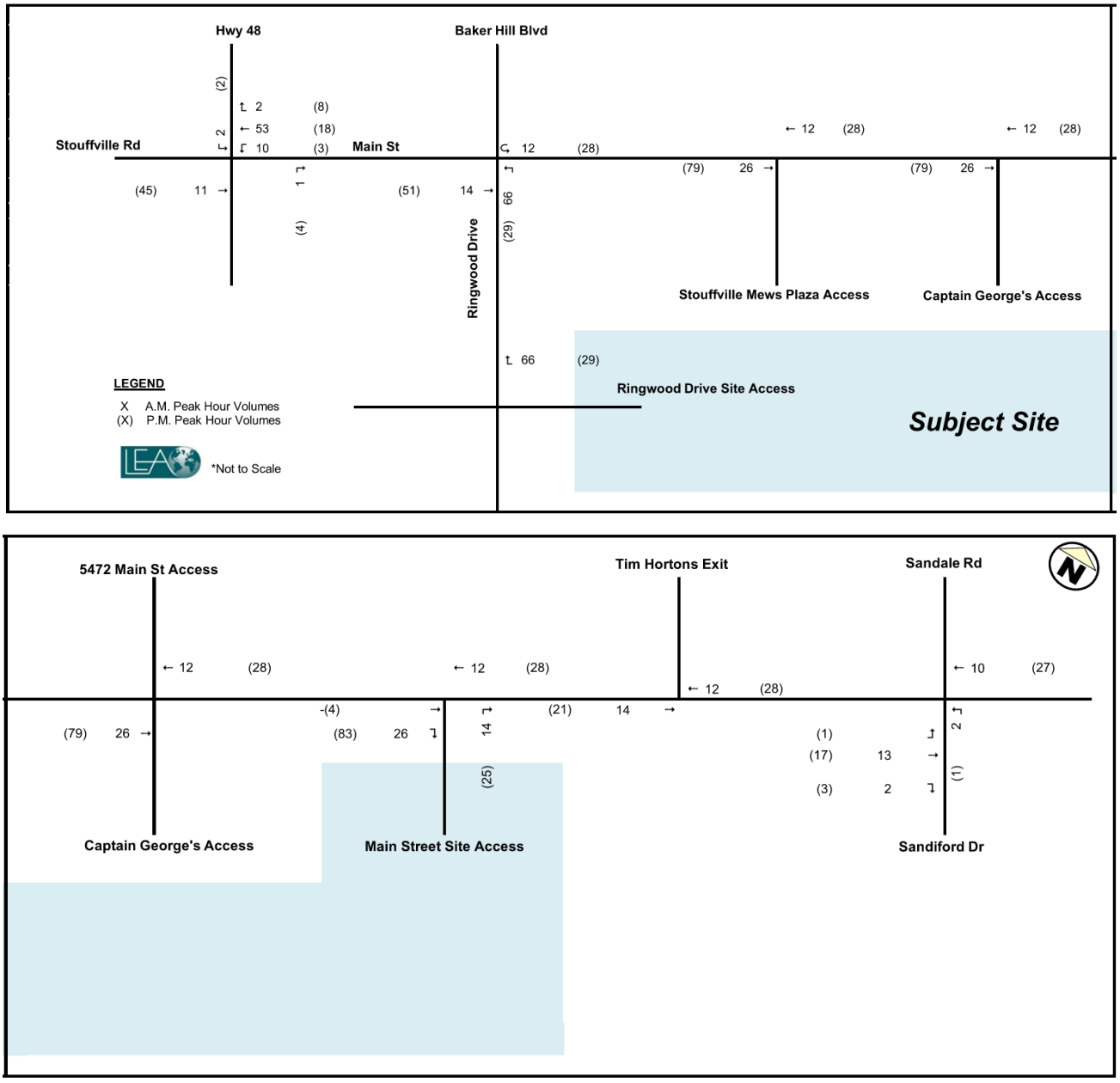
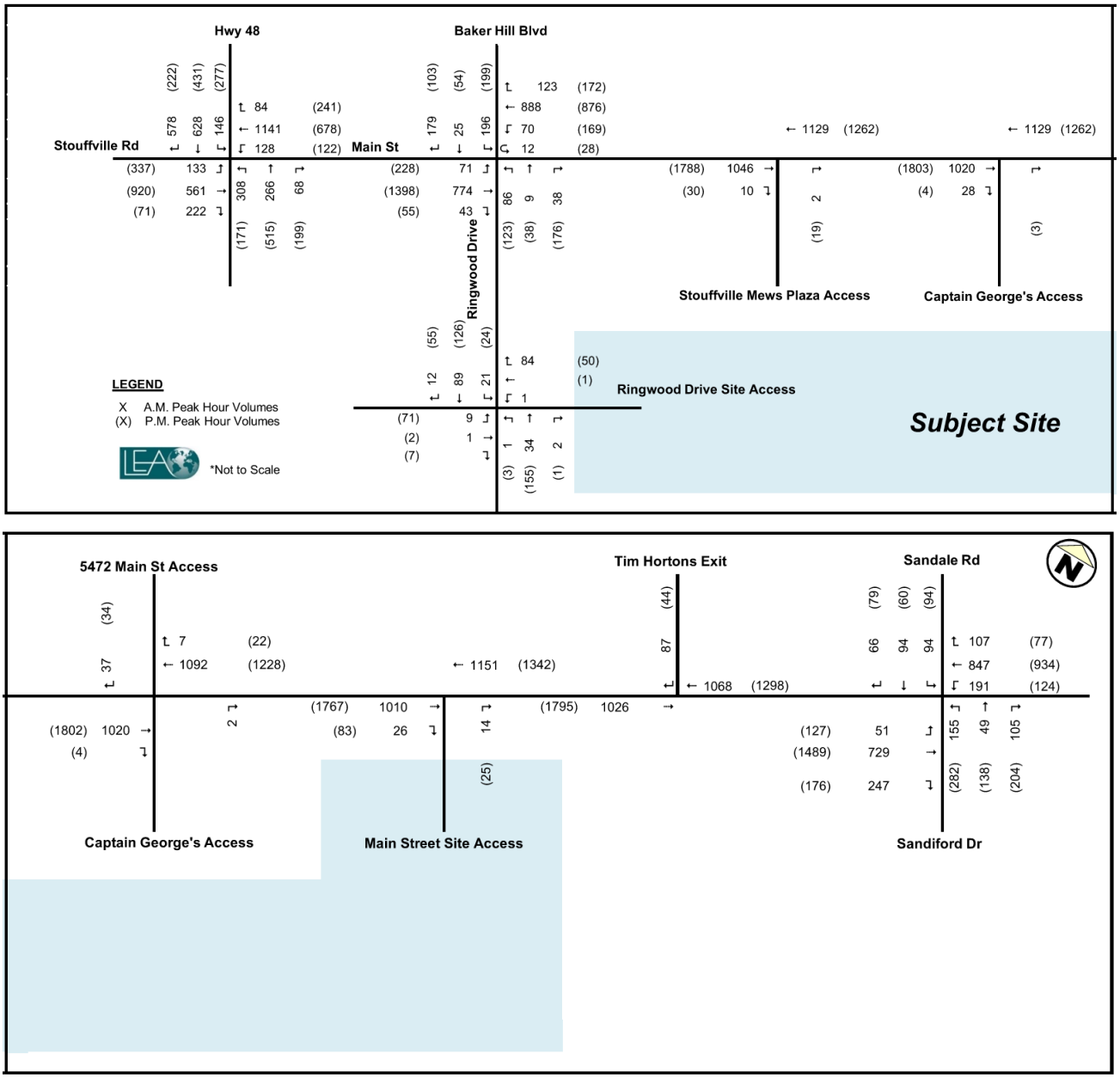


Figure 2-4: Future Total Traffic – Weekday AM (PM) Peak Hour



there will be 84% growth while the remaining areas will experience very little growth or some negative growth due to aging and migration to urban centres.

Table 3-1: Population and Employment by Settlement Area

Secondary Plan Area	Population			Employment			Growth (2011 to 2031)	
	2011	2021	2031	2011	2021	2031	Population	Employment
Stouffville	24,800	38,200	45,600	7,800	14,100	16,700	84%	114%
Gormley	700	700	700	2,300	2,600	2,800	0%	22%
Vandorf	1,600	1,500	1,500	900	800	800	-6%	-11%
Ballantrae	6,400	6,900	7,100	800	1,000	1,000	11%	25%
Rural	5,800	5,800	5,700	1,800	1,700	1,700	-2%	-6%
Total	**39,300**	**53,100**	**60,600**	**13,600**	**20,200**	**23,000**	**54%**	**69%**

Source: York Region

Similarly, employment growth will also be focused in the Community of Stouffville at 114% growth (doubling), followed by 25% and 22% employment growth in Ballantrae and Gormley, respectively.

3.3.3 Modal Share

Modal share describes the proportion of trips made within a specified time period by various travel modes including walking, cycling, transit, auto drivers and auto passengers. The modal share for weekday AM and PM peak period travel by Town residents is illustrated in **Exhibit 3-8.**

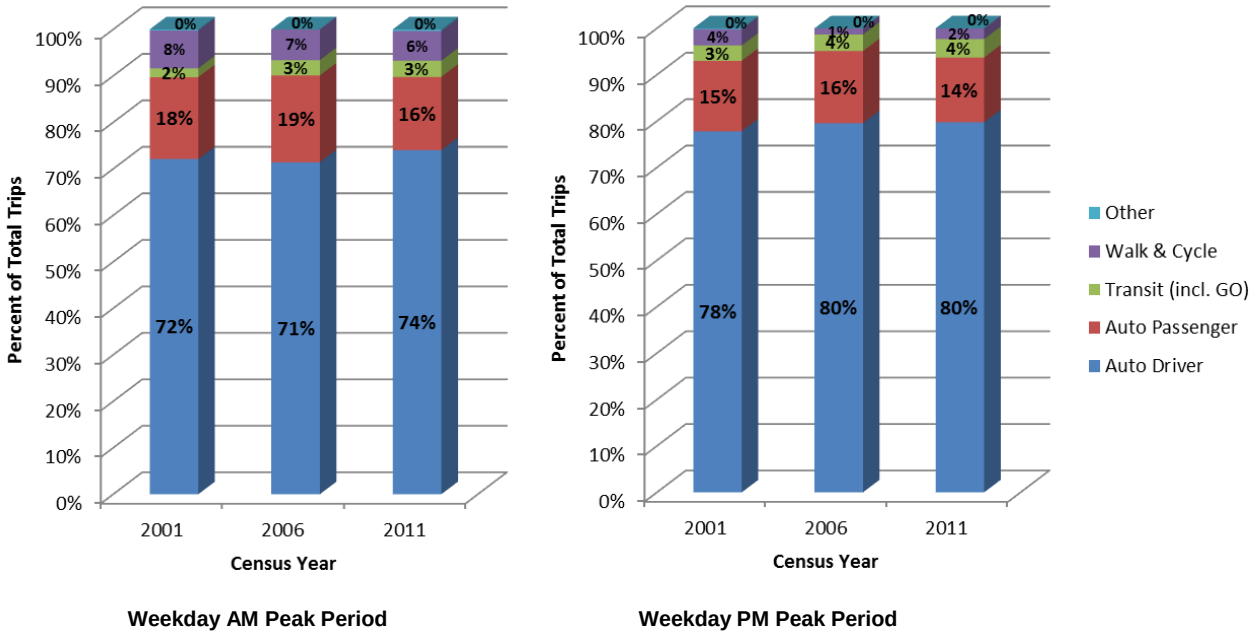


Exhibit 3-8: Modal Share

Modal share has remained relatively constant between 2001 and 2011 as the Town's urban and rural form and transportation network have changed very little in that time despite significant population growth between 2006 and 2011. The vast majority of trips within the community are completed with private auto. During the weekday AM peak period there is a higher proportion of auto passenger trips as well as walk and cycle trips, as the AM peak is typically composed of a higher number of commuter (work) and school trips. Trips by students on school buses are also captured under auto passengers. It is likely that the higher proportion of auto passenger and walk and cycle trips is due to students being driven to school, taking the school bus, and walking and cycling to school. In the PM peak period, which falls after the school hours, most students have already returned home from school, thus there are a greater proportion of auto-driver trips reflecting the employees returning home from work.

3.3.4 Employment Survey Travel Trends

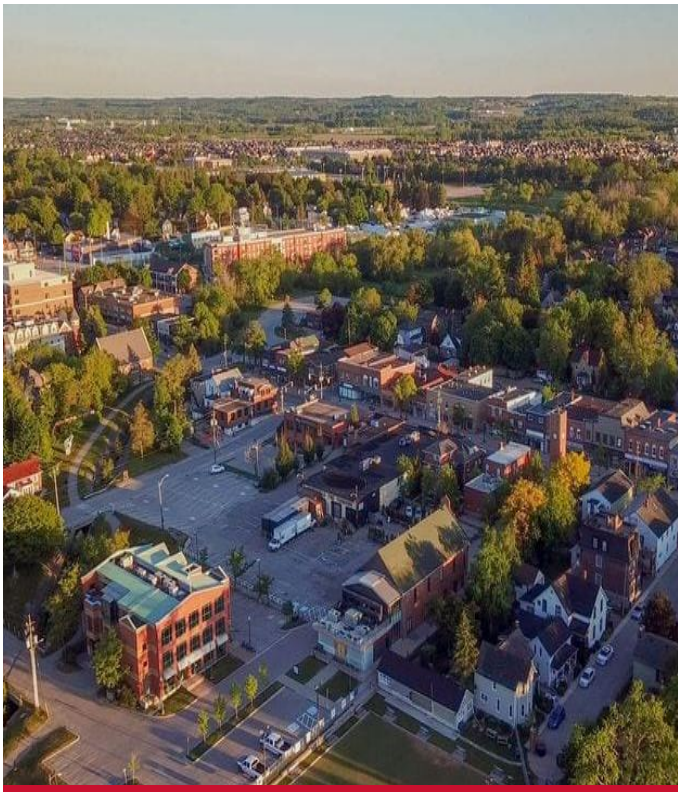
Smart-Commute Central York conducted Employee Commuter Travel Habits surveys for two major employers in the Town – the Town of Whitchurch-Stouffville and Strategic Information Technology Ltd. (SIT), a software company with its head offices in Stouffville. The first was conducted in 2013 for the Town of Whitchurch-Stouffville and the second in 2014 for SIT. The results of these surveys provide a snapshot of specific employers in Town to supplement the TTS data. The detailed surveys are provided in **Appendix B**.

The Town of Whitchurch-Stouffville employs approximately 150 full-time staff of which 96% drive alone, 1% carpool and 3% walk. This modal share is similar to overall Town results from the TTS with the exception of very few carpool trips. This low proportion of carpool trips may be a function of the specific origin locations of Town employees as 50% of survey respondents indicated that they need help finding suitable people to share the ride with. The need for their car for work was the second highest barrier to carpooling.

SIT employs approximately 161 persons, of which 79% drive alone, 14% carpool 2% take transit, 2% walk, and the remaining 3% get dropped off, telework, or vanpool (employee subsidized). This modal share is similar to overall Town results.

3.3.5 Travel Distribution in the Town

The internal distribution of trips within the Town is illustrated in **Exhibit 3-9**. In the AM peak period approximately 5,800 trips are made for all trip purposes. The Community of Stouffville is the focal point of travel with 74% trips internal to Stouffville and another 12% of trips destined to or from Stouffville from another part of the Town. Ballantrae-Musselman Lake is the next largest generator of trips while rural areas tend to generate more travel than Vandorf or Gormley.



Whitchurch-Stouffville Transportation Master Plan Update

Final Report

Town of Whitchurch-Stouffville

April 3, 2024

hdrinc.com 100 York Boulevard, Suite 300, Richmond Hill, ON CA L4B 1J8
(289) 695-4600

2 Planning Framework

Planning guidance that informs this TMP study includes strategic documents from the Province of Ontario, the Regional Municipality of York, and the Town. Relevant documents are identified and summarized in this section. Details are documented in **Appendix B**: Background Conditions Report.

2.1 The Provincial Planning Context

A number of provincial policy documents provide the basis and guidance for the transportation vision for this TMP study. Relevant provincial plans are identified and summarized in **Table 2-1**.

Table 2-1: Provincial Planning Policies

Provincial Planning Document	Directions
Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe, 2022	The province released the Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe in February 2022. The report consists of a long-term transportation plan for the Greater Golden Horseshoe (GGH), outlining a 30-year vision for enhanced mobility within and across the GGH region and Ontario. The province has outlined the following planned road improvement within Whitchurch-Stouffville: 1. Committed Widening on Highway 404 between Highway 407 to Stouffville Road; and 2. New Capacity Expansion on Highway 48 between Major Mackenzie Drive to Bloomington Road.
Provincial Policy Statement, 2020	The Provincial Policy Statement (PPS) provides policy direction for land use planning and development in Ontario. The policy guides the appropriate use of land and its associated developments while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. Within settlement areas, land use patterns should efficiently use resources, infrastructure, and public service facilities; minimize negative impacts on air quality and climate change; prepare for the impacts of a changing climate; and, support active transportation, transit and freight. The PPS requires municipalities to protect corridors and rights-of-way for infrastructure, including transportation and transit purposes. New developments adjacent to the corridors shall be compatible with, and supportive of, the long-term purpose of the identified corridor.
A Place to Grow: Growth Plan for the Greater Golder Horseshoe, 2020	The Growth Plan projects the Greater Golden Horseshoe (GGH) to grow to, at a minimum, 14.8 million people and 7.0 million jobs by 2051. Within York Region, population and employment are expected to grow to 2,020,000 and 990,000 respectively. The Growth Plan for GGH sets minimum density targets of not less than 50 residents and jobs combined per hectare for developments within designated Greenfield Areas and 150 residents and jobs combined per hectare for those that are served by the GO Transit rail network. The Growth Plan for GGH also encourages the transportation system within the GGH to actively promote transit and

3.6.2 Currently Planned Road Improvements

There are a number of future roadway improvements planned by York Region or by MTO which will affect the Town's future travel patterns and needs. These improvements are summarized in **Table 3-11** and are assumed in the 2051 base WSTMP model. It is noted that all the roads widening projects identified as involving widening up to four lanes and widening up to six lanes, as applicable, are subject to further study and review to determine the preferred solution.

Table 3-11: Currently Planned Future Road Improvements

Listed Future Road Improvement	Representation in 2051 WSTMP Model
Within Whitchurch-Stouffville	
Committed Widening on Highway 404 between Highway 407 to Stouffville Road	Addition of an HOV lane per direction in 2051 that is 3 general purpose lanes + 1 HOV lane per direction in 2051
New Capacity Expansion on Highway 48 between Major Mackenzie Drive to Bloomington Road	Highway 48 widened from 1 lane to 2 lanes per direction between Donald Cousins to Stouffville Road
An interchange between Highway 404 and St John's Sideroad	Exists in 2051 model
Completion of a full interchange between Highway 404 and Vivian Road	Full interchange in 2051, partially exists in 2016 model
Outside Whitchurch-Stouffville, in the vicinity	
Widening of Donald Cousens between 16th Avenue and Major Mackenzie with an extension to Highway 48	Donald Cousens Parkway widened from 1 lane to 2 lanes per direction between 16th Avenue and Major Mackenzie Donald Cousens Parkway extended from current terminus to Highway 48
Widening of 19th Avenue between Leslie and Warden Avenue	19th Avenue widened from 1 lane to 2 lanes per direction between Bayview Avenue and Warden Avenue
Widening of Elgin Mills between Woodbine Avenue and Highway 48	Elgin Mills widened from 1 to 2 lanes per direction between Woodbine Avenue and Highway 48
Midblock overpass over Highway 404 between Elgin Mills Road and 19th Avenue	4-lane overpass added to 2051 network
Midblock overpass over Highway 404 between Elgin Mills Road and Major Mackenzie Drive	4-lane overpass added to 2051 network
Midblock overpass over Highway 404 between Major Mackenzie Drive and 16th Avenue	4-lane overpass added to 2051 network
Widening on Warden Avenue between 19th and Major Mackenzie Drive	Warden Avenue widened from 1 lane to 2 lanes per direction between 19th Avenue and Major Mackenzie Drive



Site Location

Figure 1.1

2 Proposed Development

The subject site is located in the southwest quadrant of Sam's Way and Rougeview Avenue (south leg) intersection in the Town of Whitchurch-Stouffville.

The immediate land uses surrounding the subject site consist of vacant lands to the south, east, and west, and commercial/retail land uses to the north.

The property owner proposes to develop a four-storey medical office building totaling 3,440.74 SM (37,036 SF) gross floor area (GFA) in size.

The medical office building will provide outpatient services (i.e., building without overnight stays), and house services including a walk-in clinic with attached pharmacy, a medical lab, an imaging centre, along with medical offices and specialist medical clinics.

Vehicle access is proposed via two full-movement access connections, one with Sam's Way (approximately 80 metres west of Rougeview Avenue (south leg)) and one with Rougeview Avenue (south leg), approximately 60 metres south of Sam's Way.

A total parking supply of 175 spaces is proposed, including seven barrier-free parking spaces (four Type A spaces and three Type B spaces), and six parking spaces with electrical charger provisions.

A total of three long-term bicycle parking spaces are provided indoors, and 16 short-term bicycle parking spaces are proposed on-site in proximity to a building entrance.

Waste collection for the site will be facilitated through an in-ground waste bin collection system situated in the southwest corner of the site.

Figure 2.1 illustrates the proposed development concept site plan.

4.2 Future Transportation Network

Reference was made to the Town of Whitchurch-Stouffville *Transportation Master Plan*[12] to determine if there are planned changes/improvements to the adjacent transportation network.

Specifically, Table 3-4: Current Planned Future Road Improvements identified widening Highway 48 from two to four lanes from Bloomington Road to south Town limits by 2041.

Actual timing for the completion for the road widening is unknown. For the purpose of this assessment, it was assumed that the road widening of Highway 48 would not be in place by the 2026, 2031 or 2036 horizon. The existing road network and study area intersections lane configurations have been used for all future operational analyses.

As we understand, for the adjacent undeveloped portion of land on the north side of the subject site there is a masterplan by SmartCentres with a potential north leg extension opposite of Rougeview Avenue (south leg). However, the current status or timing is unknown.

Per the Town of Whitchurch-Stouffville Highway 48 Study Framework Plan, Sam's Way is proposed to be extended west of Highway 48. Per review comments received, direction was provided that for assessment purposes the westerly extension can be assumed to be completed by 2031 if Town staff identifies the Flato/Wyview Developments (Phase 2) development to be accounted for. As Town staff did not identify nor provide information pertaining to the Phase 2 development, we have not included/accounted for the westerly extension of Sam's Way within the analysis.

4.3 Site Trip Generation

4.3.1 Automobile Trips

The Institute of Transportation Engineers (ITE) publication, *Trip Generation Manual (11th Edition)*[13] was referenced to estimate the peak hour vehicular traffic volumes generated by the proposed medical office development.

Land use codes (LUC) 630 – Clinic, and 720 – Medical-Dental Office Building were both reviewed, and their descriptions are as follows:

[12] Town of Whitchurch-Stouffville, *Transportation Master Plan*, February 2017, p31.
[13] Institute of Transportation Engineers, *Trip Generation Manual (11th Edition)*, September 2021.

- **LUC 630 (Clinic)**: a facility that provides limited diagnostic and outpatient care but is unable to provide prolonged in-house medical and surgical care. A clinic may have a lab facility and supporting pharmacy but typically does not have the equipment and medical personnel available at an urgent care site. A clinic typically offers a wide range of services which makes it distinct from a medical office building that typically houses specialized or individual physicians; and
- **LUC 720 (Medical-Dental Office Building)**: a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility.

Table 4.2 summarizes the resultant weekday AM and PM peak hour site trip generation using LUC 630 and 720, respectively. For a conservative approach, the higher of the two estimates is used.

The proposed medical office development is estimated to generate a total of 115 AM and 148 PM peak hour vehicular trips. No trip reductions were applied to the estimated site trip generation to account for travel by transit or active transportation modes.

TABLE 4.2: SITE TRIP GENERATION

Land Use	GFA	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
630 Clinic[1]	37,036 SF (3,440.74 SM)	83	19	102	41	96	137
720 Medical-Dental Office Building[2]		91	24	115	44	104	148
Trip Generation for Assessment		***91***	***24***	***115***	***44***	***104***	***148***

[1]AM: 2.75 per 1,000 SF of GFA (81% In/19% Out); PM: 3.69 per 1,000 SF of GFA (30% In/70% Out);
[2]AM: 3.10 per 1,000 SF of GFA (79% In/21% Out); PM: T = 4.07(X) – 3.17 (30% In/70% Out).

4.3.2 Transit, Cycling, and Walking Trip Generation

Per Section 3.4, the existing modal split data has been utilized to estimate the transit, cycling, and walking trips generated by the site.

Table 4.3 provides an estimate of trips generated by the subject development based upon the 2016 TTS modal split data. This provides a good baseline of anticipated site trips by mode recognizing that travel by non-auto modes could be greater under future conditions once

further supporting infrastructure is available and with successful implementation of a Transportation Demand Management (TDM) Plan.

TABLE 4.3: SITE TRIP GENERATION BY MODE

Mode	AM Peak Hour					PM Peak Hour				
	%		Trips			%		Trips		
	In	Out	In	Out	Total	In	Out	In	Out	Total
Automobile	74%	83%	91	24	115	95%	88%	44	103	148
Transit	1%	2%	1	1	2	4%	0%	2	0	2
Cycle	5%	0%	6	0	6	0%	5%	0	6	6
Walk	20%	15%	25	4	29	1%	7%	0	9	9
Total	***100%***	***100%***	***123***	***29***	***152***	***100%***	***100%***	***46***	***118***	***165***

Based upon the existing modal split data reported, the proposed medical office development is forecast to generate, in the weekday AM and PM peak hours, respectively:

- 115 and 148 automobile trips;
- 2 and 2 transit trips;
- 6 and 6 cycling trips; and
- 29 and 9 walking trips.

4.4 Site Trip Distribution and Assignment

The directional distribution of traffic approaching and departing the subject site is a function of several variables including population densities, existing travel patterns, and efficiency of the roadways leading to the site.

Trip distribution for the subject lands was estimated based on a review of the existing traffic patterns documented in the collected turning movement count data. **Table 4.4** summarizes the estimated direction distribution.

TABLE 4.4: ESTIMATED TRIP DISTRIBUTION

To/From	Via	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
North	Highway 48	56%	41%	42%	52%
South	Highway 48	44%	59%	58%	48%
Total		***100%***	***100%***	***100%***	***100%***

The estimated site traffic was assigned to the road network based upon the above estimated distribution. It is noted that trips inbound

to/outbound of the site were assumed to be split 50% via the north access and 50% via the east access.

It is further noted our distribution examines a worst-case scenario where all site traffic is processed through the Highway 48/Sam's Way intersection.

Figure 4.5 illustrates the site trip assignment for the weekday AM and PM peak hours. Slight differences with respect to the trip generation estimates are due to rounding.

4.5 Future Total Traffic

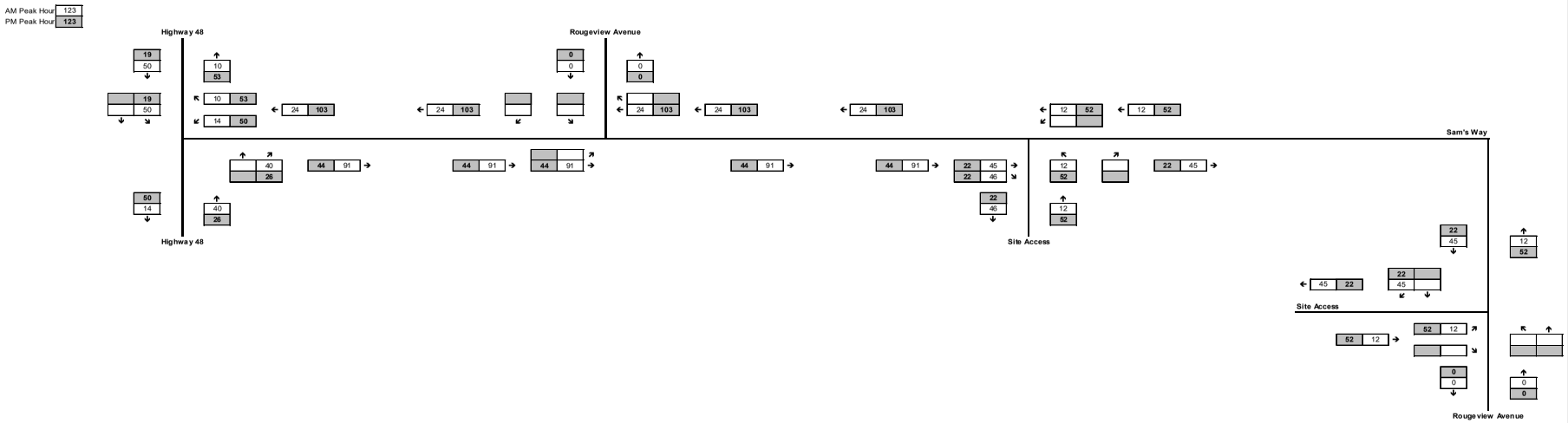
The future weekday AM and PM peak hour background traffic forecasts were combined with the site traffic assignments to develop the total traffic forecasts for the 2026, 2031 and 2036 horizon years.

Figure 4.6 illustrates the 2026 total traffic forecasts for the weekday AM and PM peak hours.

Figure 4.7 illustrates the 2031 total traffic forecasts for the weekday AM and PM peak hours.

Figure 4.8 illustrates the 2036 total traffic forecasts for the weekday AM and PM peak hours.





NTS

Site-Generated Traffic Forecasts

Southwest Quadrant of Sam's Way and Rougeview Avenue – Transportation Impact Study
220682

Figure 4.5

1. INTRODUCTION

It is proposed to construct a new shopping centre in the northwest quadrant of the Highway 48/Stouffville Road intersection. The location of the site is shown in the following figure:



Figure 1.1 – Site Location

The overall project has been in development for many years. The Phase 1 site is currently occupied by Gallo Real Estate. The business is located in a converted house that increasingly requires maintenance and is also being outgrown by the business. Therefore, the owner has decided to proceed with Phase 1 that will replace the existing building on the site with a new building.

Mark Engineering was retained to undertake a traffic impact study to:

- identify the additional traffic generated by the proposed development,
- determine the impacts of this traffic on the surrounding road and transportation system, and
- identify any changes to the surrounding road system required to support the development.

The study area was limited to the Highway 48/Stouffville Road intersection and the proposed access.

3. PROPOSED DEVELOPMENT

The proposed office development (phase 1) is shown in the following figure:

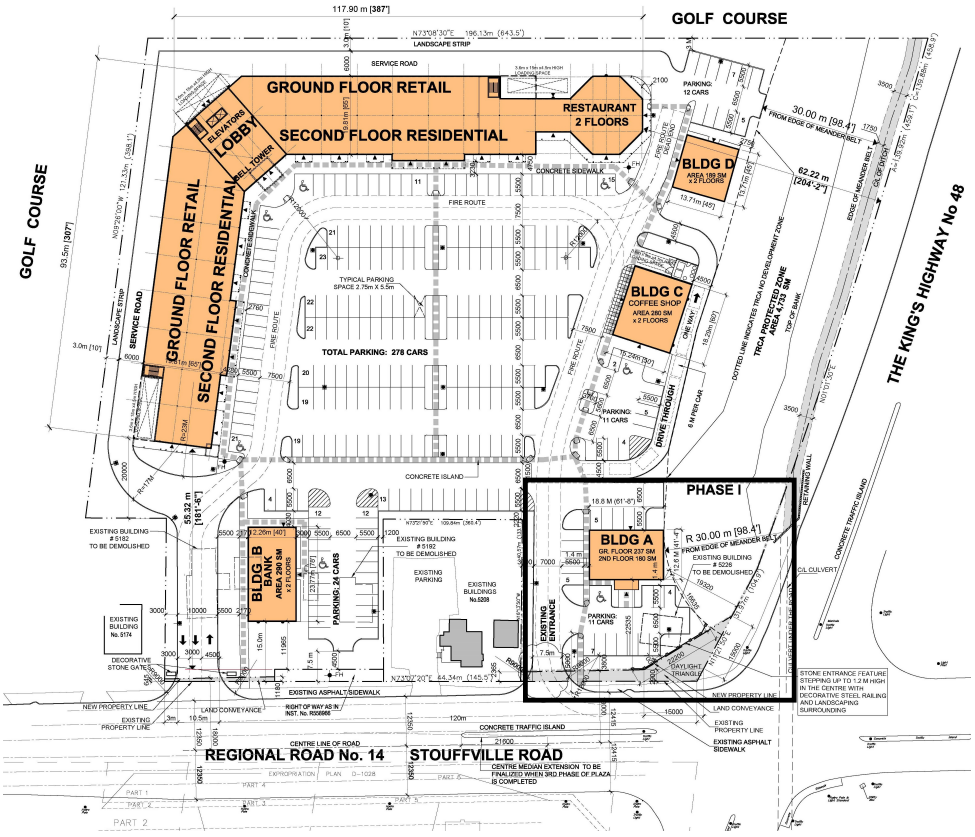


Figure 3.1 – Proposed Office Development (not to scale)

The total gross floor area is 417 m² (4,488.55 ft²) and there are two floors. The total parking spaces on site will be 21 spaces. Based on information from the owner, the future number of employees will be 14 staff.

The existing full movement site entrance will be remained to service the future office development. The Ministry of Transportation has said that they will not permit any direct access to Highway 48. The Stouffville Road access will be located about where the existing access to the Gallo real estate office is located. The distance from the centreline of the existing access and the centre line of Highway 48 is about 55± metres. The distance from the centreline of pavement in the access to the west edge of pavement of Highway 48 measured along the north edge of pavement is 50± metres. As a Class IV – Commercial Commuter road, the minimum driveway spacing is 70 metres[1]. It would be desirable to have greater spacing between Highway 48 and the access, but the animal hospital precludes this.

[1] Table 5, Access Guideline for Regional Roads

4.2 Site Traffic

4.2.1 Trip Generation

The subject site has an existing real estate office in operation and there are currently 8 employees. The nature of a real estate office is that some of the employees do not work full time in the office or follow the 9-5 work schedule.

The trip generation rate for the proposed development is calculated based on the first principal's method. The employee information is provided by the owner.

The existing office at the subject site has 8 employees and the future development will have 14 employees. The plan originally was to survey the existing site entrance for an accurate trip generation. However, the site trips observed at the site entrance is extremely low, being 4 trips in the morning and 5 trips in the afternoon peak hour. In order to be conservative, we have assigned 8 inbound trips to the site entrance under the existing AM peak and 8 outbound trips during the PM peak hour, as shown in Diagram 1.

For the site traffic estimation, the existing site trips are doubled and assigned to the site entrance. The result is 16 inbound trips in the morning and 16 outbound trips in the afternoon. We have applied a nominal number of trips for the opposite direction of travel. The proposed site's traffic volumes are:

Table 4.1 - Site Trip Generation

Peak Hour	Inbound	Outbound	Total
Morning	16	6	22
Afternoon	4	16	20

The site's trip assignments are shown in Diagram 3.

There was no reduction for transit service since the level of transit service provided would not attract significant transit traffic that would reduce the level of vehicle traffic.

Additionally, a comparison of the trip generation was based on the trip generation rates from the 10th Edition of the Institute of Transportation Engineers' Trip Generation report. The derivation of the trip generation is shown in Exhibit 4. The equation for the morning peak hour generates volumes that are significantly higher than for the afternoon peak hour and for the average rates. Therefore, the average rates provide a better fit with the existing data.

The visitors to the office will be minimal and they are not likely to all occur during the peak hours.

The total site related traffic is shown in Diagram 3.

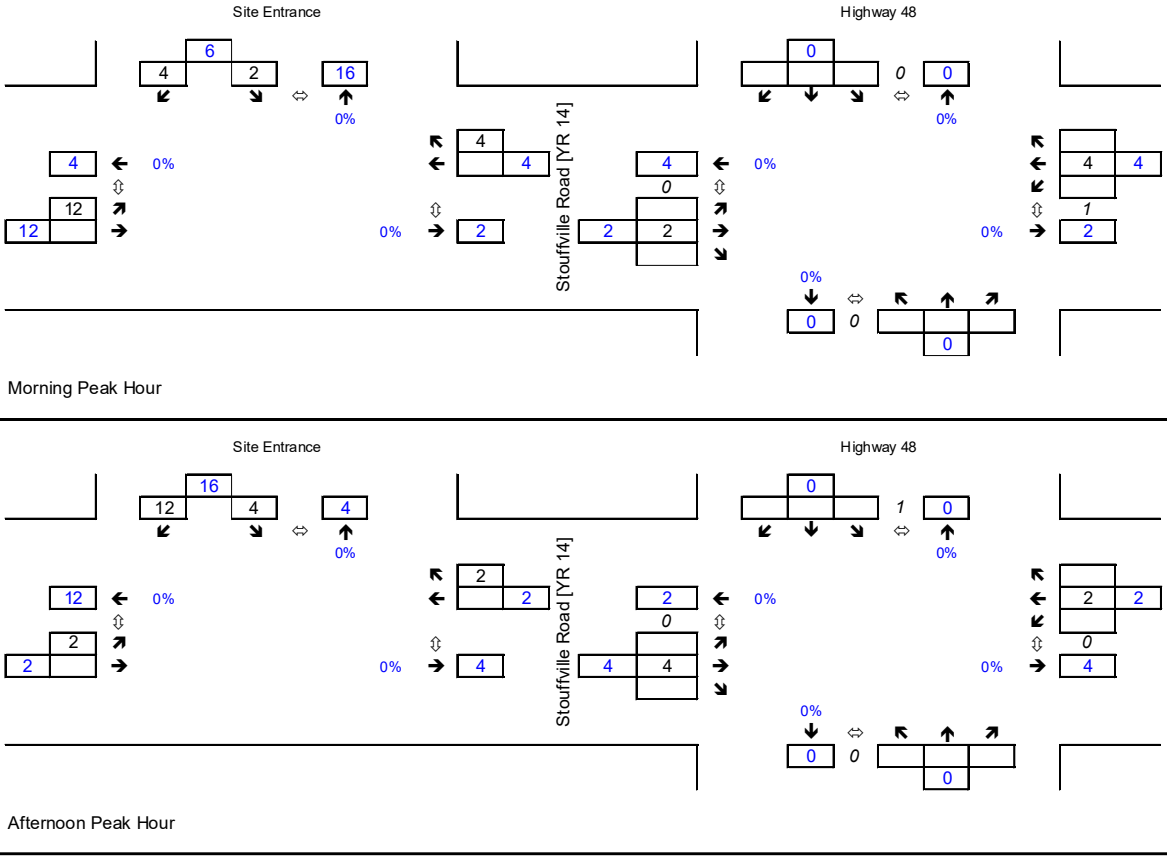


Diagram 3 - Site Traffic

4.3 Future Total Traffic

The total site traffic was combined with the 2025 background traffic to produce the future total traffic volumes shown in Diagram 4.

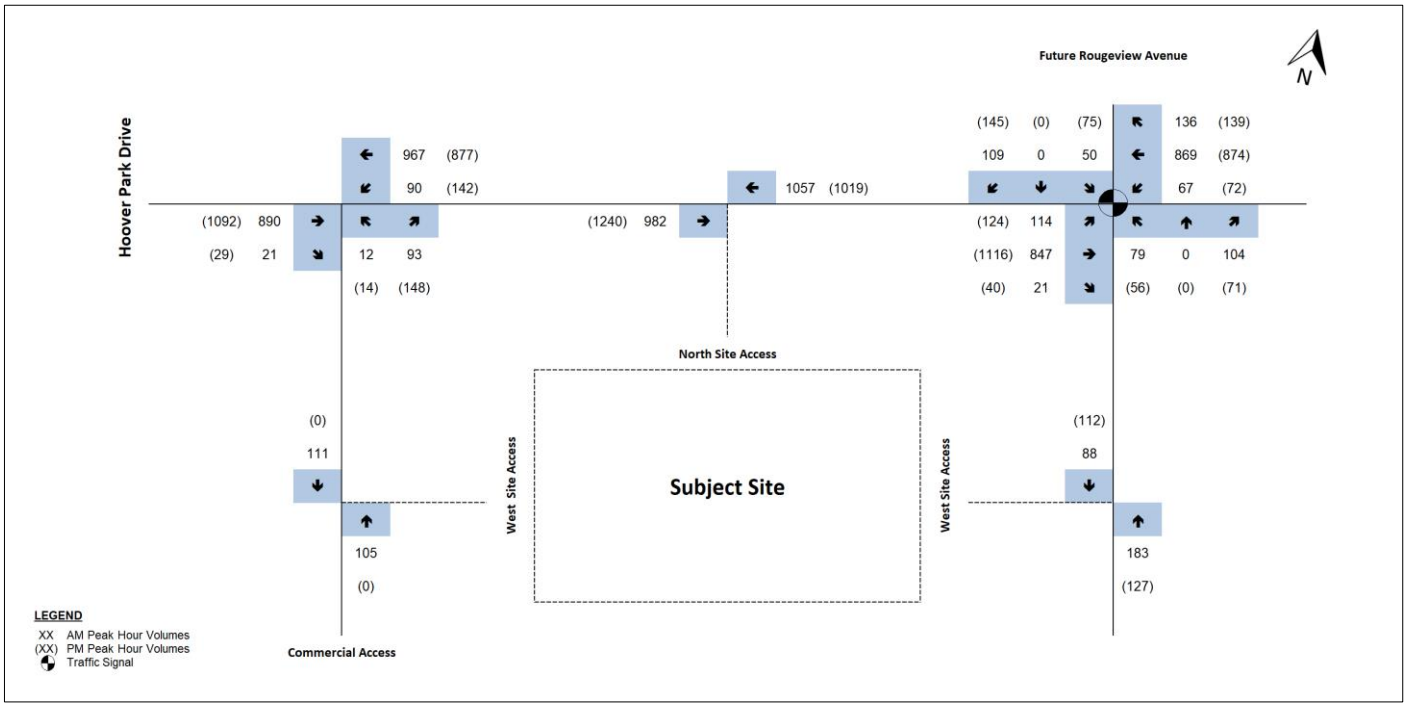


Figure 11 2041 Future Background Traffic Volumes

5. Site Generated Traffic

5.1 Site Traffic Generation

The proposed Schlegel Villages Stouffville site consists of a total of 358 long-term care beds and retirement home/apartment dwelling units and will be built-out in phases.

Phase 1 consists of Building 1 with:

- 192 long-term care beds
- 1 Living Classroom

Full Build-out consists of Buildings 1, 2 and 3 with:

- 192 long-term care beds
- 384 retirement home dwelling units
- 108 apartment units
- 1 Living Classroom plus several other ancilliary uses

The trip generation for the residential uses were calculated using rates provided in the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 11th Edition using Land Use Code (LUC) 254 (Assisted Living) for the 192 long-term care beds and LUC 252 (Senior Adult Housing – Multifamily) for the 384 unit retirement home and 108 apartment dwelling units.

The living classroom proposed for the site will have a total of 40 students and 5 staff members. The 5 staff members will have parking spaces allocated for them, and as a result 5 inbound trips during the a.m. peak and 5 outbound trips during the p.m. peak were added to the trip generation for the subject site. The students will be informed that they do will not have any parking spaces allocated for them and be required to find an alternative mode of transportation for commuting to the subject site. As a result, the student component of the living classroom will not generate any additional new trips.

Site trips for the additional accessory uses were not included in the calculated trip generation for the subject site as they will be used primarily by residents and their visitors and would not result in any significant volume of new trips to the site generated by the general public. While some uses such as the Medical Centre, Spa and Salon and Ruby Restaurant may generate a small number of additional site trips from outside visitors, the volumes are expected to be so small and will have a nominal impact to the operation of the study intersections.

For each of the proposed land uses, GHD compared the average rates to the fitted curve equation and adopted the rate that generated the highest volume of site trips for a more conservative analysis.

Table 2 below summarizes the estimated trip generation for the proposed development.

Table 2 Estimated Site Trips

Land Uses	Beds/ Dwelling Units	Parameters	Peak Hour					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Assisted Living (LUC 254) - Phase 1	192 beds	Trip Ratio	60%	40%	100%	39%	61%	100%
		Gross Trips	21	14	35	18	28	46
Senior Adult Housing - Multifamily (LUC 252) – Full Build-out	492 units	Trip Ratio	34%	64%	100%	56%	44%	100%
		Gross Trips	33	65	98	69	54	123
Living Classroom – Phase 1	5 Staff	Gross Trips	5	0	5	0	5	5
Total Primary Trips (Phase 1)			***26***	***14***	***40***	***18***	***33***	***51***
Total Primary Trips (Full Build-out)			***59***	***79***	***138***	***87***	***87***	***174***

Phase 1 of the proposed Schlegel Village is expected to generate a total of 40 new two-way trips during the weekday a.m. peak hour consisting of 26 inbound and 14 outbound trips and 51 new two-way trips during the weekday p.m. peak hour consisting of 18 inbound and 33 outbound trips.

Full build-out of the Schlegel Village is expected to generate a total of 138 new two-way trips during the weekday a.m. peak hour consisting of 59 inbound and 79 outbound trips and 174 new two-way trips during the weekday p.m. peak hour consisting of 87 inbound and 87 outbound trips.

5.2 Site Traffic Distribution and Assignment

The distribution of the site-generated traffic was based primarily on first principles and identifying the shortest routes available from Whitchurch-Stouffville and adjacent municipalities.

With the subject site located in the south-west corner of Whitchurch-Stouffville, it was assumed that half of the trips would arrive and leave from the Town as it's the nearest municipality and most visitors and staff members could be located nearby. The remaining trips would arrive from the north and south via Highway 48, with a larger portion (35%) arriving from the south with the City of Markham being the next nearest municipality.

The proposed trip distribution is summarized in **Table 3** below.

Table 3 Trip Distribution

Origin/Destination	AM Peak Hour		PM Peak Hour	
	Percentage of Inbound Trips	Percentage of Outbound Trips	Percentage of Inbound Trips	Percentage of Outbound Trips
North (Highway 48)	15%	15%	15%	15%
South (Highway 48)	35%	35%	35%	35%
East (Hoover Park Drive)	50%	50%	50%	50%
Total	**100%**	**100%**	**100%**	**100%**

The distribution of site trips between the north (visitors) and south (staff) parking lots was based on the number of spaces available in each lot.

For Phase 1, all trips arriving from the north and leaving towards the east accessing the north parking lot were assumed to use the access along Hoover Park Drive. The remaining trips for the north parking lot were assumed to use the driveway along the commercial access to the west of the site. For the south parking lot, all inbound and outbound trips to/from the north and the east were assumed to arrive/depart along Hoover Park Drive via the commercial access. Trips to/from the south accessing the south parking lot would use Sam's Way and the commercial parking lot and would not appear in any of the study intersections. This consists of 5 inbound and 3 outbound trips during the a.m. peak hour and 4 inbound and 7 outbound trips during the p.m. peak hour that would not pass through any of the study intersections.

For full build-out, the same assignment as Phase 1 was assumed with the exception of the trips to/from the south and using the south parking lot would use Sam's Way and the Rougeview Avenue extension to access the parking site.

The estimated site trips generated by the proposed development and distributed to the study area road network for the weekday a.m. and p.m. peak hours are shown in **Figure 12** (Phase 1) and **Figure 13** (Full Build-out).

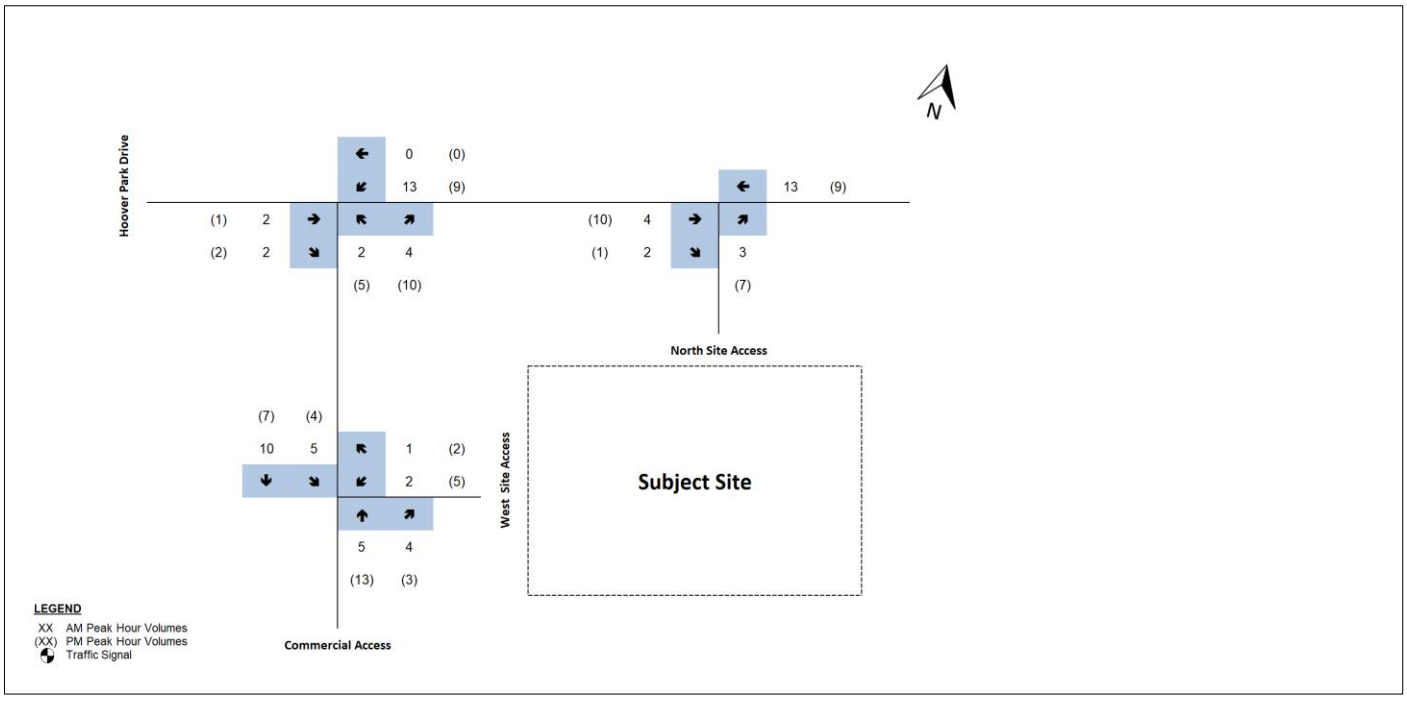


Figure 12 Phase 1 Site Trips

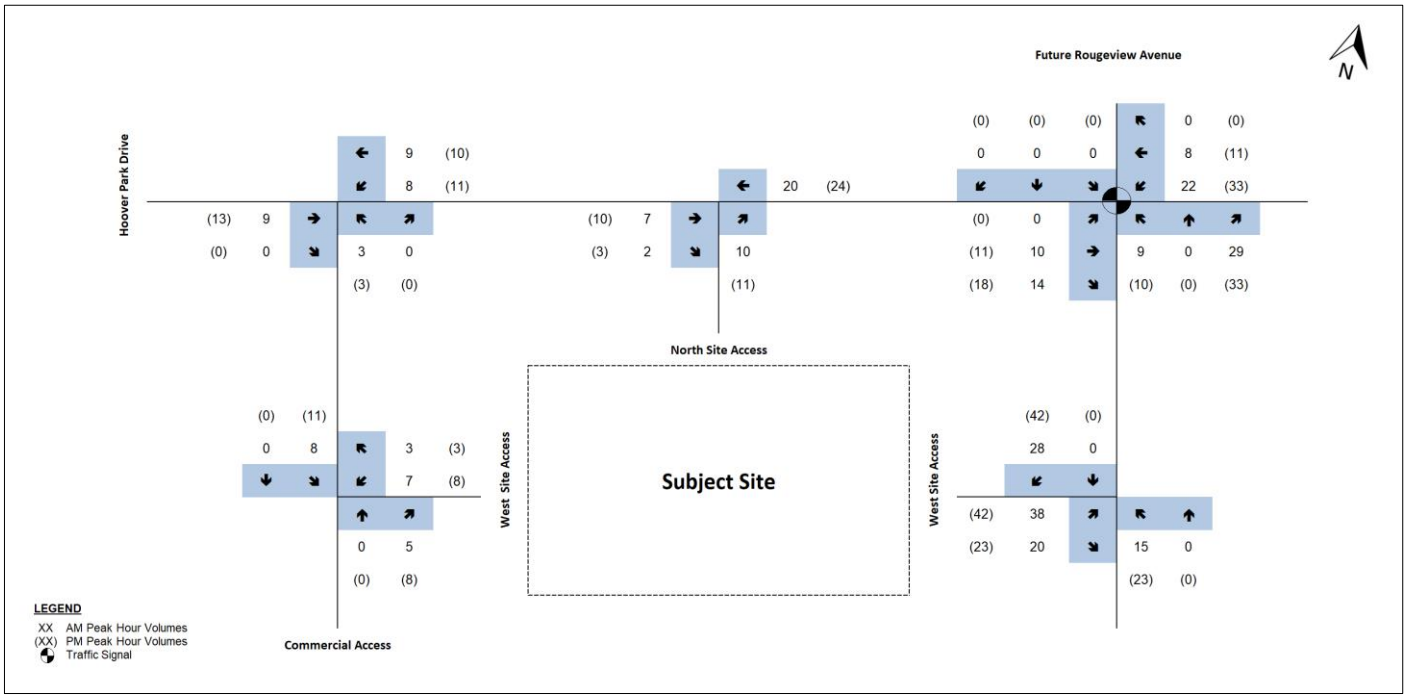


Figure 13 Phase 2 (Total) Site Trips

6. Future Total Traffic

The future total traffic conditions in the weekday a.m. and p.m. peak hours for the 2028 and 2041 planning horizons were derived by combining the projected future background traffic with the corresponding estimated site generated traffic. The resulting traffic volumes are presented in **Figure 14** and **Figure 15.**

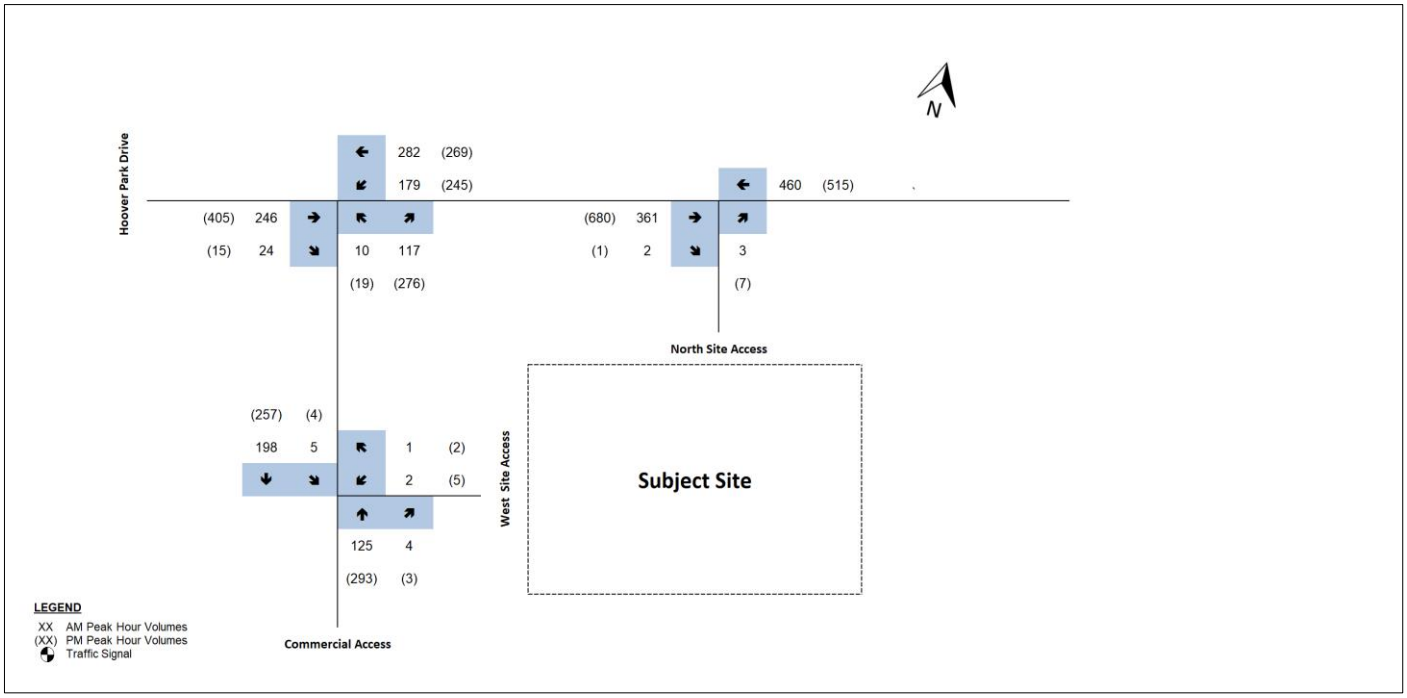


Figure 14 2028 Future Total Traffic Volumes

2. Introduction

2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Flato Developments Inc. (Flato) to complete a Transportation Mobility Plan (TMP) in review of the Official Plan Application and Zoning By-law Amendment for a proposed commercial development located at 5211-5241 Stouffville Road (the 'Site') in the Town of Whitchurch-Stouffville (the 'Town') within the Region of York (the 'Region').

An updated submission of the TMP was made in July 2023. This submission revises the July submission to reflect an updated Site Plan and address comments provided by the Town and Region. A Comment Response Memo has been in prepared to address comments received on the July 2023 submission and is included in **Appendix A.**

2.2 Purpose and Scope

The purpose of this study is to assess the impacts of the proposed development on the boundary road network and to make recommendations to support the proposed plan for the Site, in accordance with York Region's Transportation Mobility Plan Guidelines. This study reviews the following from a transportation engineering perspective:

- Existing, future background, and future total traffic operations at the study intersections.
- Forecasted trip generation of the proposed development.
- Recommended mitigations and roadway improvements.
- Transportation Demand Management opportunities.
- Site Plan refinement considerations

2.3 Development Proposal

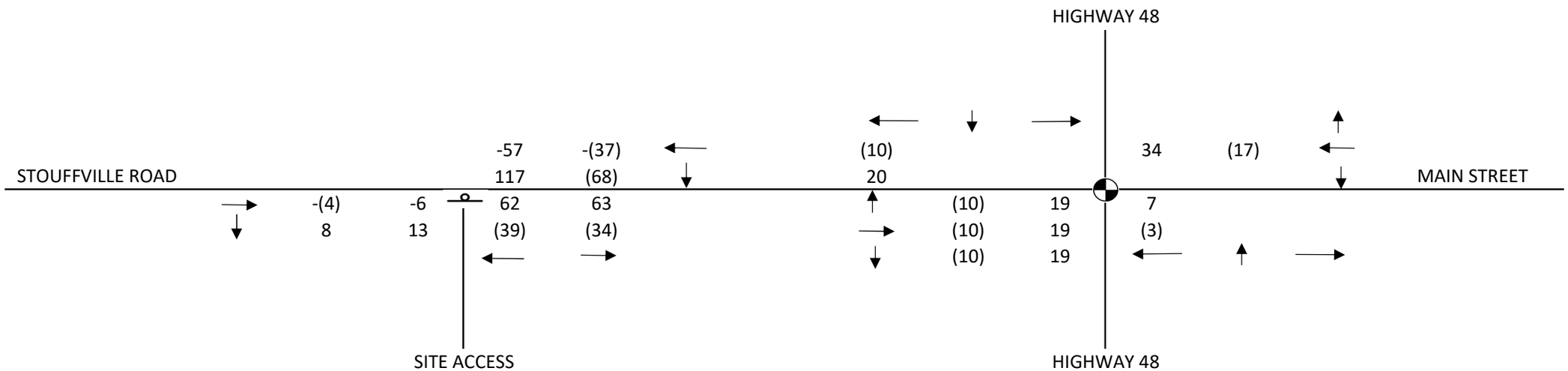
The development includes proposed two commercial buildings. Buildings A and B are proposed to have restaurants with drive-through facilities, and Building B will also contain two individual commercial units.

Table 1 summarizes the anticipated unit/gross floor area (GFA) for each building. As outlined in the Town's buildings GFA is not inclusive of the mechanical rooms.

Table 1: Development Proposal

Building	Land Use	Gross Floor Area
Building A	Restaurant with Drive-Through Facility	122.9 m^2 (1,323 ft^2)
Building B	Coffee Shop with Drive-Through Facility	204.3 m^2 (2,199 ft^2)
	Commercial	118.2 m^2 (1,272 ft^2)

Access to the development lands is proposed through a full-moves access to Stouffville Road approximately 127 m (stop bar to access centreline) from Highway 48. The plan proposes 33 parking stalls including three accessible stalls and an additional eight spaces within the MTO setback, to total 41 parking spaces on site. Five bicycle parking spaces are also proposed. Building A has a dual entry drive-thru lane which provides 12 stacking spaces. Building B has a single-entry drive-thru lane which provides 12 stacking spaces. There is one waste collection and loading space on the east side of Building B, between the drive-through and Ministry of Transportation, Ontario (MTO) setback. The site plan also includes a gated emergency exit on the eastern limits of the property, adjacent to the MTO 14 metre setback. **Appendix B** contains the Site Plan (Turner Fleischer Inc., September 19, 2023).



LEGEND

- SIGNAL CONTROL
- STOP CONTROL
- ##(##) AM(PM) PEAK HOUR VOLUMES
- MOVEMENT

HIGHWAY 48 & STOUFFVILLE ROAD

TRIP ASSIGNMENT

DRAWN	KH
CHECK	KH
DATE	2023.05.01
SCALE	NTS

CROZIER CONSULTING ENGINEERS
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

PROJECT NO.	DRAWING NO.
1060-6225	FIG. 21

Table 9: 1020 Hoover Park Drive Trip Generation

Land Use	Units	Peak Hour	IN	OUT	TOTAL
Assisted Living Facility	192 beds	AM	21	14	35
		PM	18	28	46

The development is forecasted to generate 35 weekday a.m. and 46 weekday p.m. two-way peak hour trips. The trip assignment through the study intersections is illustrated in **Figure 6**.

4.3.2 199 Sam's Way

No Transportation Study could be provided for the development of 199 Sam's Way. Based on the Site Plan Application (SPA23.001) information of the Town's online Development Activity Map employment uses are proposed, and the Town's Highway 48 Visioning Study Framework Plan outlines the lands as Business Park/industrial Lands.

The ITE 11th Edition Trip Generation Manual was used to determine the trip generation. LUC 821 "Shopping Plaza" was used to assess approximately 6,000 m^2 of commercial GFA and LUC 110 "General Light Industrial" was used to assess approximately 27,400 m^2 of industrial GFA assumed to be completed by 2025.

Table 10: 199 Sam's Way Generation

Land Use	GFA	Peak Hour	IN	OUT	TOTAL
Commercial	64,483 ft^2	AM	69	43	112
		PM	164	171	335
Industrial	294,931 ft^2	AM	24	180	204
		PM	12	76	88

The development is forecasted to generate 316 weekday a.m. and 423 weekday p.m. two-way peak hour trips. 30% of trips were sent west on Stouffville Road, 15% east on Main Street, 15% north of Highway 48 and 40% south on Highway 48. **Figure 7** illustrates the trips to and from the development as assumed based on the available information.

4.3.3 5262-5318 Main Street

Based on the Transportation Study prepared by Trans-plan in May 2022, 5262-5318 Main Street is proposed to include a residential and commercial mixed-use development. At the time the development proposal consisted of 340 high-rise residential units, 460 mid-rise residential units and 5,000 ft^2 of commercial gross floor area (GFA). The first phase of the development is expected to be complete by the 2030 horizon with the second by the 2035 horizon and a third by the 2040 horizon.

Phase 1 is forecasted to generate 108 two-way a.m. weekday peak hour trips and 124 two-way p.m. weekday peak hour trips. Phase 2 is forecasted to generate an additional 56 two-way a.m. weekday peak hour trips and 84 two-way p.m. weekday peak hour trips At full build-out the development is forecasted to generate a total of 268 and 355 tow-way trips in the a.m. and p.m. peak hours, respectively. **Figure 8** illustrates the 2030 trips **Figure 9** illustrates the 2035 trips and **Figure 10** illustrates the 2040 trips to and from the development as assigned within the May 2022 Transportation Study.

4.3.4 12049 Highway 48

WSP prepared a Transportation Study for the proposed development of 12049 Highway 48 in August 2021. Since that time updated timelines and development statistics have been proposed. Based on available information, the following development and timelines have been assessed:

- By 2030, 300 high density units and 146,572 ft^2 of non-residential GFA is proposed.
- By 2035, 100 medium density units and another 150 high density units and 146,572 ft^2 of non-residential GFA is proposed.
- By 2040, another 481 high density units and 256,368 ft^2 of non-residential GFA is proposed.

Further development of the property is expected beyond the 2045 horizon.

The ITE 11th Edition Trip Generation Manual was used to determine the updated trip generation. **Table 11** outlines the number of units and associated trip generation expected.

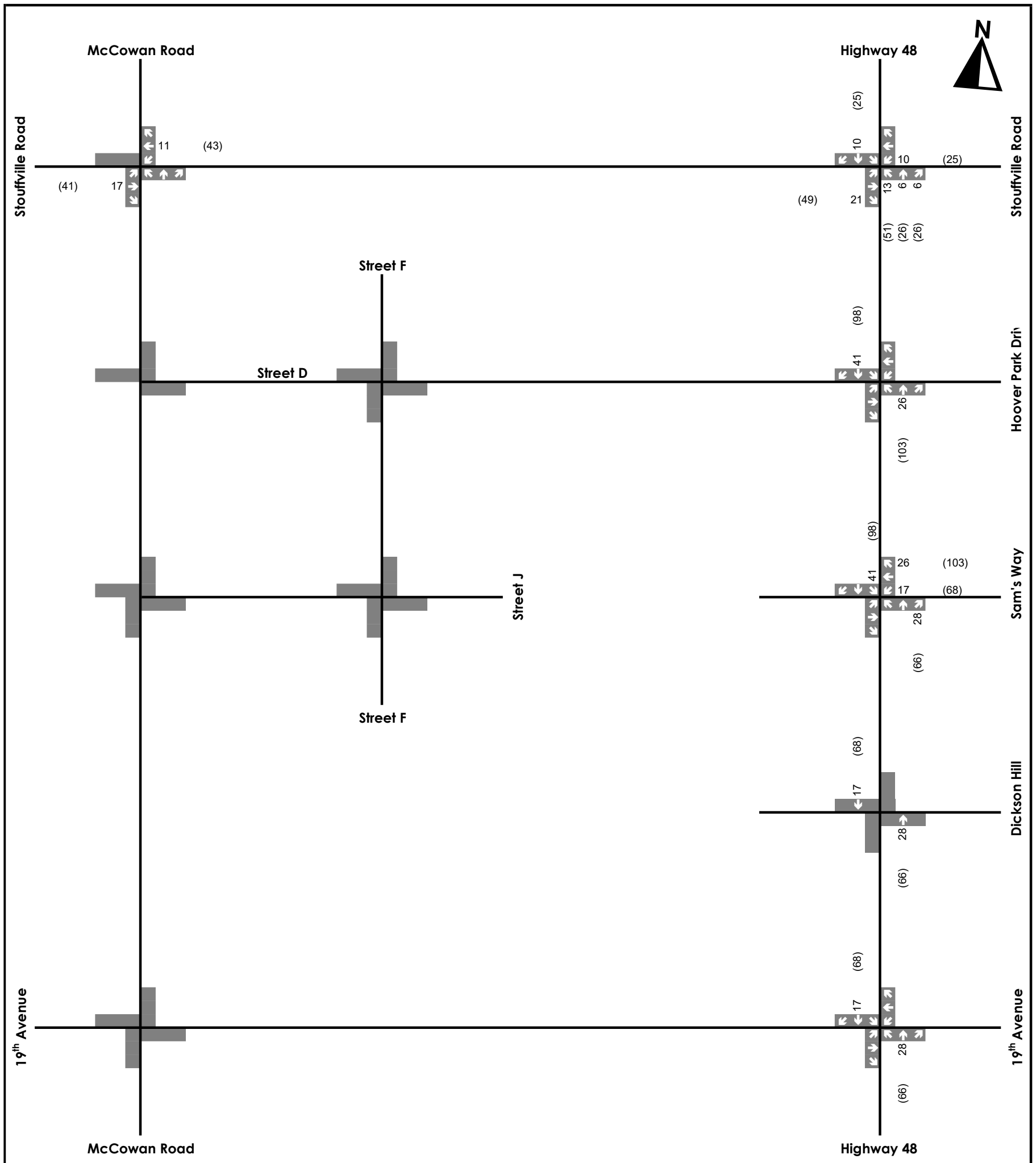
Table 11: 12049 Highway 48 Trip Generation

Horizon Year	Land Use	Units/GFA	Peak Hour	IN	OUT	TOTAL
2030	High Density	300	AM	22	85	63
			PM	63	38	101
	Commercial/Office	146,572 ft^2	AM	32	19	51
			PM	100	108	208
2035	Medium Density	100	AM	7	25	32
			PM	24	15	39
	High Density	450	AM	31	87	118
			PM	87	53	140
	Commercial/Office	293,144 ft^2	AM	278	66	344
			PM	177	326	503
2040	Medium Density	100	AM	13	41	54
			PM	40	24	64
	High Density	931	AM	58	166	118
			PM	164	101	140
	Commercial/Office	549,512 ft^2	AM	550	103	344
			PM	226	564	503

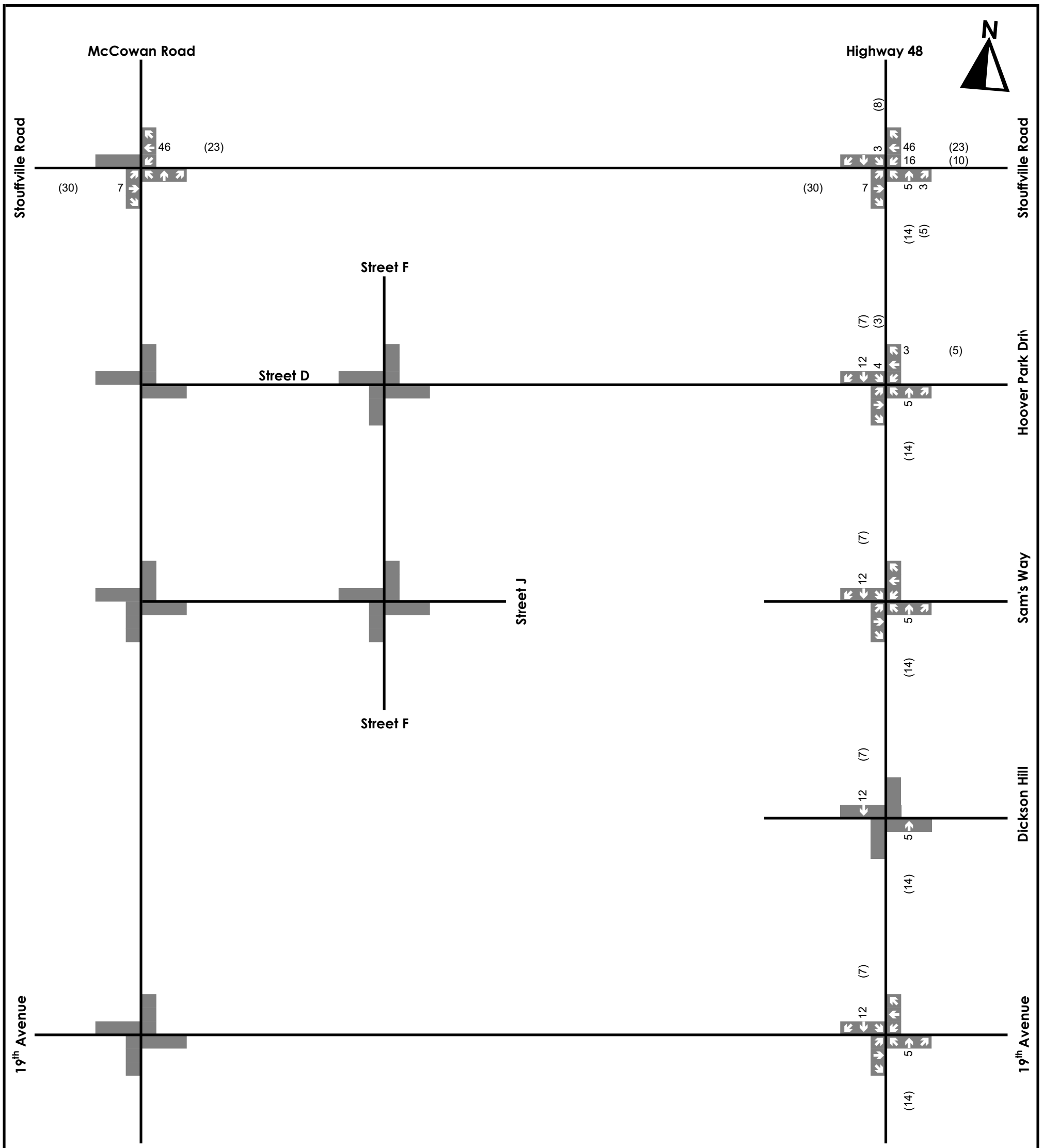
These trips were applied to the boundary road network using the same distribution as the August 2021 Transportation Study. The resulting 2030, 2035 and 2040 trip assignments are illustrated in **Figure 11, Figure 12,** and **Figure 13**, respectively**.**

4.3.5 178 Sam's Way

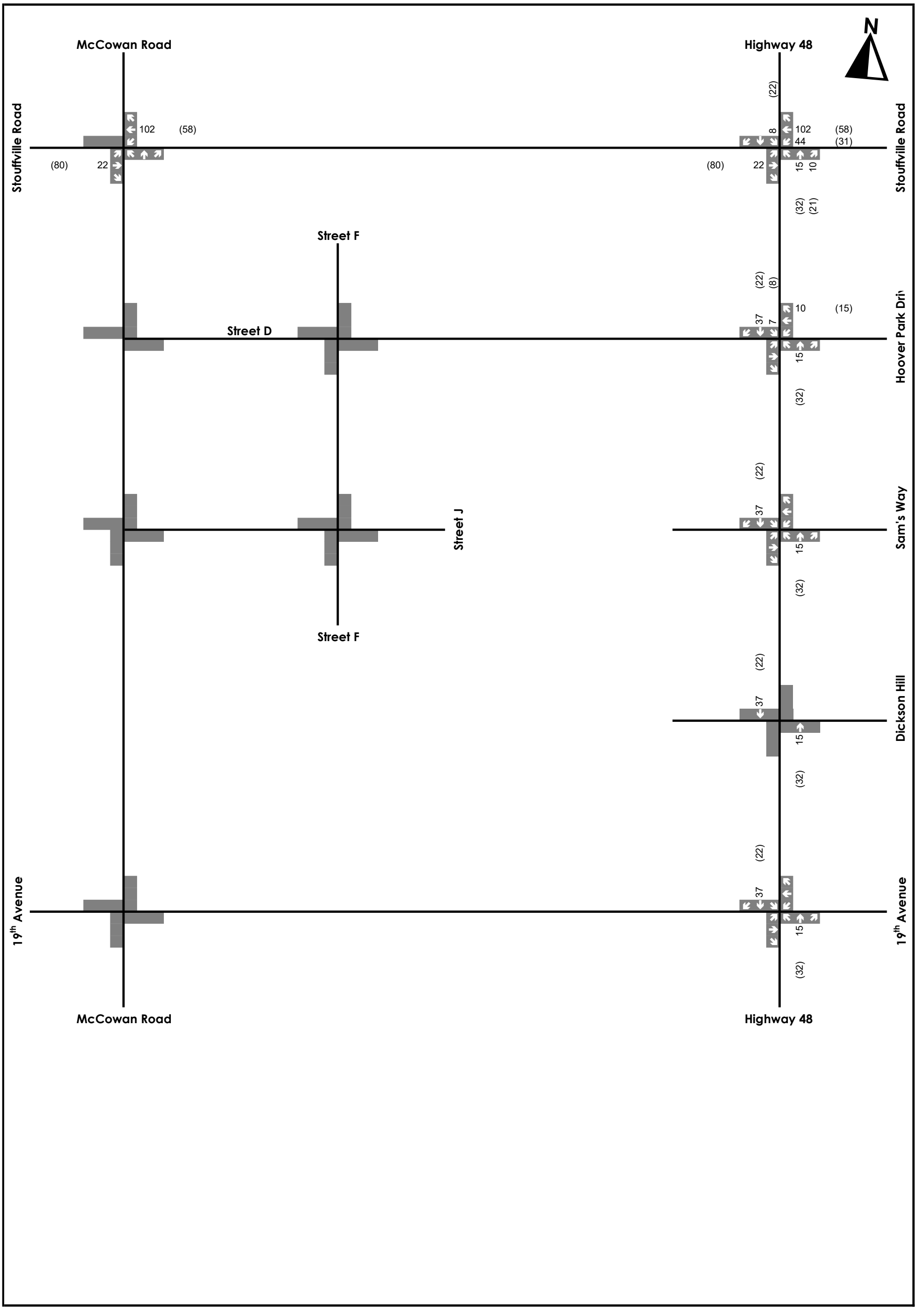
CGE Consulting prepared a Transportation Study for the proposed development of 178 Sam's Way in May 2022, an provided a response letter to the Town in November 2022. At the time the development proposal consisted of 5,000 ft^2 of commercial GFA is expected to be completed by 2025. The development is forecasted to generate 182 two-way trips in the weekday p.m. peak hour. Based on the opening hours of the commercial space, no weekday a.m. trips are expected in the peak hour.



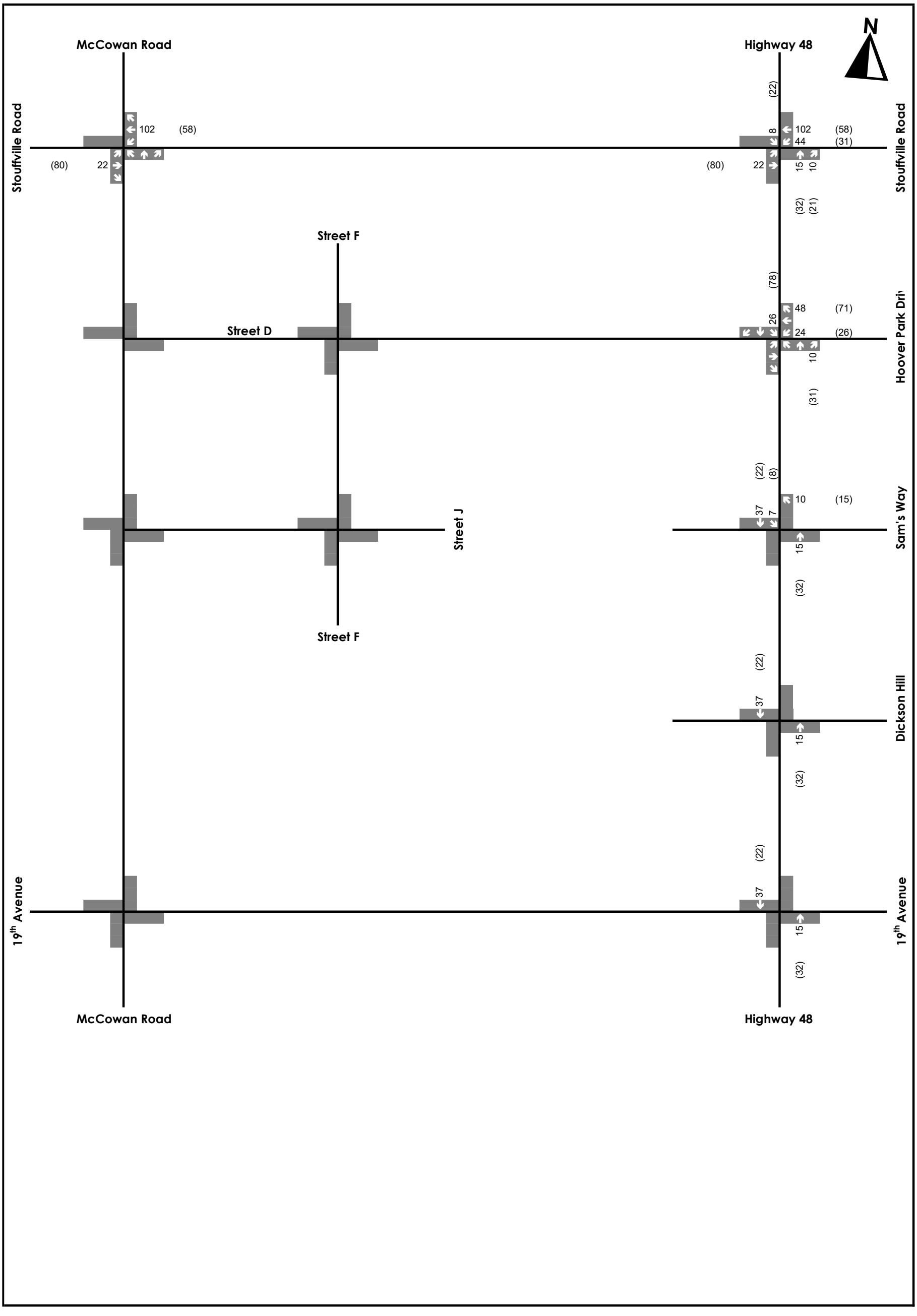
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 7
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	199 Sam's Way (2025)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



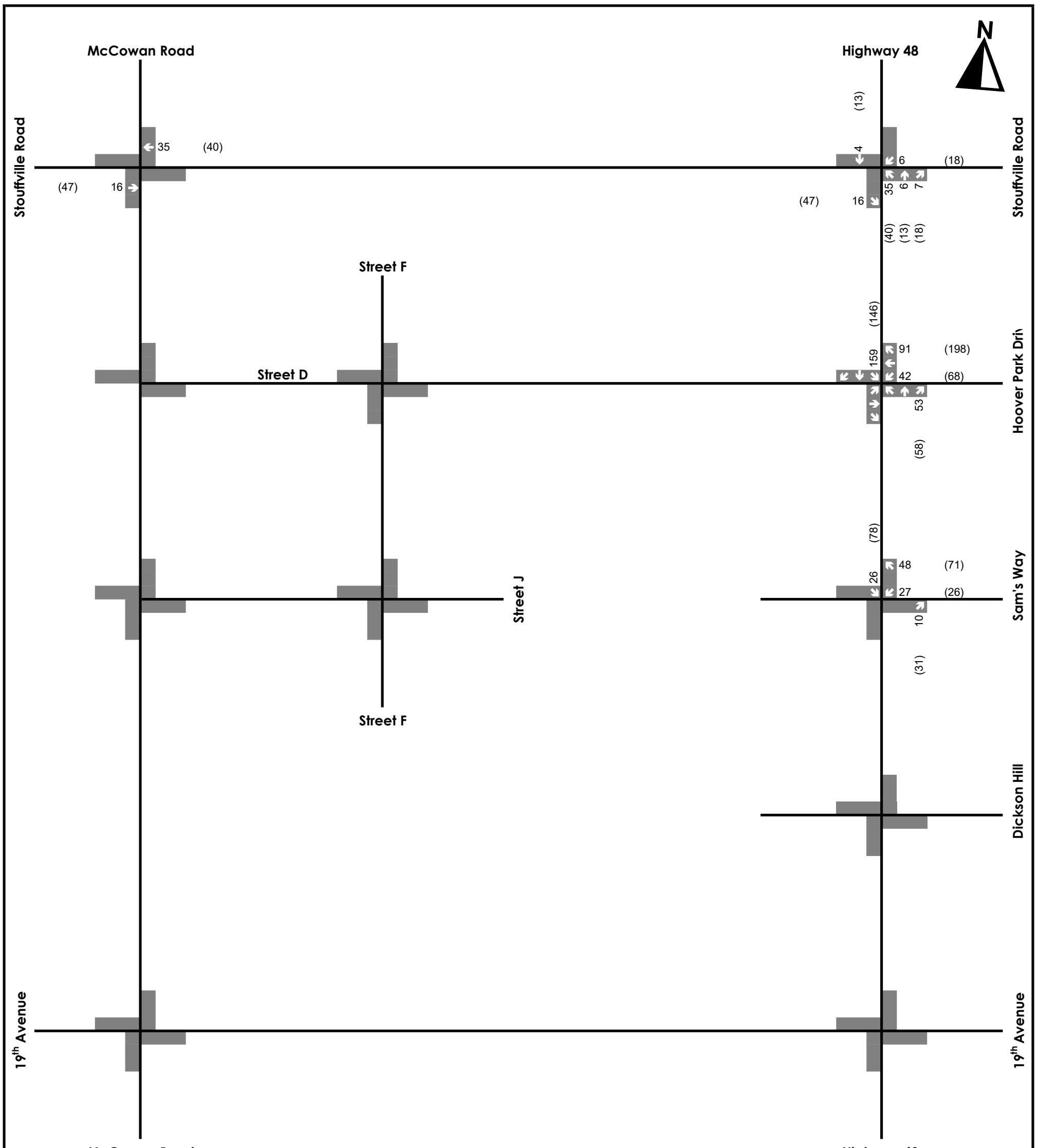
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 8
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	5262-5318 Main Street (2030)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 9
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	5262-5318 Main Street (2035)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 10
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes {xx} Weekend Peak Hour Traffic Volumes	5262-5318 Main Street (2040)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes

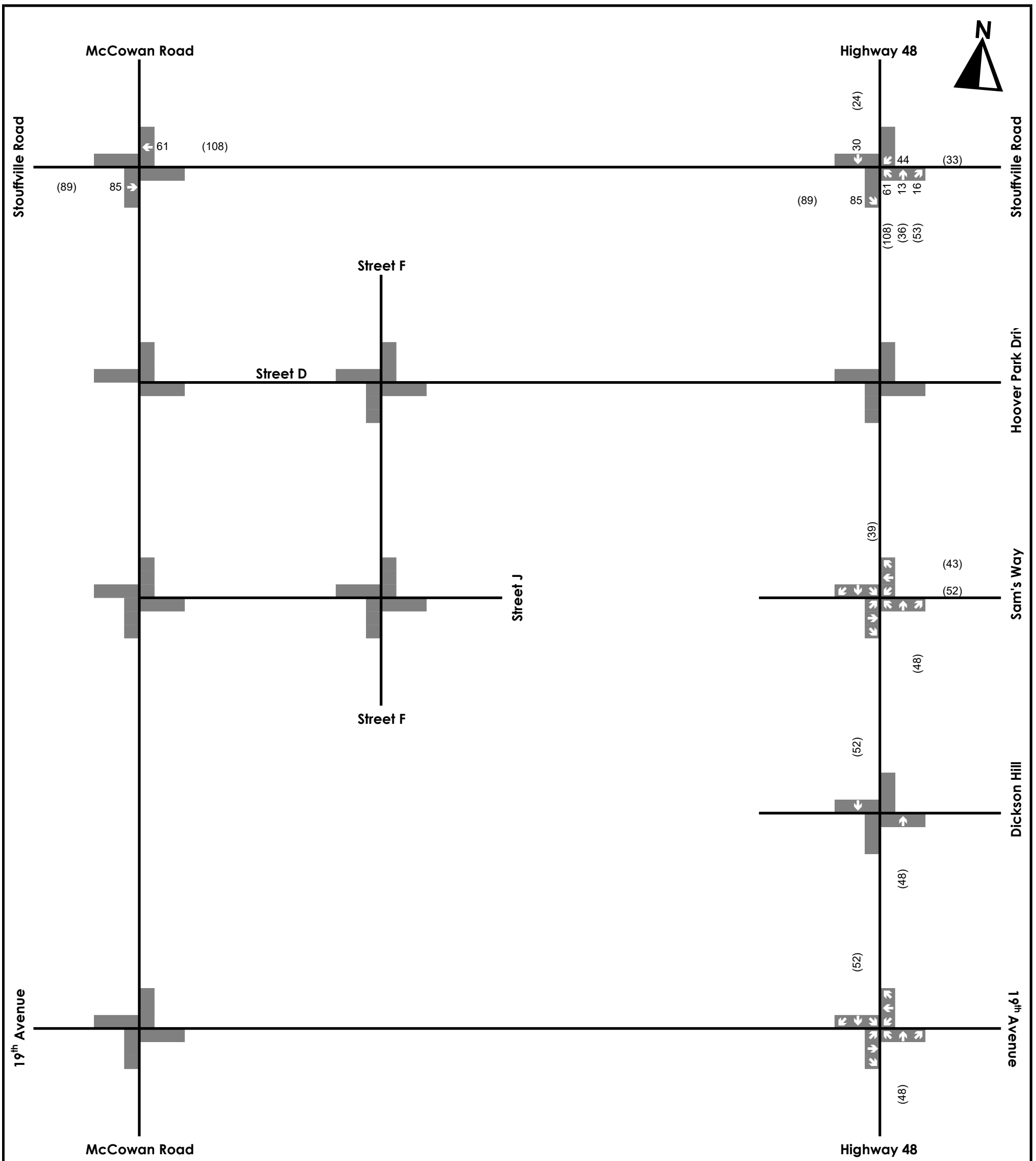
12045, 11861 McCowan Road

12049 Highway 48 (2030)

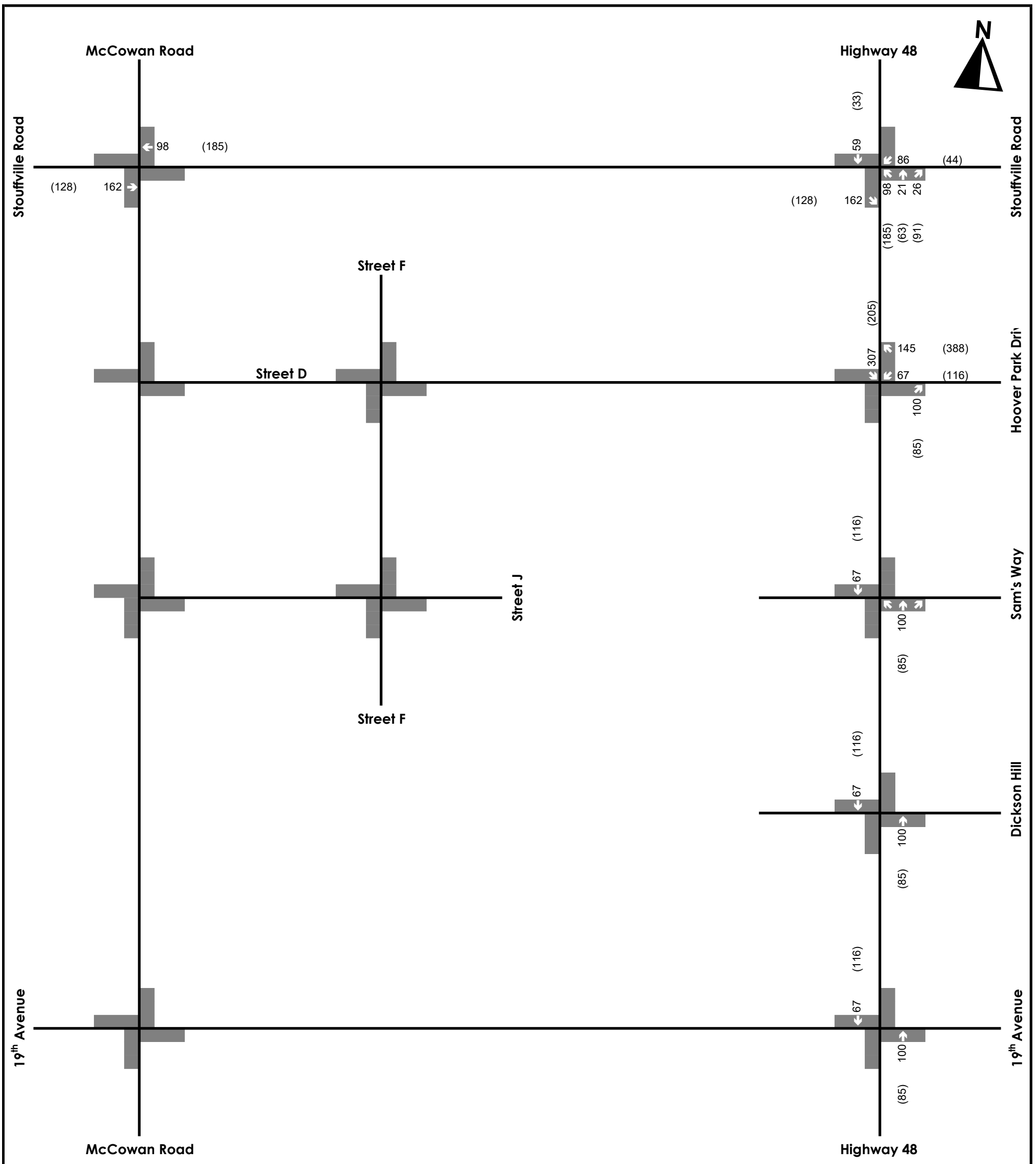
CROZIER CONSULTING ENGINEERS

Figure 11

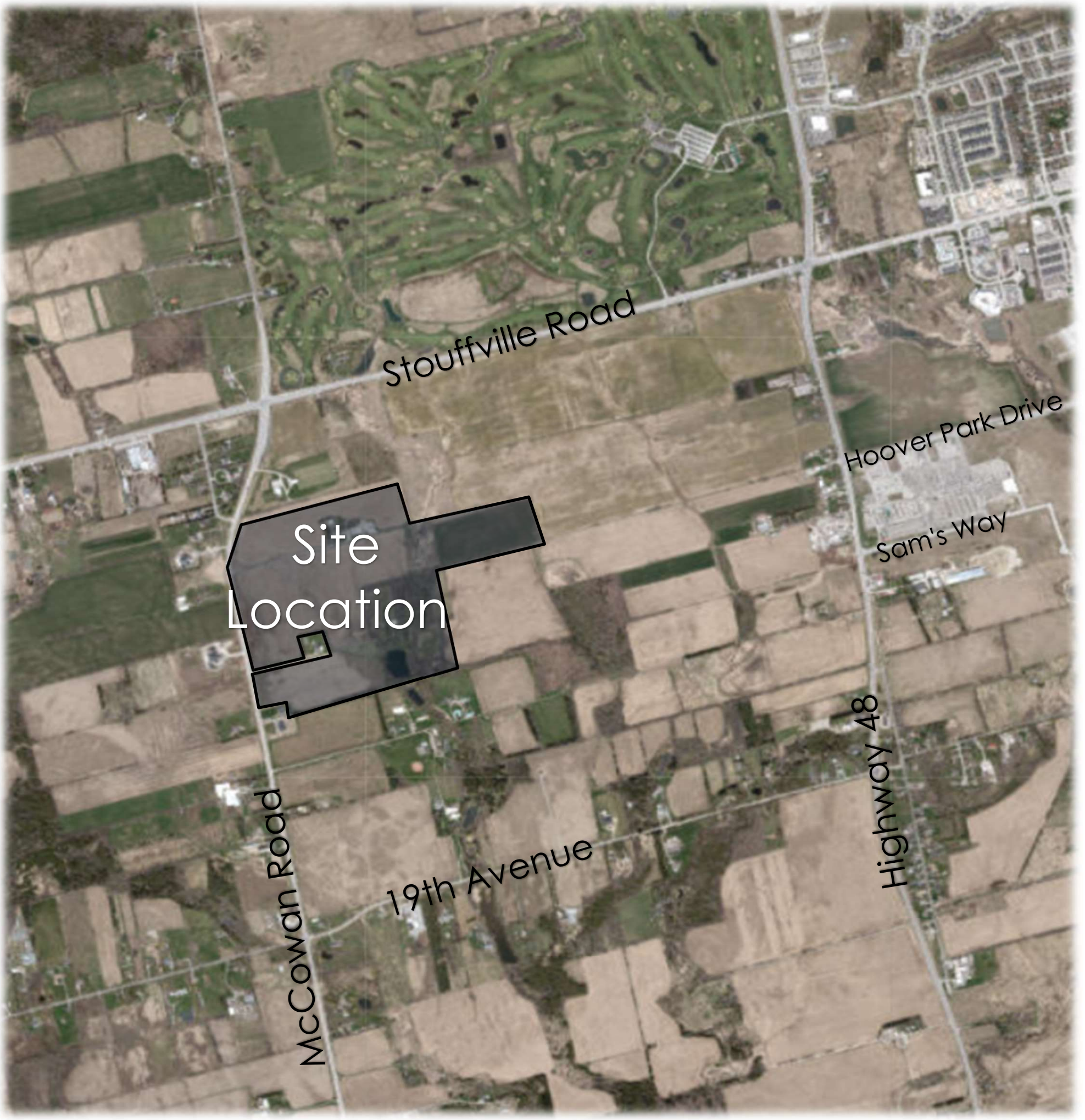
Project No. 2135-6050
Date. October 26, 2023
Analyst. KH



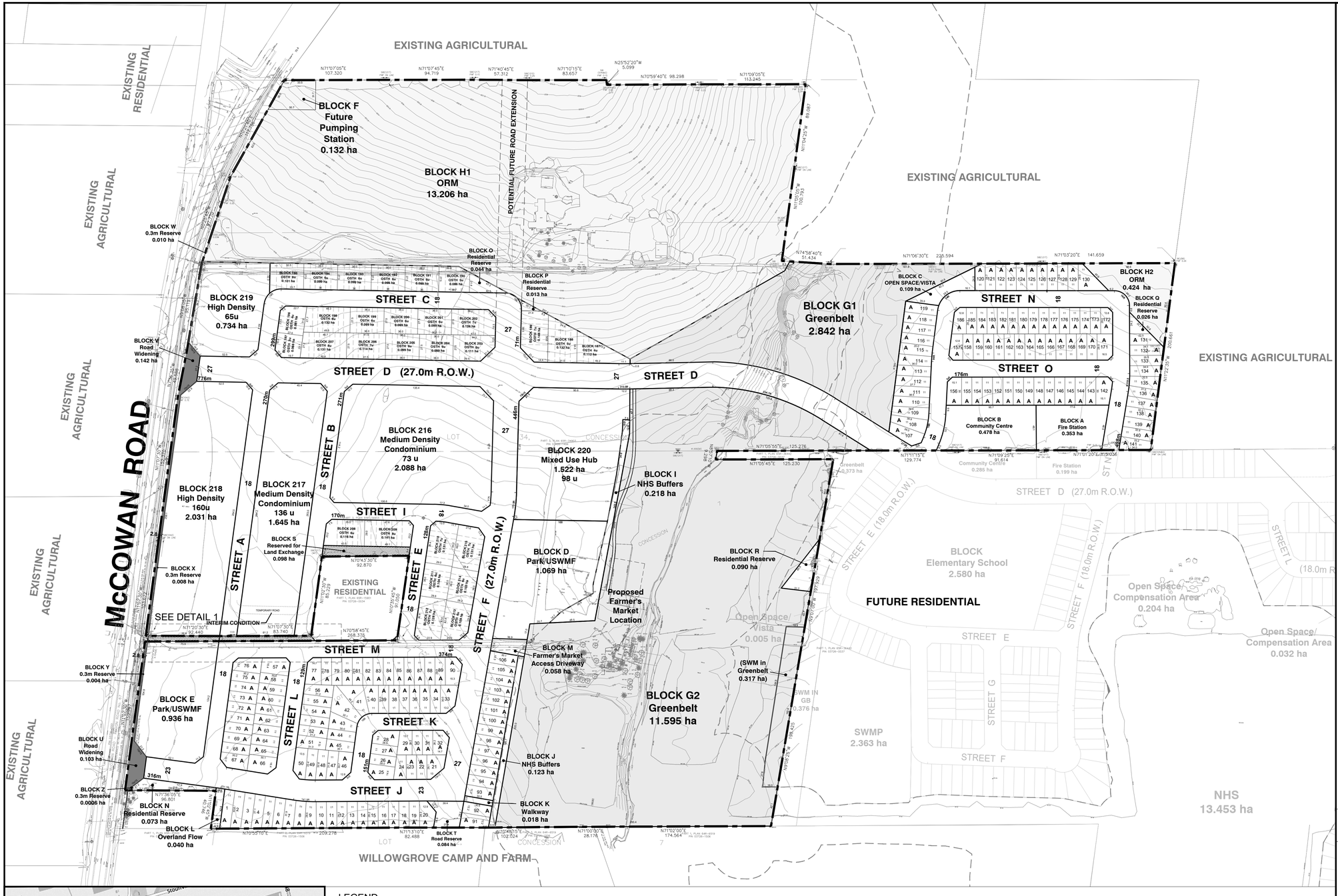
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 12
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	12049 Highway 48 (2035)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 13
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	12049 Highway 48 (2040)		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend	12045, 11861 McCowan Road Development Location	CROZIER CONSULTING ENGINEERS	Figure 1 Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



AREA TABLE	23170 - 42dp April 24, 2024	
Residential Single Detached	Lots 1-186	6.589 ha±
On Street Townhouses (OSTH)	Blocks 187 - 215	3.195
Medium Density Condominium	Blocks 216 - 217	3.733
High Density	Blocks 218 - 219	2.765
Mixed Use Hub	Block 220	1.522
Fire Station	Block A	0.353
Community Centre	Block B	0.478
Open Space/ Vista	Block C	0.109
Park/ Underground Storm Water Facility	Blocks D - E	2.005
Future Pumping Station	Block F	0.132
Greenbelt	Blocks G1 - G2	14.437
Oak Ridges Moraine (ORM)	Blocks H1 - H2	13.630
Natural Heritage System (NHS) Buffers	Blocks I - J	0.341
Walkway	Block K	0.018
Overland Flow	Block L	0.040
Farmer's Market Access Driveway	Block M	0.058
Residential Reserve	Blocks N - R	0.246
Reserved for Land Exchange	Block S	0.098
Road Reserve	Block T	0.084
Road Widening and 0.3m Reserves	Blocks U - V	0.245
0.3m Reserves	Blocks W-Z	0.023
Roads		8.767
	Total	**58.868 ha±**

ROADS		
27.0m R.O.W.	**1,277 m**	3.495
23.0m R.O.W.	**316 m**	0.733
18.0m R.O.W.	**2,466 m**	4.539
	Total 4,059 m	**8.767 ha**

UNIT COUNT (excluding part lots)		
11.0m Singles	A	186
5.5m On Street Townhouse	OSTH	177
Mixed Use Hub		98
MD Condominium Blocks		209
High Density		225
	Total	**895 u**

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

C. Additional land owned by the applicant in the vicinity is as shown on the key plan.
D. Singles, Townhouses, High Density, Condominium Blocks, Mixed Use Hub, Fire Station, Community Centre, Open Space/Vista, Park/ USWMFs, Greenbelt, ORM, Pumping Station, NHS Buffers, Overland Flow Block, Walkway, Residential Reserve, Farmer's Market Access Road, Reserved for Land Exchange, Widening, Road Reserve Block, 0.3m Reserves and Roads
H. Piped water to be provided.
I. Clay loam soil.
K. Sanitary & storm sewers to be provided.

SURVEYOR'S CERTIFICATE

I certify that: the boundaries of the lands to be subdivided and their relationship to the adjacent lands are correctly shown.

See Original Submission
Signature Day Month Year

Dan Dzaldov, OLS
Schaeffer Dzaldov
Bennett Ltd.

OWNER'S AUTHORIZATION

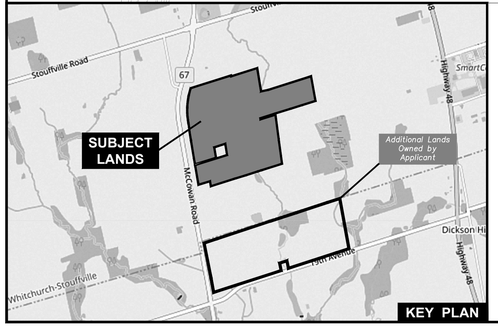
I/we, Orca Equity (2743903 Ontario Inc.)

being the registered owner(s) of the subject lands hereby authorize BOUSFIELDs INC. to prepare and submit a draft plan of subdivision for approval.

Signature Day Month Year

19T(W)22.004

PROPOSED DRAFT PLAN OF SUBDIVISION
PART OF LOTS 33 & 34,
CONCESSION 7
(GEOGRAPHIC TOWNSHIP OF MARKHAM)
TOWN OF WHITCHURCH-STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK



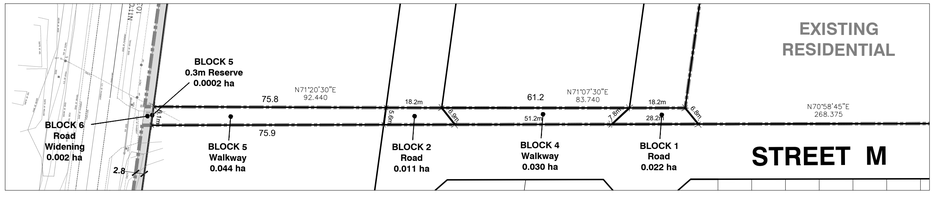
LEGEND

- Subject Property
- Developable Limit (SLR - December 2023)
- Road Widening
- Lands intended for exchange
- Greenbelt Lands
- ORM

NOTES

All dimensions are in metres.
All area measurements are computer generated.
All elevations refer to Geodetic Datum.

DETAIL 1



0 20 40 60 80 100m
SCALE 1:2000

BOUSFIELDs INC.
3 Church Street, Suite 200
Toronto, Ontario M5E 1M2
P (416) 947-9744
F (416) 947-0781
W www.bousfields.ca

1 : 2000	April 24, 2024	23170 - 42dp
Scale	Date	Drawing Number

to remains while the next stop after the restructuring will be at the intersection of Baker Hill Boulevard and Main Street, approximately 520 m from the intersection of Highway 48 and Stouffville Road. As previously noted, Street A within the Stouffville Meadows subdivision is proposed to have transit stops for eastbound and westbound transit services. When transit services are implemented the Level of Service for access will improve to an LOS "A" within the block. Recommendations for future transit stop locations is discussed further in **Section 6.6**.

5.0 Site Generated Traffic

5.1 Phasing

Phasing of the development has been forecasted based on the servicing timelines for the Highway 48 Block. As previously stated, the timeline assessed for Phase 1 is aggressive. The Phasing Plan (prepared by Crozier) divides the subdivision into four phases for servicing. For the purposed of analysis, the timeline assessed for the phases is as follows:

- 2025: Phase 1A (100 units)
  Street J connection to McCowan Road
- 2030: Phase 1A, 1B, Phase 2 Towns
  Street D connection to McCowan Road
  Street D connection to Street F
- 2035: Phase 2 Mixed-Use Hub, Phase 3, Phase 4
  Street J connection to Street F

Appendix K includes the Servicing Phasing Plan. It is noted that with the assumed parallel timeline with the Stouffville Phase 2 background development, Street D is expected to connect to Highway 48 in 2030. Construction timelines will be confirmed through detailed design and the tender process.

5.2 Trip Generation

The proposed development will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also result in additional turning movements at the site entrances.

The trip generation of the proposed development was forecasted using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition for the following land uses:

- LUC 210: Single-Family Detached Housing
- LUC 220: Multifamily Housing (Low-Rise)
- LUC 221: Multifamily Housing (Mid-Rise)
- LUC 821: Shopping Plaza (40-150k)
- LUC 822: Strip Retail Plaza (<40k)

Based on the location of potential units along McCowan Road, the ground floor commercial development is expected to generate both primary and pass-by trips. Primary trips add additional volumes to the road network as the Site is the ultimate destination. Pass-by trips are generated by existing vehicles on the road network, which stop at the Site when travelling to the primary destination. Pass-By trips were not assessed for the Mixed-Use Hub commercial area and the trip assignment is conservative as the commercial area will serve the surrounding neighbourhood.

Pass-by trips were established based on the Pass-By Tables included in the Appendix of the 11th Edition Manual. LUC 821 has a pass-by rate of 0% in the a.m. peak hour and 40% in the p.m. peak hour.

Table 23: Trip Generation

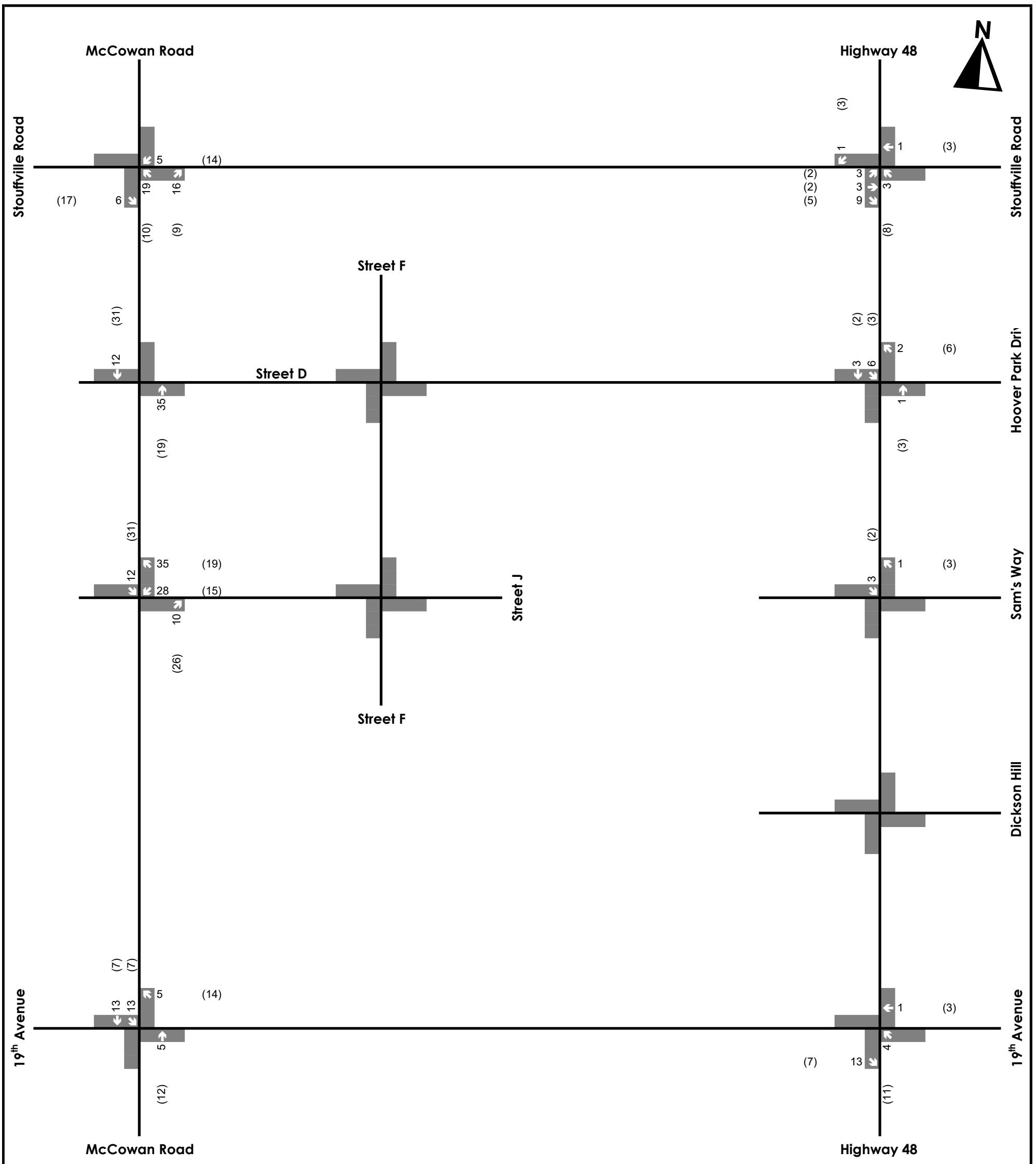
Horizon	Land Use Code	Units/GFA	Peak Hour	In	Out	Total
2025	LUC 210	43 units	AM	9	26	35
			PM	28	17	45
	LUC 220	57 units	AM	10	31	41
			PM	28	17	45
	2025 Total		**AM**	**21**	**63**	**76**
			PM	**56**	**34**	**90**
2030	LUC 220	305 units	AM	28	89	117
			PM	96	56	152
	LUC 221	225 units	AM	20	67	87
			PM	54	34	88
	LUC 821 (Primary)	87, 747 ft^2	AM	94	58	152
			PM	134	139	273
	LUC 821 (Pass-By)		AM	0	0	0
			PM	89	93	182
	2030 Total		**AM**	**142**	**214**	**356**
			PM	**373**	**322**	**695**
2035	LUC 210	143 units	AM	26	77	103
			PM	88	51	139
	LUC 220	50 units	AM	9	29	38
			PM	26	16	42
	LUC 221	72 units	AM	5	15	20
			PM	17	11	28
	LUC 822	3,552 ft^2	AM	9	6	15
			PM	19	18	37
	2035 Total		**AM**	**49**	**127**	**176**
			PM	**150**	**96**	**246**
Development Total			**AM**	**212**	**404**	**608**
			PM	**579**	**452**	**1031**

As outlined in **Table 23,** at full build-out the McCowan Lands are expected to generate 608 and 1031 two-way trips in the a.m. and p.m. peak hours, respectively.

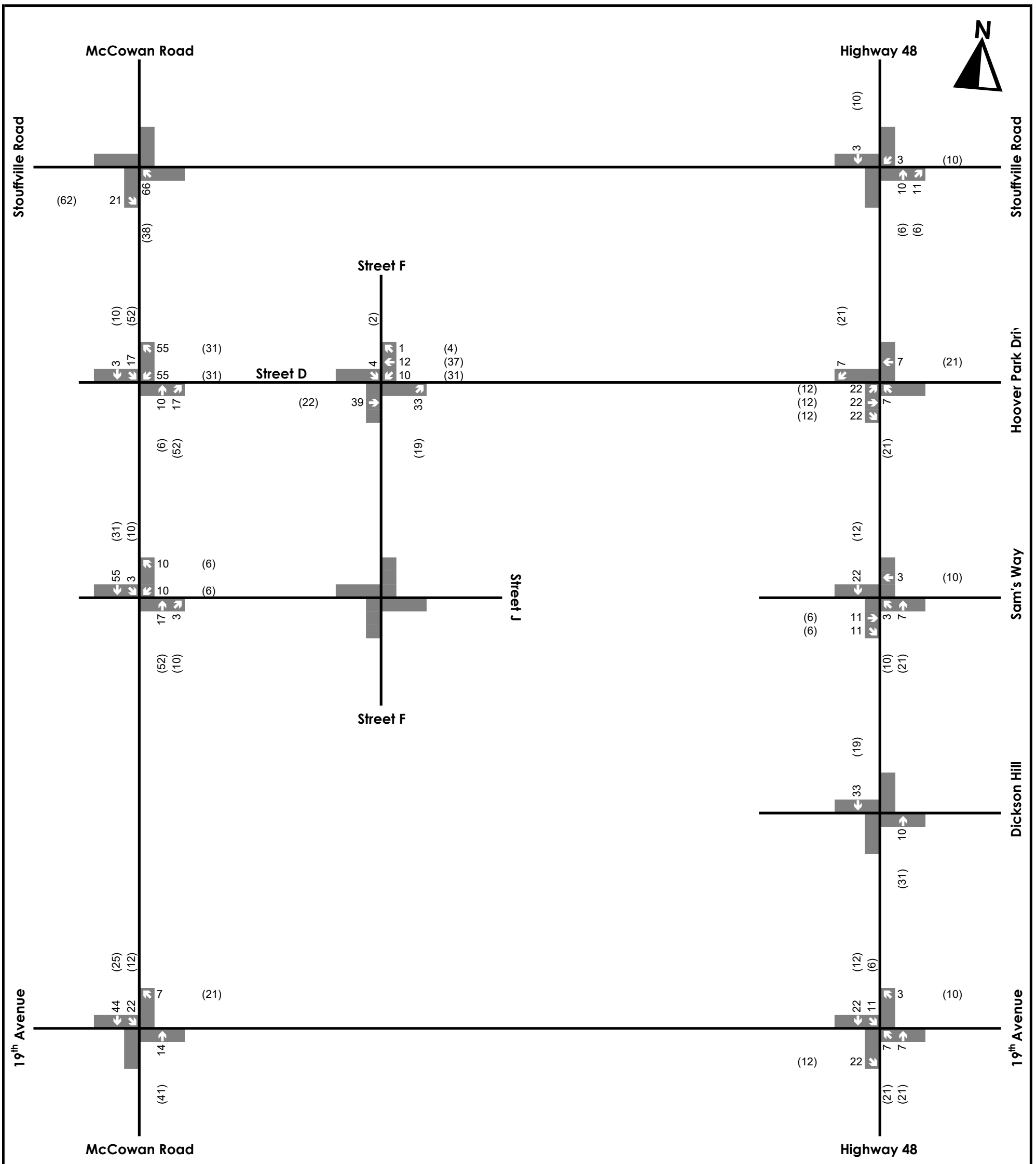
5.3 Trip Distribution & Assignments

Trips generated by the development were distributed to and from the boundary road network based on Transportation Tomorrow Survey (TTS) data. TTS data was filtered to determine the origin and destination of trips travelling to and from the site in the a.m. and p.m. peak hours for the purpose of leaving or returning home. The distribution applied is consistent with the ongoing MESP and similar land uses within the Highway 48 Block.

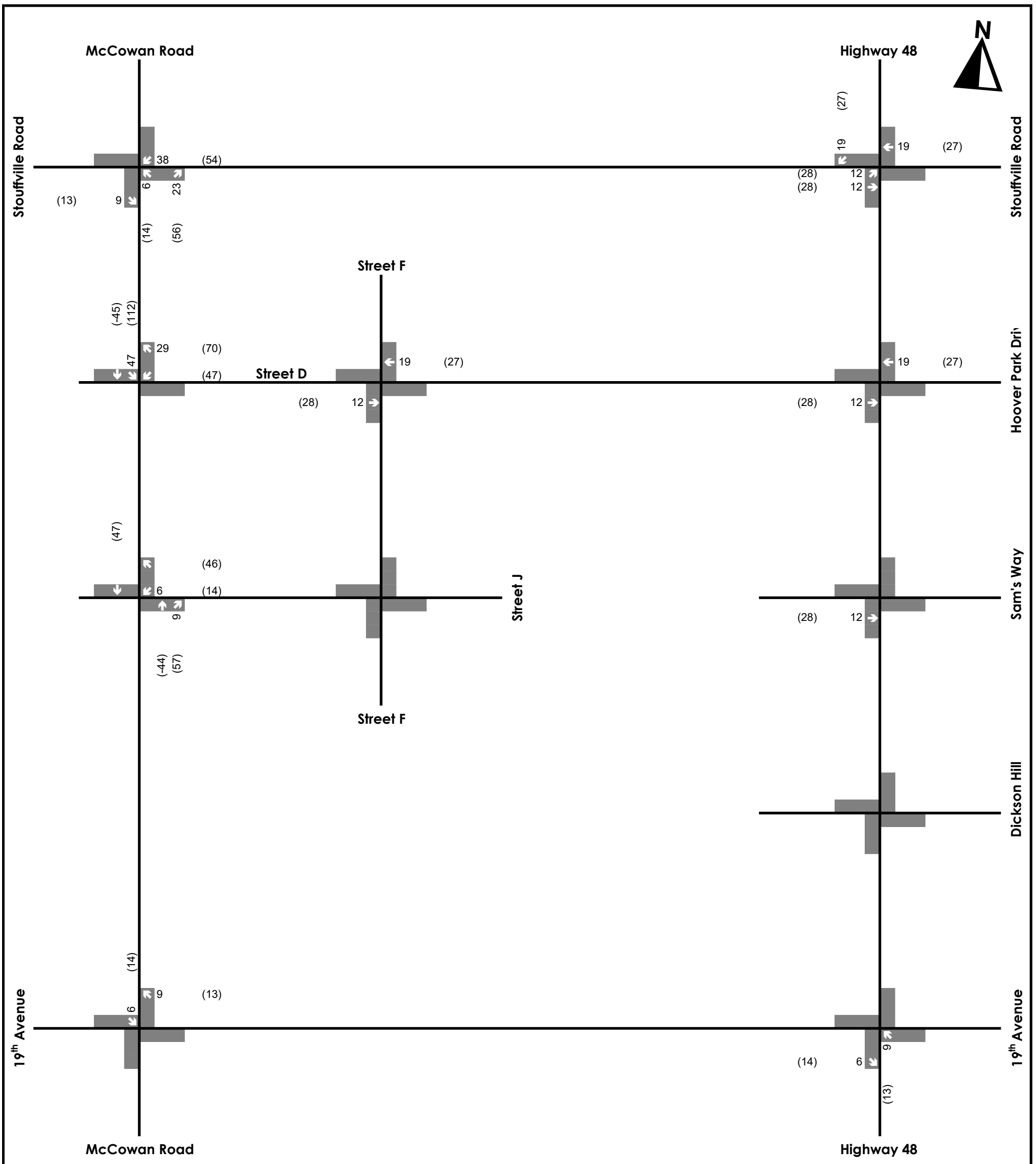
Trips have been distributed based on the location and availability of nearby accesses. It should be noted that as the developments within the blocks connect to each other, trips distributions may deviate. Additionally, as internal connections are made the trip distributions are altered. It is noted



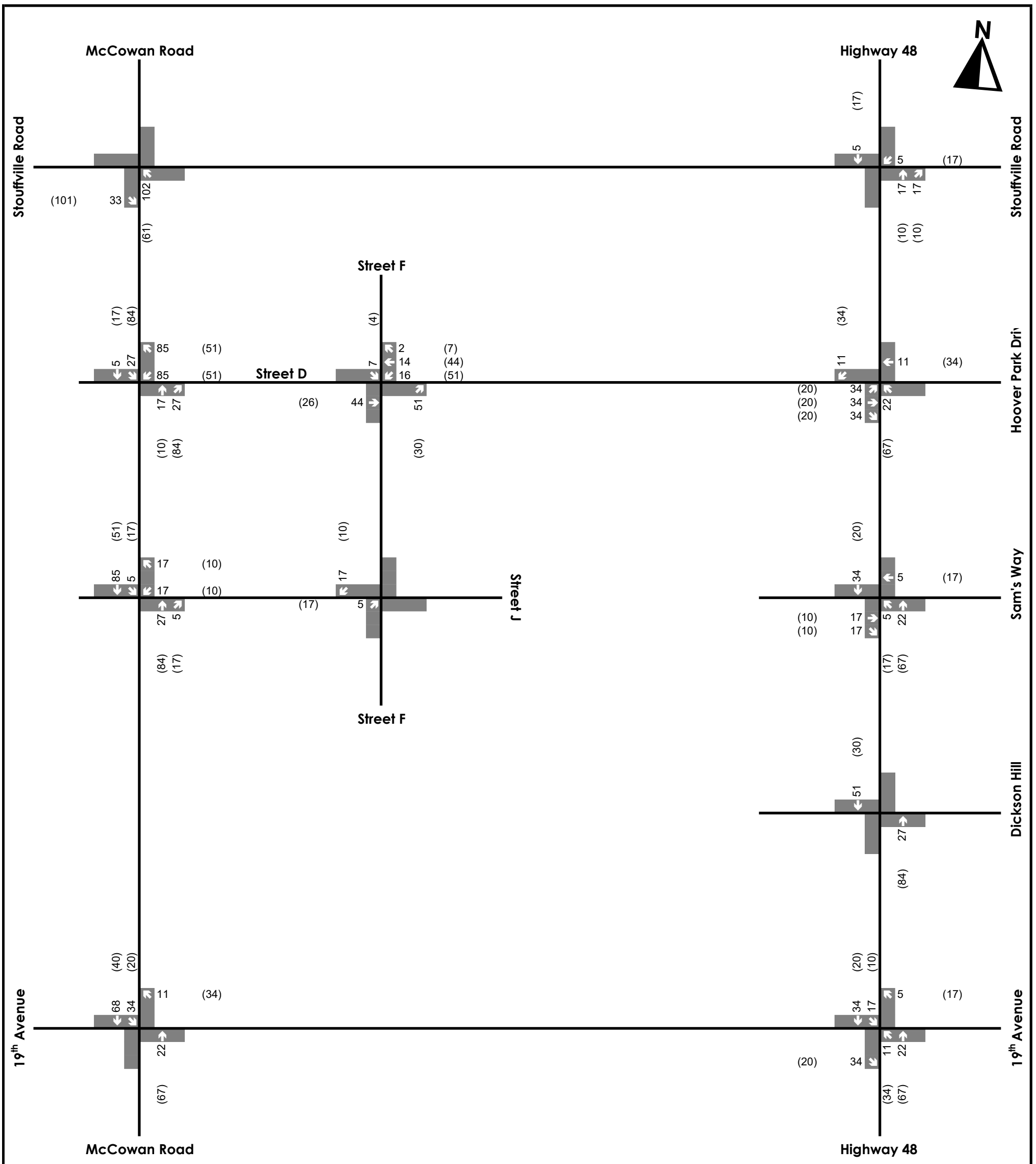
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 27
xx A.M. Peak Hour Trip Assignment (xx) P.M. Peak Hour Trip Assignment	2025 Residential Trip Assignment		Project No. 2135-6050 Date. April 25, 2024 Analyst. KH



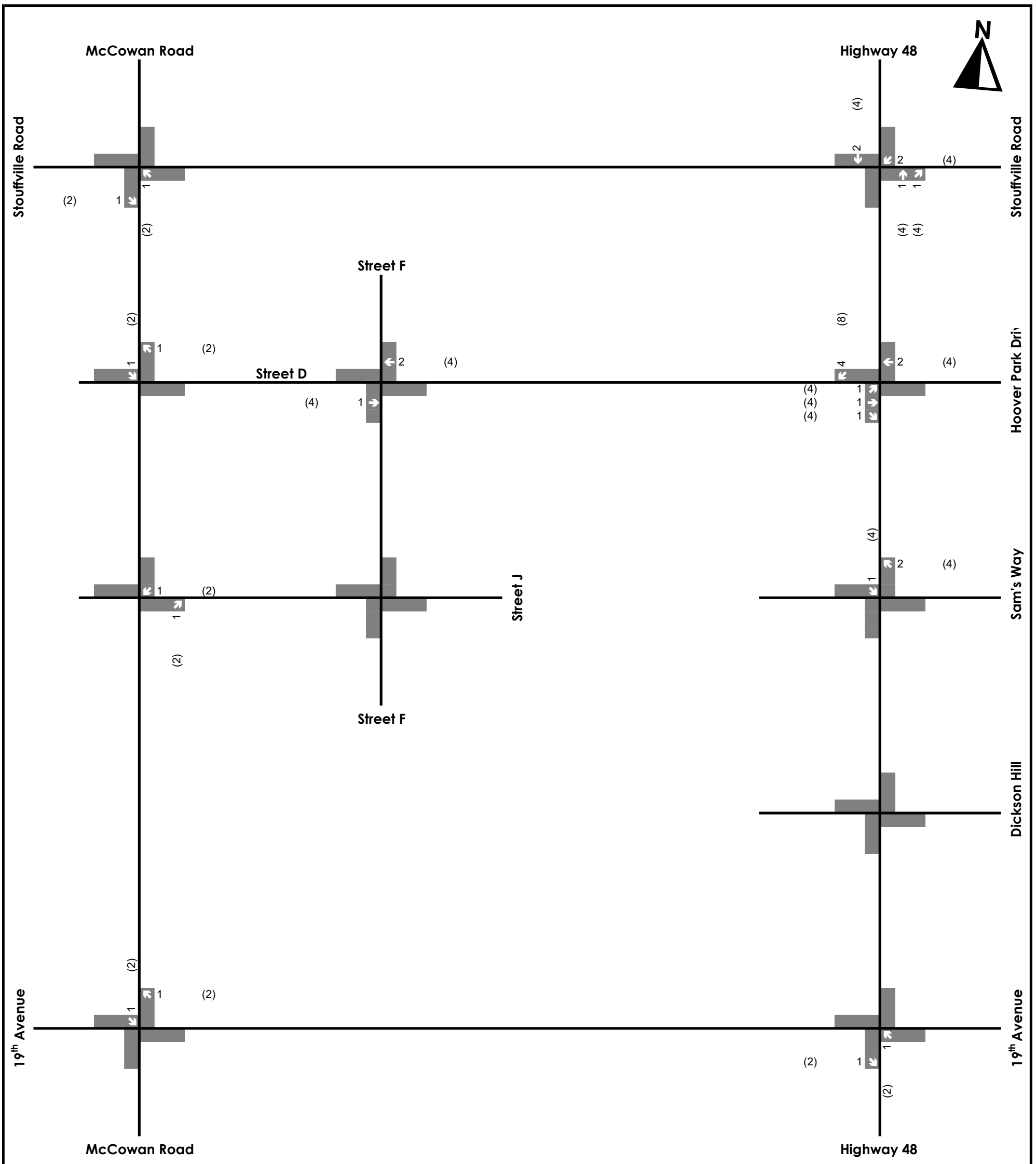
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 29
xx A.M. Peak Hour Trip Assignment (xx) P.M. Peak Hour Trip Assignment	2030 Residential Trip Assignment		Project No. 2135-6050 Date. April 25, 2024 Analyst. KH



Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 31
xx A.M. Peak Hour Trip Assignment (xx) P.M. Peak Hour Trip Assignment	McCowan Road Commercial Trip Assignment		Project No. 2135-6050 Date. April 25, 2024 Analyst. KH



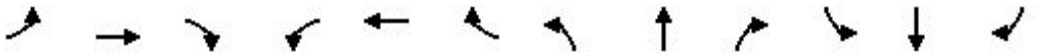
Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 33
xx A.M. Peak Hour Trip Assignment (xx) P.M. Peak Hour Trip Assignment	2035 Residential Trip Assignment		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH



Legend	12045, 11861 McCowan Road	CROZIER CONSULTING ENGINEERS	Figure 35
xx A.M. Peak Hour Trip Assignment (xx) P.M. Peak Hour Trip Assignment	Mixed-Use Hub Commercial Trip Assignment		Project No. 2135-6050 Date. October 26, 2023 Analyst. KH

Appendix D

Synchro Reports



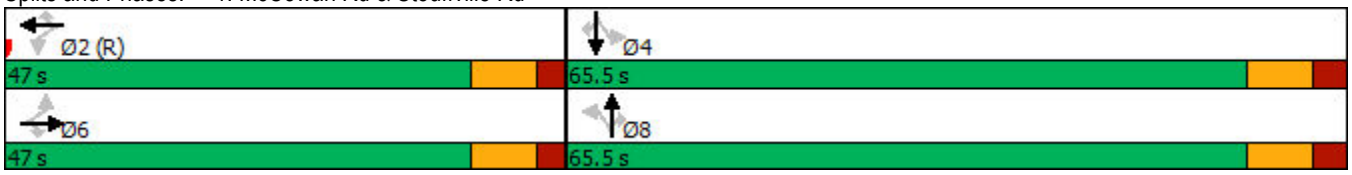
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	585	190	122	699	16	151	71	79	18	69	33
Future Volume (vph)	32	585	190	122	699	16	151	71	79	18	69	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.321			0.379			0.702			0.700		
Satd. Flow (perm)	586	3433	1493	666	3400	1507	1256	3336	1487	1240	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			224			53			78			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	688	224	144	822	19	178	84	93	21	81	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	688	224	144	822	19	178	84	93	21	81	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	72.9	72.9	72.9	72.9	72.9	72.9	23.1	23.1	23.1	23.1	23.1	23.1
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.65	0.65	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.10	0.31	0.21	0.33	0.37	0.02	0.69	0.12	0.25	0.08	0.12	0.12
Control Delay	11.2	10.4	2.1	14.0	11.1	0.1	53.7	33.8	11.0	32.2	33.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	10.4	2.1	14.0	11.1	0.1	53.7	33.8	11.0	32.2	33.7	7.1
LOS	B	B	A	B	B	A	D	C	B	C	C	A
Approach Delay		8.5			11.3			37.8			26.1	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	2.9	32.7	0.0	13.3	41.2	0.0	39.0	8.5	2.8	4.0	8.2	0.0
Queue Length 95th (m)	9.9	57.2	9.5	34.2	70.7	0.0	50.0	12.2	12.7	8.7	11.8	5.4
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	379	2223	1045	431	2202	994	636	1690	791	628	1659	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.31	0.21	0.33	0.37	0.02	0.28	0.05	0.12	0.03	0.05	0.05

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 101.0% ICU Level of Service G
Analysis Period (min) 15

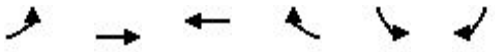
Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	585	190	122	699	16	151	71	79	18	69	33
Future Volume (vph)	32	585	190	122	699	16	151	71	79	18	69	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.32	1.00	1.00	0.38	1.00	1.00	0.70	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	585	3433	1493	666	3400	1507	1256	3336	1487	1239	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	688	224	144	822	19	178	84	93	21	81	39
RTOR Reduction (vph)	0	0	79	0	0	7	0	0	62	0	0	31
Lane Group Flow (vph)	38	688	145	144	822	12	178	84	31	21	81	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	72.9	72.9	72.9	72.9	72.9	72.9	23.1	23.1	23.1	23.1	23.1	23.1
Effective Green, g (s)	72.9	72.9	72.9	72.9	72.9	72.9	23.1	23.1	23.1	23.1	23.1	23.1
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.65	0.65	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	379	2224	967	431	2203	976	257	684	305	254	672	285
v/s Ratio Prot		0.20			c0.24			0.03			0.02	
v/s Ratio Perm	0.06		0.10	0.22		0.01	c0.14		0.02	0.02		0.01
v/c Ratio	0.10	0.31	0.15	0.33	0.37	0.01	0.69	0.12	0.10	0.08	0.12	0.03
Uniform Delay, d1	7.5	8.7	7.7	8.9	9.2	7.0	41.4	36.4	36.3	36.1	36.4	35.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.3	2.1	0.5	0.0	7.8	0.1	0.1	0.1	0.1	0.0
Delay (s)	8.0	9.1	8.0	11.0	9.7	7.1	49.2	36.5	36.4	36.3	36.5	35.8
Level of Service	A	A	A	B	A	A	D	D	D	D	D	D
Approach Delay (s)		8.8			9.8			42.9			36.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	646	846	10	3	0
Future Volume (Veh/h)	29	646	846	10	3	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	702	920	11	3	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	931				1340	466
vC1, stage 1 conf vol					926	
vC2, stage 2 conf vol					415	
vCu, unblocked vol	931				1340	466
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	100
cM capacity (veh/h)	743				318	549

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	32	351	351	613	318	3
Volume Left	32	0	0	0	0	3
Volume Right	0	0	0	0	11	0
cSH	743	1700	1700	1700	1700	318
Volume to Capacity	0.04	0.21	0.21	0.36	0.19	0.01
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	16.4
Lane LOS	B					C
Approach Delay (s)	0.4			0.0		16.4
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

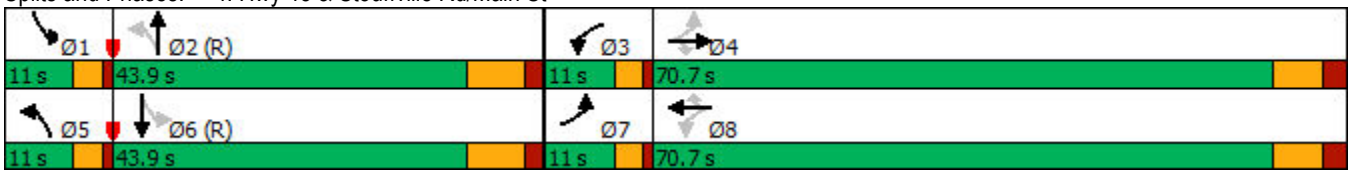
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	445	197	9	456	68	142	247	91	130	301	271
Future Volume (vph)	9	445	197	9	456	68	142	247	91	130	301	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.960			0.929	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3187	0	1684	3127	0
Flt Permitted	0.270			0.283			0.353			0.531		
Satd. Flow (perm)	507	3433	1521	532	3400	1551	626	3187	0	941	3127	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			103		38			162	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	10	489	216	10	501	75	156	271	100	143	331	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	489	216	10	501	75	156	371	0	143	629	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	31.6	26.5	26.5	31.6	26.5	26.5	95.4	78.7		87.5	74.0	
Actuated g/C Ratio	0.23	0.19	0.19	0.23	0.19	0.19	0.70	0.58		0.64	0.54	

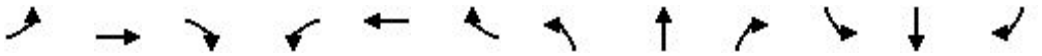
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.05	0.74	0.46	0.05	0.76	0.20	0.29	0.20		0.22	0.36	
Control Delay	35.4	58.3	8.6	35.3	59.5	4.2	9.4	14.5		9.1	14.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.4	58.3	8.6	35.3	59.5	4.2	9.4	14.5		9.1	14.6	
LOS	D	E	A	D	E	A	A	B		A	B	
Approach Delay		43.0			52.0			13.0			13.5	
Approach LOS		D			D			B			B	
Queue Length 50th (m)	2.3	69.5	0.0	2.3	71.6	0.0	12.3	21.3		11.2	34.9	
Queue Length 95th (m)	6.2	84.0	20.8	6.2	86.3	6.6	30.5	43.6		28.2	66.0	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	182	1583	817	187	1568	770	547	1851		655	1768	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.05	0.31	0.26	0.05	0.32	0.10	0.29	0.20		0.22	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 30.2 Intersection LOS: C
Intersection Capacity Utilization 64.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	445	197	9	456	68	142	247	91	130	301	271
Future Volume (vph)	9	445	197	9	456	68	142	247	91	130	301	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		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)	1785	3433	1521	1785	3400	1551	1684	3185		1684	3127	
Flt Permitted	0.27	1.00	1.00	0.28	1.00	1.00	0.35	1.00		0.53	1.00	
Satd. Flow (perm)	508	3433	1521	532	3400	1551	625	3185		941	3127	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	10	489	216	10	501	75	156	271	100	143	331	298
RTOR Reduction (vph)	0	0	174	0	0	60	0	17	0	0	78	0
Lane Group Flow (vph)	10	489	42	10	501	15	156	354	0	143	551	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.9	26.5	26.5	27.9	26.5	26.5	89.1	75.5		80.4	70.8	
Effective Green, g (s)	27.9	26.5	26.5	27.9	26.5	26.5	89.1	75.5		80.4	70.8	
Actuated g/C Ratio	0.20	0.19	0.19	0.20	0.19	0.19	0.65	0.55		0.59	0.52	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	116	665	295	121	659	300	518	1760		606	1620	
v/s Ratio Prot	c0.00	0.14		0.00	c0.15		c0.03	0.11		0.02	c0.18	
v/s Ratio Perm	0.02		0.03	0.02		0.01	0.16			0.12		
v/c Ratio	0.09	0.74	0.14	0.08	0.76	0.05	0.30	0.20		0.24	0.34	
Uniform Delay, d1	44.0	51.8	45.6	43.9	52.0	44.8	9.7	15.4		12.6	19.2	
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	0.3	4.2	0.2	0.3	5.2	0.1	0.3	0.3		0.2	0.6	
Delay (s)	44.3	56.0	45.8	44.2	57.2	44.9	10.0	15.6		12.8	19.8	
Level of Service	D	E	D	D	E	D	A	B		B	B	
Approach Delay (s)		52.8			55.4			14.0			18.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

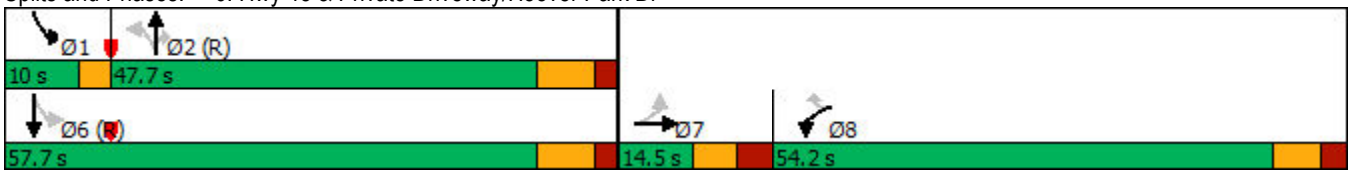
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	232	0	126	0	372	205	146	376	0
Future Volume (vph)	0	0	0	232	0	126	0	372	205	146	376	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	0	1566	1879	1724	1536	1700	1756	0
Flt Permitted				0.950						0.447		
Satd. Flow (perm)	0	1879	0	1716	0	1566	1879	1724	1536	800	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						140			228			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	0	0	258	0	140	0	413	228	162	418	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	258	0	140	0	413	228	162	418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Prot		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8				2		1	6	
Permitted Phases	7					8	2		2	6		
Detector Phase	7	7		8		8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0		10.0	40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2		39.2	47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2		54.2	47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%		42.9%	37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5		4.5	5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7		2.7	2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2		7.2	7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	None		None		None	C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)				24.7		24.7		74.3	74.3	91.5	86.8	
Actuated g/C Ratio				0.20		0.20		0.59	0.59	0.72	0.69	

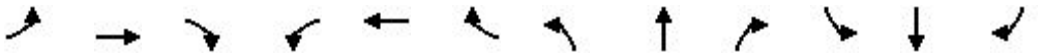
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio				0.77		0.33		0.41	0.23	0.25	0.35	
Control Delay				62.8		8.2		17.3	2.6	7.2	10.0	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				62.8		8.2		17.3	2.6	7.2	10.0	
LOS				E		A		B	A	A	B	
Approach Delay					43.6			12.1			9.2	
Approach LOS					D			B			A	
Queue Length 50th (m)				64.6		0.0		55.1	0.0	11.5	41.0	
Queue Length 95th (m)				88.0		16.4		99.0	13.3	24.0	72.3	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)				638		670		1012	996	646	1205	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.40		0.21		0.41	0.23	0.25	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 18.8 Intersection LOS: B
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	232	0	126	0	372	205	146	376	0
Future Volume (vph)	0	0	0	232	0	126	0	372	205	146	376	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.2		7.2		7.7	7.7	3.0	7.7	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1716		1566		1724	1536	1700	1756	
Flt Permitted				0.95		1.00		1.00	1.00	0.45	1.00	
Satd. Flow (perm)				1716		1566		1724	1536	801	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	258	0	140	0	413	228	162	418	0
RTOR Reduction (vph)	0	0	0	0	0	113	0	0	94	0	0	0
Lane Group Flow (vph)	0	0	0	258	0	27	0	413	134	162	418	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type				Prot		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8				2		1	6	
Permitted Phases	7					8	2		2	6		
Actuated Green, G (s)				24.7		24.7		74.3	74.3	86.8	86.8	
Effective Green, g (s)				24.7		24.7		74.3	74.3	86.8	86.8	
Actuated g/C Ratio				0.20		0.20		0.59	0.59	0.69	0.69	
Clearance Time (s)				7.2		7.2		7.7	7.7	3.0	7.7	
Vehicle Extension (s)				3.0		3.0		4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)				335		306		1013	902	617	1205	
v/s Ratio Prot				c0.15				c0.24		0.02	c0.24	
v/s Ratio Perm						0.02			0.09	0.16		
v/c Ratio				0.77		0.09		0.41	0.15	0.26	0.35	
Uniform Delay, d1				48.2		41.6		14.1	11.8	7.4	8.1	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				10.4		0.1		1.2	0.3	0.2	0.8	
Delay (s)				58.6		41.8		15.3	12.1	7.6	8.9	
Level of Service				E		D		B	B	A	A	
Approach Delay (s)		0.0			52.7			14.2			8.6	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

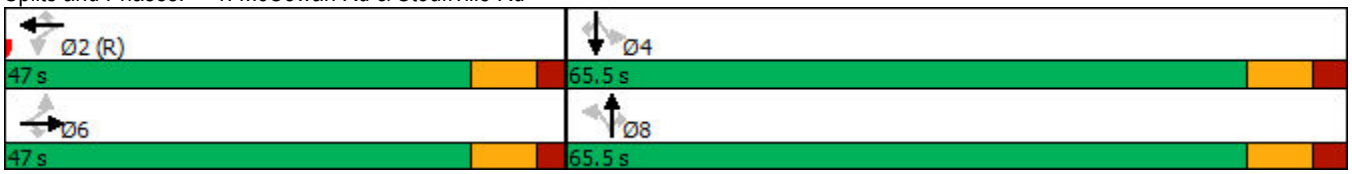
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	964	252	114	755	12	186	111	59	14	77	19
Future Volume (vph)	73	964	252	114	755	12	186	111	59	14	77	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.318			0.234			0.700			0.675		
Satd. Flow (perm)	575	3535	1536	427	3500	1597	1253	3535	1566	1268	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			274			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1048	274	124	821	13	202	121	64	15	84	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1048	274	124	821	13	202	121	64	15	84	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	71.1	71.1	71.1	71.1	71.1	71.1	24.9	24.9	24.9	24.9	24.9	24.9
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22

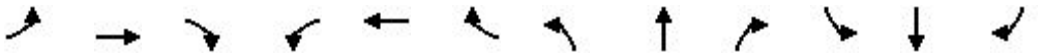
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.22	0.47	0.26	0.46	0.37	0.01	0.73	0.15	0.17	0.05	0.11	0.06
Control Delay	13.2	13.0	2.1	20.8	11.7	0.0	54.7	33.4	12.9	30.2	32.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.0	2.1	20.8	11.7	0.0	54.7	33.4	12.9	30.2	32.5	1.6
LOS	B	B	A	C	B	A	D	C	B	C	C	A
Approach Delay		10.9			12.8			41.1			26.8	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	7.1	60.8	0.0	13.6	43.8	0.0	44.0	12.0	3.0	2.8	8.2	0.0
Queue Length 95th (m)	20.7	102.7	12.6	41.7	75.5	0.0	61.2	17.3	12.4	7.4	12.9	1.6
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	363	2234	1071	269	2212	1028	634	1791	817	642	1722	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.47	0.26	0.46	0.37	0.01	0.32	0.07	0.08	0.02	0.05	0.03

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 102.4% ICU Level of Service G
Analysis Period (min) 15

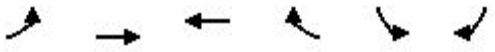
Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	964	252	114	755	12	186	111	59	14	77	19
Future Volume (vph)	73	964	252	114	755	12	186	111	59	14	77	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.32	1.00	1.00	0.23	1.00	1.00	0.70	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	574	3535	1536	426	3500	1597	1252	3535	1566	1269	3400	1452
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)	79	1048	274	124	821	13	202	121	64	15	84	21
RTOR Reduction (vph)	0	0	101	0	0	5	0	0	37	0	0	16
Lane Group Flow (vph)	79	1048	173	124	821	8	202	121	27	15	84	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	71.1	71.1	71.1	71.1	71.1	71.1	24.9	24.9	24.9	24.9	24.9	24.9
Effective Green, g (s)	71.1	71.1	71.1	71.1	71.1	71.1	24.9	24.9	24.9	24.9	24.9	24.9
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	362	2234	970	269	2212	1009	277	782	346	280	752	321
v/s Ratio Prot		c0.30			0.23			0.03			0.02	
v/s Ratio Perm	0.14		0.11	0.29		0.01	c0.16		0.02	0.01		0.00
v/c Ratio	0.22	0.47	0.18	0.46	0.37	0.01	0.73	0.15	0.08	0.05	0.11	0.01
Uniform Delay, d1	8.8	10.8	8.6	10.7	10.0	7.7	40.7	35.3	34.7	34.5	35.0	34.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.7	0.4	5.6	0.5	0.0	9.2	0.1	0.1	0.1	0.1	0.0
Delay (s)	10.2	11.5	9.0	16.3	10.4	7.7	49.9	35.4	34.8	34.6	35.0	34.2
Level of Service	B	B	A	B	B	A	D	D	C	C	D	C
Approach Delay (s)		11.0			11.2			42.9			34.8	
Approach LOS		B			B			D			C	

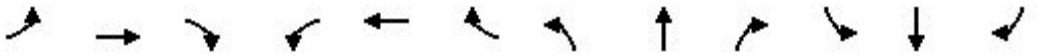
Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	1003	870	68	3	27
Future Volume (Veh/h)	32	1003	870	68	3	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	35	1102	956	75	3	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1031				1614	516
vC1, stage 1 conf vol					994	
vC2, stage 2 conf vol					621	
vCu, unblocked vol	1031				1614	516
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				99	94
cM capacity (veh/h)	682				274	510

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	35	551	551	637	394	33
Volume Left	35	0	0	0	0	3
Volume Right	0	0	0	0	75	30
cSH	682	1700	1700	1700	1700	473
Volume to Capacity	0.05	0.32	0.32	0.37	0.23	0.07
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	1.8
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	13.2
Lane LOS	B					B
Approach Delay (s)	0.3			0.0		13.2
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		



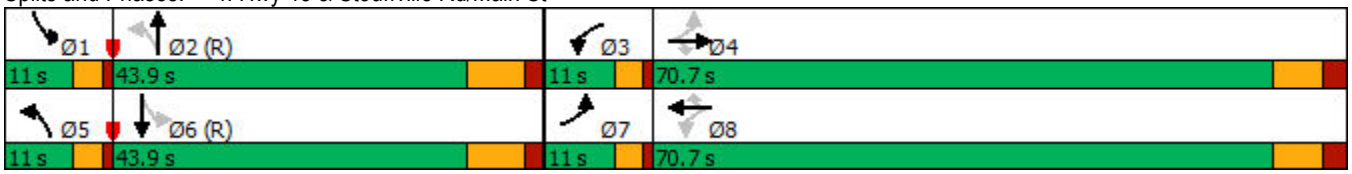
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	676	284	8	511	140	232	445	116	87	379	192
Future Volume (vph)	8	676	284	8	511	140	232	445	116	87	379	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.969			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3357	0	1750	3282	0
Flt Permitted	0.300			0.172			0.317			0.410		
Satd. Flow (perm)	564	3500	1581	323	3535	1581	562	3357	0	755	3282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			316			156		23			63	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	9	751	316	9	568	156	258	494	129	97	421	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	751	316	9	568	156	258	623	0	97	634	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	42.9	37.8	37.8	42.9	37.8	37.8	84.8	68.1		73.6	60.8	
Actuated g/C Ratio	0.31	0.28	0.28	0.31	0.28	0.28	0.62	0.50		0.54	0.45	

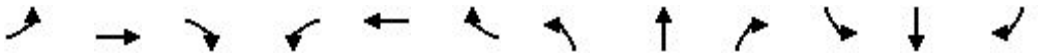
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.04	0.78	0.47	0.05	0.58	0.28	0.54	0.37		0.21	0.42	
Control Delay	26.6	51.0	5.9	26.9	44.4	6.1	17.8	23.2		14.4	27.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.6	51.0	5.9	26.9	44.4	6.1	17.8	23.2		14.4	27.1	
LOS	C	D	A	C	D	A	B	C		B	C	
Approach Delay		37.5			36.1			21.6			25.4	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	1.8	103.9	0.0	1.8	73.5	0.0	29.4	51.1		9.9	54.8	
Queue Length 95th (m)	4.9	116.3	20.6	4.9	84.6	15.6	63.2	91.5		25.1	100.2	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	239	1614	899	176	1630	813	482	1684		471	1494	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.47	0.35	0.05	0.35	0.19	0.54	0.37		0.21	0.42	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 30.5 Intersection LOS: C
Intersection Capacity Utilization 75.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	676	284	8	511	140	232	445	116	87	379	192
Future Volume (vph)	8	676	284	8	511	140	232	445	116	87	379	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3357		1750	3281	
Flt Permitted	0.30	1.00	1.00	0.17	1.00	1.00	0.32	1.00		0.41	1.00	
Satd. Flow (perm)	563	3500	1581	323	3535	1581	562	3357		755	3281	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	751	316	9	568	156	258	494	129	97	421	213
RTOR Reduction (vph)	0	0	229	0	0	113	0	12	0	0	36	0
Lane Group Flow (vph)	9	751	87	9	568	43	258	611	0	97	598	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	39.2	37.8	37.8	39.2	37.8	37.8	77.8	64.9		66.5	57.6	
Effective Green, g (s)	39.2	37.8	37.8	39.2	37.8	37.8	77.8	64.9		66.5	57.6	
Actuated g/C Ratio	0.29	0.28	0.28	0.29	0.28	0.28	0.57	0.48		0.49	0.42	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	174	968	437	107	978	437	453	1594		432	1383	
v/s Ratio Prot	0.00	c0.21		c0.00	0.16		c0.07	0.18		0.01	0.18	
v/s Ratio Perm	0.01		0.06	0.02		0.03	c0.26			0.09		
v/c Ratio	0.05	0.78	0.20	0.08	0.58	0.10	0.57	0.38		0.22	0.43	
Uniform Delay, d1	35.4	45.5	37.8	36.4	42.6	36.7	16.1	23.0		19.0	27.9	
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	0.1	4.0	0.2	0.3	0.9	0.1	1.6	0.7		0.3	1.0	
Delay (s)	35.6	49.4	38.1	36.7	43.5	36.8	17.7	23.7		19.3	28.9	
Level of Service	D	D	D	D	D	D	B	C		B	C	
Approach Delay (s)		46.0			42.0			22.0			27.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

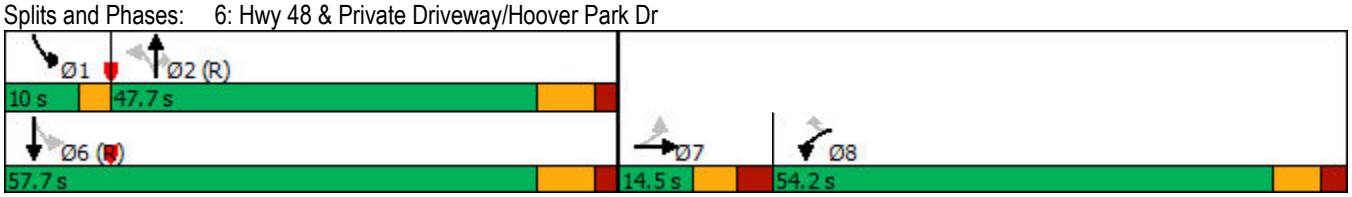
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	164	0	245	0	546	233	269	397	1
Future Volume (vph)	0	0	0	164	0	245	0	546	233	269	397	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.99			0.99	1.00	1.00	
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	0	1566	1879	1789	1597	1767	1803	0
Flt Permitted				0.950						0.180		
Satd. Flow (perm)	0	1879	0	1750	0	1545	1879	1789	1576	335	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						275			262			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	0	0	184	0	275	0	613	262	302	446	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	184	0	275	0	613	262	302	447	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type				Prot		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8				2		1	6	
Permitted Phases	7					8	2		2	6		
Detector Phase	7	7		8		8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0		10.0	40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2		39.2	47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2		54.2	47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%		42.9%	37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5		4.5	5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7		2.7	2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2		7.2	7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	None		None		None	C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)				18.9		18.9		53.6	53.6	97.3	92.6	
Actuated g/C Ratio				0.15		0.15		0.42	0.42	0.77	0.73	
v/c Ratio				0.70		0.59		0.81	0.32	0.45	0.34	
Control Delay				65.1		10.6		40.9	3.5	9.6	7.4	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				65.1		10.6		40.9	3.5	9.6	7.4	
LOS				E		B		D	A	A	A	
Approach Delay					32.5			29.7			8.3	
Approach LOS					C			C			A	
Queue Length 50th (m)				46.4		0.0		127.5	0.0	18.6	36.6	
Queue Length 95th (m)				67.1		22.9		181.9	15.1	47.9	63.1	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)				650		747		758	818	666	1321	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.28		0.37		0.81	0.32	0.45	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 22.6 Intersection LOS: C
Intersection Capacity Utilization 92.1% ICU Level of Service F
Analysis Period (min) 15

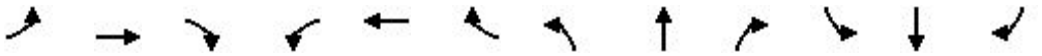
Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	164	0	245	0	546	233	269	397	1
Future Volume (vph)	0	0	0	164	0	245	0	546	233	269	397	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.2		7.2		7.7	7.7	3.0	7.7	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes				1.00		0.99		1.00	0.99	1.00	1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1750		1545		1789	1576	1767	1802	
Flt Permitted				0.95		1.00		1.00	1.00	0.18	1.00	
Satd. Flow (perm)				1750		1545		1789	1576	335	1802	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	184	0	275	0	613	262	302	446	1
RTOR Reduction (vph)	0	0	0	0	0	234	0	0	151	0	0	0
Lane Group Flow (vph)	0	0	0	184	0	41	0	613	111	302	447	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type				Prot		Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8				2		1	6	
Permitted Phases	7					8	2		2	6		
Actuated Green, G (s)				18.9		18.9		53.5	53.5	92.6	92.6	
Effective Green, g (s)				18.9		18.9		53.5	53.5	92.6	92.6	
Actuated g/C Ratio				0.15		0.15		0.42	0.42	0.73	0.73	
Clearance Time (s)				7.2		7.2		7.7	7.7	3.0	7.7	
Vehicle Extension (s)				3.0		3.0		4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)				261		231		757	667	654	1320	
v/s Ratio Prot				c0.11				c0.34		c0.13	0.25	
v/s Ratio Perm						0.03			0.07	0.21		
v/c Ratio				0.70		0.18		0.81	0.17	0.46	0.34	
Uniform Delay, d1				51.1		47.0		32.0	22.6	12.3	6.0	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				8.4		0.4		9.1	0.5	0.5	0.7	
Delay (s)				59.5		47.3		41.1	23.2	12.8	6.7	
Level of Service				E		D		D	C	B	A	
Approach Delay (s)		0.0			52.2			35.7			9.2	
Approach LOS		A			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



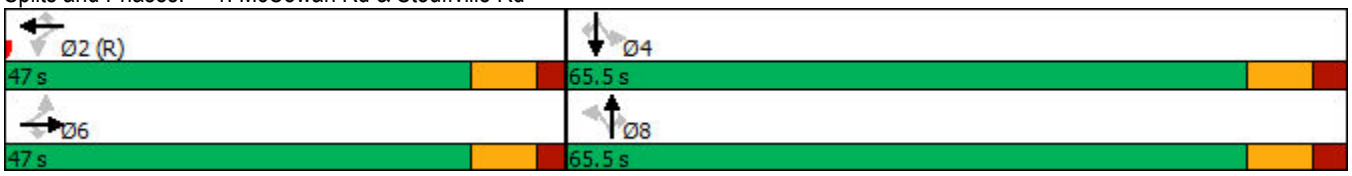
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Future Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.137			0.221			0.692			0.690		
Satd. Flow (perm)	250	3433	1493	388	3400	1507	1238	3336	1487	1222	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None

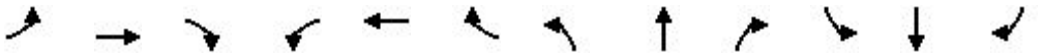
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.24	0.50	0.22	0.96	0.65	0.03	0.71	0.14	0.36	0.14	0.14	0.12
Control Delay	16.7	13.0	2.2	72.6	15.7	1.7	54.3	33.7	23.7	33.2	33.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	13.0	2.2	72.6	15.7	1.7	54.3	33.7	23.7	33.2	33.6	7.0
LOS	B	B	A	E	B	A	D	C	C	C	C	A
Approach Delay		11.2			23.5			39.9			27.4	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	3.3	62.8	0.0	46.2	93.8	0.0	40.4	9.8	15.3	6.9	9.5	0.0
Queue Length 95th (m)	12.7	101.6	9.6	#108.2	148.0	2.4	52.1	13.8	25.6	12.9	13.5	5.4
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	160	2202	1041	249	2181	985	627	1690	777	619	1659	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.50	0.22	0.96	0.65	0.03	0.30	0.06	0.16	0.06	0.06	0.05

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 20.9 Intersection LOS: C
Intersection Capacity Utilization 101.8% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd

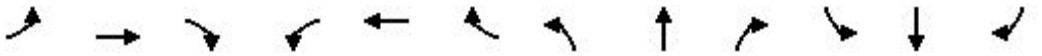




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Future Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.14	1.00	1.00	0.22	1.00	1.00	0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	250	3433	1493	388	3400	1507	1239	3336	1487	1223	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
RTOR Reduction (vph)	0	0	84	0	0	12	0	0	38	0	0	31
Lane Group Flow (vph)	38	1096	150	239	1407	22	185	98	88	36	95	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Effective Green, g (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	160	2203	958	249	2182	967	262	705	314	258	692	293
v/s Ratio Prot		0.32			0.41			0.03			0.03	
v/s Ratio Perm	0.15		0.10	c0.62		0.01	c0.15		0.06	0.03		0.01
v/c Ratio	0.24	0.50	0.16	0.96	0.64	0.02	0.71	0.14	0.28	0.14	0.14	0.03
Uniform Delay, d1	8.5	10.6	8.0	18.8	12.3	7.3	41.1	36.0	37.2	36.0	36.0	35.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.8	0.3	47.6	1.5	0.0	8.4	0.1	0.5	0.2	0.1	0.0
Delay (s)	12.0	11.4	8.4	66.4	13.8	7.4	49.5	36.1	37.7	36.3	36.1	35.2
Level of Service	B	B	A	E	B	A	D	D	D	D	D	D
Approach Delay (s)		10.9			21.1			42.6			35.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
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)	29	1019	16	47	1288	10	161	0	5	3	0	0
Future Volume (Veh/h)	29	1019	16	47	1288	10	161	0	5	3	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)	32	1108	17	51	1400	11	175	0	5	3	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1411			1125			1974	2685	554	2130	2696	706
vC1, stage 1 conf vol							1172	1172		1508	1508	
vC2, stage 2 conf vol							802	1513		623	1189	
vCu, unblocked vol	1411			1125			1974	2685	554	2130	2696	706
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			92			0	100	99	97	100	100
cM capacity (veh/h)	490			628			159	117	481	110	124	383

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	32	554	554	17	51	933	478	175	5	3
Volume Left	32	0	0	0	51	0	0	175	0	3
Volume Right	0	0	0	17	0	0	11	0	5	0
cSH	490	1700	1700	1700	628	1700	1700	159	481	110
Volume to Capacity	0.07	0.33	0.33	0.01	0.08	0.55	0.28	1.10	0.01	0.03
Queue Length 95th (m)	1.7	0.0	0.0	0.0	2.1	0.0	0.0	73.4	0.3	0.7
Control Delay (s)	12.9	0.0	0.0	0.0	11.2	0.0	0.0	159.2	12.6	38.5
Lane LOS	B				B			F	B	E
Approach Delay (s)	0.4				0.4			155.1		38.5
Approach LOS								F		E

Intersection Summary				
Average Delay	10.4			
Intersection Capacity Utilization	54.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	997	37	0	1360	0	86
Future Volume (Veh/h)	997	37	0	1360	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1084	40	0	1478	0	93
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.77	
vC, conflicting volume			1084		1823	542
vC1, stage 1 conf vol					1084	
vC2, stage 2 conf vol					739	
vCu, unblocked vol			1084		1481	542
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			651		270	490

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	542	542	40	739	739	93
Volume Left	0	0	0	0	0	0
Volume Right	0	0	40	0	0	93
cSH	1700	1700	1700	1700	1700	490
Volume to Capacity	0.32	0.32	0.02	0.43	0.43	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		14.1
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

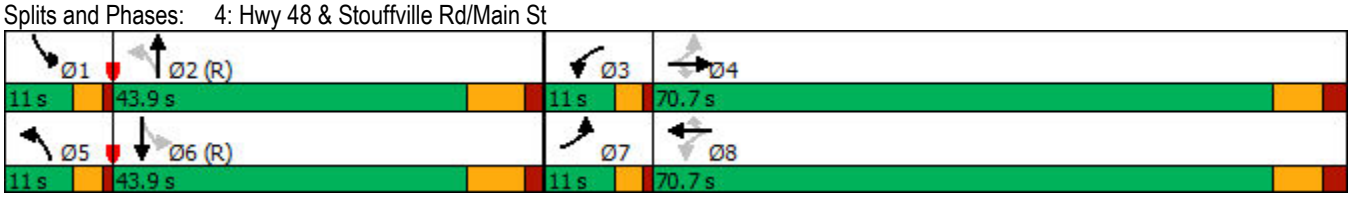
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Future Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.958			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3180	0	1684	3163	0
Flt Permitted	0.156			0.241			0.102			0.445		
Satd. Flow (perm)	293	3433	1521	453	3400	1551	181	3180	0	789	3163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242			103		40			108	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	58	680	477	191	866	88	302	399	154	173	534	349
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	680	477	191	866	88	302	553	0	173	883	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	52.5	41.8	41.8	53.3	44.0	44.0	71.3	50.8		53.3	36.0	
Actuated g/C Ratio	0.38	0.31	0.31	0.39	0.32	0.32	0.52	0.37		0.39	0.26	

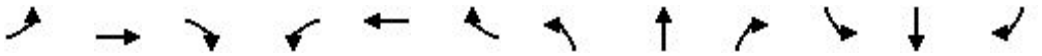
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.31	0.65	0.75	0.78	0.79	0.15	0.75	0.46		0.44	0.97	
Control Delay	26.0	43.2	27.3	50.4	47.6	4.1	46.2	33.9		24.0	66.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.0	43.2	27.3	50.4	47.6	4.1	46.2	33.9		24.0	66.3	
LOS	C	D	C	D	D	A	D	C		C	E	
Approach Delay		36.2			44.7			38.2			59.4	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	9.7	86.3	61.6	34.4	118.4	0.0	63.7	58.8		25.8	117.8	
Queue Length 95th (m)	16.7	97.5	96.0	#46.9	131.0	8.5	#142.3	89.2		46.1	#162.9	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	189	1583	831	245	1568	770	404	1207		395	913	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.31	0.43	0.57	0.78	0.55	0.11	0.75	0.46		0.44	0.97	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

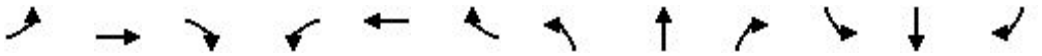
Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Future Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3180		1684	3162	
Flt Permitted	0.16	1.00	1.00	0.24	1.00	1.00	0.10	1.00		0.45	1.00	
Satd. Flow (perm)	293	3433	1521	453	3400	1551	181	3180		789	3162	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	58	680	477	191	866	88	302	399	154	173	534	349
RTOR Reduction (vph)	0	0	167	0	0	60	0	25	0	0	80	0
Lane Group Flow (vph)	58	680	310	191	866	28	302	528	0	173	803	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	48.2	42.6	42.6	51.0	44.0	44.0	67.4	50.0		48.6	35.2	
Effective Green, g (s)	48.2	42.6	42.6	51.0	44.0	44.0	67.4	50.0		48.6	35.2	
Actuated g/C Ratio	0.35	0.31	0.31	0.37	0.32	0.32	0.49	0.37		0.36	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	164	1070	474	237	1095	499	399	1163		368	814	
v/s Ratio Prot	0.01	0.20		c0.04	0.25		c0.16	0.17		0.05	c0.25	
v/s Ratio Perm	0.11		0.20	c0.26		0.02	0.22			0.12		
v/c Ratio	0.35	0.64	0.65	0.81	0.79	0.06	0.76	0.45		0.47	0.99	
Uniform Delay, d1	31.6	40.3	40.6	36.7	42.1	32.0	36.2	32.9		31.6	50.5	
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	1.3	1.2	3.2	17.8	4.0	0.0	8.0	1.3		1.0	28.4	
Delay (s)	32.9	41.6	43.9	54.5	46.1	32.0	44.2	34.2		32.5	78.9	
Level of Service	C	D	D	D	D	C	D	C		C	E	
Approach Delay (s)		42.1			46.4			37.7			71.3	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



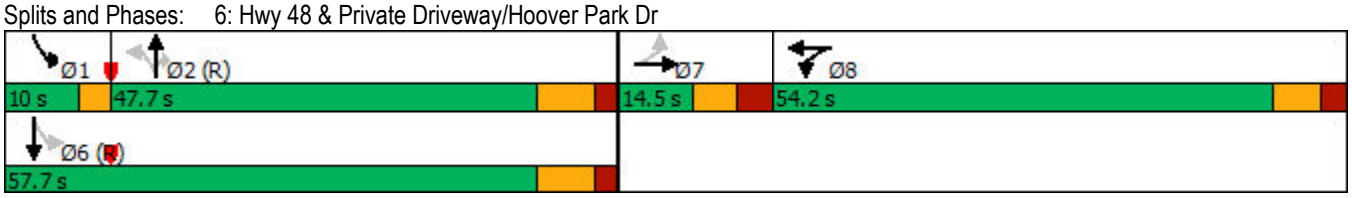
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Future Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	1724	1536	1700	1756	0
Flt Permitted				0.950						0.104		
Satd. Flow (perm)	0	1879	0	1716	1580	0	1879	1724	1536	186	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					361				421			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	450	21	420	0	559	421	587	663	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	450	441	0	0	559	421	587	663	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		7.0		38.9	38.9			40.0	40.0	71.5	66.8	
Actuated g/C Ratio		0.06		0.31	0.31			0.32	0.32	0.57	0.53	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.12		0.85	0.60			1.03	0.54	1.51	0.72	
Control Delay		59.7		56.4	10.1			87.9	5.8	268.7	31.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		59.7		56.4	10.1			87.9	5.8	268.7	31.4	
LOS		E		E	B			F	A	F	C	
Approach Delay		59.7			33.4			52.7			142.8	
Approach LOS		E			C			D			F	
Queue Length 50th (m)		3.3		109.6	15.2			~155.8	0.0	~176.0	114.8	
Queue Length 95th (m)		10.6		139.9	43.7			#227.1	24.4	#332.3	#246.4	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		638	814			545	773	390	927	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.13		0.71	0.54			1.03	0.54	1.51	0.72	

Intersection Summary

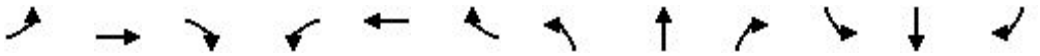
Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.51
Intersection Signal Delay: 83.2 Intersection LOS: F
Intersection Capacity Utilization 114.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Future Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			1724	1536	1700	1756	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1716	1580			1724	1536	186	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	450	21	420	0	559	421	587	663	0
RTOR Reduction (vph)	0	0	0	0	250	0	0	0	303	0	0	0
Lane Group Flow (vph)	0	13	0	450	191	0	0	559	118	587	663	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		2.8		38.9	38.9			35.5	35.5	62.3	62.3	
Effective Green, g (s)		2.8		38.9	38.9			35.5	35.5	62.3	62.3	
Actuated g/C Ratio		0.02		0.31	0.31			0.28	0.28	0.49	0.49	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		41		528	486			484	431	376	865	
v/s Ratio Prot		c0.01		c0.26	0.12			0.32		c0.29	0.38	
v/s Ratio Perm									0.08	c0.47		
v/c Ratio		0.32		0.85	0.39			1.15	0.27	1.56	0.77	
Uniform Delay, d1		60.9		41.1	34.5			45.5	35.4	39.5	26.1	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.4		12.6	0.5			91.0	1.6	265.2	6.4	
Delay (s)		65.3		53.6	35.0			136.4	37.0	304.7	32.6	
Level of Service		E		D	C			F	D	F	C	
Approach Delay (s)		65.3			44.4			93.7			160.4	
Approach LOS		E			D			F			F	

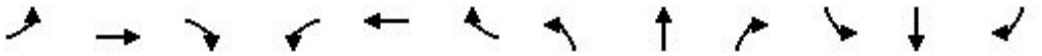
Intersection Summary			
HCM 2000 Control Delay	106.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	27	0	0	73	37	0	0	0	16	0	0
Future Volume (vph)	0	27	0	0	73	37	0	0	0	16	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	29	0	0	79	40	0	0	0	17	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	119	0	17
Volume Left (vph)	0	0	0	17
Volume Right (vph)	0	40	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.0	3.8	4.2	4.4
Degree Utilization, x	0.03	0.12	0.00	0.02
Capacity (veh/h)	875	946	828	789
Control Delay (s)	7.2	7.3	7.2	7.5
Approach Delay (s)	7.2	7.3	0.0	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Future Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.137			0.081			0.690			0.662		
Satd. Flow (perm)	248	3535	1536	148	3500	1597	1235	3535	1566	1244	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1648	288	215	1380	23	217	142	140	53	99	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1648	288	215	1380	23	217	142	140	53	99	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.52	0.75	0.27	2.36	0.64	0.02	0.75	0.17	0.35	0.18	0.12	0.06
Control Delay	30.8	19.7	2.2	661.8	16.5	0.5	55.5	32.9	23.7	32.7	31.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	19.7	2.2	661.8	16.5	0.5	55.5	32.9	23.7	32.7	31.9	1.6
LOS	C	B	A	F	B	A	E	C	C	C	C	A
Approach Delay		17.6			102.0			40.1			28.5	
Approach LOS		B			F			D			C	
Queue Length 50th (m)	9.5	132.5	0.0	~61.0	97.8	0.0	47.0	13.8	17.5	9.9	9.5	0.0
Queue Length 95th (m)	#39.1	209.2	12.9	#117.7	155.2	0.9	66.4	19.8	31.2	18.5	14.8	1.6
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	153	2192	1061	91	2170	1010	625	1791	817	630	1722	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.75	0.27	2.36	0.64	0.02	0.35	0.08	0.17	0.08	0.06	0.03

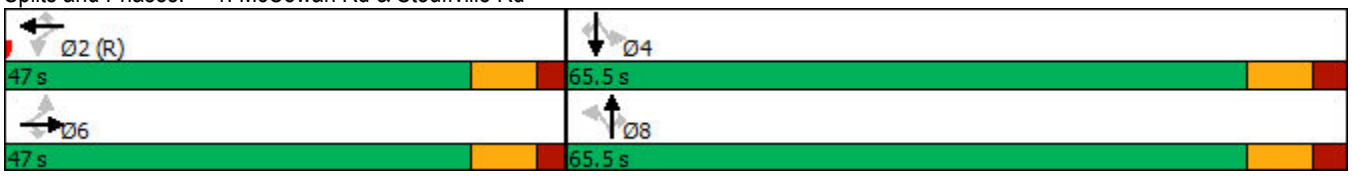
Intersection Summary

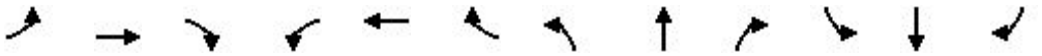
Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.36
Intersection Signal Delay: 52.4 Intersection LOS: D
Intersection Capacity Utilization 121.3% ICU Level of Service H
Analysis Period (min) 15

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

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

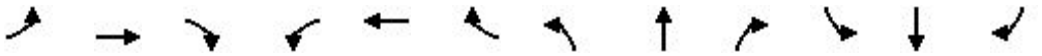
Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Future Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.14	1.00	1.00	0.08	1.00	1.00	0.69	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	248	3535	1536	148	3500	1597	1234	3535	1566	1244	3400	1452
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)	79	1648	288	215	1380	23	217	142	140	53	99	21
RTOR Reduction (vph)	0	0	109	0	0	9	0	0	37	0	0	16
Lane Group Flow (vph)	79	1648	179	215	1380	14	217	142	103	53	99	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Effective Green, g (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	153	2193	953	91	2171	990	287	823	364	289	791	338
v/s Ratio Prot		0.47			0.39			0.04			0.03	
v/s Ratio Perm	0.32		0.12	c1.45		0.01	c0.18		0.07	0.04		0.00
v/c Ratio	0.52	0.75	0.19	2.36	0.64	0.01	0.76	0.17	0.28	0.18	0.13	0.01
Uniform Delay, d1	11.9	15.2	9.2	21.4	13.4	8.2	40.2	34.5	35.4	34.6	34.1	33.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.9	2.4	0.4	645.8	1.4	0.0	10.8	0.1	0.4	0.3	0.1	0.0
Delay (s)	23.8	17.6	9.6	667.1	14.8	8.2	51.0	34.6	35.9	34.9	34.2	33.2
Level of Service	C	B	A	F	B	A	D	C	D	C	C	C
Approach Delay (s)		16.7			101.4			42.1			34.3	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	52.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	121.3%	ICU Level of Service	H
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)	32	1617	43	128	1374	68	115	0	3	3	0	27
Future Volume (Veh/h)	32	1617	43	128	1374	68	115	0	3	3	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	35	1777	47	141	1510	75	126	0	3	3	0	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1585			1824			2914	3714	888	2791	3724	792
vC1, stage 1 conf vol							1847	1847		1830	1830	
vC2, stage 2 conf vol							1067	1867		962	1894	
vCu, unblocked vol	1585			1824			2914	3714	888	2791	3724	792
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			59			0	100	99	93	100	91
cM capacity (veh/h)	420			340			54	34	290	42	2	336

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	35	888	888	47	141	1007	578	126	3	33
Volume Left	35	0	0	0	141	0	0	126	0	3
Volume Right	0	0	0	47	0	0	75	0	3	30
cSH	420	1700	1700	1700	340	1700	1700	54	290	206
Volume to Capacity	0.08	0.52	0.52	0.03	0.41	0.59	0.34	2.33	0.01	0.16
Queue Length 95th (m)	2.2	0.0	0.0	0.0	15.8	0.0	0.0	101.7	0.3	4.5
Control Delay (s)	14.3	0.0	0.0	0.0	22.9	0.0	0.0	770.9	17.5	25.8
Lane LOS	B				C			F	C	D
Approach Delay (s)	0.3				1.9			753.3		25.8
Approach LOS								F		D

Intersection Summary				
Average Delay	27.2			
Intersection Capacity Utilization	74.8%	ICU Level of Service		D
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1484	101	0	1572	0	61
Future Volume (Veh/h)	1484	101	0	1572	0	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1613	110	0	1709	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.80	
vC, conflicting volume			1613		2468	806
vC1, stage 1 conf vol					1613	
vC2, stage 2 conf vol					854	
vCu, unblocked vol			1613		2338	806
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	80
cM capacity (veh/h)			410		143	329

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	806	806	110	854	854	66
Volume Left	0	0	0	0	0	0
Volume Right	0	0	110	0	0	66
cSH	1700	1700	1700	1700	1700	329
Volume to Capacity	0.47	0.47	0.06	0.50	0.50	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	18.7
Lane LOS						C
Approach Delay (s)	0.0			0.0		18.7
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

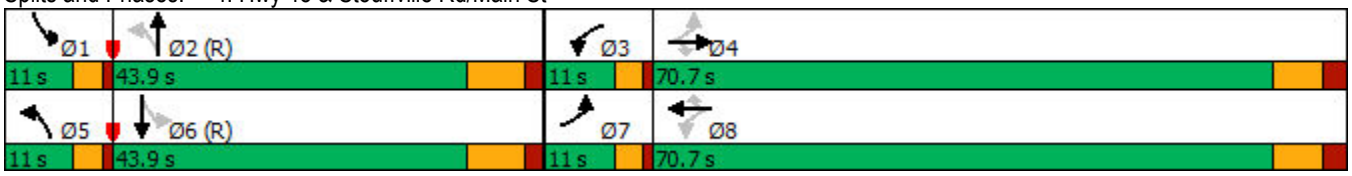
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Future Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3312	0	1750	3288	0
Flt Permitted	0.211			0.104			0.104			0.114		
Satd. Flow (perm)	396	3500	1581	195	3535	1581	184	3312	0	210	3288	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			183		38			55	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	61	1109	551	139	880	183	569	796	297	149	594	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1109	551	139	880	183	569	1093	0	149	873	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	64.3	53.6	53.6	65.1	55.8	55.8	58.0	39.3		53.1	36.0	
Actuated g/C Ratio	0.47	0.39	0.39	0.48	0.41	0.41	0.42	0.29		0.39	0.26	

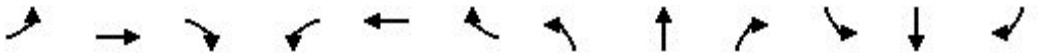
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.24	0.81	0.73	0.80	0.61	0.24	2.21	1.12		0.65	0.96	
Control Delay	18.4	41.7	26.1	50.9	33.7	3.8	578.1	109.6		41.9	68.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.4	41.7	26.1	50.9	33.7	3.8	578.1	109.6		41.9	68.5	
LOS	B	D	C	D	C	A	F	F		D	E	
Approach Delay		35.9			31.1			270.0			64.6	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	8.7	146.0	82.8	20.8	105.2	0.0	~246.9	~194.3		25.5	122.7	
Queue Length 95th (m)	14.5	155.7	115.9	#38.3	114.3	13.5	#352.8	#240.5		#68.3	#167.0	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	257	1614	846	174	1630	827	258	978		229	907	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.24	0.69	0.65	0.80	0.54	0.22	2.21	1.12		0.65	0.96	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.21
Intersection Signal Delay: 109.5 Intersection LOS: F
Intersection Capacity Utilization 110.0% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Future Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3313		1750	3288	
Flt Permitted	0.21	1.00	1.00	0.10	1.00	1.00	0.10	1.00		0.11	1.00	
Satd. Flow (perm)	396	3500	1581	196	3535	1581	185	3313		209	3288	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	1109	551	139	880	183	569	796	297	149	594	279
RTOR Reduction (vph)	0	0	131	0	0	108	0	27	0	0	41	0
Lane Group Flow (vph)	61	1109	420	139	880	75	569	1066	0	149	832	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	60.0	54.4	54.4	62.8	55.8	55.8	54.8	38.4		48.4	35.2	
Effective Green, g (s)	60.0	54.4	54.4	62.8	55.8	55.8	54.8	38.4		48.4	35.2	
Actuated g/C Ratio	0.44	0.40	0.40	0.46	0.41	0.41	0.40	0.28		0.35	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	230	1393	629	171	1444	645	254	931		222	847	
v/s Ratio Prot	0.01	0.32		c0.04	0.25		c0.27	0.32		0.06	0.25	
v/s Ratio Perm	0.11		0.27	c0.33		0.05	c0.63			0.17		
v/c Ratio	0.27	0.80	0.67	0.81	0.61	0.12	2.24	1.14		0.67	0.98	
Uniform Delay, d1	23.7	36.2	33.7	27.3	31.8	25.1	40.9	49.1		35.0	50.4	
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	0.6	3.2	2.7	24.6	0.7	0.1	570.6	77.9		7.7	27.0	
Delay (s)	24.3	39.5	36.4	51.9	32.6	25.2	611.4	127.0		42.7	77.4	
Level of Service	C	D	D	D	C	C	F	F		D	E	
Approach Delay (s)		37.9			33.7			292.8			72.3	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	118.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

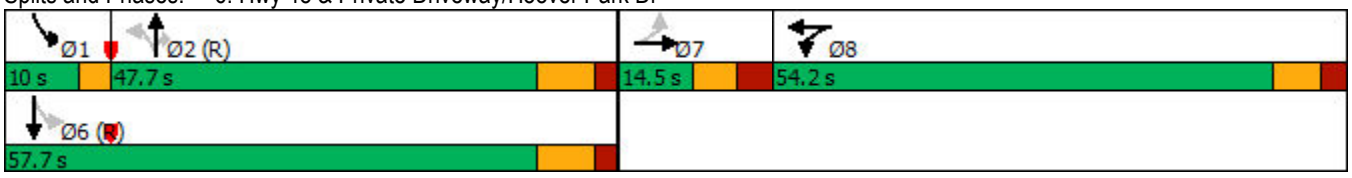
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Future Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99				0.99		1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	1789	1597	1767	1804	0
Flt Permitted				0.950						0.100		
Satd. Flow (perm)	0	1879	0	1750	1556	0	1879	1789	1576	186	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					296				408			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	428	30	865	0	960	476	685	710	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	428	895	0	0	960	476	685	711	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		7.0		52.8	52.8			40.0	40.0	54.7	50.0	
Actuated g/C Ratio		0.06		0.42	0.42			0.32	0.32	0.43	0.40	
v/c Ratio		0.30		0.59	1.09			1.70	0.61	4.08	1.00	
Control Delay		65.1		34.0	83.1			350.3	9.7	1411.4	71.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		65.1		34.0	83.1			350.3	9.7	1411.4	71.5	
LOS		E		C	F			F	A	F	E	
Approach Delay		65.1			67.2			237.4			728.9	
Approach LOS		E			E			F			F	
Queue Length 50th (m)		8.0		92.5	~228.0			~368.4	12.7	~311.9	183.5	
Queue Length 95th (m)		18.6		128.5	#303.2			#442.4	45.0	#383.2	#263.5	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		730	822			566	777	168	713	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.30		0.59	1.09			1.70	0.61	4.08	1.00	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 4.08
Intersection Signal Delay: 346.3 Intersection LOS: F
Intersection Capacity Utilization 143.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

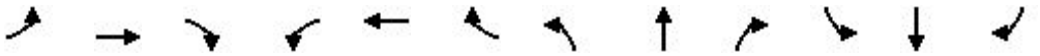
Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Future Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			1789	1576	1767	1804	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1750	1556			1789	1576	186	1804	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	428	30	865	0	960	476	685	710	1
RTOR Reduction (vph)	0	0	0	0	172	0	0	0	289	0	0	0
Lane Group Flow (vph)	0	31	0	428	723	0	0	960	187	685	711	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Effective Green, g (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Actuated g/C Ratio		0.03		0.42	0.42			0.29	0.29	0.37	0.37	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		62		731	649			523	461	156	670	
v/s Ratio Prot		c0.02		0.24	c0.46			0.54		c0.24	0.39	
v/s Ratio Perm									0.12	c1.38		
v/c Ratio		0.50		0.59	1.11			1.84	0.41	4.39	1.06	
Uniform Delay, d1		60.1		28.4	36.8			44.7	35.9	35.2	39.7	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.2		1.2	70.7			383.4	2.6	1540.8	52.1	
Delay (s)		66.3		29.6	107.5			428.1	38.5	1575.9	91.8	
Level of Service		E		C	F			F	D	F	F	
Approach Delay (s)		66.3			82.3			299.0			820.1	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	402.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.62		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	143.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	73	0	0	52	26	0	0	0	43	0	0
Future Volume (vph)	0	73	0	0	52	26	0	0	0	43	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	79	0	0	57	28	0	0	0	47	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	85	0	47
Volume Left (vph)	0	0	0	47
Volume Right (vph)	0	28	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.1	3.9	4.3	4.4
Degree Utilization, x	0.09	0.09	0.00	0.06
Capacity (veh/h)	862	907	810	780
Control Delay (s)	7.5	7.3	7.3	7.7
Approach Delay (s)	7.5	7.3	0.0	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Future Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.183			0.165			0.692			0.690		
Satd. Flow (perm)	334	3433	1493	290	3400	1507	1238	3336	1487	1222	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			50			126			82
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	4.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	8.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	54.5	54.5	54.5	20.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	45.4%	45.4%	45.4%	16.7%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	3.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	0.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None

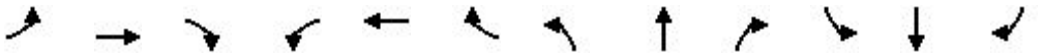
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	60.9	60.9	60.9	83.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.51	0.51	0.51	0.69	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.22	0.63	0.27	0.66	0.63	0.03	0.74	0.14	0.31	0.15	0.14	0.11
Control Delay	26.4	25.8	3.7	15.9	11.3	0.3	60.6	37.1	7.7	36.7	37.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	25.8	3.7	15.9	11.3	0.3	60.6	37.1	7.7	36.7	37.0	0.8
LOS	C	C	A	B	B	A	E	D	A	D	D	A
Approach Delay		22.0			11.7			38.7			28.7	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	5.1	100.9	0.0	8.7	113.0	0.2	43.7	10.6	0.0	7.4	10.3	0.0
Queue Length 95th (m)	15.8	142.9	13.0	34.3	157.0	m0.6	56.9	15.0	12.0	14.1	14.7	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	169	1742	872	392	2240	1010	381	1028	545	376	1009	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.63	0.27	0.61	0.63	0.03	0.49	0.10	0.23	0.10	0.09	0.08

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 19.4 Intersection LOS: B
Intersection Capacity Utilization 101.8% ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Future Volume (vph)	32	932	199	203	1196	29	157	83	107	31	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1682	3275	1389
Flt Permitted	0.18	1.00	1.00	0.16	1.00	1.00	0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	334	3433	1493	289	3400	1507	1239	3336	1487	1223	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1096	234	239	1407	34	185	98	126	36	95	39
RTOR Reduction (vph)	0	0	115	0	0	12	0	0	100	0	0	31
Lane Group Flow (vph)	38	1096	119	239	1407	22	185	98	26	36	95	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	60.9	60.9	60.9	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	60.9	60.9	60.9	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.51	0.51	0.51	0.66	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	169	1742	757	353	2241	993	251	678	302	248	665	282
v/s Ratio Prot		0.32		0.08	c0.41			0.03			0.03	
v/s Ratio Perm	0.11		0.08	c0.37		0.01	c0.15		0.02	0.03		0.01
v/c Ratio	0.22	0.63	0.16	0.68	0.63	0.02	0.74	0.14	0.08	0.15	0.14	0.03
Uniform Delay, d1	16.4	21.4	15.8	13.1	11.9	7.1	44.8	39.2	38.7	39.2	39.2	38.3
Progression Factor	1.00	1.00	1.00	0.79	0.74	0.14	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	1.7	0.4	4.4	1.2	0.0	10.7	0.1	0.1	0.3	0.1	0.0
Delay (s)	19.5	23.1	16.3	14.8	10.0	1.0	55.5	39.3	38.9	39.5	39.3	38.3
Level of Service	B	C	B	B	B	A	E	D	D	D	D	D
Approach Delay (s)		21.8			10.5			46.5			39.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1019	16	47	1288	10	161	0	5	3	0	0
Future Volume (vph)	29	1019	16	47	1288	10	161	0	5	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1785	3400	1597	1785	3398	0	1785	1597	0	0	1785	0
Flt Permitted	0.178			0.191			0.756				0.754	
Satd. Flow (perm)	334	3400	1597	359	3398	0	1420	1597	0	0	1417	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		1			162				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	1108	17	51	1400	11	175	0	5	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	1108	17	51	1411	0	175	5	0	0	3	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	63.0	63.0	63.0	13.0	76.0		44.0	44.0		44.0	44.0	
Total Split (%)	52.5%	52.5%	52.5%	10.8%	63.3%		36.7%	36.7%		36.7%	36.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	77.2	77.2	77.2	87.8	87.8		20.2	20.2			20.2	
Actuated g/C Ratio	0.64	0.64	0.64	0.73	0.73		0.17	0.17			0.17	

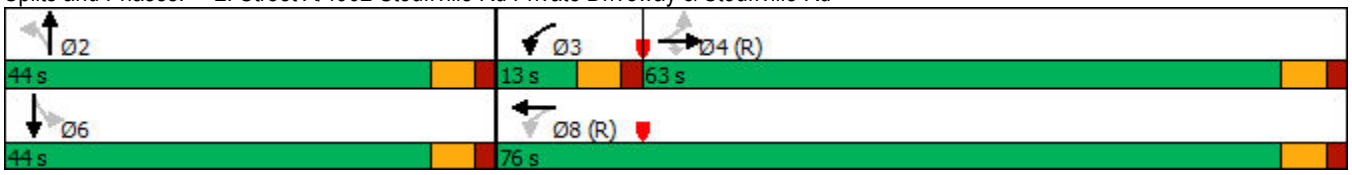
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.15	0.51	0.02	0.15	0.57		0.73	0.01			0.01	
Control Delay	25.2	21.5	2.0	6.6	9.2		64.2	0.0			37.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	25.2	21.5	2.0	6.6	9.2		64.2	0.0			37.3	
LOS	C	C	A	A	A		E	A			D	
Approach Delay		21.3			9.1			62.5			37.3	
Approach LOS		C			A			E			D	
Queue Length 50th (m)	3.1	63.1	0.0	3.1	74.0		41.6	0.0			0.6	
Queue Length 95th (m)	m11.2	142.3	m0.0	8.4	116.9		62.2	0.0			3.3	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	215	2187	1056	347	2486		449	616			448	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.15	0.51	0.02	0.15	0.57		0.39	0.01			0.01	

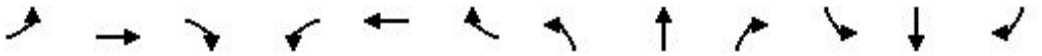
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 57.4% ICU Level of Service B
Analysis Period (min) 15

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

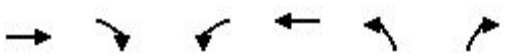
Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1019	16	47	1288	10	161	0	5	3	0	0
Future Volume (vph)	29	1019	16	47	1288	10	161	0	5	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1785	3400	1597	1785	3397		1785	1597			1785	
Flt Permitted	0.18	1.00	1.00	0.19	1.00		0.76	1.00			0.75	
Satd. Flow (perm)	334	3400	1597	359	3397		1420	1597			1418	
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)	32	1108	17	51	1400	11	175	0	5	3	0	0
RTOR Reduction (vph)	0	0	6	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	32	1108	11	51	1411	0	175	1	0	0	3	0
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	76.0	76.0	76.0	87.8	87.8		20.2	20.2			20.2	
Effective Green, g (s)	76.0	76.0	76.0	87.8	87.8		20.2	20.2			20.2	
Actuated g/C Ratio	0.63	0.63	0.63	0.73	0.73		0.17	0.17			0.17	
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)	211	2153	1011	331	2485		239	268			238	
v/s Ratio Prot		0.33		0.01	c0.42			0.00				
v/s Ratio Perm	0.10		0.01	0.11			c0.12				0.00	
v/c Ratio	0.15	0.51	0.01	0.15	0.57		0.73	0.00			0.01	
Uniform Delay, d1	8.9	12.0	8.1	6.5	7.4		47.3	41.5			41.6	
Progression Factor	1.93	1.59	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.3	0.7	0.0	0.2	0.9		11.0	0.0			0.0	
Delay (s)	18.5	19.7	8.1	6.7	8.3		58.3	41.5			41.6	
Level of Service	B	B	A	A	A		E	D			D	
Approach Delay (s)		19.5			8.3			57.9			41.6	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	997	37	0	1360	0	86
Future Volume (Veh/h)	997	37	0	1360	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1084	40	0	1478	0	93
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.83		0.85	0.83
vC, conflicting volume			1084		1823	542
vC1, stage 1 conf vol					1084	
vC2, stage 2 conf vol					739	
vCu, unblocked vol			678		700	21
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			762		378	873

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	542	542	40	739	739	93
Volume Left	0	0	0	0	0	0
Volume Right	0	0	40	0	0	93
cSH	1700	1700	1700	1700	1700	873
Volume to Capacity	0.32	0.32	0.02	0.43	0.43	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

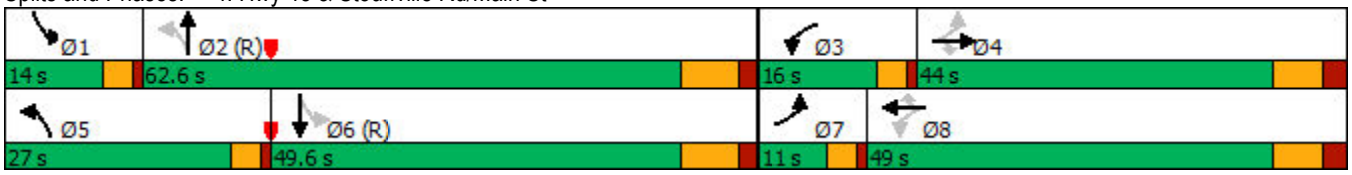
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Future Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.958			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3180	0	1684	3163	0
Flt Permitted	0.152			0.169			0.143			0.445		
Satd. Flow (perm)	286	3433	1521	318	3400	1551	253	3180	0	789	3163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			390			135		49			114	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	58	680	477	191	866	88	302	399	154	173	534	349
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	680	477	191	866	88	302	553	0	173	883	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	44.0	44.0	16.0	49.0	49.0	27.0	62.6		14.0	49.6	
Total Split (%)	8.1%	32.2%	32.2%	11.7%	35.9%	35.9%	19.8%	45.8%		10.2%	36.3%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	44.1	33.3	33.3	53.2	40.7	40.7	75.4	57.6		60.5	46.7	
Actuated g/C Ratio	0.32	0.24	0.24	0.39	0.30	0.30	0.55	0.42		0.44	0.34	

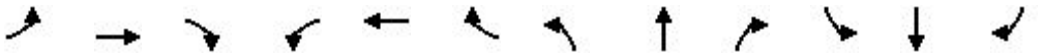
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.34	0.81	0.72	0.75	0.86	0.16	0.85	0.40		0.42	0.76	
Control Delay	31.2	56.9	15.5	47.5	54.8	1.8	46.9	26.6		21.1	41.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.2	56.9	15.5	47.5	54.8	1.8	46.9	26.6		21.1	41.0	
LOS	C	E	B	D	D	A	D	C		C	D	
Approach Delay		39.4			49.5			33.7			37.7	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	10.0	93.4	19.3	35.5	121.4	0.0	54.0	53.7		24.9	109.8	
Queue Length 95th (m)	19.4	116.9	62.2	#55.9	148.8	3.0	#99.9	70.4		39.0	138.1	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	169	912	690	256	1029	564	380	1369		417	1156	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.34	0.75	0.69	0.75	0.84	0.16	0.79	0.40		0.41	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Future Volume (vph)	53	619	434	174	788	80	275	363	140	157	486	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3180		1684	3162	
Flt Permitted	0.15	1.00	1.00	0.17	1.00	1.00	0.14	1.00		0.45	1.00	
Satd. Flow (perm)	286	3433	1521	317	3400	1551	254	3180		789	3162	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	58	680	477	191	866	88	302	399	154	173	534	349
RTOR Reduction (vph)	0	0	293	0	0	62	0	29	0	0	76	0
Lane Group Flow (vph)	58	680	184	191	866	26	302	524	0	173	807	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	39.7	34.1	34.1	50.3	40.7	40.7	70.7	56.9		55.7	45.9	
Effective Green, g (s)	39.7	34.1	34.1	50.3	40.7	40.7	70.7	56.9		55.7	45.9	
Actuated g/C Ratio	0.29	0.25	0.25	0.37	0.30	0.30	0.52	0.42		0.41	0.34	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	144	856	379	247	1013	462	349	1324		385	1062	
v/s Ratio Prot	0.02	0.20		c0.07	c0.25		c0.13	0.16		0.03	0.26	
v/s Ratio Perm	0.10		0.12	0.21		0.02	c0.32			0.15		
v/c Ratio	0.40	0.79	0.49	0.77	0.85	0.06	0.87	0.40		0.45	0.76	
Uniform Delay, d1	36.9	48.0	43.8	32.9	45.2	34.2	29.8	27.8		26.7	40.4	
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	1.8	5.1	1.0	14.0	7.2	0.1	19.5	0.9		0.8	5.1	
Delay (s)	38.7	53.1	44.8	46.8	52.3	34.3	49.2	28.7		27.5	45.6	
Level of Service	D	D	D	D	D	C	D	C		C	D	
Approach Delay (s)		49.1			50.0			36.0			42.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

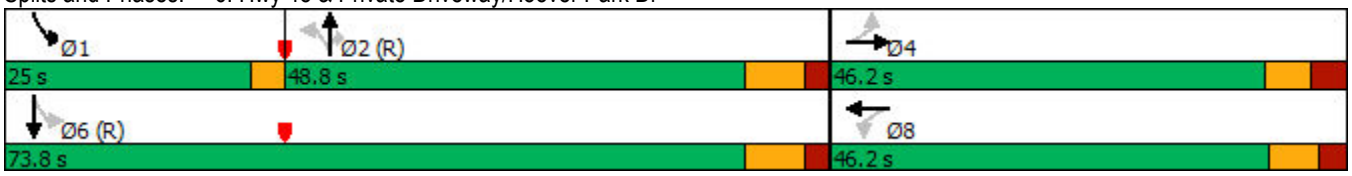
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Future Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	3275	1536	1700	3336	0
Flt Permitted				0.749						0.330		
Satd. Flow (perm)	0	1879	0	1353	1580	0	1879	3275	1536	591	3336	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					420				421			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	450	21	420	0	559	421	587	663	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	450	441	0	0	559	421	587	663	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	46.2	46.2		46.2	46.2		48.8	48.8	48.8	25.0	73.8	
Total Split (%)	38.5%	38.5%		38.5%	38.5%		40.7%	40.7%	40.7%	20.8%	61.5%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		39.8		40.1	40.1			40.0	40.0	69.7	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.58	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.02		1.00	0.55			0.51	0.53	1.08	0.37	
Control Delay		27.2		81.8	6.3			34.2	5.4	79.9	16.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		27.2		81.8	6.3			34.2	5.4	79.9	16.5	
LOS		C		F	A			C	A	E	B	
Approach Delay		27.3			44.4			21.8			46.3	
Approach LOS		C			D			C			D	
Queue Length 50th (m)		2.2		110.8	3.5			58.3	0.0	~102.9	47.4	
Queue Length 95th (m)		6.9		#181.0	28.9			76.3	23.0	#197.5	60.9	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		623		452	807			1121	802	546	1837	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.02		1.00	0.55			0.50	0.52	1.08	0.36	

Intersection Summary

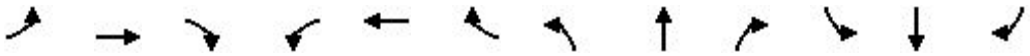
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 38.0 Intersection LOS: D
Intersection Capacity Utilization 114.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Future Volume (vph)	0	12	0	405	19	378	0	503	379	528	597	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			3275	1536	1700	3336	
Flt Permitted		1.00		0.75	1.00			1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1879		1353	1580			3275	1536	590	3336	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	450	21	420	0	559	421	587	663	0
RTOR Reduction (vph)	0	0	0	0	280	0	0	0	281	0	0	0
Lane Group Flow (vph)	0	13	0	450	161	0	0	559	140	587	663	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Effective Green, g (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.54	0.54	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		623		452	527			1091	512	523	1807	
v/s Ratio Prot		0.01			0.10			0.17		c0.21	0.20	
v/s Ratio Perm				c0.33					0.09	c0.40		
v/c Ratio		0.02		1.00	0.31			0.51	0.27	1.12	0.37	
Uniform Delay, d1		27.0		39.9	29.6			32.2	29.3	21.3	15.7	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		40.9	0.3			1.7	1.3	77.5	0.6	
Delay (s)		27.0		80.8	30.0			33.9	30.7	98.8	16.3	
Level of Service		C		F	C			C	C	F	B	
Approach Delay (s)		27.0			55.6			32.5			55.1	
Approach LOS		C			E			C			E	

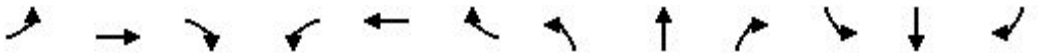
Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	27	0	0	73	37	0	0	0	16	0	0
Future Volume (vph)	0	27	0	0	73	37	0	0	0	16	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	29	0	0	79	40	0	0	0	17	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	119	0	17
Volume Left (vph)	0	0	0	17
Volume Right (vph)	0	40	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.0	3.8	4.2	4.4
Degree Utilization, x	0.03	0.12	0.00	0.02
Capacity (veh/h)	875	946	828	789
Control Delay (s)	7.2	7.3	7.2	7.5
Approach Delay (s)	7.2	7.3	0.0	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Future Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.196			0.067			0.690			0.662		
Satd. Flow (perm)	354	3535	1536	122	3500	1597	1235	3535	1566	1244	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			50			135			118
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1648	288	215	1380	23	217	142	140	53	99	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1648	288	215	1380	23	217	142	140	53	99	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	5.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	13.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	59.5	59.5	59.5	15.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	49.6%	49.6%	49.6%	12.5%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.52	1.09	0.35	0.69	0.62	0.02	0.79	0.18	0.31	0.19	0.13	0.05
Control Delay	40.3	83.8	3.6	38.8	20.1	4.0	63.9	36.5	7.8	36.6	35.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	83.8	3.6	38.8	20.1	4.0	63.9	36.5	7.8	36.6	35.5	0.2
LOS	D	F	A	D	C	A	E	D	A	D	D	A
Approach Delay		70.7			22.4			40.3			31.6	
Approach LOS		E			C			D			C	
Queue Length 50th (m)	14.1	~241.4	0.0	34.9	112.1	0.0	51.2	15.1	1.0	10.8	10.4	0.0
Queue Length 95th (m)	33.4	#286.2	16.3	#105.6	172.8	m0.8	72.4	21.5	15.8	20.0	16.1	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	151	1517	823	312	2243	1041	380	1089	576	383	1048	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	1.09	0.35	0.69	0.62	0.02	0.57	0.13	0.24	0.14	0.09	0.04

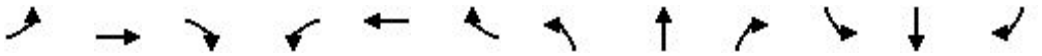
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 47.4 Intersection LOS: D
Intersection Capacity Utilization 114.5% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Future Volume (vph)	73	1516	265	198	1270	21	200	131	129	49	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.20	1.00	1.00	0.07	1.00	1.00	0.69	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	354	3535	1536	123	3500	1597	1234	3535	1566	1244	3400	1452
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)	79	1648	288	215	1380	23	217	142	140	53	99	21
RTOR Reduction (vph)	0	0	164	0	0	8	0	0	105	0	0	16
Lane Group Flow (vph)	79	1648	124	215	1380	15	217	142	35	53	99	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Effective Green, g (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	151	1517	659	312	2242	1023	273	783	347	275	753	321
v/s Ratio Prot		c0.47		0.10	c0.39			0.04			0.03	
v/s Ratio Perm	0.22		0.08	0.34		0.01	c0.18		0.02	0.04		0.00
v/c Ratio	0.52	1.09	0.19	0.69	0.62	0.01	0.79	0.18	0.10	0.19	0.13	0.01
Uniform Delay, d1	25.2	34.2	21.3	33.9	12.8	7.8	44.1	37.9	37.2	38.0	37.4	36.5
Progression Factor	1.00	1.00	1.00	1.00	1.34	5.95	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	50.4	0.6	5.1	1.0	0.0	14.7	0.1	0.1	0.3	0.1	0.0
Delay (s)	37.6	84.6	21.9	38.9	18.2	46.5	58.8	38.0	37.3	38.3	37.5	36.5
Level of Service	D	F	C	D	B	D	E	D	D	D	D	D
Approach Delay (s)		73.8			21.3			46.8			37.6	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1617	43	128	1374	68	115	0	3	3	0	27
Future Volume (vph)	32	1617	43	128	1374	68	115	0	3	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.850			0.877	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1785	3535	1597	1785	3479	0	1785	1597	0	0	1640	0
Flt Permitted	0.155			0.056			0.736				0.981	
Satd. Flow (perm)	291	3535	1597	105	3479	0	1383	1597	0	0	1616	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		11			174			82	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	1777	47	141	1510	75	126	0	3	3	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1777	47	141	1585	0	126	3	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	76.0	76.0	76.0	18.0	94.0		26.0	26.0		26.0	26.0	
Total Split (%)	63.3%	63.3%	63.3%	15.0%	78.3%		21.7%	21.7%		21.7%	21.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.77	0.77		0.13	0.13			0.13	

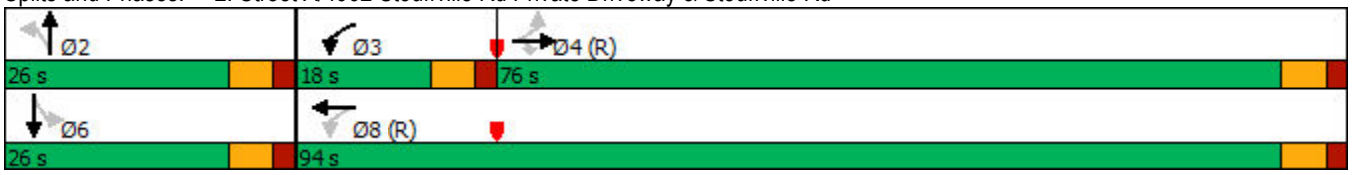
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.19	0.79	0.04	0.65	0.59		0.70	0.01			0.12	
Control Delay	6.4	17.2	1.3	33.5	7.3		70.2	0.0			0.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	6.4	17.2	1.3	33.5	7.3		70.2	0.0			0.9	
LOS	A	B	A	C	A		E	A			A	
Approach Delay		16.6			9.4			68.5			0.9	
Approach LOS		B			A			E			A	
Queue Length 50th (m)	1.8	244.3	0.3	14.7	75.2		30.2	0.0			0.0	
Queue Length 95th (m)	m3.4	m229.8	m0.6	37.6	106.3		50.0	0.0			0.0	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	185	2257	1049	250	2682		230	411			337	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.19	0.79	0.04	0.56	0.59		0.55	0.01			0.10	

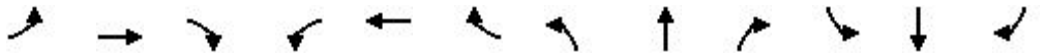
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15

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

Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1617	43	128	1374	68	115	0	3	3	0	27
Future Volume (vph)	32	1617	43	128	1374	68	115	0	3	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1785	3535	1597	1785	3478		1785	1597			1641	
Flt Permitted	0.15	1.00	1.00	0.06	1.00		0.74	1.00			0.98	
Satd. Flow (perm)	291	3535	1597	106	3478		1382	1597			1617	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	35	1777	47	141	1510	75	126	0	3	3	0	30
RTOR Reduction (vph)	0	0	17	0	3	0	0	3	0	0	29	0
Lane Group Flow (vph)	35	1777	30	141	1582	0	126	0	0	0	4	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Effective Green, g (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.77	0.77		0.13	0.13			0.13	
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)	185	2256	1019	218	2678		179	207			210	
v/s Ratio Prot		c0.50		0.05	c0.45			0.00				
v/s Ratio Perm	0.12		0.02	0.44			c0.09				0.00	
v/c Ratio	0.19	0.79	0.03	0.65	0.59		0.70	0.00			0.02	
Uniform Delay, d1	8.9	15.8	8.0	27.9	5.8		50.0	45.4			45.5	
Progression Factor	0.49	0.94	2.15	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.6	0.7	0.0	6.5	1.0		11.9	0.0			0.0	
Delay (s)	4.9	15.6	17.2	34.4	6.8		61.8	45.4			45.6	
Level of Service	A	B	B	C	A		E	D			D	
Approach Delay (s)		15.5			9.0			61.5			45.6	
Approach LOS		B			A			E			D	

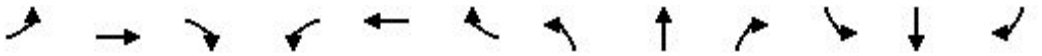
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1484	101	0	1572	0	61
Future Volume (Veh/h)	1484	101	0	1572	0	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1613	110	0	1709	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.62		0.74	0.62
vC, conflicting volume			1613		2468	806
vC1, stage 1 conf vol					1613	
vC2, stage 2 conf vol					854	
vCu, unblocked vol			771		883	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			531		256	679

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	806	806	110	854	854	66
Volume Left	0	0	0	0	0	0
Volume Right	0	0	110	0	0	66
cSH	1700	1700	1700	1700	1700	679
Volume to Capacity	0.47	0.47	0.06	0.50	0.50	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.9
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.9
Approach LOS						B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Future Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3312	0	1750	3288	0
Flt Permitted	0.138			0.094			0.103			0.196		
Satd. Flow (perm)	259	3500	1581	177	3535	1581	183	3312	0	361	3288	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			452			183		48			55	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	61	1109	551	139	880	183	569	796	297	149	594	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1109	551	139	880	183	569	1093	0	149	873	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	48.0	48.0	11.0	48.0	48.0	34.0	64.6		13.0	43.6	
Total Split (%)	8.1%	35.1%	35.1%	8.1%	35.1%	35.1%	24.9%	47.3%		9.5%	31.9%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	51.0	40.3	40.3	51.8	42.5	42.5	73.6	56.9		48.4	35.7	
Actuated g/C Ratio	0.37	0.30	0.30	0.38	0.31	0.31	0.54	0.42		0.35	0.26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	1.07	0.70	0.93	0.80	0.30	1.33	0.78		0.69	0.97	
Control Delay	31.1	95.8	13.3	89.1	50.3	6.1	197.2	37.5		37.4	70.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.1	95.8	13.3	89.1	50.3	6.1	197.2	37.5		37.4	70.4	
LOS	C	F	B	F	D	A	F	D		D	E	
Approach Delay		67.1			48.1			92.2			65.6	
Approach LOS		E			D			F			E	
Queue Length 50th (m)	10.6	~183.8	21.2	25.3	123.7	0.0	~192.7	134.4		20.6	123.1	
Queue Length 95th (m)	20.5	#228.0	67.2	#66.3	151.0	17.8	#266.9	163.1		#37.1	#168.1	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	174	1032	785	149	1099	618	428	1406		219	899	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.35	1.07	0.70	0.93	0.80	0.30	1.33	0.78		0.68	0.97	

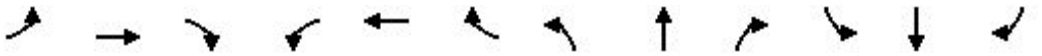
Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 70.2 Intersection LOS: E
Intersection Capacity Utilization 110.0% ICU Level of Service H
Analysis Period (min) 15

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

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Future Volume (vph)	55	998	496	125	792	165	512	716	267	134	535	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3313		1750	3288	
Flt Permitted	0.14	1.00	1.00	0.09	1.00	1.00	0.10	1.00		0.20	1.00	
Satd. Flow (perm)	260	3500	1581	177	3535	1581	182	3313		361	3288	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	1109	551	139	880	183	569	796	297	149	594	279
RTOR Reduction (vph)	0	0	316	0	0	126	0	28	0	0	41	0
Lane Group Flow (vph)	61	1109	235	139	880	57	569	1065	0	149	832	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.1		43.7	34.9	
Effective Green, g (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.1		43.7	34.9	
Actuated g/C Ratio	0.34	0.30	0.30	0.36	0.31	0.31	0.50	0.41		0.32	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	151	1053	475	146	1099	491	421	1360		204	840	
v/s Ratio Prot	0.02	c0.32		c0.05	0.25		c0.30	0.32		0.05	0.25	
v/s Ratio Perm	0.12		0.15	0.30		0.04	c0.38			0.19		
v/c Ratio	0.40	1.05	0.49	0.95	0.80	0.12	1.35	0.78		0.73	0.99	
Uniform Delay, d1	32.9	47.7	39.2	37.3	43.2	33.6	42.6	35.0		34.9	50.7	
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	1.8	42.8	0.8	59.8	4.3	0.1	173.2	4.6		12.6	28.8	
Delay (s)	34.6	90.6	40.0	97.0	47.4	33.7	215.8	39.5		47.5	79.5	
Level of Service	C	F	D	F	D	C	F	D		D	E	
Approach Delay (s)		72.4			51.1			99.9			74.9	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

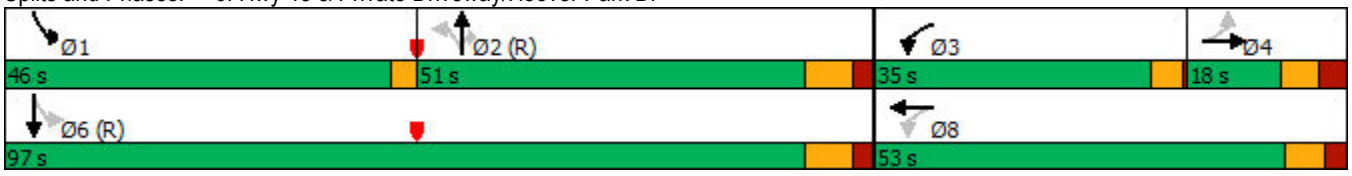
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Future Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99				0.99	1.00	1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	3400	1597	1767	3428	0
Flt Permitted				0.459						0.092		
Satd. Flow (perm)	0	1879	0	845	1556	0	1879	3400	1576	171	3428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					549				476			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	428	30	865	0	960	476	685	710	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	428	895	0	0	960	476	685	711	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		4.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		8.0	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	18.0	18.0		35.0	53.0		51.0	51.0	51.0	46.0	97.0	
Total Split (%)	12.0%	12.0%		23.3%	35.3%		34.0%	34.0%	34.0%	30.7%	64.7%	
Yellow Time (s)	4.1	4.1		3.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		0.5	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		4.0	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.1		49.0	45.8			43.3	43.3	94.0	89.3	
Actuated g/C Ratio		0.06		0.33	0.31			0.29	0.29	0.63	0.60	
v/c Ratio		0.27		0.85	1.05			0.98	0.60	1.21	0.35	
Control Delay		72.8		61.6	62.8			76.5	6.8	149.7	16.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		72.8		61.6	62.8			76.5	6.8	149.7	16.1	
LOS		E		E	E			E	A	F	B	
Approach Delay		72.8			62.4			53.4			81.7	
Approach LOS		E			E			D			F	
Queue Length 50th (m)		9.4		119.7	~176.2			157.5	0.0	~243.1	57.4	
Queue Length 95th (m)		21.0		#160.2	#252.5			#200.3	26.8	#316.7	69.4	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		131		506	856			981	793	564	2040	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.24		0.85	1.05			0.98	0.60	1.21	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 65.8 Intersection LOS: E
Intersection Capacity Utilization 134.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

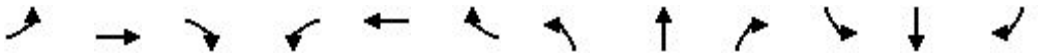
Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Future Volume (vph)	0	28	0	381	27	770	0	854	424	610	632	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			3400	1576	1767	3427	
Flt Permitted		1.00		0.46	1.00			1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1879		845	1556			3400	1576	172	3427	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	428	30	865	0	960	476	685	710	1
RTOR Reduction (vph)	0	0	0	0	370	0	0	0	348	0	0	0
Lane Group Flow (vph)	0	31	0	428	525	0	0	960	128	685	711	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Effective Green, g (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Actuated g/C Ratio		0.04		0.33	0.33			0.27	0.27	0.58	0.58	
Clearance Time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		78		505	506			913	423	556	1971	
v/s Ratio Prot		0.02		0.22	c0.34			0.28		c0.35	0.21	
v/s Ratio Perm				0.06					0.08	c0.36		
v/c Ratio		0.40		0.85	1.04			1.05	0.30	1.23	0.36	
Uniform Delay, d1		70.0		45.3	50.6			54.9	43.7	45.7	17.1	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.3		12.5	49.8			44.2	1.8	119.4	0.5	
Delay (s)		73.3		57.7	100.4			99.1	45.5	165.1	17.6	
Level of Service		E		E	F			F	D	F	B	
Approach Delay (s)		73.3			86.6			81.3			90.0	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	85.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	134.7%	ICU Level of Service	H
Analysis Period (min)	15		

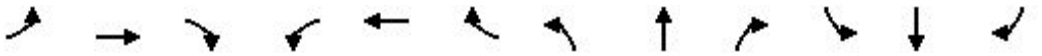
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	73	0	0	52	26	0	0	0	43	0	0
Future Volume (vph)	0	73	0	0	52	26	0	0	0	43	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	79	0	0	57	28	0	0	0	47	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	85	0	47
Volume Left (vph)	0	0	0	47
Volume Right (vph)	0	28	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.1	3.9	4.3	4.4
Degree Utilization, x	0.09	0.09	0.00	0.06
Capacity (veh/h)	862	907	810	780
Control Delay (s)	7.5	7.3	7.3	7.7
Approach Delay (s)	7.5	7.3	0.0	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			



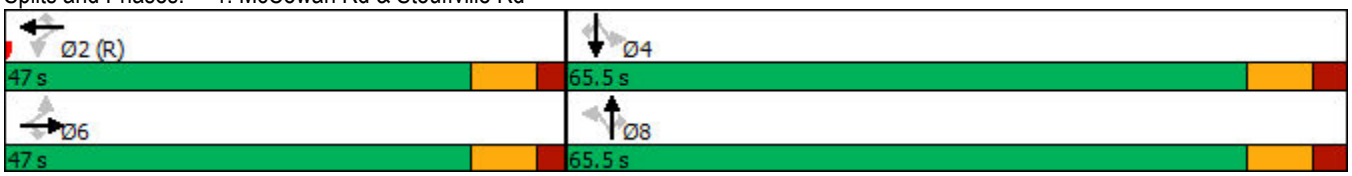
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Future Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.120			0.201			0.681			0.679		
Satd. Flow (perm)	219	3433	1493	353	3400	1507	1219	3336	1487	1203	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None

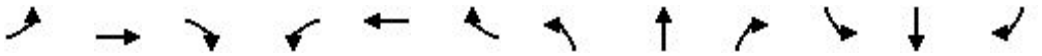
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.27	0.53	0.23	1.06	0.68	0.03	0.71	0.16	0.35	0.14	0.16	0.12
Control Delay	18.9	13.5	2.2	102.2	16.7	1.7	54.7	34.0	23.6	33.1	34.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	13.5	2.2	102.2	16.7	1.7	54.7	34.0	23.6	33.1	34.0	7.0
LOS	B	B	A	F	B	A	D	C	C	C	C	A
Approach Delay		11.8			28.0			39.9			28.2	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	3.5	69.0	0.0	~60.2	103.5	0.0	40.4	11.6	15.3	6.9	11.3	0.0
Queue Length 95th (m)	13.6	110.0	9.6	#112.6	160.8	2.4	52.3	15.7	25.6	12.9	15.4	5.4
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	139	2196	1039	225	2175	983	617	1690	777	609	1659	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.53	0.23	1.06	0.68	0.03	0.30	0.07	0.16	0.06	0.07	0.05

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 23.3 Intersection LOS: C
Intersection Capacity Utilization 103.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd

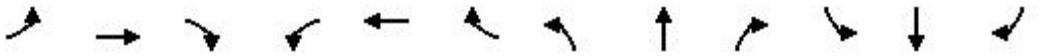




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Future Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.12	1.00	1.00	0.20	1.00	1.00	0.68	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	219	3433	1493	353	3400	1507	1219	3336	1487	1203	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
RTOR Reduction (vph)	0	0	84	0	0	12	0	0	38	0	0	31
Lane Group Flow (vph)	38	1159	150	239	1482	22	185	115	88	36	112	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Effective Green, g (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	140	2197	955	225	2176	964	260	711	317	256	698	296
v/s Ratio Prot		0.34			0.44			0.03			0.03	
v/s Ratio Perm	0.17		0.10	c0.68		0.01	c0.15		0.06	0.03		0.01
v/c Ratio	0.27	0.53	0.16	1.06	0.68	0.02	0.71	0.16	0.28	0.14	0.16	0.03
Uniform Delay, d1	8.8	11.0	8.1	20.2	12.9	7.4	41.0	36.1	37.0	35.9	36.0	35.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.9	0.4	77.4	1.7	0.0	8.9	0.1	0.5	0.3	0.1	0.0
Delay (s)	13.5	11.9	8.5	97.7	14.7	7.4	49.9	36.2	37.5	36.1	36.2	35.1
Level of Service	B	B	A	F	B	A	D	D	D	D	D	D
Approach Delay (s)		11.4			25.8			42.5			35.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
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)	29	1072	16	47	1364	10	161	0	5	3	0	0
Future Volume (Veh/h)	29	1072	16	47	1364	10	161	0	5	3	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)	32	1165	17	51	1483	11	175	0	5	3	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1494			1182			2072	2825	582	2242	2836	747
vC1, stage 1 conf vol							1229	1229		1590	1590	
vC2, stage 2 conf vol							844	1596		652	1246	
vCu, unblocked vol	1494			1182			2072	2825	582	2242	2836	747
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			91			0	100	99	97	100	100
cM capacity (veh/h)	455			598			146	104	461	98	113	360

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	32	582	582	17	51	989	505	175	5	3
Volume Left	32	0	0	0	51	0	0	175	0	3
Volume Right	0	0	0	17	0	0	11	0	5	0
cSH	455	1700	1700	1700	598	1700	1700	146	461	98
Volume to Capacity	0.07	0.34	0.34	0.01	0.09	0.58	0.30	1.20	0.01	0.03
Queue Length 95th (m)	1.8	0.0	0.0	0.0	2.2	0.0	0.0	81.1	0.3	0.8
Control Delay (s)	13.5	0.0	0.0	0.0	11.6	0.0	0.0	199.3	12.9	42.9
Lane LOS	B				B			F	B	E
Approach Delay (s)	0.4				0.4			194.1		42.9
Approach LOS								F		E

Intersection Summary				
Average Delay	12.3			
Intersection Capacity Utilization	54.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1056	37	0	1438	0	86
Future Volume (Veh/h)	1056	37	0	1438	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1148	40	0	1563	0	93
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.76	
vC, conflicting volume			1148		1930	574
vC1, stage 1 conf vol					1148	
vC2, stage 2 conf vol					782	
vCu, unblocked vol			1148		1590	574
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	80
cM capacity (veh/h)			616		250	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	574	574	40	782	782	93
Volume Left	0	0	0	0	0	0
Volume Right	0	0	40	0	0	93
cSH	1700	1700	1700	1700	1700	467
Volume to Capacity	0.34	0.34	0.02	0.46	0.46	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.6
Lane LOS						B
Approach Delay (s)	0.0			0.0		14.6
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

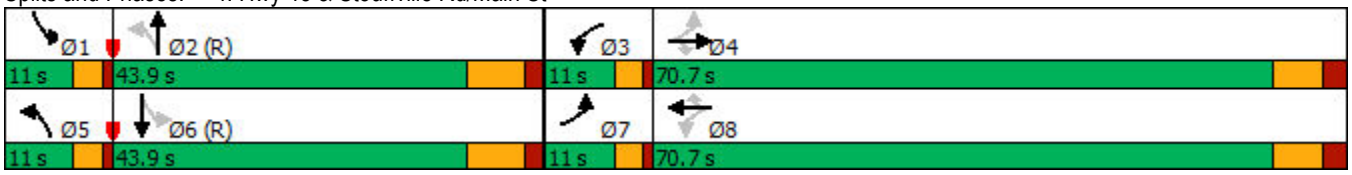
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Future Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3183	0	1684	3166	0
Flt Permitted	0.145			0.225			0.102			0.439		
Satd. Flow (perm)	272	3433	1521	423	3400	1551	181	3183	0	778	3166	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			235			103		38			100	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	58	725	477	191	911	88	302	412	154	173	552	349
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	725	477	191	911	88	302	566	0	173	901	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	54.4	43.7	43.7	55.2	45.9	45.9	69.4	49.0		53.2	36.0	
Actuated g/C Ratio	0.40	0.32	0.32	0.40	0.34	0.34	0.51	0.36		0.39	0.26	

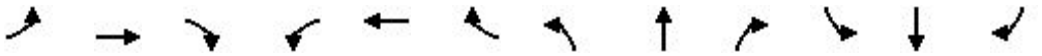
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.31	0.66	0.74	0.80	0.80	0.15	0.79	0.49		0.44	0.99	
Control Delay	25.1	42.4	26.5	51.0	46.6	3.9	50.7	35.6		25.0	72.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	25.1	42.4	26.5	51.0	46.6	3.9	50.7	35.6		25.0	72.4	
LOS	C	D	C	D	D	A	D	D		C	E	
Approach Delay		35.6			44.2			40.8			64.8	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	9.4	91.6	62.3	33.5	124.0	0.0	65.2	62.6		26.6	122.9	
Queue Length 95th (m)	16.2	102.4	95.7	#47.6	136.2	8.3	#149.4	91.8		47.4	#170.3	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	186	1583	828	240	1568	770	381	1166		390	908	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.31	0.46	0.58	0.80	0.58	0.11	0.79	0.49		0.44	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 46.1 Intersection LOS: D
Intersection Capacity Utilization 91.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

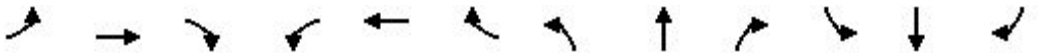
Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Future Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3184		1684	3165	
Flt Permitted	0.15	1.00	1.00	0.22	1.00	1.00	0.10	1.00		0.44	1.00	
Satd. Flow (perm)	273	3433	1521	422	3400	1551	181	3184		779	3165	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	58	725	477	191	911	88	302	412	154	173	552	349
RTOR Reduction (vph)	0	0	158	0	0	58	0	25	0	0	74	0
Lane Group Flow (vph)	58	725	319	191	911	30	302	541	0	173	827	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	50.1	44.5	44.5	52.9	45.9	45.9	65.5	48.2		48.5	35.2	
Effective Green, g (s)	50.1	44.5	44.5	52.9	45.9	45.9	65.5	48.2		48.5	35.2	
Actuated g/C Ratio	0.37	0.33	0.33	0.39	0.34	0.34	0.48	0.35		0.36	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	162	1118	495	233	1142	521	376	1123		364	815	
v/s Ratio Prot	0.01	0.21		c0.04	0.27		c0.15	0.17		0.05	c0.26	
v/s Ratio Perm	0.12		0.21	c0.27		0.02	0.23			0.12		
v/c Ratio	0.36	0.65	0.64	0.82	0.80	0.06	0.80	0.48		0.48	1.01	
Uniform Delay, d1	30.6	39.4	39.3	35.7	41.1	30.7	37.8	34.5		31.7	50.7	
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	1.4	1.3	2.9	19.7	4.0	0.0	11.7	1.5		1.0	35.2	
Delay (s)	32.0	40.7	42.1	55.4	45.1	30.7	49.5	35.9		32.6	85.9	
Level of Service	C	D	D	E	D	C	D	D		C	F	
Approach Delay (s)		40.8			45.7			40.7			77.3	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



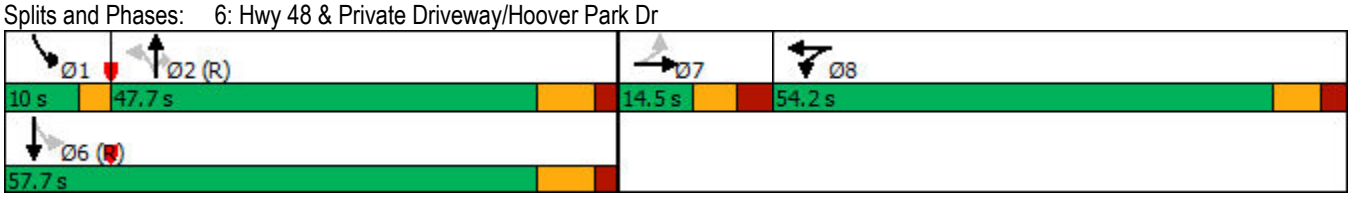
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Future Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	1724	1536	1700	1756	0
Flt Permitted				0.950						0.104		
Satd. Flow (perm)	0	1879	0	1716	1580	0	1879	1724	1536	186	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					354				432			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	480	21	437	0	579	432	594	684	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	480	458	0	0	579	432	594	684	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		7.0		40.6	40.6			40.0	40.0	69.8	65.1	
Actuated g/C Ratio		0.06		0.32	0.32			0.32	0.32	0.55	0.52	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.12		0.87	0.61			1.06	0.55	1.62	0.76	
Control Delay		59.7		57.2	11.3			97.9	5.9	317.0	34.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		59.7		57.2	11.3			97.9	5.9	317.0	34.1	
LOS		E		E	B			F	A	F	C	
Approach Delay		59.7			34.8			58.6			165.6	
Approach LOS		E			C			E			F	
Queue Length 50th (m)		3.3		115.8	19.4			~166.7	0.0	~189.7	127.3	
Queue Length 95th (m)		10.6		152.5	51.2			#238.5	24.9	#336.2	#258.9	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		638	809			545	781	367	904	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.13		0.75	0.57			1.06	0.55	1.62	0.76	

Intersection Summary

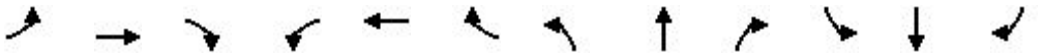
Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.62
Intersection Signal Delay: 93.9 Intersection LOS: F
Intersection Capacity Utilization 116.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Future Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			1724	1536	1700	1756	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1716	1580			1724	1536	186	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	480	21	437	0	579	432	594	684	0
RTOR Reduction (vph)	0	0	0	0	240	0	0	0	311	0	0	0
Lane Group Flow (vph)	0	13	0	480	218	0	0	579	121	594	684	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		2.8		40.6	40.6			35.5	35.5	60.6	60.6	
Effective Green, g (s)		2.8		40.6	40.6			35.5	35.5	60.6	60.6	
Actuated g/C Ratio		0.02		0.32	0.32			0.28	0.28	0.48	0.48	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		41		551	507			484	431	353	841	
v/s Ratio Prot		c0.01		c0.28	0.14			0.34		c0.29	0.39	
v/s Ratio Perm									0.08	c0.51		
v/c Ratio		0.32		0.87	0.43			1.20	0.28	1.68	0.81	
Uniform Delay, d1		60.9		40.4	33.8			45.5	35.5	39.5	28.1	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.4		14.1	0.6			107.0	1.6	319.3	8.5	
Delay (s)		65.3		54.5	34.4			152.5	37.1	358.8	36.5	
Level of Service		E		D	C			F	D	F	D	
Approach Delay (s)		65.3			44.7			103.2			186.3	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	118.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	116.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	27	0	0	73	37	0	0	0	16	0	0
Future Volume (vph)	0	27	0	0	73	37	0	0	0	16	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	29	0	0	79	40	0	0	0	17	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	119	0	17
Volume Left (vph)	0	0	0	17
Volume Right (vph)	0	40	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.0	3.8	4.2	4.4
Degree Utilization, x	0.03	0.12	0.00	0.02
Capacity (veh/h)	875	946	828	789
Control Delay (s)	7.2	7.3	7.2	7.5
Approach Delay (s)	7.2	7.3	0.0	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			

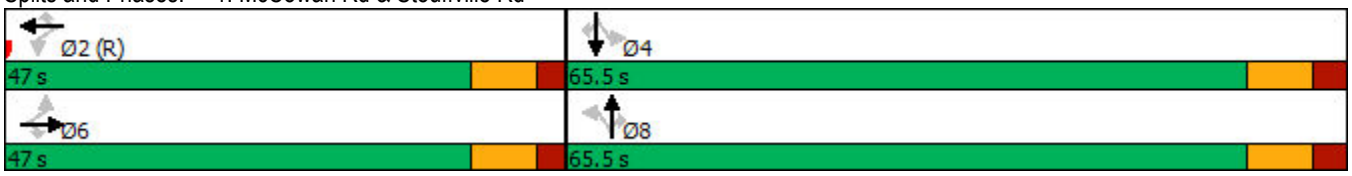
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Future Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.119			0.064			0.679			0.647		
Satd. Flow (perm)	215	3535	1536	117	3500	1597	1215	3535	1566	1216	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1742	288	215	1455	23	217	166	140	53	115	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1742	288	215	1455	23	217	166	140	53	115	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24

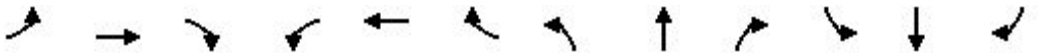
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.60	0.80	0.27	2.99	0.67	0.02	0.76	0.20	0.35	0.19	0.14	0.06
Control Delay	39.7	21.5	2.2	949.3	17.5	0.5	56.0	33.2	23.5	32.7	32.1	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	21.5	2.2	949.3	17.5	0.5	56.0	33.2	23.5	32.7	32.1	1.6
LOS	D	C	A	F	B	A	E	C	C	C	C	A
Approach Delay		19.5			135.6			40.0			28.9	
Approach LOS		B			F			D			C	
Queue Length 50th (m)	10.3	148.6	0.0	~70.5	107.7	0.0	47.0	16.3	17.4	9.9	11.1	0.0
Queue Length 95th (m)	#43.3	#251.3	12.9	#125.6	169.2	0.9	66.8	22.5	31.2	18.5	16.7	1.6
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	132	2184	1058	72	2163	1006	615	1791	817	616	1722	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.80	0.27	2.99	0.67	0.02	0.35	0.09	0.17	0.09	0.07	0.03

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.99
Intersection Signal Delay: 65.8 Intersection LOS: E
Intersection Capacity Utilization 123.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

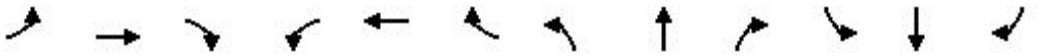
Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Future Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.12	1.00	1.00	0.06	1.00	1.00	0.68	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	215	3535	1536	117	3500	1597	1215	3535	1566	1215	3400	1452
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)	79	1742	288	215	1455	23	217	166	140	53	115	21
RTOR Reduction (vph)	0	0	110	0	0	9	0	0	37	0	0	16
Lane Group Flow (vph)	79	1742	178	215	1455	14	217	166	103	53	115	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Effective Green, g (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	132	2183	948	72	2162	986	286	832	368	286	800	342
v/s Ratio Prot		0.49			0.42			0.05			0.03	
v/s Ratio Perm	0.37		0.12	c1.84		0.01	c0.18		0.07	0.04		0.00
v/c Ratio	0.60	0.80	0.19	2.99	0.67	0.01	0.76	0.20	0.28	0.19	0.14	0.01
Uniform Delay, d1	13.0	16.2	9.3	21.5	14.1	8.3	40.0	34.5	35.2	34.4	34.0	33.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	3.1	0.4	929.9	1.7	0.0	11.0	0.1	0.4	0.3	0.1	0.0
Delay (s)	31.5	19.4	9.7	951.4	15.8	8.3	51.0	34.6	35.6	34.7	34.1	33.0
Level of Service	C	B	A	F	B	A	D	C	D	C	C	C
Approach Delay (s)		18.5			134.5			41.7			34.1	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	65.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.36		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	123.7%	ICU Level of Service	H
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)	32	1704	43	128	1453	68	115	0	3	3	0	27
Future Volume (Veh/h)	32	1704	43	128	1453	68	115	0	3	3	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	35	1873	47	141	1597	75	126	0	3	3	0	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1672			1920			3054	3897	936	2926	3906	836
vC1, stage 1 conf vol							1943	1943		1916	1916	
vC2, stage 2 conf vol							1110	1954		1010	1990	
vCu, unblocked vol	1672			1920			3054	3897	936	2926	3906	836
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			55			0	100	99	91	100	90
cM capacity (veh/h)	389			312			46	24	270	35	2	315

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	35	936	936	47	141	1065	607	126	3	33
Volume Left	35	0	0	0	141	0	0	126	0	3
Volume Right	0	0	0	47	0	0	75	0	3	30
cSH	389	1700	1700	1700	312	1700	1700	46	270	182
Volume to Capacity	0.09	0.55	0.55	0.03	0.45	0.63	0.36	2.75	0.01	0.18
Queue Length 95th (m)	2.4	0.0	0.0	0.0	17.9	0.0	0.0	108.2	0.3	5.1
Control Delay (s)	15.2	0.0	0.0	0.0	25.7	0.0	0.0	982.0	18.5	29.2
Lane LOS	C				D			F	C	D
Approach Delay (s)	0.3				2.0			959.6		29.2
Approach LOS								F		D

Intersection Summary				
Average Delay	32.8			
Intersection Capacity Utilization	77.2%	ICU Level of Service		D
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1572	101	0	1657	0	61
Future Volume (Veh/h)	1572	101	0	1657	0	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1709	110	0	1801	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.79	
vC, conflicting volume			1709		2610	854
vC1, stage 1 conf vol					1709	
vC2, stage 2 conf vol					900	
vCu, unblocked vol			1709		2507	854
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	78
cM capacity (veh/h)			377		127	306

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	854	854	110	900	900	66
Volume Left	0	0	0	0	0	0
Volume Right	0	0	110	0	0	66
cSH	1700	1700	1700	1700	1700	306
Volume to Capacity	0.50	0.50	0.06	0.53	0.53	0.22
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	20.0
Lane LOS						C
Approach Delay (s)	0.0			0.0		20.0
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

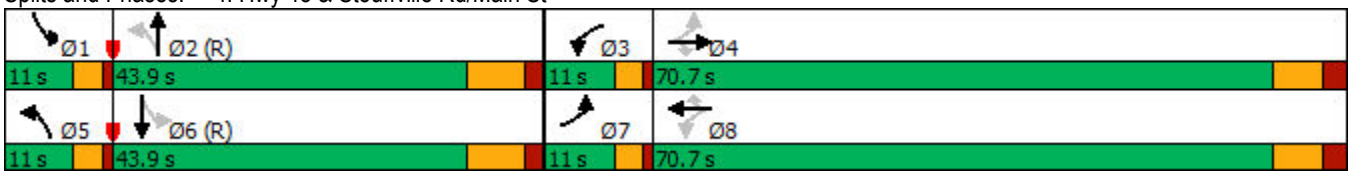
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Future Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.960			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3317	0	1750	3291	0
Flt Permitted	0.197			0.092			0.108			0.114		
Satd. Flow (perm)	370	3500	1581	173	3535	1581	191	3317	0	210	3291	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			210			183		37			52	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	61	1177	551	139	931	183	569	821	297	149	616	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1177	551	139	931	183	569	1118	0	149	895	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	66.5	55.8	55.8	67.3	58.0	58.0	55.2	38.0		52.1	36.0	
Actuated g/C Ratio	0.49	0.41	0.41	0.49	0.42	0.42	0.40	0.28		0.38	0.26	

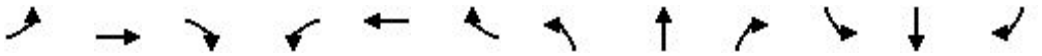
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.24	0.82	0.72	0.83	0.62	0.24	2.45	1.18		0.69	0.99	
Control Delay	17.5	41.2	25.1	57.0	32.6	3.6	687.8	132.4		46.5	74.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.5	41.2	25.1	57.0	32.6	3.6	687.8	132.4		46.5	74.3	
LOS	B	D	C	E	C	A	F	F		D	E	
Approach Delay		35.4			31.1			319.7			70.4	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	8.3	153.5	81.7	19.9	109.4	0.0	~256.4	~203.6		26.5	127.6	
Queue Length 95th (m)	14.3	167.5	116.7	#49.6	121.3	13.3	#354.6	#248.4		#71.4	#174.4	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	252	1614	842	167	1630	827	232	950		217	905	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.24	0.73	0.65	0.83	0.57	0.22	2.45	1.18		0.69	0.99	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.45
Intersection Signal Delay: 123.9 Intersection LOS: F
Intersection Capacity Utilization 111.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Future Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3317		1750	3292	
Flt Permitted	0.20	1.00	1.00	0.09	1.00	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)	370	3500	1581	174	3535	1581	191	3317		209	3292	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	1177	551	139	931	183	569	821	297	149	616	279
RTOR Reduction (vph)	0	0	123	0	0	105	0	27	0	0	39	0
Lane Group Flow (vph)	61	1177	428	139	931	78	569	1091	0	149	856	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	62.2	56.6	56.6	65.0	58.0	58.0	51.4	37.2		47.4	35.2	
Effective Green, g (s)	62.2	56.6	56.6	65.0	58.0	58.0	51.4	37.2		47.4	35.2	
Actuated g/C Ratio	0.46	0.41	0.41	0.48	0.42	0.42	0.38	0.27		0.35	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	226	1450	655	165	1500	671	227	903		210	848	
v/s Ratio Prot	0.01	0.34		c0.04	0.26		c0.26	0.33		0.06	0.26	
v/s Ratio Perm	0.11		0.27	c0.36		0.05	c0.68			0.18		
v/c Ratio	0.27	0.81	0.65	0.84	0.62	0.12	2.51	1.21		0.71	1.01	
Uniform Delay, d1	22.7	35.3	32.1	27.1	30.7	23.8	39.3	49.7		35.7	50.7	
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	0.6	3.6	2.3	30.4	0.8	0.1	690.9	104.1		10.5	33.4	
Delay (s)	23.3	38.9	34.5	57.5	31.5	23.9	730.2	153.8		46.2	84.1	
Level of Service	C	D	C	E	C	C	F	F		D	F	
Approach Delay (s)		37.0			33.3			348.2			78.7	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	134.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

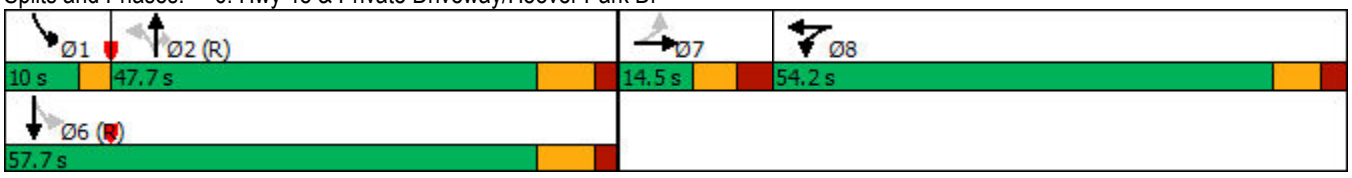
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Future Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99				0.99		1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	1789	1597	1767	1804	0
Flt Permitted				0.950						0.100		
Satd. Flow (perm)	0	1879	0	1750	1556	0	1879	1789	1576	186	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					294				407			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	449	30	898	0	991	490	700	733	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	449	928	0	0	991	490	700	734	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		7.0		52.8	52.8			40.0	40.0	54.7	50.0	
Actuated g/C Ratio		0.06		0.42	0.42			0.32	0.32	0.43	0.40	
v/c Ratio		0.30		0.62	1.13			1.75	0.63	4.17	1.03	
Control Delay		65.1		34.9	98.5			373.9	10.7	1451.3	79.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		65.1		34.9	98.5			373.9	10.7	1451.3	79.4	
LOS		E		C	F			F	B	F	E	
Approach Delay		65.1			77.8			253.8			749.0	
Approach LOS		E			E			F			F	
Queue Length 50th (m)		8.0		98.5	~246.9			~385.3	15.7	~320.2	~205.3	
Queue Length 95th (m)		18.6		136.0	#322.1			#459.8	50.1	#391.5	#276.6	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		730	821			566	776	168	713	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.30		0.62	1.13			1.75	0.63	4.17	1.03	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 4.17
Intersection Signal Delay: 360.7 Intersection LOS: F
Intersection Capacity Utilization 147.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

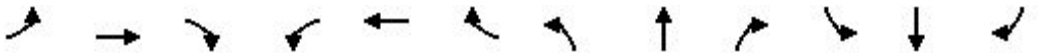
Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Future Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			1789	1576	1767	1804	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1750	1556			1789	1576	186	1804	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	449	30	898	0	991	490	700	733	1
RTOR Reduction (vph)	0	0	0	0	171	0	0	0	288	0	0	0
Lane Group Flow (vph)	0	31	0	449	757	0	0	991	202	700	734	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Effective Green, g (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Actuated g/C Ratio		0.03		0.42	0.42			0.29	0.29	0.37	0.37	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		62		731	649			523	461	156	670	
v/s Ratio Prot		c0.02		0.26	c0.49			0.55		c0.25	0.41	
v/s Ratio Perm									0.13	c1.41		
v/c Ratio		0.50		0.61	1.17			1.89	0.44	4.49	1.10	
Uniform Delay, d1		60.1		28.8	36.8			44.7	36.3	35.2	39.7	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.2		1.5	90.8			409.8	3.0	1583.9	63.8	
Delay (s)		66.3		30.4	127.6			454.5	39.3	1619.1	103.5	
Level of Service		E		C	F			F	D	F	F	
Approach Delay (s)		66.3			95.9			317.1			843.3	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	419.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.69		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	147.6%	ICU Level of Service	H
Analysis Period (min)	15		

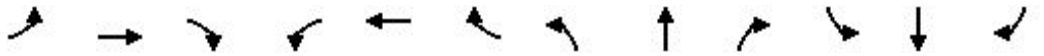
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	73	0	0	52	26	0	0	0	43	0	0
Future Volume (vph)	0	73	0	0	52	26	0	0	0	43	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	79	0	0	57	28	0	0	0	47	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	85	0	47
Volume Left (vph)	0	0	0	47
Volume Right (vph)	0	28	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.1	3.9	4.3	4.4
Degree Utilization, x	0.09	0.09	0.00	0.06
Capacity (veh/h)	862	907	810	780
Control Delay (s)	7.5	7.3	7.3	7.7
Approach Delay (s)	7.5	7.3	0.0	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Future Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.166			0.141			0.681			0.679		
Satd. Flow (perm)	303	3433	1493	248	3400	1507	1219	3336	1487	1203	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			50			126			82
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	4.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	8.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	54.5	54.5	54.5	20.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	45.4%	45.4%	45.4%	16.7%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	3.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	0.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	59.7	59.7	59.7	83.3	79.3	79.3	24.2	24.2	24.2	24.2	24.2	24.2
Actuated g/C Ratio	0.50	0.50	0.50	0.69	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.25	0.68	0.27	0.67	0.66	0.03	0.75	0.17	0.32	0.15	0.17	0.11
Control Delay	28.6	27.8	3.8	19.2	11.4	0.3	62.6	37.8	7.7	37.0	37.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	27.8	3.8	19.2	11.4	0.3	62.6	37.8	7.7	37.0	37.7	0.8
LOS	C	C	A	B	B	A	E	D	A	D	D	A
Approach Delay		23.9			12.2			39.7			29.9	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	5.4	114.0	0.0	7.7	121.3	0.2	43.9	12.6	0.0	7.5	12.3	0.0
Queue Length 95th (m)	16.3	154.4	13.0	43.3	169.3	m0.5	57.2	17.1	12.0	14.1	16.7	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	150	1706	859	377	2246	1012	375	1028	545	370	1009	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.68	0.27	0.63	0.66	0.03	0.49	0.11	0.23	0.10	0.11	0.08

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 103.6% ICU Level of Service G
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Future Volume (vph)	32	985	199	203	1260	29	157	98	107	31	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.17	1.00	1.00	0.14	1.00	1.00	0.68	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	303	3433	1493	248	3400	1507	1219	3336	1487	1203	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1159	234	239	1482	34	185	115	126	36	112	39
RTOR Reduction (vph)	0	0	118	0	0	12	0	0	101	0	0	31
Lane Group Flow (vph)	38	1159	116	239	1482	22	185	115	25	36	112	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	59.7	59.7	59.7	79.3	79.3	79.3	24.2	24.2	24.2	24.2	24.2	24.2
Effective Green, g (s)	59.7	59.7	59.7	79.3	79.3	79.3	24.2	24.2	24.2	24.2	24.2	24.2
Actuated g/C Ratio	0.50	0.50	0.50	0.66	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	150	1707	742	348	2246	995	245	672	299	242	660	280
v/s Ratio Prot		0.34		0.09	c0.44			0.03			0.03	
v/s Ratio Perm	0.13		0.08	c0.36		0.01	c0.15		0.02	0.03		0.01
v/c Ratio	0.25	0.68	0.16	0.69	0.66	0.02	0.76	0.17	0.08	0.15	0.17	0.03
Uniform Delay, d1	17.3	22.9	16.4	14.9	12.2	7.0	45.1	39.6	38.9	39.4	39.6	38.5
Progression Factor	1.00	1.00	1.00	0.87	0.72	0.13	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	2.2	0.5	4.7	1.3	0.0	12.4	0.1	0.1	0.3	0.1	0.0
Delay (s)	21.4	25.1	16.9	17.6	10.1	0.9	57.5	39.7	39.0	39.7	39.7	38.5
Level of Service	C	C	B	B	B	A	E	D	D	D	D	D
Approach Delay (s)		23.6			10.9			47.3			39.5	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1072	16	47	1364	10	161	0	5	3	0	0
Future Volume (vph)	29	1072	16	47	1364	10	161	0	5	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1785	3400	1597	1785	3398	0	1785	1597	0	0	1785	0
Flt Permitted	0.158			0.176			0.756				0.754	
Satd. Flow (perm)	297	3400	1597	331	3398	0	1420	1597	0	0	1417	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		1			155				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	1165	17	51	1483	11	175	0	5	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	1165	17	51	1494	0	175	5	0	0	3	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	63.0	63.0	63.0	13.0	76.0		44.0	44.0		44.0	44.0	
Total Split (%)	52.5%	52.5%	52.5%	10.8%	63.3%		36.7%	36.7%		36.7%	36.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	77.2	77.2	77.2	87.8	87.8		20.2	20.2			20.2	
Actuated g/C Ratio	0.64	0.64	0.64	0.73	0.73		0.17	0.17			0.17	

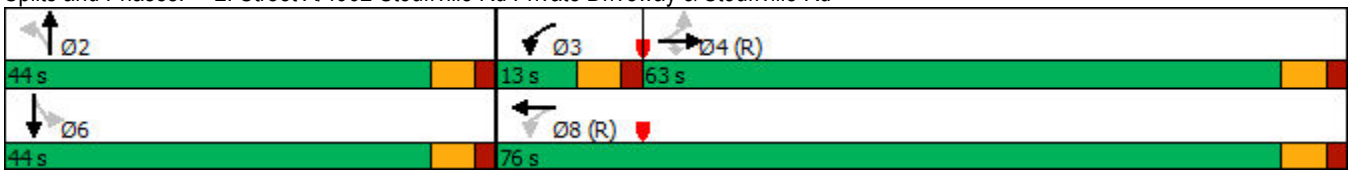
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.17	0.53	0.02	0.16	0.60		0.73	0.01			0.01	
Control Delay	27.2	23.2	2.1	6.7	9.8		64.2	0.0			37.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	27.2	23.2	2.1	6.7	9.8		64.2	0.0			37.3	
LOS	C	C	A	A	A		E	A			D	
Approach Delay		23.0			9.7			62.5			37.3	
Approach LOS		C			A			E			D	
Queue Length 50th (m)	3.8	79.1	0.0	3.1	81.8		41.6	0.0			0.6	
Queue Length 95th (m)	m10.4	149.0	m0.0	8.4	129.2		62.2	0.0			3.3	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	191	2187	1056	328	2486		449	611			448	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.17	0.53	0.02	0.16	0.60		0.39	0.01			0.01	

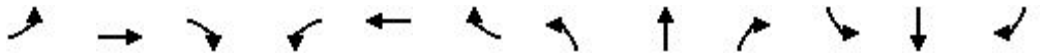
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 57.4% ICU Level of Service B
Analysis Period (min) 15

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

Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1072	16	47	1364	10	161	0	5	3	0	0
Future Volume (vph)	29	1072	16	47	1364	10	161	0	5	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1785	3400	1597	1785	3397		1785	1597			1785	
Flt Permitted	0.16	1.00	1.00	0.18	1.00		0.76	1.00			0.75	
Satd. Flow (perm)	297	3400	1597	330	3397		1420	1597			1418	
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)	32	1165	17	51	1483	11	175	0	5	3	0	0
RTOR Reduction (vph)	0	0	6	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	32	1165	11	51	1494	0	175	1	0	0	3	0
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	76.0	76.0	76.0	87.8	87.8		20.2	20.2			20.2	
Effective Green, g (s)	76.0	76.0	76.0	87.8	87.8		20.2	20.2			20.2	
Actuated g/C Ratio	0.63	0.63	0.63	0.73	0.73		0.17	0.17			0.17	
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)	188	2153	1011	311	2485		239	268			238	
v/s Ratio Prot		0.34		0.01	c0.44			0.00				
v/s Ratio Perm	0.11		0.01	0.11			c0.12				0.00	
v/c Ratio	0.17	0.54	0.01	0.16	0.60		0.73	0.00			0.01	
Uniform Delay, d1	9.0	12.3	8.1	6.9	7.7		47.3	41.5			41.6	
Progression Factor	2.02	1.67	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.5	0.8	0.0	0.2	1.1		11.0	0.0			0.0	
Delay (s)	19.8	21.2	8.1	7.1	8.8		58.3	41.5			41.6	
Level of Service	B	C	A	A	A		E	D			D	
Approach Delay (s)		21.0			8.7			57.9			41.6	
Approach LOS		C			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1056	37	0	1438	0	86
Future Volume (Veh/h)	1056	37	0	1438	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1148	40	0	1563	0	93
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.81		0.84	0.81
vC, conflicting volume			1148		1930	574
vC1, stage 1 conf vol					1148	
vC2, stage 2 conf vol					782	
vCu, unblocked vol			713		714	5
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			726		357	878

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	574	574	40	782	782	93
Volume Left	0	0	0	0	0	0
Volume Right	0	0	40	0	0	93
cSH	1700	1700	1700	1700	1700	878
Volume to Capacity	0.34	0.34	0.02	0.46	0.46	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

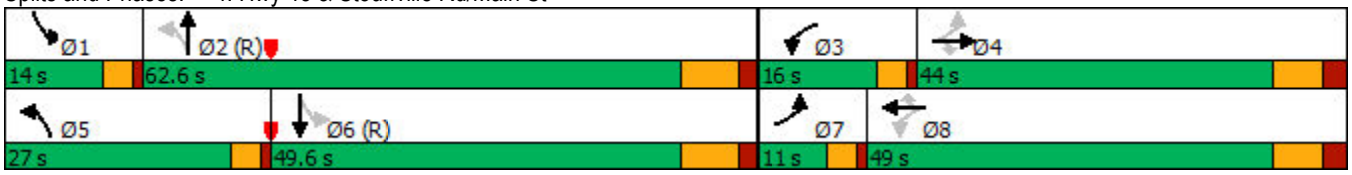
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Future Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3183	0	1684	3166	0
Flt Permitted	0.131			0.147			0.132			0.439		
Satd. Flow (perm)	246	3433	1521	276	3400	1551	234	3183	0	778	3166	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			382			135		47			106	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	58	725	477	191	911	88	302	412	154	173	552	349
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	725	477	191	911	88	302	566	0	173	901	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	44.0	44.0	16.0	49.0	49.0	27.0	62.6		14.0	49.6	
Total Split (%)	8.1%	32.2%	32.2%	11.7%	35.9%	35.9%	19.8%	45.8%		10.2%	36.3%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	44.8	34.0	34.0	54.0	41.4	41.4	74.6	56.9		59.8	46.1	
Actuated g/C Ratio	0.33	0.25	0.25	0.40	0.30	0.30	0.55	0.42		0.44	0.34	

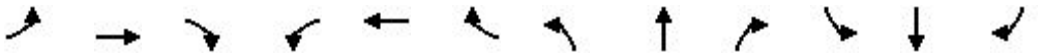
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.36	0.85	0.72	0.78	0.88	0.16	0.87	0.42		0.43	0.79	
Control Delay	31.9	59.0	16.2	50.9	56.7	1.7	52.3	27.3		21.5	43.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.9	59.0	16.2	50.9	56.7	1.7	52.3	27.3		21.5	43.0	
LOS	C	E	B	D	E	A	D	C		C	D	
Approach Delay		41.5			51.7			36.0			39.5	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	10.0	101.3	21.7	35.5	129.9	0.0	56.6	55.6		24.9	114.5	
Queue Length 95th (m)	19.4	125.9	65.0	#64.2	#166.0	3.0	#104.1	72.5		39.0	143.3	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	159	912	684	245	1038	567	371	1352		409	1138	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.79	0.70	0.78	0.88	0.16	0.81	0.42		0.42	0.79	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 42.7 Intersection LOS: D
Intersection Capacity Utilization 91.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Future Volume (vph)	53	660	434	174	829	80	275	375	140	157	502	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3184		1684	3165	
Flt Permitted	0.13	1.00	1.00	0.15	1.00	1.00	0.13	1.00		0.44	1.00	
Satd. Flow (perm)	246	3433	1521	275	3400	1551	234	3184		779	3165	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	58	725	477	191	911	88	302	412	154	173	552	349
RTOR Reduction (vph)	0	0	285	0	0	61	0	28	0	0	71	0
Lane Group Flow (vph)	58	725	192	191	911	27	302	538	0	173	830	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	40.4	34.8	34.8	51.0	41.4	41.4	70.0	56.1		55.2	45.3	
Effective Green, g (s)	40.4	34.8	34.8	51.0	41.4	41.4	70.0	56.1		55.2	45.3	
Actuated g/C Ratio	0.30	0.25	0.25	0.37	0.30	0.30	0.51	0.41		0.40	0.33	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	135	874	387	237	1030	470	339	1307		380	1049	
v/s Ratio Prot	0.02	0.21		c0.07	c0.27		c0.13	0.17		0.03	0.26	
v/s Ratio Perm	0.11		0.13	0.23		0.02	c0.32			0.15		
v/c Ratio	0.43	0.83	0.50	0.81	0.88	0.06	0.89	0.41		0.46	0.79	
Uniform Delay, d1	36.7	48.1	43.4	32.8	45.3	33.8	32.6	28.5		27.0	41.4	
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	2.2	6.6	1.0	17.8	9.2	0.1	24.0	1.0		0.9	6.1	
Delay (s)	38.9	54.7	44.4	50.7	54.5	33.8	56.5	29.5		27.9	47.5	
Level of Service	D	D	D	D	D	C	E	C		C	D	
Approach Delay (s)		50.1			52.4			38.9			44.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

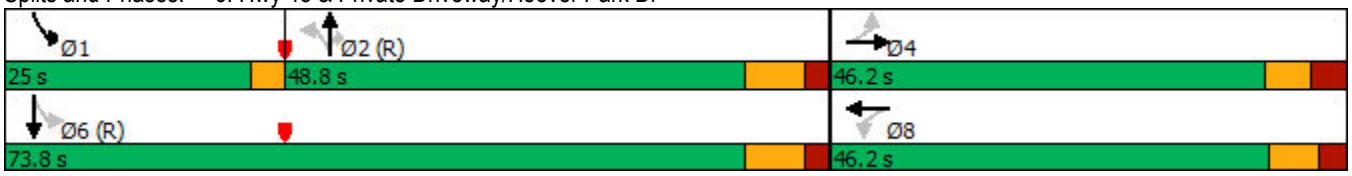
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Future Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	3275	1536	1700	3336	0
Flt Permitted				0.749						0.317		
Satd. Flow (perm)	0	1879	0	1353	1580	0	1879	3275	1536	567	3336	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					437				432			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	480	21	437	0	579	432	594	684	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	480	458	0	0	579	432	594	684	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	46.2	46.2		46.2	46.2		48.8	48.8	48.8	25.0	73.8	
Total Split (%)	38.5%	38.5%		38.5%	38.5%		40.7%	40.7%	40.7%	20.8%	61.5%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		39.8		40.1	40.1			40.0	40.0	69.7	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.58	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.02		1.06	0.56			0.53	0.54	1.11	0.38	
Control Delay		27.2		98.8	6.4			34.6	5.5	90.8	16.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		27.2		98.8	6.4			34.6	5.5	90.8	16.6	
LOS		C		F	A			C	A	F	B	
Approach Delay		27.3			53.7			22.1			51.1	
Approach LOS		C			D			C			D	
Queue Length 50th (m)		2.2		~131.0	3.5			60.8	0.0	~110.5	49.3	
Queue Length 95th (m)		6.9		#197.5	29.7			79.2	23.3	#208.1	63.2	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		623		452	818			1121	810	537	1837	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.02		1.06	0.56			0.52	0.53	1.11	0.37	

Intersection Summary

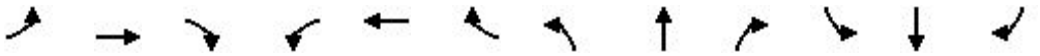
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 42.7 Intersection LOS: D
Intersection Capacity Utilization 116.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Future Volume (vph)	0	12	0	432	19	393	0	521	389	535	616	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			3275	1536	1700	3336	
Flt Permitted		1.00		0.75	1.00			1.00	1.00	0.32	1.00	
Satd. Flow (perm)		1879		1353	1580			3275	1536	567	3336	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	480	21	437	0	579	432	594	684	0
RTOR Reduction (vph)	0	0	0	0	291	0	0	0	288	0	0	0
Lane Group Flow (vph)	0	13	0	480	167	0	0	579	144	594	684	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Effective Green, g (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.54	0.54	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		623		452	527			1091	512	514	1807	
v/s Ratio Prot		0.01			0.11			0.18		c0.21	0.21	
v/s Ratio Perm				c0.35					0.09	c0.41		
v/c Ratio		0.02		1.06	0.32			0.53	0.28	1.16	0.38	
Uniform Delay, d1		27.0		40.0	29.8			32.4	29.4	21.1	15.9	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		59.7	0.3			1.8	1.4	90.2	0.6	
Delay (s)		27.0		99.7	30.1			34.2	30.8	111.3	16.5	
Level of Service		C		F	C			C	C	F	B	
Approach Delay (s)		27.0			65.7			32.8			60.5	
Approach LOS		C			E			C			E	

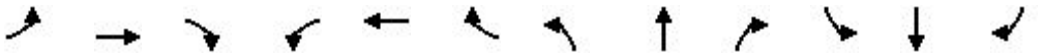
Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	116.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	27	0	0	73	37	0	0	0	16	0	0
Future Volume (vph)	0	27	0	0	73	37	0	0	0	16	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	29	0	0	79	40	0	0	0	17	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	119	0	17
Volume Left (vph)	0	0	0	17
Volume Right (vph)	0	40	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.0	3.8	4.2	4.4
Degree Utilization, x	0.03	0.12	0.00	0.02
Capacity (veh/h)	875	946	828	789
Control Delay (s)	7.2	7.3	7.2	7.5
Approach Delay (s)	7.2	7.3	0.0	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Future Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.181			0.067			0.679			0.647		
Satd. Flow (perm)	327	3535	1536	122	3500	1597	1215	3535	1566	1216	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			50			134			118
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1742	288	215	1455	23	217	166	140	53	115	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1742	288	215	1455	23	217	166	140	53	115	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	5.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	13.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	59.5	59.5	59.5	15.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	49.6%	49.6%	49.6%	12.5%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.56	1.15	0.35	0.69	0.65	0.02	0.81	0.21	0.31	0.20	0.15	0.05
Control Delay	44.5	107.6	3.6	38.2	21.4	4.0	65.5	37.0	8.0	36.7	35.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	107.6	3.6	38.2	21.4	4.0	65.5	37.0	8.0	36.7	35.9	0.2
LOS	D	F	A	D	C	A	E	D	A	D	D	A
Approach Delay		91.1			23.3			41.1			32.2	
Approach LOS		F			C			D			C	
Queue Length 50th (m)	14.5	~267.0	0.0	35.2	126.7	0.0	51.4	17.8	1.2	10.8	12.2	0.0
Queue Length 95th (m)	#37.6	#311.4	16.3	#103.9	186.6	m0.7	72.8	24.6	16.0	20.1	18.2	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	140	1517	823	312	2243	1041	374	1089	575	374	1048	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.15	0.35	0.69	0.65	0.02	0.58	0.15	0.24	0.14	0.11	0.04

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 57.4 Intersection LOS: E
Intersection Capacity Utilization 116.4% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Future Volume (vph)	73	1603	265	198	1339	21	200	153	129	49	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.18	1.00	1.00	0.07	1.00	1.00	0.68	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	328	3535	1536	123	3500	1597	1215	3535	1566	1215	3400	1452
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)	79	1742	288	215	1455	23	217	166	140	53	115	21
RTOR Reduction (vph)	0	0	164	0	0	8	0	0	104	0	0	16
Lane Group Flow (vph)	79	1742	124	215	1455	15	217	166	36	53	115	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Effective Green, g (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	140	1517	659	312	2242	1023	269	783	347	269	753	321
v/s Ratio Prot		c0.49		0.10	c0.42			0.05			0.03	
v/s Ratio Perm	0.24		0.08	0.34		0.01	c0.18		0.02	0.04		0.00
v/c Ratio	0.56	1.15	0.19	0.69	0.65	0.01	0.81	0.21	0.10	0.20	0.15	0.01
Uniform Delay, d1	25.8	34.2	21.3	33.9	13.3	7.8	44.3	38.1	37.2	38.0	37.6	36.5
Progression Factor	1.00	1.00	1.00	0.99	1.37	6.02	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.4	74.9	0.6	5.0	1.2	0.0	16.0	0.1	0.1	0.4	0.1	0.0
Delay (s)	41.2	109.2	21.9	38.4	19.3	47.1	60.3	38.3	37.3	38.4	37.7	36.5
Level of Service	D	F	C	D	B	D	E	D	D	D	D	D
Approach Delay (s)		94.7			22.1			47.2			37.8	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1704	43	128	1453	68	115	0	3	3	0	27
Future Volume (vph)	32	1704	43	128	1453	68	115	0	3	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.850			0.877	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1785	3535	1597	1785	3478	0	1785	1597	0	0	1640	0
Flt Permitted	0.137			0.048			0.736				0.981	
Satd. Flow (perm)	257	3535	1597	90	3478	0	1383	1597	0	0	1616	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		10			171			82	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	1873	47	141	1597	75	126	0	3	3	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1873	47	141	1672	0	126	3	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	76.0	76.0	76.0	18.0	94.0		26.0	26.0		26.0	26.0	
Total Split (%)	63.3%	63.3%	63.3%	15.0%	78.3%		21.7%	21.7%		21.7%	21.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.77	0.77		0.13	0.13			0.13	

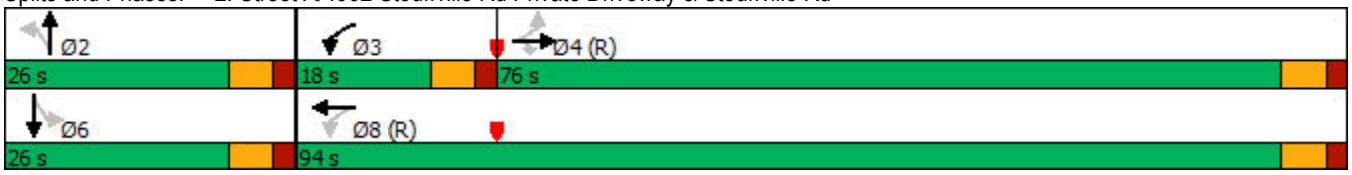
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.21	0.83	0.04	0.68	0.62		0.70	0.01			0.12	
Control Delay	6.8	18.2	1.3	40.5	7.8		70.2	0.0			0.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	6.8	18.2	1.3	40.5	7.8		70.2	0.0			0.9	
LOS	A	B	A	D	A		E	A			A	
Approach Delay		17.6			10.3			68.5			0.9	
Approach LOS		B			B			E			A	
Queue Length 50th (m)	1.8	258.5	0.3	17.6	83.0		30.2	0.0			0.0	
Queue Length 95th (m)	m3.4	m230.8	m0.5	40.4	117.4		50.0	0.0			0.0	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	164	2257	1049	240	2681		230	408			337	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.21	0.83	0.04	0.59	0.62		0.55	0.01			0.10	

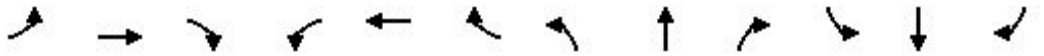
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 87.0% ICU Level of Service E
Analysis Period (min) 15

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

Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1704	43	128	1453	68	115	0	3	3	0	27
Future Volume (vph)	32	1704	43	128	1453	68	115	0	3	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1785	3535	1597	1785	3479		1785	1597			1641	
Flt Permitted	0.14	1.00	1.00	0.05	1.00		0.74	1.00			0.98	
Satd. Flow (perm)	257	3535	1597	91	3479		1382	1597			1617	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	35	1873	47	141	1597	75	126	0	3	3	0	30
RTOR Reduction (vph)	0	0	17	0	2	0	0	3	0	0	29	0
Lane Group Flow (vph)	35	1873	30	141	1670	0	126	0	0	0	4	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Effective Green, g (s)	76.6	76.6	76.6	92.4	92.4		15.6	15.6			15.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.77	0.77		0.13	0.13			0.13	
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)	164	2256	1019	208	2678		179	207			210	
v/s Ratio Prot		c0.53		0.06	c0.48			0.00				
v/s Ratio Perm	0.14		0.02	0.47			c0.09				0.00	
v/c Ratio	0.21	0.83	0.03	0.68	0.62		0.70	0.00			0.02	
Uniform Delay, d1	9.1	16.7	8.0	32.8	6.1		50.0	45.4			45.5	
Progression Factor	0.53	0.96	2.16	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.3	0.0	8.5	1.1		11.9	0.0			0.0	
Delay (s)	5.1	16.5	17.3	41.3	7.2		61.8	45.4			45.6	
Level of Service	A	B	B	D	A		E	D			D	
Approach Delay (s)		16.3			9.9			61.5			45.6	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1572	101	0	1657	0	61
Future Volume (Veh/h)	1572	101	0	1657	0	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1709	110	0	1801	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.57		0.70	0.57
vC, conflicting volume			1709		2610	854
vC1, stage 1 conf vol					1709	
vC2, stage 2 conf vol					900	
vCu, unblocked vol			747		837	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			499		243	625

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	854	854	110	900	900	66
Volume Left	0	0	0	0	0	0
Volume Right	0	0	110	0	0	66
cSH	1700	1700	1700	1700	1700	625
Volume to Capacity	0.50	0.50	0.06	0.53	0.53	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.4
Lane LOS						B
Approach Delay (s)	0.0			0.0		11.4
Approach LOS						B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Future Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.960			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3317	0	1750	3291	0
Flt Permitted	0.112			0.094			0.103			0.181		
Satd. Flow (perm)	210	3500	1581	177	3535	1581	183	3317	0	333	3291	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			449			183		46			52	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	61	1177	551	139	931	183	569	821	297	149	616	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1177	551	139	931	183	569	1118	0	149	895	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	48.0	48.0	11.0	48.0	48.0	34.0	64.6		13.0	43.6	
Total Split (%)	8.1%	35.1%	35.1%	8.1%	35.1%	35.1%	24.9%	47.3%		9.5%	31.9%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	51.0	40.3	40.3	51.8	42.5	42.5	73.6	56.8		48.5	35.7	
Actuated g/C Ratio	0.37	0.30	0.30	0.38	0.31	0.31	0.54	0.42		0.36	0.26	

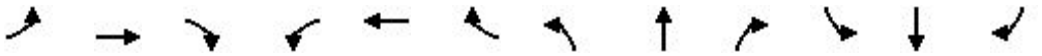
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.38	1.14	0.70	0.93	0.85	0.30	1.33	0.80		0.71	1.00	
Control Delay	32.5	118.5	13.6	89.1	53.0	6.1	197.2	38.5		40.5	76.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	32.5	118.5	13.6	89.1	53.0	6.1	197.2	38.5		40.5	76.5	
LOS	C	F	B	F	D	A	F	D		D	E	
Approach Delay		83.3			50.2			92.0			71.3	
Approach LOS		F			D			F			E	
Queue Length 50th (m)	10.6	~205.0	22.3	25.3	133.5	0.0	~192.7	139.3		20.6	128.1	
Queue Length 95th (m)	20.5	#249.4	68.3	#66.3	#170.2	17.8	#266.9	168.7		#41.8	#175.6	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	159	1032	782	149	1099	618	428	1406		211	898	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.38	1.14	0.70	0.93	0.85	0.30	1.33	0.80		0.71	1.00	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 76.5 Intersection LOS: E
Intersection Capacity Utilization 111.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Future Volume (vph)	55	1059	496	125	838	165	512	739	267	134	554	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3317		1750	3292	
Flt Permitted	0.11	1.00	1.00	0.09	1.00	1.00	0.10	1.00		0.18	1.00	
Satd. Flow (perm)	210	3500	1581	177	3535	1581	182	3317		333	3292	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	1177	551	139	931	183	569	821	297	149	616	279
RTOR Reduction (vph)	0	0	314	0	0	126	0	27	0	0	39	0
Lane Group Flow (vph)	61	1177	237	139	931	57	569	1091	0	149	856	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.0		43.8	34.9	
Effective Green, g (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.0		43.8	34.9	
Actuated g/C Ratio	0.34	0.30	0.30	0.36	0.31	0.31	0.50	0.41		0.32	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	136	1053	475	146	1099	491	421	1359		199	841	
v/s Ratio Prot	0.02	c0.34		c0.05	0.26		c0.30	0.33		0.05	0.26	
v/s Ratio Perm	0.13		0.15	0.30		0.04	c0.38			0.19		
v/c Ratio	0.45	1.12	0.50	0.95	0.85	0.12	1.35	0.80		0.75	1.02	
Uniform Delay, d1	33.4	47.7	39.3	37.3	44.0	33.6	42.7	35.4		35.0	50.8	
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	2.3	66.0	0.8	59.8	6.2	0.1	173.2	5.1		14.3	35.7	
Delay (s)	35.8	113.8	40.1	97.0	50.2	33.7	215.9	40.5		49.3	86.5	
Level of Service	D	F	D	F	D	C	F	D		D	F	
Approach Delay (s)		88.4			53.0			99.7			81.2	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	82.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

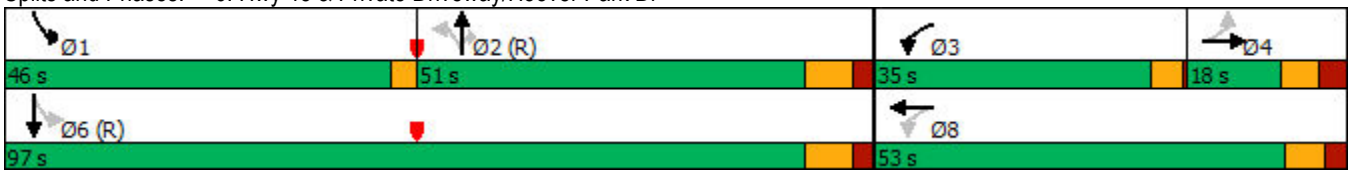
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Future Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99				0.99	1.00	1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	3400	1597	1767	3428	0
Flt Permitted				0.459						0.092		
Satd. Flow (perm)	0	1879	0	845	1556	0	1879	3400	1576	171	3428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					548				490			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	449	30	898	0	991	490	700	733	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	449	928	0	0	991	490	700	734	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		4.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		8.0	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	18.0	18.0		35.0	53.0		51.0	51.0	51.0	46.0	97.0	
Total Split (%)	12.0%	12.0%		23.3%	35.3%		34.0%	34.0%	34.0%	30.7%	64.7%	
Yellow Time (s)	4.1	4.1		3.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		0.5	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		4.0	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.1		49.0	45.8			43.3	43.3	94.0	89.3	
Actuated g/C Ratio		0.06		0.33	0.31			0.29	0.29	0.63	0.60	
v/c Ratio		0.27		0.89	1.09			1.01	0.61	1.24	0.36	
Control Delay		72.8		66.4	76.7			83.6	6.8	160.1	16.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		72.8		66.4	76.7			83.6	6.8	160.1	16.2	
LOS		E		E	E			F	A	F	B	
Approach Delay		72.8			73.3			58.2			86.5	
Approach LOS		E			E			E			F	
Queue Length 50th (m)		9.4		127.6	~198.4			~167.0	0.0	~252.9	59.7	
Queue Length 95th (m)		21.0		#174.5	#274.7			#210.8	27.3	#327.3	72.0	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		131		506	855			981	803	564	2040	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.24		0.89	1.09			1.01	0.61	1.24	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 72.5 Intersection LOS: E
Intersection Capacity Utilization 136.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

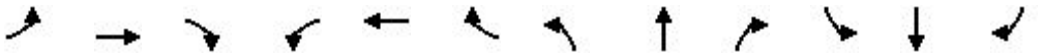
Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Future Volume (vph)	0	28	0	400	27	799	0	882	436	623	652	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1555			3400	1576	1767	3427	
Flt Permitted		1.00		0.46	1.00			1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1879		845	1555			3400	1576	172	3427	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	449	30	898	0	991	490	700	733	1
RTOR Reduction (vph)	0	0	0	0	370	0	0	0	358	0	0	0
Lane Group Flow (vph)	0	31	0	449	558	0	0	991	132	700	734	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Effective Green, g (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Actuated g/C Ratio		0.04		0.33	0.33			0.27	0.27	0.58	0.58	
Clearance Time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		78		505	505			913	423	556	1971	
v/s Ratio Prot		0.02		0.23	c0.36			0.29		c0.36	0.21	
v/s Ratio Perm				0.06					0.08	c0.36		
v/c Ratio		0.40		0.89	1.11			1.09	0.31	1.26	0.37	
Uniform Delay, d1		70.0		46.0	50.6			54.9	43.8	45.7	17.2	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.3		17.2	72.1			55.7	1.9	130.6	0.5	
Delay (s)		73.3		63.2	122.7			110.6	45.7	176.3	17.8	
Level of Service		E		E	F			F	D	F	B	
Approach Delay (s)		73.3			103.3			89.1			95.1	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	95.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	136.5%	ICU Level of Service	H
Analysis Period (min)	15		

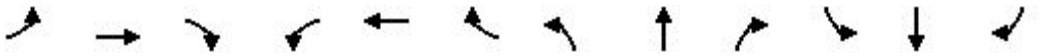
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	73	0	0	52	26	0	0	0	43	0	0
Future Volume (vph)	0	73	0	0	52	26	0	0	0	43	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	79	0	0	57	28	0	0	0	47	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	79	85	0	47
Volume Left (vph)	0	0	0	47
Volume Right (vph)	0	28	0	0
Hadj (s)	0.00	-0.20	0.00	0.20
Departure Headway (s)	4.1	3.9	4.3	4.4
Degree Utilization, x	0.09	0.09	0.00	0.06
Capacity (veh/h)	862	907	810	780
Control Delay (s)	7.5	7.3	7.3	7.7
Approach Delay (s)	7.5	7.3	0.0	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			



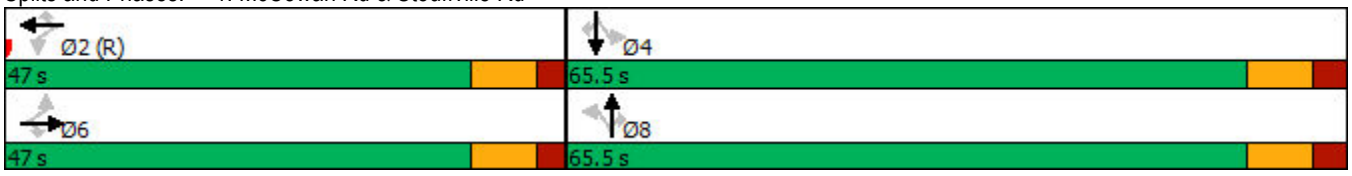
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Future Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.119			0.212			0.692			0.690		
Satd. Flow (perm)	217	3433	1493	372	3400	1507	1238	3336	1487	1222	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None

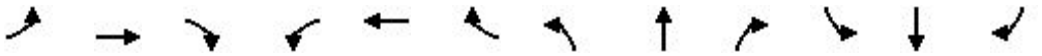
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.27	0.51	0.22	1.14	0.68	0.04	0.71	0.14	0.37	0.18	0.14	0.12
Control Delay	18.9	13.2	2.2	126.6	16.6	2.8	54.3	33.7	24.1	34.3	33.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	13.2	2.2	126.6	16.6	2.8	54.3	33.7	24.1	34.3	33.6	7.0
LOS	B	B	A	F	B	A	D	C	C	C	C	A
Approach Delay		11.5			32.9			39.9			28.1	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	3.4	65.4	0.0	~72.9	103.5	0.0	40.4	9.8	15.9	9.1	9.5	0.0
Queue Length 95th (m)	13.7	105.3	9.6	#127.1	162.3	4.0	52.1	13.8	26.4	15.7	13.5	5.4
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	139	2202	1041	238	2181	985	627	1690	777	619	1659	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.51	0.22	1.14	0.68	0.04	0.30	0.06	0.17	0.08	0.06	0.05

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 25.5 Intersection LOS: C
Intersection Capacity Utilization 103.8% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd

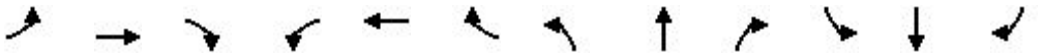




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Future Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.12	1.00	1.00	0.21	1.00	1.00	0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	218	3433	1493	372	3400	1507	1239	3336	1487	1223	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
RTOR Reduction (vph)	0	0	84	0	0	16	0	0	38	0	0	31
Lane Group Flow (vph)	38	1125	150	272	1489	28	185	98	91	47	95	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Effective Green, g (s)	72.2	72.2	72.2	72.2	72.2	72.2	23.8	23.8	23.8	23.8	23.8	23.8
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	139	2203	958	238	2182	967	262	705	314	258	692	293
v/s Ratio Prot		0.33			0.44			0.03			0.03	
v/s Ratio Perm	0.17		0.10	c0.73		0.02	c0.15		0.06	0.04		0.01
v/c Ratio	0.27	0.51	0.16	1.14	0.68	0.03	0.71	0.14	0.29	0.18	0.14	0.03
Uniform Delay, d1	8.8	10.7	8.0	20.1	12.8	7.4	41.1	36.0	37.3	36.4	36.0	35.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	0.8	0.3	102.3	1.8	0.1	8.4	0.1	0.5	0.3	0.1	0.0
Delay (s)	13.6	11.6	8.4	122.5	14.6	7.4	49.5	36.1	37.8	36.7	36.1	35.2
Level of Service	B	B	A	F	B	A	D	D	D	D	D	D
Approach Delay (s)		11.1			30.7			42.6			36.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
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)	29	1044	27	78	1288	10	267	0	8	3	0	0
Future Volume (Veh/h)	29	1044	27	78	1288	10	267	0	8	3	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)	32	1135	29	85	1400	11	290	0	9	3	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1411			1164			2069	2780	568	2216	2804	706
vC1, stage 1 conf vol							1199	1199		1576	1576	
vC2, stage 2 conf vol							870	1581		640	1228	
vCu, unblocked vol	1411			1164			2069	2780	568	2216	2804	706
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			86			0	100	98	97	100	100
cM capacity (veh/h)	490			607			145	101	471	94	102	383

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	32	568	568	29	85	933	478	290	9	3
Volume Left	32	0	0	0	85	0	0	290	0	3
Volume Right	0	0	0	29	0	0	11	0	9	0
cSH	490	1700	1700	1700	607	1700	1700	145	471	94
Volume to Capacity	0.07	0.33	0.33	0.02	0.14	0.55	0.28	2.01	0.02	0.03
Queue Length 95th (m)	1.7	0.0	0.0	0.0	3.9	0.0	0.0	183.4	0.5	0.8
Control Delay (s)	12.9	0.0	0.0	0.0	11.9	0.0	0.0	527.5	12.8	44.6
Lane LOS	B				B			F	B	E
Approach Delay (s)	0.3				0.7			512.0		44.6
Approach LOS								F		E

Intersection Summary				
Average Delay	51.7			
Intersection Capacity Utilization	63.1%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1000	62	0	1391	0	142
Future Volume (Veh/h)	1000	62	0	1391	0	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1087	67	0	1512	0	154
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.77	
vC, conflicting volume			1087		1843	544
vC1, stage 1 conf vol					1087	
vC2, stage 2 conf vol					756	
vCu, unblocked vol			1087		1498	544
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	68
cM capacity (veh/h)			649		268	489

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	544	544	67	756	756	154
Volume Left	0	0	0	0	0	0
Volume Right	0	0	67	0	0	154
cSH	1700	1700	1700	1700	1700	489
Volume to Capacity	0.32	0.32	0.04	0.44	0.44	0.32
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	10.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	15.7
Lane LOS						C
Approach Delay (s)	0.0			0.0		15.7
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

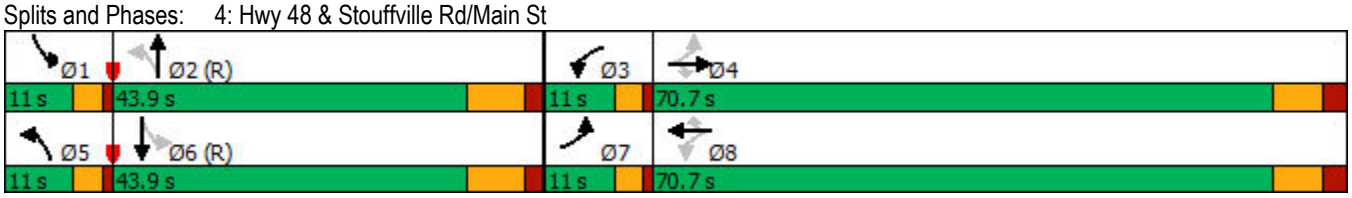
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Future Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.958			0.940	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3180	0	1684	3160	0
Flt Permitted	0.153			0.227			0.102			0.445		
Satd. Flow (perm)	287	3433	1521	427	3400	1551	181	3180	0	789	3160	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			240			103		40			112	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	67	711	502	191	884	88	313	399	154	173	534	355
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	711	502	191	884	88	313	553	0	173	889	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	53.4	42.7	42.7	54.2	44.9	44.9	70.4	50.0		53.1	36.0	
Actuated g/C Ratio	0.39	0.31	0.31	0.40	0.33	0.33	0.52	0.37		0.39	0.26	

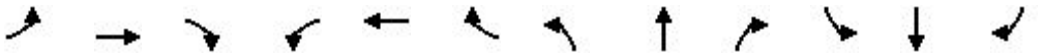
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	0.66	0.78	0.80	0.79	0.15	0.80	0.46		0.44	0.97	
Control Delay	26.8	43.1	29.9	52.4	46.9	4.0	50.8	34.4		24.5	67.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.8	43.1	29.9	52.4	46.9	4.0	50.8	34.4		24.5	67.0	
LOS	C	D	C	D	D	A	D	C		C	E	
Approach Delay		37.0			44.6			40.3			60.1	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	11.1	90.6	70.3	34.0	120.6	0.0	67.9	59.4		26.1	118.6	
Queue Length 95th (m)	18.3	101.1	105.8	#48.3	132.3	8.3	#153.9	89.2		46.9	#164.0	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	189	1583	830	239	1568	770	393	1190		393	915	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.35	0.45	0.60	0.80	0.56	0.11	0.80	0.46		0.44	0.97	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 45.3 Intersection LOS: D
Intersection Capacity Utilization 91.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Future Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3180		1684	3160	
Flt Permitted	0.15	1.00	1.00	0.23	1.00	1.00	0.10	1.00		0.45	1.00	
Satd. Flow (perm)	287	3433	1521	427	3400	1551	181	3180		789	3160	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	67	711	502	191	884	88	313	399	154	173	534	355
RTOR Reduction (vph)	0	0	164	0	0	59	0	26	0	0	83	0
Lane Group Flow (vph)	67	711	338	191	884	29	313	527	0	173	806	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	49.1	43.5	43.5	51.9	44.9	44.9	66.5	49.3		48.4	35.2	
Effective Green, g (s)	49.1	43.5	43.5	51.9	44.9	44.9	66.5	49.3		48.4	35.2	
Actuated g/C Ratio	0.36	0.32	0.32	0.38	0.33	0.33	0.49	0.36		0.35	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	164	1093	484	231	1117	509	388	1147		366	814	
v/s Ratio Prot	0.02	0.21		c0.04	0.26		c0.16	0.17		0.05	c0.26	
v/s Ratio Perm	0.13		0.22	c0.27		0.02	0.23			0.12		
v/c Ratio	0.41	0.65	0.70	0.83	0.79	0.06	0.81	0.46		0.47	0.99	
Uniform Delay, d1	31.3	40.0	40.8	36.4	41.6	31.4	37.8	33.4		31.7	50.5	
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	1.7	1.4	4.4	20.9	3.9	0.0	11.6	1.3		1.0	29.2	
Delay (s)	32.9	41.4	45.2	57.3	45.5	31.4	49.4	34.8		32.7	79.7	
Level of Service	C	D	D	E	D	C	D	C		C	E	
Approach Delay (s)		42.5			46.4			40.1			72.1	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

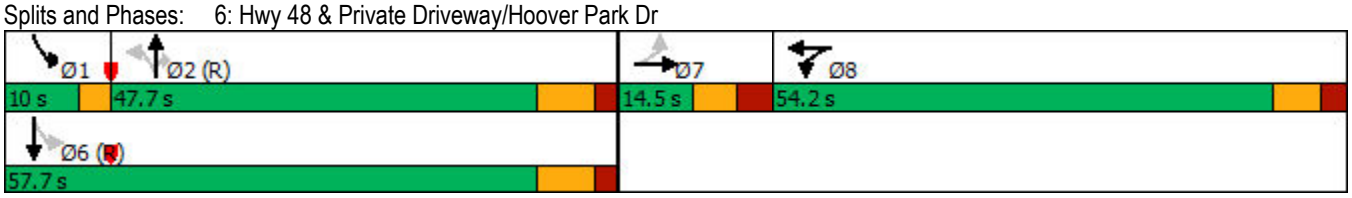
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Future Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	1724	1536	1700	1756	0
Flt Permitted				0.950						0.104		
Satd. Flow (perm)	0	1879	0	1716	1580	0	1879	1724	1536	186	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					357				421			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	450	21	420	0	570	421	587	689	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	450	441	0	0	570	421	587	689	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		7.0		38.9	38.9			40.0	40.0	71.5	66.8	
Actuated g/C Ratio		0.06		0.31	0.31			0.32	0.32	0.57	0.53	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.12		0.85	0.60			1.05	0.54	1.51	0.74	
Control Delay		59.7		56.4	10.4			93.2	5.8	268.7	32.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		59.7		56.4	10.4			93.2	5.8	268.7	32.6	
LOS		E		E	B			F	A	F	C	
Approach Delay		59.7			33.6			56.1			141.2	
Approach LOS		E			C			E			F	
Queue Length 50th (m)		3.3		109.6	15.9			~161.8	0.0	~176.0	122.3	
Queue Length 95th (m)		10.6		139.9	44.8			#233.6	24.4	#332.3	#261.1	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		638	811			545	773	390	927	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.13		0.71	0.54			1.05	0.54	1.51	0.74	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.51
Intersection Signal Delay: 84.0 Intersection LOS: F
Intersection Capacity Utilization 114.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Future Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			1724	1536	1700	1756	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1716	1580			1724	1536	186	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	450	21	420	0	570	421	587	689	0
RTOR Reduction (vph)	0	0	0	0	247	0	0	0	303	0	0	0
Lane Group Flow (vph)	0	13	0	450	194	0	0	570	118	587	689	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		2.8		38.9	38.9			35.5	35.5	62.3	62.3	
Effective Green, g (s)		2.8		38.9	38.9			35.5	35.5	62.3	62.3	
Actuated g/C Ratio		0.02		0.31	0.31			0.28	0.28	0.49	0.49	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		41		528	486			484	431	376	865	
v/s Ratio Prot		c0.01		c0.26	0.12			0.33		c0.29	0.39	
v/s Ratio Perm									0.08	c0.47		
v/c Ratio		0.32		0.85	0.40			1.18	0.27	1.56	0.80	
Uniform Delay, d1		60.9		41.1	34.5			45.5	35.4	39.5	26.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.4		12.6	0.5			99.7	1.6	265.2	7.5	
Delay (s)		65.3		53.6	35.1			145.2	37.0	304.7	34.3	
Level of Service		E		D	D			F	D	F	C	
Approach Delay (s)		65.3			44.4			99.2			158.7	
Approach LOS		E			D			F			F	

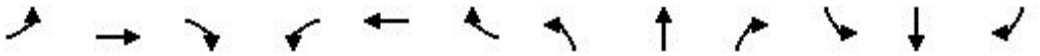
Intersection Summary			
HCM 2000 Control Delay	107.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	28	114	21	25	37
Future Volume (Veh/h)	53	28	114	21	25	37
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)	58	30	124	23	27	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	230	136			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	136			147	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			98	
cM capacity (veh/h)	749	919			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	147	67
Volume Left	58	0	27
Volume Right	30	23	0
cSH	799	1700	1447
Volume to Capacity	0.11	0.09	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	10.1	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	3.1
Approach LOS	B		

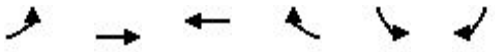
Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		25.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
Future Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
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)	23	52	0	0	140	71	0	0	0	17	0	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	75	211	0	75
Volume Left (vph)	23	0	0	17
Volume Right (vph)	0	71	0	58
Hadj (s)	0.06	-0.20	0.00	-0.42
Departure Headway (s)	4.3	3.9	4.6	4.1
Degree Utilization, x	0.09	0.23	0.00	0.09
Capacity (veh/h)	806	894	743	815
Control Delay (s)	7.8	8.1	7.6	7.5
Approach Delay (s)	7.8	8.1	0.0	7.5
Approach LOS	A	A	A	A

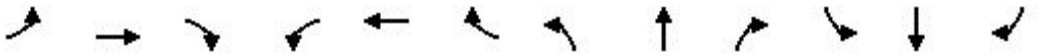
Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	0	0	0	0	84
Future Volume (Veh/h)	21	0	0	0	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	0	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				46	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				46	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	92
cM capacity (veh/h)	1636				956	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	0	91
Volume Left	23	0	0
Volume Right	0	0	91
cSH	1636	1700	1091
Volume to Capacity	0.01	0.00	0.08
Queue Length 95th (m)	0.3	0.0	2.2
Control Delay (s)	7.2	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	7.2	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



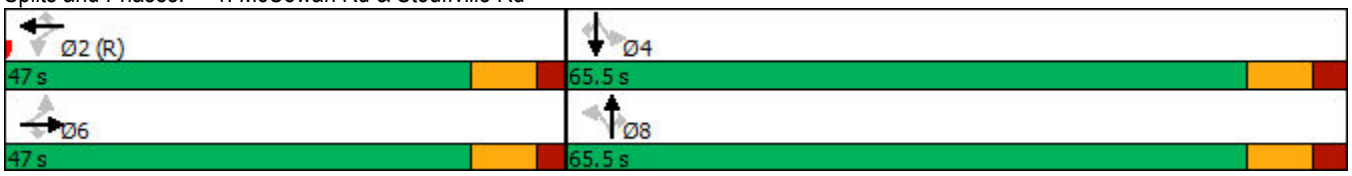
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Future Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.125			0.069			0.690			0.662		
Satd. Flow (perm)	226	3535	1536	126	3500	1597	1235	3535	1566	1244	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1718	288	237	1435	29	217	142	150	79	99	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1718	288	237	1435	29	217	142	150	79	99	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.56	0.78	0.27	3.04	0.66	0.03	0.75	0.17	0.37	0.27	0.12	0.06
Control Delay	36.0	20.8	2.2	966.0	17.1	1.3	55.5	32.9	25.0	35.1	31.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	20.8	2.2	966.0	17.1	1.3	55.5	32.9	25.0	35.1	31.9	1.6
LOS	D	C	A	F	B	A	E	C	C	D	C	A
Approach Delay		18.8			149.1			40.2			30.0	
Approach LOS		B			F			D			C	
Queue Length 50th (m)	9.9	143.3	0.0	~78.5	104.4	0.0	47.0	13.8	19.5	15.1	9.5	0.0
Queue Length 95th (m)	#41.9	#245.5	12.9	#136.1	165.6	1.9	66.4	19.8	33.9	25.6	14.8	1.6
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	140	2192	1061	78	2170	1010	625	1791	817	630	1722	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.78	0.27	3.04	0.66	0.03	0.35	0.08	0.18	0.13	0.06	0.03

Intersection Summary

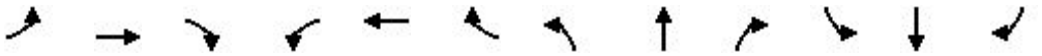
Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 3.04
Intersection Signal Delay: 71.0 Intersection LOS: E
Intersection Capacity Utilization 123.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Future Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.12	1.00	1.00	0.07	1.00	1.00	0.69	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	225	3535	1536	126	3500	1597	1234	3535	1566	1244	3400	1452
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)	79	1718	288	237	1435	29	217	142	150	79	99	21
RTOR Reduction (vph)	0	0	109	0	0	11	0	0	37	0	0	16
Lane Group Flow (vph)	79	1718	179	237	1435	18	217	142	113	79	99	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Effective Green, g (s)	69.8	69.8	69.8	69.8	69.8	69.8	26.2	26.2	26.2	26.2	26.2	26.2
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	139	2193	953	78	2171	990	287	823	364	289	791	338
v/s Ratio Prot		0.49			0.41			0.04			0.03	
v/s Ratio Perm	0.35		0.12	c1.88		0.01	c0.18		0.07	0.06		0.00
v/c Ratio	0.57	0.78	0.19	3.04	0.66	0.02	0.76	0.17	0.31	0.27	0.13	0.01
Uniform Delay, d1	12.5	15.8	9.2	21.4	13.7	8.2	40.2	34.5	35.7	35.4	34.1	33.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.8	2.9	0.4	950.5	1.6	0.0	10.8	0.1	0.5	0.5	0.1	0.0
Delay (s)	28.3	18.7	9.6	971.9	15.3	8.2	51.0	34.6	36.2	35.9	34.2	33.2
Level of Service	C	B	A	F	B	A	D	C	D	D	C	C
Approach Delay (s)		17.8			148.5			42.0			34.7	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.41		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	123.1%	ICU Level of Service	H
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)	32	1686	72	215	1374	68	191	0	5	3	0	27
Future Volume (Veh/h)	32	1686	72	215	1374	68	191	0	5	3	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	35	1853	79	236	1510	75	210	0	5	3	0	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1585			1932			3180	3980	926	3021	4022	792
vC1, stage 1 conf vol							1923	1923		2020	2020	
vC2, stage 2 conf vol							1257	2057		1002	2002	
vCu, unblocked vol	1585			1932			3180	3980	926	3021	4022	792
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			24			0	100	98	0	100	91
cM capacity (veh/h)	420			309			4	1	274	2	1	336

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	35	926	926	79	236	1007	578	210	5	33
Volume Left	35	0	0	0	236	0	0	210	0	3
Volume Right	0	0	0	79	0	0	75	0	5	30
cSH	420	1700	1700	1700	309	1700	1700	4	274	21
Volume to Capacity	0.08	0.55	0.55	0.05	0.76	0.59	0.34	47.26	0.02	1.56
Queue Length 95th (m)	2.2	0.0	0.0	0.0	47.2	0.0	0.0	Err	0.4	34.7
Control Delay (s)	14.3	0.0	0.0	0.0	46.2	0.0	0.0	Err	18.4	669.5
Lane LOS	B				E			F	C	F
Approach Delay (s)	0.3				6.0			9766.9		669.5
Approach LOS								F		F

Intersection Summary				
Average Delay	528.6			
Intersection Capacity Utilization	85.8%	ICU Level of Service		E
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1486	170	0	1659	0	101
Future Volume (Veh/h)	1486	170	0	1659	0	101
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1615	185	0	1803	0	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.79	
vC, conflicting volume			1615		2516	808
vC1, stage 1 conf vol					1615	
vC2, stage 2 conf vol					902	
vCu, unblocked vol			1615		2389	808
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	67
cM capacity (veh/h)			409		142	328

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	808	808	185	902	902	110
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	110
cSH	1700	1700	1700	1700	1700	328
Volume to Capacity	0.47	0.47	0.11	0.53	0.53	0.33
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	11.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	21.4
Lane LOS						C
Approach Delay (s)	0.0			0.0		21.4
Approach LOS						C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

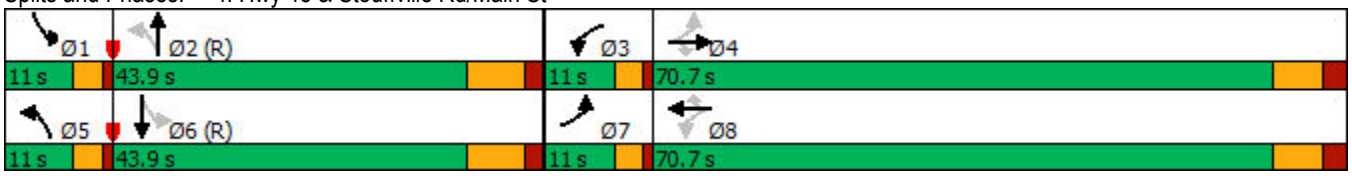
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Future Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3312	0	1750	3282	0
Flt Permitted	0.192			0.101			0.106			0.114		
Satd. Flow (perm)	361	3500	1581	190	3535	1581	188	3312	0	210	3282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			217			183		38			62	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	67	1131	570	139	929	183	600	796	297	149	594	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	1131	570	139	929	183	600	1093	0	149	890	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	65.2	54.5	54.5	66.0	56.7	56.7	56.9	38.7		52.7	36.0	
Actuated g/C Ratio	0.48	0.40	0.40	0.48	0.42	0.42	0.42	0.28		0.39	0.26	

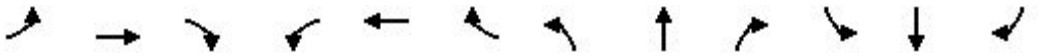
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.27	0.81	0.75	0.80	0.63	0.24	2.43	1.13		0.67	0.98	
Control Delay	18.6	41.2	27.0	51.5	33.7	3.7	674.2	115.0		43.8	71.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.6	41.2	27.0	51.5	33.7	3.7	674.2	115.0		43.8	71.2	
LOS	B	D	C	D	C	A	F	F		D	E	
Approach Delay		35.8			31.3			313.2			67.3	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	9.4	147.6	88.3	20.4	111.4	0.0	~269.5	~195.7		26.0	125.1	
Queue Length 95th (m)	15.5	158.8	123.4	#38.5	121.2	13.4	#374.1	#240.5		#70.6	#170.9	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	245	1614	846	173	1630	827	247	966		224	910	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.27	0.70	0.67	0.80	0.57	0.22	2.43	1.13		0.67	0.98	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.43
Intersection Signal Delay: 122.2 Intersection LOS: F
Intersection Capacity Utilization 112.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Future Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3313		1750	3282	
Flt Permitted	0.19	1.00	1.00	0.10	1.00	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)	362	3500	1581	190	3535	1581	187	3313		209	3282	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	1131	570	139	929	183	600	796	297	149	594	296
RTOR Reduction (vph)	0	0	129	0	0	107	0	27	0	0	46	0
Lane Group Flow (vph)	67	1131	441	139	929	76	600	1066	0	149	844	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	60.9	55.3	55.3	63.7	56.7	56.7	53.4	37.9		48.0	35.2	
Effective Green, g (s)	60.9	55.3	55.3	63.7	56.7	56.7	53.4	37.9		48.0	35.2	
Actuated g/C Ratio	0.45	0.40	0.40	0.47	0.42	0.42	0.39	0.28		0.35	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	219	1416	640	170	1467	656	242	919		217	845	
v/s Ratio Prot	0.01	0.32		c0.04	0.26		c0.28	0.32		0.06	0.26	
v/s Ratio Perm	0.12		0.28	c0.34		0.05	c0.68			0.18		
v/c Ratio	0.31	0.80	0.69	0.82	0.63	0.12	2.48	1.16		0.69	1.00	
Uniform Delay, d1	23.6	35.8	33.5	27.0	31.7	24.5	40.2	49.3		35.3	50.7	
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	0.8	3.2	3.1	25.3	0.9	0.1	677.9	83.9		8.7	30.7	
Delay (s)	24.4	39.0	36.6	52.3	32.6	24.6	718.2	133.3		44.0	81.3	
Level of Service	C	D	D	D	C	C	F	F		D	F	
Approach Delay (s)		37.7			33.6			340.6			76.0	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	132.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

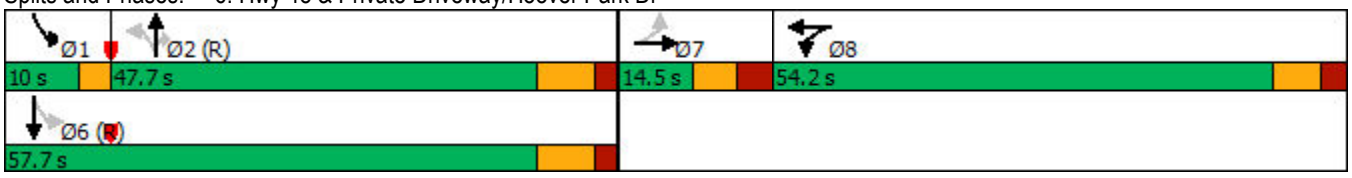
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Future Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99				0.99		1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	1789	1597	1767	1804	0
Flt Permitted				0.950						0.100		
Satd. Flow (perm)	0	1879	0	1750	1556	0	1879	1789	1576	186	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					294				395			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	428	30	865	0	991	476	685	729	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	428	895	0	0	991	476	685	730	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		7.0		52.8	52.8			40.0	40.0	54.7	50.0	
Actuated g/C Ratio		0.06		0.42	0.42			0.32	0.32	0.43	0.40	
v/c Ratio		0.30		0.59	1.09			1.75	0.62	4.08	1.02	
Control Delay		65.1		34.0	83.7			373.9	10.6	1411.4	77.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		65.1		34.0	83.7			373.9	10.6	1411.4	77.9	
LOS		E		C	F			F	B	F	E	
Approach Delay		65.1			67.6			256.0			723.4	
Approach LOS		E			E			F			F	
Queue Length 50th (m)		8.0		92.5	~228.7			~385.3	15.3	~311.9	~203.1	
Queue Length 95th (m)		18.6		128.5	#303.9			#459.8	49.0	#383.2	#274.4	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		730	821			566	768	168	713	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.30		0.59	1.09			1.75	0.62	4.08	1.02	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 4.08
Intersection Signal Delay: 351.9 Intersection LOS: F
Intersection Capacity Utilization 145.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Future Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			1789	1576	1767	1804	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1750	1556			1789	1576	186	1804	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	428	30	865	0	991	476	685	729	1
RTOR Reduction (vph)	0	0	0	0	171	0	0	0	279	0	0	0
Lane Group Flow (vph)	0	31	0	428	724	0	0	991	197	685	730	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Effective Green, g (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Actuated g/C Ratio		0.03		0.42	0.42			0.29	0.29	0.37	0.37	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		62		731	649			523	461	156	670	
v/s Ratio Prot		c0.02		0.24	c0.47			0.55		c0.24	0.40	
v/s Ratio Perm									0.12	c1.38		
v/c Ratio		0.50		0.59	1.12			1.89	0.43	4.39	1.09	
Uniform Delay, d1		60.1		28.4	36.8			44.7	36.1	35.2	39.7	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.2		1.2	71.4			409.8	2.9	1540.8	61.7	
Delay (s)		66.3		29.6	108.2			454.5	39.0	1575.9	101.4	
Level of Service		E		C	F			F	D	F	F	
Approach Delay (s)		66.3			82.7			319.7			815.2	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	409.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.62		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	145.1%	ICU Level of Service	H
Analysis Period (min)	15		

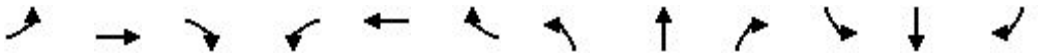
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	20	81	58	69	101
Future Volume (Veh/h)	38	20	81	58	69	101
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)	41	22	88	63	75	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	120			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	120			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	98			95	
cM capacity (veh/h)	594	938			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	151	185
Volume Left	41	0	75
Volume Right	22	63	0
cSH	681	1700	1442
Volume to Capacity	0.09	0.09	0.05
Queue Length 95th (m)	2.4	0.0	1.3
Control Delay (s)	10.8	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	3.3
Approach LOS	B		

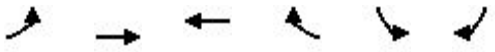
Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		30.3%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
Future Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
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)	63	142	0	0	100	50	0	0	0	47	0	41

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	205	150	0	88
Volume Left (vph)	63	0	0	47
Volume Right (vph)	0	50	0	41
Hadj (s)	0.06	-0.20	0.00	-0.17
Departure Headway (s)	4.3	4.1	4.8	4.5
Degree Utilization, x	0.25	0.17	0.00	0.11
Capacity (veh/h)	810	835	692	735
Control Delay (s)	8.7	8.0	7.8	8.1
Approach Delay (s)	8.7	8.0	0.0	8.1
Approach LOS	A	A	A	A

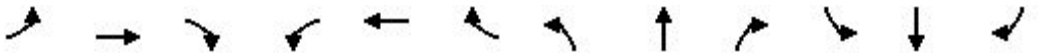
Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	0	0	0	0	60
Future Volume (Veh/h)	58	0	0	0	0	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	0	0	0	0	65
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				126	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				126	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	94
cM capacity (veh/h)	1636				840	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	63	0	65
Volume Left	63	0	0
Volume Right	0	0	65
cSH	1636	1700	1091
Volume to Capacity	0.04	0.00	0.06
Queue Length 95th (m)	1.0	0.0	1.5
Control Delay (s)	7.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		



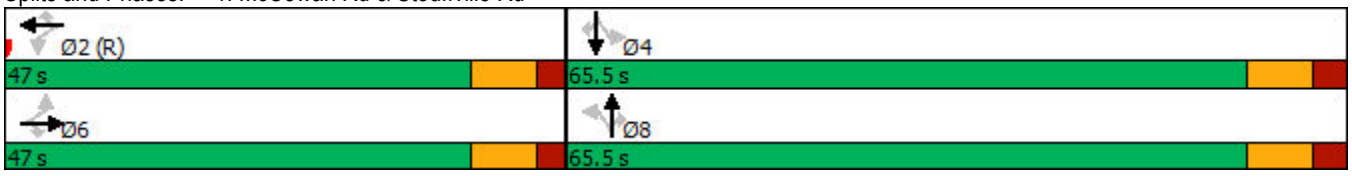
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Future Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.103			0.193			0.681			0.679		
Satd. Flow (perm)	188	3433	1493	339	3400	1507	1219	3336	1487	1203	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None

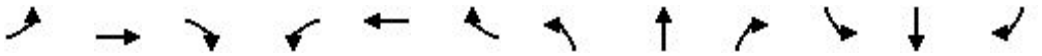
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.32	0.54	0.23	1.26	0.72	0.04	0.71	0.16	0.36	0.18	0.16	0.12
Control Delay	22.2	13.7	2.2	171.7	17.8	2.8	54.7	34.0	24.0	34.2	34.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	13.7	2.2	171.7	17.8	2.8	54.7	34.0	24.0	34.2	34.0	7.0
LOS	C	B	A	F	B	A	D	C	C	C	C	A
Approach Delay		12.1			39.7			39.9			28.7	
Approach LOS		B			D			D			C	
Queue Length 50th (m)	3.6	71.5	0.0	~78.3	114.3	0.0	40.4	11.6	15.9	9.1	11.3	0.0
Queue Length 95th (m)	15.0	113.7	9.6	#91.4	176.8	4.0	52.3	15.7	26.4	15.8	15.4	5.4
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	120	2196	1039	216	2175	983	617	1690	777	609	1659	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.54	0.23	1.26	0.72	0.04	0.30	0.07	0.17	0.08	0.07	0.05

Intersection Summary

Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 29.0 Intersection LOS: C
Intersection Capacity Utilization 105.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd

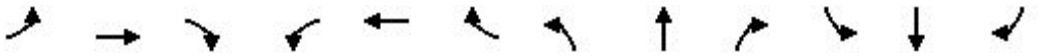




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Future Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.10	1.00	1.00	0.19	1.00	1.00	0.68	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	188	3433	1493	339	3400	1507	1219	3336	1487	1203	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
RTOR Reduction (vph)	0	0	84	0	0	16	0	0	38	0	0	31
Lane Group Flow (vph)	38	1187	150	272	1565	28	185	115	91	47	112	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Effective Green, g (s)	72.0	72.0	72.0	72.0	72.0	72.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.64	0.64	0.21	0.21	0.21	0.21	0.21	0.21
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	120	2197	955	216	2176	964	260	711	317	256	698	296
v/s Ratio Prot		0.35			0.46			0.03			0.03	
v/s Ratio Perm	0.20		0.10	c0.80		0.02	c0.15		0.06	0.04		0.01
v/c Ratio	0.32	0.54	0.16	1.26	0.72	0.03	0.71	0.16	0.29	0.18	0.16	0.03
Uniform Delay, d1	9.1	11.1	8.1	20.2	13.5	7.4	41.0	36.1	37.1	36.2	36.0	35.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	1.0	0.4	148.5	2.1	0.1	8.9	0.1	0.5	0.3	0.1	0.0
Delay (s)	15.9	12.1	8.5	168.7	15.6	7.5	49.9	36.2	37.6	36.6	36.2	35.1
Level of Service	B	B	A	F	B	A	D	D	D	D	D	D
Approach Delay (s)		11.6			37.5			42.5			36.0	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
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)	29	1097	27	78	1364	10	267	0	8	3	0	0
Future Volume (Veh/h)	29	1097	27	78	1364	10	267	0	8	3	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)	32	1192	29	85	1483	11	290	0	9	3	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1494			1221			2168	2920	596	2328	2944	747
vC1, stage 1 conf vol							1256	1256		1658	1658	
vC2, stage 2 conf vol							912	1664		669	1285	
vCu, unblocked vol	1494			1221			2168	2920	596	2328	2944	747
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			85			0	100	98	96	100	100
cM capacity (veh/h)	455			578			132	89	452	83	91	360

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	32	596	596	29	85	989	505	290	9	3
Volume Left	32	0	0	0	85	0	0	290	0	3
Volume Right	0	0	0	29	0	0	11	0	9	0
cSH	455	1700	1700	1700	578	1700	1700	132	452	83
Volume to Capacity	0.07	0.35	0.35	0.02	0.15	0.58	0.30	2.19	0.02	0.04
Queue Length 95th (m)	1.8	0.0	0.0	0.0	4.1	0.0	0.0	193.5	0.5	0.9
Control Delay (s)	13.5	0.0	0.0	0.0	12.3	0.0	0.0	613.2	13.1	50.1
Lane LOS	B				B			F	B	F
Approach Delay (s)	0.3				0.7			595.1		50.1
Approach LOS								F		F

Intersection Summary				
Average Delay	57.3			
Intersection Capacity Utilization	65.2%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1059	62	0	1469	0	142
Future Volume (Veh/h)	1059	62	0	1469	0	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1151	67	0	1597	0	154
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.75	
vC, conflicting volume			1151		1950	576
vC1, stage 1 conf vol					1151	
vC2, stage 2 conf vol					798	
vCu, unblocked vol			1151		1608	576
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	67
cM capacity (veh/h)			614		249	466

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	576	576	67	798	798	154
Volume Left	0	0	0	0	0	0
Volume Right	0	0	67	0	0	154
cSH	1700	1700	1700	1700	1700	466
Volume to Capacity	0.34	0.34	0.04	0.47	0.47	0.33
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	11.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	16.5
Lane LOS						C
Approach Delay (s)	0.0			0.0		16.5
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

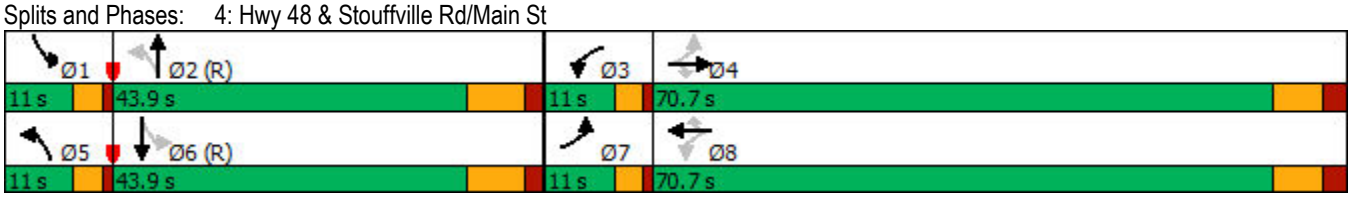
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Future Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3183	0	1684	3163	0
Flt Permitted	0.142			0.212			0.102			0.439		
Satd. Flow (perm)	267	3433	1521	398	3400	1551	181	3183	0	778	3163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			233			103		38			104	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	67	756	502	191	929	88	313	412	154	173	552	355
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	756	502	191	929	88	313	566	0	173	907	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	55.2	44.5	44.5	56.0	46.7	46.7	68.6	48.3		53.1	36.0	
Actuated g/C Ratio	0.40	0.33	0.33	0.41	0.34	0.34	0.50	0.35		0.39	0.26	

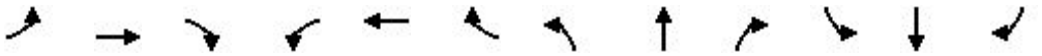
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.36	0.68	0.77	0.82	0.80	0.15	0.84	0.49		0.44	1.00	
Control Delay	26.0	42.3	29.0	53.7	46.2	3.9	56.6	36.1		25.3	73.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.0	42.3	29.0	53.7	46.2	3.9	56.6	36.1		25.3	73.3	
LOS	C	D	C	D	D	A	E	D		C	E	
Approach Delay		36.5			44.3			43.4			65.6	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	10.8	95.7	70.7	33.1	126.2	0.0	69.5	63.2		26.9	123.5	
Queue Length 95th (m)	17.9	106.6	105.9	#49.8	138.3	8.2	#159.2	91.8		47.8	#171.4	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	185	1583	827	234	1568	770	371	1150		389	910	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.48	0.61	0.82	0.59	0.11	0.84	0.49		0.44	1.00	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 92.1% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

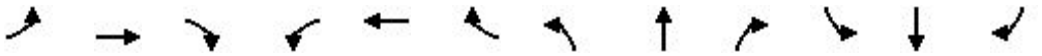
Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Future Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3184		1684	3164	
Flt Permitted	0.14	1.00	1.00	0.21	1.00	1.00	0.10	1.00		0.44	1.00	
Satd. Flow (perm)	266	3433	1521	398	3400	1551	181	3184		779	3164	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	67	756	502	191	929	88	313	412	154	173	552	355
RTOR Reduction (vph)	0	0	156	0	0	58	0	25	0	0	77	0
Lane Group Flow (vph)	67	756	346	191	929	30	313	541	0	173	830	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	50.9	45.3	45.3	53.7	46.7	46.7	64.7	47.5		48.4	35.2	
Effective Green, g (s)	50.9	45.3	45.3	53.7	46.7	46.7	64.7	47.5		48.4	35.2	
Actuated g/C Ratio	0.37	0.33	0.33	0.39	0.34	0.34	0.47	0.35		0.35	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	161	1138	504	227	1162	530	366	1107		363	815	
v/s Ratio Prot	0.02	0.22		c0.04	0.27		c0.16	0.17		0.05	c0.26	
v/s Ratio Perm	0.14		0.23	c0.29		0.02	0.25			0.12		
v/c Ratio	0.42	0.66	0.69	0.84	0.80	0.06	0.86	0.49		0.48	1.02	
Uniform Delay, d1	30.4	39.1	39.5	35.6	40.7	30.2	39.3	35.0		31.7	50.7	
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	1.7	1.5	3.9	23.5	3.9	0.0	17.4	1.5		1.0	36.2	
Delay (s)	32.1	40.6	43.4	59.1	44.7	30.2	56.7	36.6		32.7	86.9	
Level of Service	C	D	D	E	D	C	E	D		C	F	
Approach Delay (s)		41.2			45.9			43.7			78.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Future Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	1724	1536	1700	1756	0
Flt Permitted				0.950						0.104		
Satd. Flow (perm)	0	1879	0	1716	1580	0	1879	1724	1536	186	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					351				432			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	480	21	437	0	590	432	594	710	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	480	458	0	0	590	432	594	710	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		7.0		40.6	40.6			40.0	40.0	69.8	65.1	
Actuated g/C Ratio		0.06		0.32	0.32			0.32	0.32	0.55	0.52	

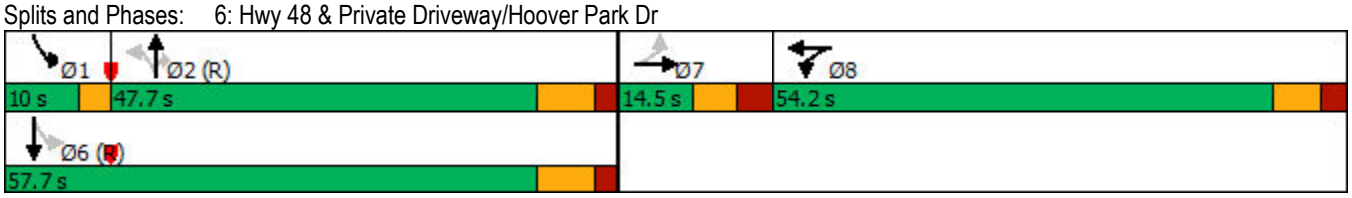
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.12		0.87	0.61			1.08	0.55	1.62	0.79	
Control Delay		59.7		57.2	11.5			103.9	5.9	317.0	35.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		59.7		57.2	11.5			103.9	5.9	317.0	35.5	
LOS		E		E	B			F	A	F	D	
Approach Delay		59.7			34.9			62.5			163.7	
Approach LOS		E			C			E			F	
Queue Length 50th (m)		3.3		115.8	20.0			~172.6	0.0	~189.7	135.5	
Queue Length 95th (m)		10.6		152.5	52.0			#245.0	24.9	#336.2	#273.6	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		638	807			545	781	367	904	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.13		0.75	0.57			1.08	0.55	1.62	0.79	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.62
Intersection Signal Delay: 94.9 Intersection LOS: F
Intersection Capacity Utilization 116.4% ICU Level of Service H
Analysis Period (min) 15

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

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Future Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			1724	1536	1700	1756	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1716	1580			1724	1536	186	1756	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	480	21	437	0	590	432	594	710	0
RTOR Reduction (vph)	0	0	0	0	238	0	0	0	311	0	0	0
Lane Group Flow (vph)	0	13	0	480	220	0	0	590	121	594	710	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		2.8		40.6	40.6			35.5	35.5	60.6	60.6	
Effective Green, g (s)		2.8		40.6	40.6			35.5	35.5	60.6	60.6	
Actuated g/C Ratio		0.02		0.32	0.32			0.28	0.28	0.48	0.48	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		41		551	507			484	431	353	841	
v/s Ratio Prot		c0.01		c0.28	0.14			0.34		c0.29	0.40	
v/s Ratio Perm									0.08	c0.51		
v/c Ratio		0.32		0.87	0.43			1.22	0.28	1.68	0.84	
Uniform Delay, d1		60.9		40.4	33.8			45.5	35.5	39.5	28.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.4		14.1	0.6			116.1	1.6	319.3	10.1	
Delay (s)		65.3		54.5	34.4			161.6	37.1	358.8	38.9	
Level of Service		E		D	C			F	D	F	D	
Approach Delay (s)		65.3			44.7			109.0			184.6	
Approach LOS		E			D			F			F	

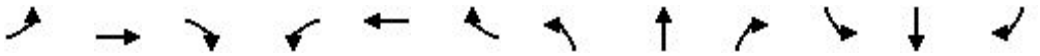
Intersection Summary			
HCM 2000 Control Delay	120.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	28	114	21	25	37
Future Volume (Veh/h)	53	28	114	21	25	37
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)	58	30	124	23	27	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	230	136			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	136			147	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			98	
cM capacity (veh/h)	749	919			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	147	67
Volume Left	58	0	27
Volume Right	30	23	0
cSH	799	1700	1447
Volume to Capacity	0.11	0.09	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	10.1	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	3.1
Approach LOS	B		

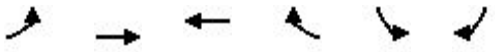
Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		25.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
Future Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
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)	23	52	0	0	140	71	0	0	0	17	0	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	75	211	0	75
Volume Left (vph)	23	0	0	17
Volume Right (vph)	0	71	0	58
Hadj (s)	0.06	-0.20	0.00	-0.42
Departure Headway (s)	4.3	3.9	4.6	4.1
Degree Utilization, x	0.09	0.23	0.00	0.09
Capacity (veh/h)	806	894	743	815
Control Delay (s)	7.8	8.1	7.6	7.5
Approach Delay (s)	7.8	8.1	0.0	7.5
Approach LOS	A	A	A	A

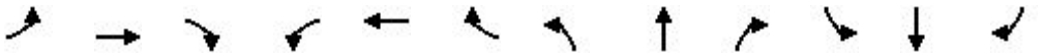
Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	0	0	0	0	84
Future Volume (Veh/h)	21	0	0	0	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	0	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				46	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				46	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	92
cM capacity (veh/h)	1636				956	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	0	91
Volume Left	23	0	0
Volume Right	0	0	91
cSH	1636	1700	1091
Volume to Capacity	0.01	0.00	0.08
Queue Length 95th (m)	0.3	0.0	2.2
Control Delay (s)	7.2	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	7.2	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



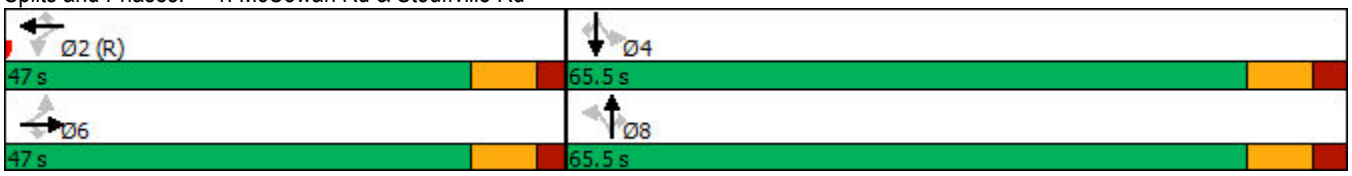
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Future Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.107			0.058			0.679			0.647		
Satd. Flow (perm)	193	3535	1536	106	3500	1597	1215	3535	1566	1216	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			53			48			48
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1813	288	237	1510	29	217	166	150	79	115	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1813	288	237	1510	29	217	166	150	79	115	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	39.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	65.5	65.5	65.5	65.5	65.5	65.5
Total Split (%)	41.8%	41.8%	41.8%	41.8%	41.8%	41.8%	58.2%	58.2%	58.2%	58.2%	58.2%	58.2%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.66	0.83	0.27	3.65	0.70	0.03	0.76	0.20	0.37	0.28	0.14	0.06
Control Delay	48.9	22.9	2.2	1241.3	18.2	1.3	56.0	33.2	24.8	35.1	32.1	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	22.9	2.2	1241.3	18.2	1.3	56.0	33.2	24.8	35.1	32.1	1.6
LOS	D	C	A	F	B	A	E	C	C	D	C	A
Approach Delay		21.1			181.1			40.1			30.2	
Approach LOS		C			F			D			C	
Queue Length 50th (m)	11.0	161.0	0.0	~84.6	115.0	0.0	47.0	16.3	19.4	15.0	11.1	0.0
Queue Length 95th (m)	#46.0	#269.4	12.9	#141.1	180.6	1.9	66.8	22.5	33.9	25.7	16.7	1.6
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	119	2184	1058	65	2163	1006	615	1791	817	616	1722	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.83	0.27	3.65	0.70	0.03	0.35	0.09	0.18	0.13	0.07	0.03

Intersection Summary

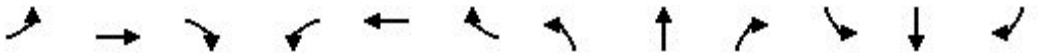
Area Type: Other
Cycle Length: 112.5
Actuated Cycle Length: 112.5
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 3.65
Intersection Signal Delay: 84.1 Intersection LOS: F
Intersection Capacity Utilization 125.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Future Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.11	1.00	1.00	0.06	1.00	1.00	0.68	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	194	3535	1536	105	3500	1597	1215	3535	1566	1215	3400	1452
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)	79	1813	288	237	1510	29	217	166	150	79	115	21
RTOR Reduction (vph)	0	0	110	0	0	11	0	0	37	0	0	16
Lane Group Flow (vph)	79	1813	178	237	1510	18	217	166	113	79	115	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Effective Green, g (s)	69.5	69.5	69.5	69.5	69.5	69.5	26.5	26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	119	2183	948	64	2162	986	286	832	368	286	800	342
v/s Ratio Prot		0.51			0.43			0.05			0.03	
v/s Ratio Perm	0.41		0.12	c2.26		0.01	c0.18		0.07	0.06		0.00
v/c Ratio	0.66	0.83	0.19	3.70	0.70	0.02	0.76	0.20	0.31	0.28	0.14	0.01
Uniform Delay, d1	13.9	16.9	9.3	21.5	14.5	8.3	40.0	34.5	35.4	35.2	34.0	33.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.6	3.8	0.4	1253.8	1.9	0.0	11.0	0.1	0.5	0.5	0.1	0.0
Delay (s)	39.5	20.7	9.7	1275.3	16.4	8.3	51.0	34.6	35.9	35.7	34.1	33.0
Level of Service	D	C	A	F	B	A	D	C	D	D	C	C
Approach Delay (s)		20.0			184.2			41.6			34.6	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	85.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.85		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	125.5%	ICU Level of Service	H
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)	32	1773	72	215	1453	68	191	0	5	3	0	27
Future Volume (Veh/h)	32	1773	72	215	1453	68	191	0	5	3	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	35	1948	79	236	1597	75	210	0	5	3	0	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1672			2027			3318	4162	974	3156	4204	836
vC1, stage 1 conf vol							2018	2018		2106	2106	
vC2, stage 2 conf vol							1300	2144		1049	2097	
vCu, unblocked vol	1672			2027			3318	4162	974	3156	4204	836
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			17			0	100	98	0	100	90
cM capacity (veh/h)	389			284			1	0	255	1	0	315

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	35	974	974	79	236	1065	607	210	5	33
Volume Left	35	0	0	0	236	0	0	210	0	3
Volume Right	0	0	0	79	0	0	75	0	5	30
cSH	389	1700	1700	1700	284	1700	1700	1	255	14
Volume to Capacity	0.09	0.57	0.57	0.05	0.83	0.63	0.36	236.54	0.02	2.41
Queue Length 95th (m)	2.4	0.0	0.0	0.0	55.1	0.0	0.0	Err	0.5	39.4
Control Delay (s)	15.2	0.0	0.0	0.0	58.5	0.0	0.0	Err	19.4	1208.7
Lane LOS	C				F			F	C	F
Approach Delay (s)	0.3				7.2			9766.9		1208.7
Approach LOS								F		F

Intersection Summary				
Average Delay	510.7			
Intersection Capacity Utilization	88.2%	ICU Level of Service		E
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1574	170	0	1744	0	101
Future Volume (Veh/h)	1574	170	0	1744	0	101
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1711	185	0	1896	0	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				303		
pX, platoon unblocked					0.78	
vC, conflicting volume			1711		2659	856
vC1, stage 1 conf vol					1711	
vC2, stage 2 conf vol					948	
vCu, unblocked vol			1711		2562	856
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	64
cM capacity (veh/h)			376		126	305

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	856	856	185	948	948	110
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	110
cSH	1700	1700	1700	1700	1700	305
Volume to Capacity	0.50	0.50	0.11	0.56	0.56	0.36
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	12.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	23.3
Lane LOS						C
Approach Delay (s)	0.0			0.0		23.3
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Future Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.960			0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3317	0	1750	3285	0
Flt Permitted	0.180			0.089			0.109			0.114		
Satd. Flow (perm)	338	3500	1581	167	3535	1581	193	3317	0	210	3285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			210			183		37			58	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	67	1199	570	139	980	183	600	821	297	149	616	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	1199	570	139	980	183	600	1118	0	149	912	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	70.7	70.7	11.0	70.7	70.7	11.0	43.9		11.0	43.9	
Total Split (%)	8.1%	51.8%	51.8%	8.1%	51.8%	51.8%	8.1%	32.1%		8.1%	32.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	67.3	56.6	56.6	68.1	58.8	58.8	54.3	37.6		51.8	36.0	
Actuated g/C Ratio	0.49	0.41	0.41	0.50	0.43	0.43	0.40	0.28		0.38	0.26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.28	0.83	0.73	0.84	0.64	0.23	2.69	1.19		0.70	1.00	
Control Delay	18.0	40.9	26.0	58.9	32.8	3.6	793.3	138.0		48.2	77.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.0	40.9	26.0	58.9	32.8	3.6	793.3	138.0		48.2	77.6	
LOS	B	D	C	E	C	A	F	F		D	E	
Approach Delay		35.5			31.5			366.8			73.5	
Approach LOS		D			C			F			E	
Queue Length 50th (m)	9.1	156.4	87.4	19.6	116.2	0.0	~277.2	~203.6		26.8	~131.1	
Queue Length 95th (m)	15.4	172.1	125.0	#51.4	129.6	13.3	#374.0	#248.4		#71.4	#178.6	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	240	1614	842	166	1630	827	223	939		213	908	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.28	0.74	0.68	0.84	0.60	0.22	2.69	1.19		0.70	1.00	

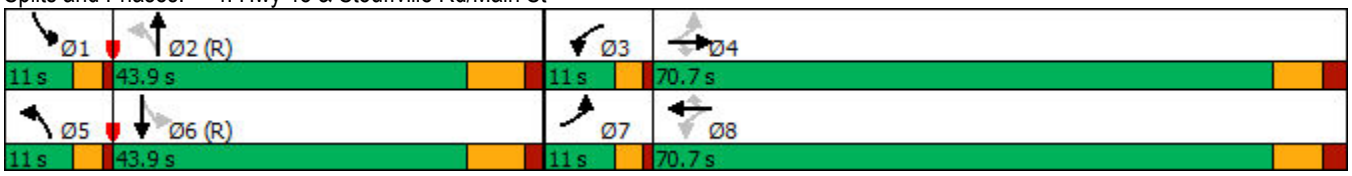
Intersection Summary

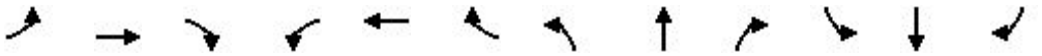
Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.69
Intersection Signal Delay: 137.6 Intersection LOS: F
Intersection Capacity Utilization 113.8% ICU Level of Service H
Analysis Period (min) 15

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

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

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Future Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3317		1750	3286	
Flt Permitted	0.18	1.00	1.00	0.09	1.00	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)	337	3500	1581	168	3535	1581	193	3317		209	3286	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	1199	570	139	980	183	600	821	297	149	616	296
RTOR Reduction (vph)	0	0	122	0	0	104	0	27	0	0	43	0
Lane Group Flow (vph)	67	1199	448	139	980	79	600	1091	0	149	869	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	63.0	57.4	57.4	65.8	58.8	58.8	50.1	36.7		47.1	35.2	
Effective Green, g (s)	63.0	57.4	57.4	65.8	58.8	58.8	50.1	36.7		47.1	35.2	
Actuated g/C Ratio	0.46	0.42	0.42	0.48	0.43	0.43	0.37	0.27		0.34	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	214	1470	664	163	1521	680	217	891		206	846	
v/s Ratio Prot	0.01	0.34		c0.04	0.28		c0.27	0.33		0.06	0.26	
v/s Ratio Perm	0.13		0.28	c0.37		0.05	c0.74			0.19		
v/c Ratio	0.31	0.82	0.68	0.85	0.64	0.12	2.76	1.22		0.72	1.03	
Uniform Delay, d1	22.6	34.9	32.1	27.0	30.7	23.3	38.6	49.9		35.9	50.7	
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	0.8	3.6	2.7	32.6	0.9	0.1	807.0	111.0		11.8	38.1	
Delay (s)	23.5	38.5	34.8	59.6	31.6	23.4	845.6	161.0		47.8	88.8	
Level of Service	C	D	C	E	C	C	F	F		D	F	
Approach Delay (s)		36.8			33.4			400.1			83.0	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	149.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

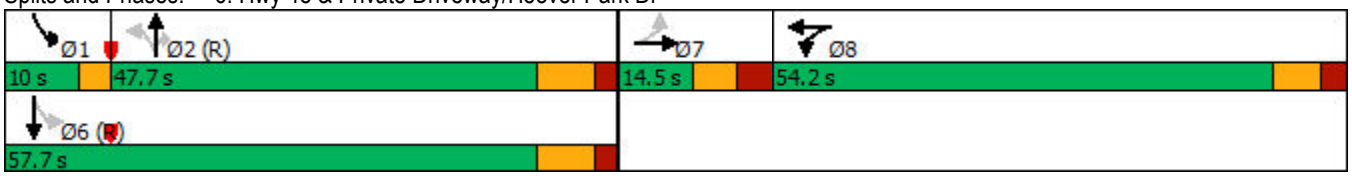
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Future Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99				0.99		1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	1789	1597	1767	1804	0
Flt Permitted				0.950						0.100		
Satd. Flow (perm)	0	1879	0	1750	1556	0	1879	1789	1576	186	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					292				395			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	449	30	898	0	1022	490	700	752	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	449	928	0	0	1022	490	700	753	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Detector Phase	7	7		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	14.5	14.5		54.2	54.2		47.7	47.7	47.7	10.0	57.7	
Total Split (%)	11.5%	11.5%		42.9%	42.9%		37.7%	37.7%	37.7%	7.9%	45.6%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		7.0		52.8	52.8			40.0	40.0	54.7	50.0	
Actuated g/C Ratio		0.06		0.42	0.42			0.32	0.32	0.43	0.40	
v/c Ratio		0.30		0.62	1.13			1.81	0.64	4.17	1.06	
Control Delay		65.1		34.9	99.2			397.6	11.6	1451.3	86.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		65.1		34.9	99.2			397.6	11.6	1451.3	86.9	
LOS		E		C	F			F	B	F	F	
Approach Delay		65.1			78.2			272.5			744.2	
Approach LOS		E			E			F			F	
Queue Length 50th (m)		8.0		98.5	~247.6			~402.2	18.1	~320.2	~215.6	
Queue Length 95th (m)		18.6		136.0	#322.8			#477.3	53.9	#391.5	#287.5	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		104		730	820			566	768	168	713	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.30		0.62	1.13			1.81	0.64	4.17	1.06	

Intersection Summary

Area Type: Other
Cycle Length: 126.4
Actuated Cycle Length: 126.4
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 4.17
Intersection Signal Delay: 366.6 Intersection LOS: F
Intersection Capacity Utilization 149.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Future Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			1789	1576	1767	1804	
Flt Permitted		1.00		0.95	1.00			1.00	1.00	0.10	1.00	
Satd. Flow (perm)		1879		1750	1556			1789	1576	186	1804	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	449	30	898	0	1022	490	700	752	1
RTOR Reduction (vph)	0	0	0	0	170	0	0	0	279	0	0	0
Lane Group Flow (vph)	0	31	0	449	758	0	0	1022	211	700	753	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		Split	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		7		8	8			2		1	6	
Permitted Phases	7						2		2	6		
Actuated Green, G (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Effective Green, g (s)		4.2		52.8	52.8			37.0	37.0	47.0	47.0	
Actuated g/C Ratio		0.03		0.42	0.42			0.29	0.29	0.37	0.37	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		62		731	649			523	461	156	670	
v/s Ratio Prot		c0.02		0.26	c0.49			0.57		c0.25	0.42	
v/s Ratio Perm									0.13	c1.41		
v/c Ratio		0.50		0.61	1.17			1.95	0.46	4.49	1.12	
Uniform Delay, d1		60.1		28.8	36.8			44.7	36.5	35.2	39.7	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.2		1.5	91.5			436.3	3.2	1583.9	74.1	
Delay (s)		66.3		30.4	128.3			481.0	39.7	1619.1	113.8	
Level of Service		E		C	F			F	D	F	F	
Approach Delay (s)		66.3			96.4			338.0			839.0	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	426.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.69		
Actuated Cycle Length (s)	126.4	Sum of lost time (s)	25.4
Intersection Capacity Utilization	149.1%	ICU Level of Service	H
Analysis Period (min)	15		

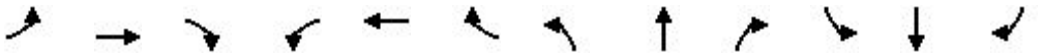
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	20	81	58	69	101
Future Volume (Veh/h)	38	20	81	58	69	101
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)	41	22	88	63	75	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	120			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	120			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	98			95	
cM capacity (veh/h)	594	938			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	151	185
Volume Left	41	0	75
Volume Right	22	63	0
cSH	681	1700	1442
Volume to Capacity	0.09	0.09	0.05
Queue Length 95th (m)	2.4	0.0	1.3
Control Delay (s)	10.8	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	3.3
Approach LOS	B		

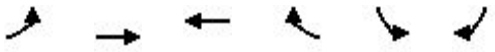
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
Future Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
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)	63	142	0	0	100	50	0	0	0	47	0	41

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	205	150	0	88
Volume Left (vph)	63	0	0	47
Volume Right (vph)	0	50	0	41
Hadj (s)	0.06	-0.20	0.00	-0.17
Departure Headway (s)	4.3	4.1	4.8	4.5
Degree Utilization, x	0.25	0.17	0.00	0.11
Capacity (veh/h)	810	835	692	735
Control Delay (s)	8.7	8.0	7.8	8.1
Approach Delay (s)	8.7	8.0	0.0	8.1
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	0	0	0	0	60
Future Volume (Veh/h)	58	0	0	0	0	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	0	0	0	0	65
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				126	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				126	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	94
cM capacity (veh/h)	1636				840	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	63	0	65
Volume Left	63	0	0
Volume Right	0	0	65
cSH	1636	1700	1091
Volume to Capacity	0.04	0.00	0.06
Queue Length 95th (m)	1.0	0.0	1.5
Control Delay (s)	7.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Future Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.171			0.142			0.692			0.690		
Satd. Flow (perm)	312	3433	1493	249	3400	1507	1238	3336	1487	1222	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			50			129			82
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	4.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	8.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	54.5	54.5	54.5	20.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	45.4%	45.4%	45.4%	16.7%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	3.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	0.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	57.1	57.1	57.1	83.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.48	0.48	0.48	0.69	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.26	0.69	0.28	0.71	0.66	0.04	0.74	0.14	0.32	0.19	0.14	0.11
Control Delay	29.7	29.4	3.9	27.0	9.7	0.2	60.6	37.1	7.7	37.8	37.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	29.4	3.9	27.0	9.7	0.2	60.6	37.1	7.7	37.8	37.0	0.8
LOS	C	C	A	C	A	A	E	D	A	D	D	A
Approach Delay		25.1			12.1			38.5			29.4	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	5.7	115.7	0.0	19.1	43.4	0.0	43.7	10.6	0.0	9.8	10.3	0.0
Queue Length 95th (m)	16.2	148.0	13.0	#66.9	115.4	m0.1	56.9	15.0	12.0	17.2	14.7	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	148	1634	833	394	2240	1010	381	1028	547	376	1009	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.69	0.28	0.69	0.66	0.04	0.49	0.10	0.24	0.13	0.09	0.08

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 103.8% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Future Volume (vph)	32	956	199	231	1266	37	157	83	110	40	81	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1682	3275	1389
Flt Permitted	0.17	1.00	1.00	0.14	1.00	1.00	0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	311	3433	1493	249	3400	1507	1239	3336	1487	1223	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1125	234	272	1489	44	185	98	129	47	95	39
RTOR Reduction (vph)	0	0	123	0	0	15	0	0	103	0	0	31
Lane Group Flow (vph)	38	1125	111	272	1489	29	185	98	26	47	95	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	57.1	57.1	57.1	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	57.1	57.1	57.1	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.48	0.48	0.48	0.66	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	147	1633	710	376	2241	993	251	678	302	248	665	282
v/s Ratio Prot		0.33		c0.11	0.44			0.03			0.03	
v/s Ratio Perm	0.12		0.07	c0.37		0.02	c0.15		0.02	0.04		0.01
v/c Ratio	0.26	0.69	0.16	0.72	0.66	0.03	0.74	0.14	0.09	0.19	0.14	0.03
Uniform Delay, d1	18.8	24.5	17.8	18.0	12.4	7.1	44.8	39.2	38.8	39.6	39.2	38.3
Progression Factor	1.00	1.00	1.00	1.26	0.59	0.07	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.4	0.5	5.5	1.3	0.0	10.7	0.1	0.1	0.4	0.1	0.0
Delay (s)	23.0	26.9	18.3	28.2	8.6	0.5	55.5	39.3	38.9	40.0	39.3	38.3
Level of Service	C	C	B	C	A	A	E	D	D	D	D	D
Approach Delay (s)		25.4			11.4			46.5			39.3	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1044	27	78	1288	10	267	0	8	3	0	0
Future Volume (vph)	29	1044	27	78	1288	10	267	0	8	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1785	3400	1597	1785	3398	0	1785	1597	0	0	1785	0
Flt Permitted	0.158			0.159			0.756				0.752	
Satd. Flow (perm)	297	3400	1597	299	3398	0	1420	1597	0	0	1413	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		1			158				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	1135	29	85	1400	11	290	0	9	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	1135	29	85	1411	0	290	9	0	0	3	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	63.0	63.0	63.0	13.0	76.0		44.0	44.0		44.0	44.0	
Total Split (%)	52.5%	52.5%	52.5%	10.8%	63.3%		36.7%	36.7%		36.7%	36.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	67.7	67.7	67.7	78.5	78.5		29.5	29.5			29.5	
Actuated g/C Ratio	0.56	0.56	0.56	0.65	0.65		0.25	0.25			0.25	

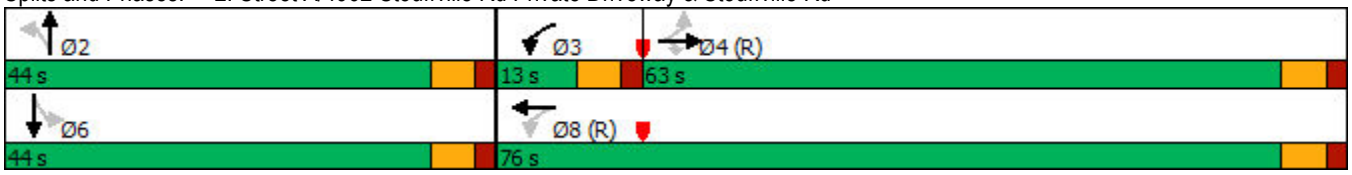
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.19	0.59	0.03	0.30	0.63		0.83	0.02			0.01	
Control Delay	35.4	30.3	6.4	11.7	15.0		62.2	0.1			29.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	35.4	30.3	6.4	11.7	15.0		62.2	0.1			29.7	
LOS	D	C	A	B	B		E	A			C	
Approach Delay		29.8			14.8			60.4			29.7	
Approach LOS		C			B			E			C	
Queue Length 50th (m)	4.7	89.6	0.0	7.1	101.3		68.2	0.0			0.6	
Queue Length 95th (m)	m10.6	146.6	m1.7	16.2	151.0		93.8	0.0			2.9	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	167	1918	936	287	2223		449	613			447	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.19	0.59	0.03	0.30	0.63		0.65	0.01			0.01	

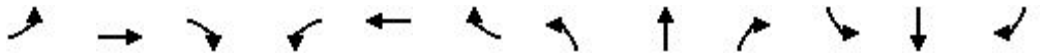
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 81.5% ICU Level of Service D
Analysis Period (min) 15

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

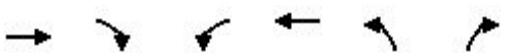
Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1044	27	78	1288	10	267	0	8	3	0	0
Future Volume (vph)	29	1044	27	78	1288	10	267	0	8	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1785	3400	1597	1785	3397		1785	1597			1785	
Flt Permitted	0.16	1.00	1.00	0.16	1.00		0.76	1.00			0.75	
Satd. Flow (perm)	297	3400	1597	298	3397		1420	1597			1412	
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)	32	1135	29	85	1400	11	290	0	9	3	0	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	32	1135	16	85	1411	0	290	2	0	0	3	0
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	66.5	66.5	66.5	78.5	78.5		29.5	29.5			29.5	
Effective Green, g (s)	66.5	66.5	66.5	78.5	78.5		29.5	29.5			29.5	
Actuated g/C Ratio	0.55	0.55	0.55	0.65	0.65		0.25	0.25			0.25	
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)	164	1884	885	269	2222		349	392			347	
v/s Ratio Prot		0.33		0.02	c0.42			0.00				
v/s Ratio Perm	0.11		0.01	0.19			c0.20				0.00	
v/c Ratio	0.20	0.60	0.02	0.32	0.63		0.83	0.01			0.01	
Uniform Delay, d1	13.4	17.9	12.0	11.1	12.3		42.9	34.2			34.2	
Progression Factor	1.83	1.50	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.1	1.1	0.0	0.7	1.4		15.4	0.0			0.0	
Delay (s)	26.5	28.0	12.1	11.8	13.7		58.2	34.2			34.2	
Level of Service	C	C	B	B	B		E	C			C	
Approach Delay (s)		27.6			13.6			57.5			34.2	
Approach LOS		C			B			E			C	

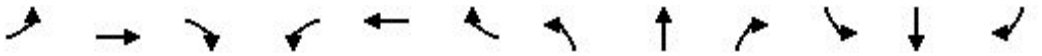
Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1000	62	0	1391	0	142
Future Volume (Veh/h)	1000	62	0	1391	0	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1087	67	0	1512	0	154
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.78		0.87	0.78
vC, conflicting volume			1087		1843	544
vC1, stage 1 conf vol					1087	
vC2, stage 2 conf vol					756	
vCu, unblocked vol			551		538	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			804		417	852

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	544	544	67	756	756	154
Volume Left	0	0	0	0	0	0
Volume Right	0	0	67	0	0	154
cSH	1700	1700	1700	1700	1700	852
Volume to Capacity	0.32	0.32	0.04	0.44	0.44	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.2
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		



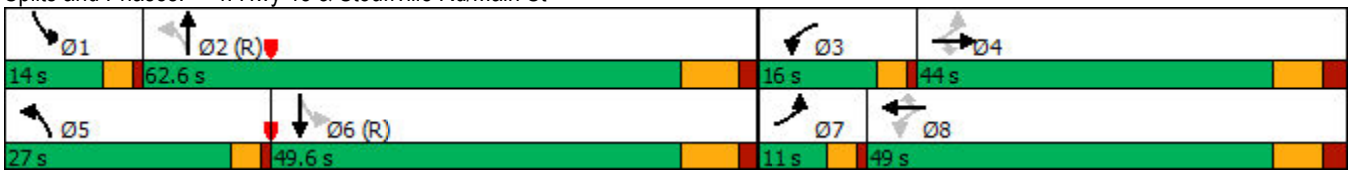
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Future Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.958			0.940	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3180	0	1684	3160	0
Flt Permitted	0.145			0.153			0.134			0.445		
Satd. Flow (perm)	272	3433	1521	287	3400	1551	238	3180	0	789	3160	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			388			135		49			119	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	67	711	502	191	884	88	313	399	154	173	534	355
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	711	502	191	884	88	313	553	0	173	889	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	44.0	44.0	16.0	49.0	49.0	27.0	62.6		14.0	49.6	
Total Split (%)	8.1%	32.2%	32.2%	11.7%	35.9%	35.9%	19.8%	45.8%		10.2%	36.3%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	44.6	33.8	33.8	53.7	41.1	41.1	74.9	57.1		59.2	45.5	
Actuated g/C Ratio	0.33	0.25	0.25	0.39	0.30	0.30	0.55	0.42		0.43	0.33	

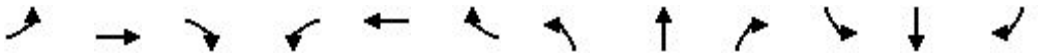
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.40	0.84	0.75	0.77	0.86	0.16	0.88	0.41		0.43	0.79	
Control Delay	32.9	58.4	18.4	49.7	55.2	1.7	52.8	26.9		21.5	42.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	32.9	58.4	18.4	49.7	55.2	1.7	52.8	26.9		21.5	42.2	
LOS	C	E	B	D	E	A	D	C		C	D	
Approach Delay		41.4			50.3			36.2			38.8	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	11.5	98.9	28.0	35.5	124.7	0.0	59.7	53.7		24.9	110.2	
Queue Length 95th (m)	21.7	123.0	74.3	#61.7	152.6	3.0	#110.4	70.4		39.0	138.6	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	167	912	689	248	1036	566	373	1357		410	1131	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.40	0.78	0.73	0.77	0.85	0.16	0.84	0.41		0.42	0.79	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 42.1 Intersection LOS: D
Intersection Capacity Utilization 91.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Future Volume (vph)	61	647	457	174	804	80	285	363	140	157	486	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3180		1684	3160	
Flt Permitted	0.14	1.00	1.00	0.15	1.00	1.00	0.13	1.00		0.45	1.00	
Satd. Flow (perm)	272	3433	1521	287	3400	1551	237	3180		789	3160	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	67	711	502	191	884	88	313	399	154	173	534	355
RTOR Reduction (vph)	0	0	290	0	0	62	0	29	0	0	80	0
Lane Group Flow (vph)	67	711	212	191	884	26	313	524	0	173	809	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	40.2	34.5	34.5	50.8	41.1	41.1	70.2	56.3		54.6	44.7	
Effective Green, g (s)	40.2	34.5	34.5	50.8	41.1	41.1	70.2	56.3		54.6	44.7	
Actuated g/C Ratio	0.29	0.25	0.25	0.37	0.30	0.30	0.51	0.41		0.40	0.33	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	143	867	384	241	1022	466	349	1310		380	1034	
v/s Ratio Prot	0.02	0.21		c0.07	c0.26		c0.14	0.16		0.03	0.26	
v/s Ratio Perm	0.12		0.14	0.22		0.02	c0.32			0.15		
v/c Ratio	0.47	0.82	0.55	0.79	0.86	0.06	0.90	0.40		0.46	0.78	
Uniform Delay, d1	36.8	48.1	44.3	32.8	45.1	34.0	33.0	28.3		27.4	41.6	
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	2.4	6.3	1.7	16.2	7.8	0.1	24.3	0.9		0.9	5.9	
Delay (s)	39.2	54.4	46.1	49.0	52.9	34.0	57.2	29.2		28.3	47.5	
Level of Service	D	D	D	D	D	C	E	C		C	D	
Approach Delay (s)		50.3			50.8			39.3			44.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

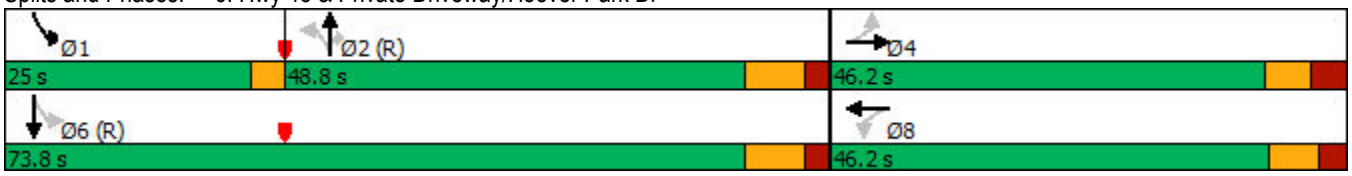
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Future Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	3275	1536	1700	3336	0
Flt Permitted				0.749						0.323		
Satd. Flow (perm)	0	1879	0	1353	1580	0	1879	3275	1536	578	3336	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					420				421			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	450	21	420	0	570	421	587	689	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	450	441	0	0	570	421	587	689	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	46.2	46.2		46.2	46.2		48.8	48.8	48.8	25.0	73.8	
Total Split (%)	38.5%	38.5%		38.5%	38.5%		40.7%	40.7%	40.7%	20.8%	61.5%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		39.8		40.1	40.1			40.0	40.0	69.7	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.58	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.02		1.00	0.55			0.52	0.53	1.09	0.38	
Control Delay		27.2		81.8	6.3			34.4	5.4	83.3	16.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		27.2		81.8	6.3			34.4	5.4	83.3	16.7	
LOS		C		F	A			C	A	F	B	
Approach Delay		27.3			44.4			22.1			47.3	
Approach LOS		C			D			C			D	
Queue Length 50th (m)		2.2		110.8	3.5			59.7	0.0	~104.7	49.7	
Queue Length 95th (m)		6.9		#181.0	28.9			78.1	23.0	#199.9	63.6	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		623		452	807			1121	802	541	1837	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.02		1.00	0.55			0.51	0.52	1.09	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 38.5 Intersection LOS: D
Intersection Capacity Utilization 114.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Future Volume (vph)	0	12	0	405	19	378	0	513	379	528	620	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			3275	1536	1700	3336	
Flt Permitted		1.00		0.75	1.00			1.00	1.00	0.32	1.00	
Satd. Flow (perm)		1879		1353	1580			3275	1536	577	3336	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	450	21	420	0	570	421	587	689	0
RTOR Reduction (vph)	0	0	0	0	280	0	0	0	281	0	0	0
Lane Group Flow (vph)	0	13	0	450	161	0	0	570	140	587	689	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Effective Green, g (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.54	0.54	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		623		452	527			1091	512	518	1807	
v/s Ratio Prot		0.01			0.10			0.17		c0.21	0.21	
v/s Ratio Perm				c0.33					0.09	c0.41		
v/c Ratio		0.02		1.00	0.31			0.52	0.27	1.13	0.38	
Uniform Delay, d1		27.0		39.9	29.6			32.3	29.3	21.2	15.9	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		40.9	0.3			1.8	1.3	81.6	0.6	
Delay (s)		27.0		80.8	30.0			34.1	30.7	102.8	16.5	
Level of Service		C		F	C			C	C	F	B	
Approach Delay (s)		27.0			55.6			32.6			56.2	
Approach LOS		C			E			C			E	

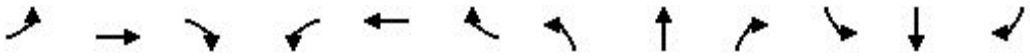
Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	28	114	21	25	37
Future Volume (Veh/h)	53	28	114	21	25	37
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)	58	30	124	23	27	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	230	136			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	136			147	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			98	
cM capacity (veh/h)	749	919			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	147	67
Volume Left	58	0	27
Volume Right	30	23	0
cSH	799	1700	1447
Volume to Capacity	0.11	0.09	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	10.1	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	3.1
Approach LOS	B		

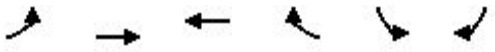
Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		25.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
Future Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
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)	23	52	0	0	140	71	0	0	0	17	0	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	75	211	0	75
Volume Left (vph)	23	0	0	17
Volume Right (vph)	0	71	0	58
Hadj (s)	0.06	-0.20	0.00	-0.42
Departure Headway (s)	4.3	3.9	4.6	4.1
Degree Utilization, x	0.09	0.23	0.00	0.09
Capacity (veh/h)	806	894	743	815
Control Delay (s)	7.8	8.1	7.6	7.5
Approach Delay (s)	7.8	8.1	0.0	7.5
Approach LOS	A	A	A	A

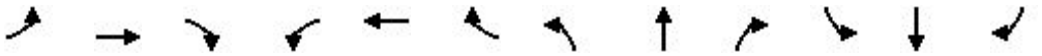
Intersection Summary			
Delay	7.9		
Level of Service	A		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	0	0	0	0	84
Future Volume (Veh/h)	21	0	0	0	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	0	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				46	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				46	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	92
cM capacity (veh/h)	1636				956	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	0	91
Volume Left	23	0	0
Volume Right	0	0	91
cSH	1636	1700	1091
Volume to Capacity	0.01	0.00	0.08
Queue Length 95th (m)	0.3	0.0	2.2
Control Delay (s)	7.2	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	7.2	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Future Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.185			0.067			0.690			0.662		
Satd. Flow (perm)	334	3535	1536	122	3500	1597	1235	3535	1566	1244	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			50			134			118
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1718	288	237	1435	29	217	142	150	79	99	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1718	288	237	1435	29	217	142	150	79	99	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	5.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	13.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	59.5	59.5	59.5	15.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	49.6%	49.6%	49.6%	12.5%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.55	1.13	0.35	0.76	0.64	0.03	0.79	0.18	0.33	0.29	0.13	0.05
Control Delay	43.3	101.4	3.6	42.6	21.8	4.7	63.9	36.5	9.3	39.1	35.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	101.4	3.6	42.6	21.8	4.7	63.9	36.5	9.3	39.1	35.5	0.2
LOS	D	F	A	D	C	A	E	D	A	D	D	A
Approach Delay		85.7			24.4			40.2			33.2	
Approach LOS		F			C			D			C	
Queue Length 50th (m)	14.4	~260.4	0.0	41.2	129.1	0.2	51.2	15.1	3.1	16.4	10.4	0.0
Queue Length 95th (m)	34.8	#305.0	16.3	m#114.0	m172.4	m1.1	72.4	21.5	18.3	27.6	16.1	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	143	1517	823	312	2243	1041	380	1089	575	383	1048	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	1.13	0.35	0.76	0.64	0.03	0.57	0.13	0.26	0.21	0.09	0.04

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 55.0 Intersection LOS: E
Intersection Capacity Utilization 115.9% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Future Volume (vph)	73	1581	265	218	1320	27	200	131	138	73	91	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.19	1.00	1.00	0.07	1.00	1.00	0.69	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	335	3535	1536	123	3500	1597	1234	3535	1566	1244	3400	1452
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)	79	1718	288	237	1435	29	217	142	150	79	99	21
RTOR Reduction (vph)	0	0	164	0	0	10	0	0	104	0	0	16
Lane Group Flow (vph)	79	1718	124	237	1435	19	217	142	46	79	99	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Effective Green, g (s)	51.5	51.5	51.5	76.9	76.9	76.9	26.6	26.6	26.6	26.6	26.6	26.6
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	143	1517	659	312	2242	1023	273	783	347	275	753	321
v/s Ratio Prot		c0.49		0.11	c0.41			0.04			0.03	
v/s Ratio Perm	0.24		0.08	0.38		0.01	c0.18		0.03	0.06		0.00
v/c Ratio	0.55	1.13	0.19	0.76	0.64	0.02	0.79	0.18	0.13	0.29	0.13	0.01
Uniform Delay, d1	25.6	34.2	21.3	35.7	13.1	7.8	44.1	37.9	37.4	38.8	37.4	36.5
Progression Factor	1.00	1.00	1.00	0.96	1.42	3.52	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.5	68.5	0.6	7.9	1.1	0.0	14.7	0.1	0.2	0.6	0.1	0.0
Delay (s)	40.1	102.7	21.9	42.1	19.7	27.6	58.8	38.0	37.6	39.4	37.5	36.5
Level of Service	D	F	C	D	B	C	E	D	D	D	D	D
Approach Delay (s)		89.2			22.9			46.8			38.2	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	57.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

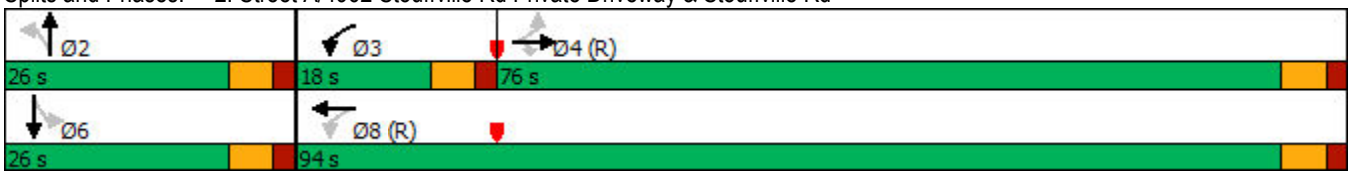
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1686	72	215	1374	68	191	0	5	3	0	27
Future Volume (vph)	32	1686	72	215	1374	68	191	0	5	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.850			0.877	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1785	3535	1597	1785	3479	0	1785	1597	0	0	1640	0
Flt Permitted	0.152			0.053			0.736				0.984	
Satd. Flow (perm)	286	3535	1597	100	3479	0	1383	1597	0	0	1621	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		11			172			82	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	1853	79	236	1510	75	210	0	5	3	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1853	79	236	1585	0	210	5	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	76.0	76.0	76.0	18.0	94.0		26.0	26.0		26.0	26.0	
Total Split (%)	63.3%	63.3%	63.3%	15.0%	78.3%		21.7%	21.7%		21.7%	21.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Actuated g/C Ratio	0.58	0.58	0.58	0.74	0.74		0.16	0.16			0.16	

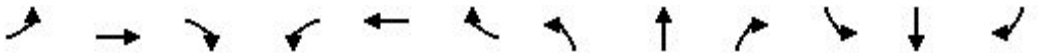
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.21	0.90	0.08	0.96	0.62		0.93	0.01			0.10	
Control Delay	6.8	23.5	1.9	81.3	8.9		94.2	0.0			0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	6.8	23.5	1.9	81.3	8.9		94.2	0.0			0.6	
LOS	A	C	A	F	A		F	A			A	
Approach Delay		22.4			18.3			92.0			0.6	
Approach LOS		C			B			F			A	
Queue Length 50th (m)	3.0	256.7	2.6	42.2	87.9		51.7	0.0			0.0	
Queue Length 95th (m)	m3.2	m230.5	m2.5	#95.4	106.3		#98.9	0.0			0.0	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	166	2062	965	246	2564		230	409			338	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.21	0.90	0.08	0.96	0.62		0.91	0.01			0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 90.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1686	72	215	1374	68	191	0	5	3	0	27
Future Volume (vph)	32	1686	72	215	1374	68	191	0	5	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1785	3535	1597	1785	3478		1785	1597			1641	
Flt Permitted	0.15	1.00	1.00	0.05	1.00		0.74	1.00			0.98	
Satd. Flow (perm)	286	3535	1597	99	3478		1382	1597			1621	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	35	1853	79	236	1510	75	210	0	5	3	0	30
RTOR Reduction (vph)	0	0	33	0	3	0	0	4	0	0	28	0
Lane Group Flow (vph)	35	1853	46	236	1582	0	210	1	0	0	5	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Effective Green, g (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Actuated g/C Ratio	0.58	0.58	0.58	0.74	0.74		0.16	0.16			0.16	
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)	166	2062	931	247	2562		225	260			264	
v/s Ratio Prot		0.52		c0.10	0.45			0.00				
v/s Ratio Perm	0.12		0.03	c0.61			c0.15				0.00	
v/c Ratio	0.21	0.90	0.05	0.96	0.62		0.93	0.00			0.02	
Uniform Delay, d1	11.9	21.9	10.7	41.3	7.6		49.6	42.0			42.1	
Progression Factor	0.50	1.02	0.86	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.7	0.0	44.6	1.1		41.6	0.0			0.0	
Delay (s)	6.2	22.9	9.3	85.9	8.8		91.2	42.0			42.2	
Level of Service	A	C	A	F	A		F	D			D	
Approach Delay (s)		22.1			18.8			90.1			42.2	
Approach LOS		C			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1486	170	0	1659	0	101
Future Volume (Veh/h)	1486	170	0	1659	0	101
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1615	185	0	1803	0	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.53		0.66	0.53
vC, conflicting volume			1615		2516	808
vC1, stage 1 conf vol					1615	
vC2, stage 2 conf vol					902	
vCu, unblocked vol			403		576	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			622		337	582

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	808	808	185	902	902	110
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	110
cSH	1700	1700	1700	1700	1700	582
Volume to Capacity	0.47	0.47	0.11	0.53	0.53	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.6
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.6
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Future Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3312	0	1750	3282	0
Flt Permitted	0.113			0.094			0.103			0.196		
Satd. Flow (perm)	212	3500	1581	177	3535	1581	183	3312	0	361	3282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			452			183		48			61	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	67	1131	570	139	929	183	600	796	297	149	594	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	1131	570	139	929	183	600	1093	0	149	890	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	48.0	48.0	11.0	48.0	48.0	34.0	64.6		13.0	43.6	
Total Split (%)	8.1%	35.1%	35.1%	8.1%	35.1%	35.1%	24.9%	47.3%		9.5%	31.9%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	51.0	40.3	40.3	51.8	42.5	42.5	73.6	56.9		48.4	35.7	
Actuated g/C Ratio	0.37	0.30	0.30	0.38	0.31	0.31	0.54	0.42		0.35	0.26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.42	1.10	0.73	0.93	0.85	0.30	1.40	0.78		0.69	0.99	
Control Delay	33.7	102.8	15.0	89.1	52.9	6.1	226.9	37.5		37.4	73.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.7	102.8	15.0	89.1	52.9	6.1	226.9	37.5		37.4	73.5	
LOS	C	F	B	F	D	A	F	D		D	E	
Approach Delay		71.8			50.1			104.6			68.3	
Approach LOS		E			D			F			E	
Queue Length 50th (m)	11.7	~190.7	27.7	25.3	133.1	0.0	~211.3	134.4		20.6	125.6	
Queue Length 95th (m)	22.0	#235.1	76.3	#66.3	#169.3	17.8	#286.7	163.1		#37.1	#172.3	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	159	1032	785	149	1099	618	428	1406		219	902	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.42	1.10	0.73	0.93	0.85	0.30	1.40	0.78		0.68	0.99	

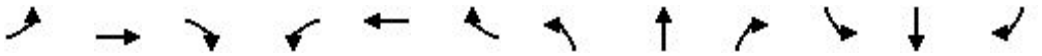
Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 76.1 Intersection LOS: E
Intersection Capacity Utilization 112.1% ICU Level of Service H
Analysis Period (min) 15

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

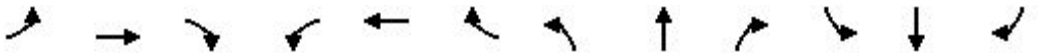
Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Future Volume (vph)	60	1018	513	125	836	165	540	716	267	134	535	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3313		1750	3282	
Flt Permitted	0.11	1.00	1.00	0.09	1.00	1.00	0.10	1.00		0.20	1.00	
Satd. Flow (perm)	212	3500	1581	177	3535	1581	182	3313		361	3282	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	1131	570	139	929	183	600	796	297	149	594	296
RTOR Reduction (vph)	0	0	316	0	0	126	0	28	0	0	45	0
Lane Group Flow (vph)	67	1131	254	139	929	57	600	1065	0	149	845	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.1		43.7	34.9	
Effective Green, g (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.1		43.7	34.9	
Actuated g/C Ratio	0.34	0.30	0.30	0.36	0.31	0.31	0.50	0.41		0.32	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	136	1053	475	146	1099	491	421	1360		204	838	
v/s Ratio Prot	0.02	c0.32		c0.05	0.26		c0.31	0.32		0.05	0.26	
v/s Ratio Perm	0.15		0.16	0.30		0.04	c0.40			0.19		
v/c Ratio	0.49	1.07	0.53	0.95	0.85	0.12	1.43	0.78		0.73	1.01	
Uniform Delay, d1	33.5	47.7	39.8	37.3	44.0	33.6	42.6	35.0		34.9	50.8	
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	2.8	49.9	1.2	59.8	6.1	0.1	204.7	4.6		12.6	33.0	
Delay (s)	36.3	97.6	40.9	97.0	50.1	33.7	247.4	39.5		47.5	83.9	
Level of Service	D	F	D	F	D	C	F	D		D	F	
Approach Delay (s)		77.0			52.9			113.2			78.7	
Approach LOS		E			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	82.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



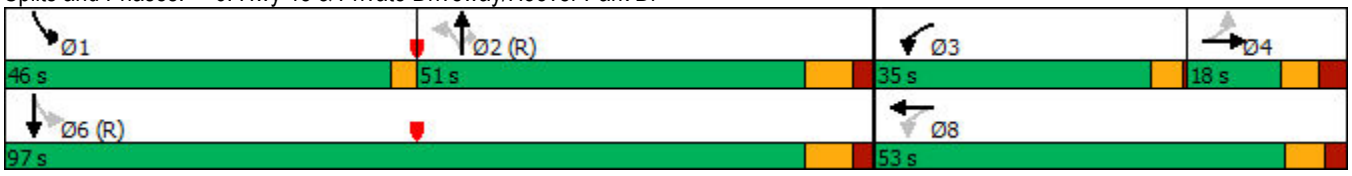
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Future Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99				0.99	1.00	1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	3400	1597	1767	3428	0
Flt Permitted				0.459						0.092		
Satd. Flow (perm)	0	1879	0	845	1556	0	1879	3400	1576	171	3428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					548				476			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	428	30	865	0	991	476	685	729	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	428	895	0	0	991	476	685	730	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		4.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		8.0	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	18.0	18.0		35.0	53.0		51.0	51.0	51.0	46.0	97.0	
Total Split (%)	12.0%	12.0%		23.3%	35.3%		34.0%	34.0%	34.0%	30.7%	64.7%	
Yellow Time (s)	4.1	4.1		3.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		0.5	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		4.0	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.1		49.0	45.8			43.3	43.3	94.0	89.3	
Actuated g/C Ratio		0.06		0.33	0.31			0.29	0.29	0.63	0.60	
v/c Ratio		0.27		0.85	1.05			1.01	0.60	1.21	0.36	
Control Delay		72.8		61.6	63.2			83.6	6.8	149.7	16.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		72.8		61.6	63.2			83.6	6.8	149.7	16.2	
LOS		E		E	E			F	A	F	B	
Approach Delay		72.8			62.7			58.7			80.9	
Approach LOS		E			E			E			F	
Queue Length 50th (m)		9.4		119.7	~176.7			~167.0	0.0	~243.1	59.3	
Queue Length 95th (m)		21.0		#160.2	#253.0			#210.8	26.8	#316.7	71.7	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		131		506	855			981	793	564	2040	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.24		0.85	1.05			1.01	0.60	1.21	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 67.4 Intersection LOS: E
Intersection Capacity Utilization 134.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Future Volume (vph)	0	28	0	381	27	770	0	882	424	610	649	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1556			3400	1576	1767	3427	
Flt Permitted		1.00		0.46	1.00			1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1879		845	1556			3400	1576	172	3427	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	428	30	865	0	991	476	685	729	1
RTOR Reduction (vph)	0	0	0	0	370	0	0	0	348	0	0	0
Lane Group Flow (vph)	0	31	0	428	525	0	0	991	128	685	730	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Effective Green, g (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Actuated g/C Ratio		0.04		0.33	0.33			0.27	0.27	0.58	0.58	
Clearance Time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		78		505	506			913	423	556	1971	
v/s Ratio Prot		0.02		0.22	c0.34			0.29		c0.35	0.21	
v/s Ratio Perm				0.06					0.08	c0.36		
v/c Ratio		0.40		0.85	1.04			1.09	0.30	1.23	0.37	
Uniform Delay, d1		70.0		45.3	50.6			54.9	43.7	45.7	17.2	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.3		12.5	50.2			55.7	1.8	119.4	0.5	
Delay (s)		73.3		57.7	100.8			110.6	45.5	165.1	17.7	
Level of Service		E		E	F			F	D	F	B	
Approach Delay (s)		73.3			86.9			89.5			89.1	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	88.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	134.7%	ICU Level of Service	H
Analysis Period (min)	15		

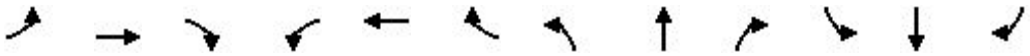
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	20	81	58	69	101
Future Volume (Veh/h)	38	20	81	58	69	101
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)	41	22	88	63	75	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	120			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	120			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	98			95	
cM capacity (veh/h)	594	938			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	151	185
Volume Left	41	0	75
Volume Right	22	63	0
cSH	681	1700	1442
Volume to Capacity	0.09	0.09	0.05
Queue Length 95th (m)	2.4	0.0	1.3
Control Delay (s)	10.8	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	3.3
Approach LOS	B		

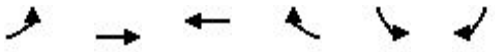
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
Future Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
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)	63	142	0	0	100	50	0	0	0	47	0	41

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	205	150	0	88
Volume Left (vph)	63	0	0	47
Volume Right (vph)	0	50	0	41
Hadj (s)	0.06	-0.20	0.00	-0.17
Departure Headway (s)	4.3	4.1	4.8	4.5
Degree Utilization, x	0.25	0.17	0.00	0.11
Capacity (veh/h)	810	835	692	735
Control Delay (s)	8.7	8.0	7.8	8.1
Approach Delay (s)	8.7	8.0	0.0	8.1
Approach LOS	A	A	A	A

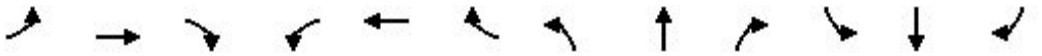
Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	0	0	0	0	60
Future Volume (Veh/h)	58	0	0	0	0	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	0	0	0	0	65
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				126	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				126	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	94
cM capacity (veh/h)	1636				840	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	63	0	65
Volume Left	63	0	0
Volume Right	0	0	65
cSH	1636	1700	1091
Volume to Capacity	0.04	0.00	0.06
Queue Length 95th (m)	1.0	0.0	1.5
Control Delay (s)	7.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Future Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1733	3433	1493	1668	3400	1507	1700	3336	1507	1684	3275	1389
Flt Permitted	0.154			0.117			0.681			0.679		
Satd. Flow (perm)	281	3433	1493	205	3400	1507	1219	3336	1487	1203	3275	1389
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			50			129			82
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Adj. Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	4.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	8.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	54.5	54.5	54.5	20.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	45.4%	45.4%	45.4%	16.7%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	3.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	0.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None

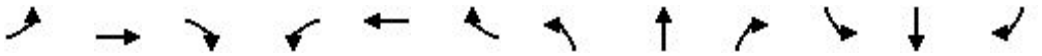
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	55.6	55.6	55.6	83.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.46	0.46	0.46	0.69	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.29	0.75	0.29	0.72	0.70	0.04	0.75	0.17	0.32	0.19	0.17	0.11
Control Delay	32.5	32.0	4.0	32.0	9.7	0.2	61.8	37.6	7.7	37.9	37.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	32.0	4.0	32.0	9.7	0.2	61.8	37.6	7.7	37.9	37.6	0.8
LOS	C	C	A	C	A	A	E	D	A	D	D	A
Approach Delay		27.5			12.7			39.1			30.4	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	5.9	128.8	0.0	25.2	43.8	0.0	43.8	12.5	0.0	9.8	12.2	0.0
Queue Length 95th (m)	16.8	159.5	13.0	#77.4	117.7	m0.1	57.2	17.1	12.0	17.3	16.7	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	130	1591	817	383	2240	1010	375	1028	547	370	1009	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.75	0.29	0.71	0.70	0.04	0.49	0.11	0.24	0.13	0.11	0.08

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 105.6% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Future Volume (vph)	32	1009	199	231	1330	37	157	98	110	40	95	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1733	3433	1493	1668	3400	1507	1700	3336	1487	1683	3275	1389
Flt Permitted	0.15	1.00	1.00	0.12	1.00	1.00	0.68	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	280	3433	1493	206	3400	1507	1219	3336	1487	1203	3275	1389
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	38	1187	234	272	1565	44	185	115	129	47	112	39
RTOR Reduction (vph)	0	0	126	0	0	15	0	0	103	0	0	31
Lane Group Flow (vph)	38	1187	108	272	1565	29	185	115	26	47	112	8
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	3%	4%	7%	7%	5%	6%	5%	7%	6%	6%	9%	15%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	55.6	55.6	55.6	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Effective Green, g (s)	55.6	55.6	55.6	79.1	79.1	79.1	24.4	24.4	24.4	24.4	24.4	24.4
Actuated g/C Ratio	0.46	0.46	0.46	0.66	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	8.0	8.0	8.0	4.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	129	1590	691	373	2241	993	247	678	302	244	665	282
v/s Ratio Prot		0.35		0.12	c0.46			0.03			0.03	
v/s Ratio Perm	0.14		0.07	c0.36		0.02	c0.15		0.02	0.04		0.01
v/c Ratio	0.29	0.75	0.16	0.73	0.70	0.03	0.75	0.17	0.09	0.19	0.17	0.03
Uniform Delay, d1	20.0	26.4	18.6	23.7	12.9	7.1	44.9	39.4	38.8	39.6	39.4	38.3
Progression Factor	1.00	1.00	1.00	1.24	0.56	0.04	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	3.2	0.5	5.5	1.4	0.0	11.7	0.1	0.1	0.4	0.1	0.0
Delay (s)	25.7	29.7	19.1	34.8	8.6	0.3	56.7	39.6	38.9	40.0	39.6	38.3
Level of Service	C	C	B	C	A	A	E	D	D	D	D	D
Approach Delay (s)		27.9			12.2			46.7			39.4	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1097	27	78	1364	10	267	0	8	3	0	0
Future Volume (vph)	29	1097	27	78	1364	10	267	0	8	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.850				
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1785	3400	1597	1785	3398	0	1785	1597	0	0	1785	0
Flt Permitted	0.137			0.143			0.756				0.752	
Satd. Flow (perm)	257	3400	1597	269	3398	0	1420	1597	0	0	1413	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		1			152				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	1192	29	85	1483	11	290	0	9	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	1192	29	85	1494	0	290	9	0	0	3	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	63.0	63.0	63.0	13.0	76.0		44.0	44.0		44.0	44.0	
Total Split (%)	52.5%	52.5%	52.5%	10.8%	63.3%		36.7%	36.7%		36.7%	36.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	67.7	67.7	67.7	78.5	78.5		29.5	29.5			29.5	
Actuated g/C Ratio	0.56	0.56	0.56	0.65	0.65		0.25	0.25			0.25	

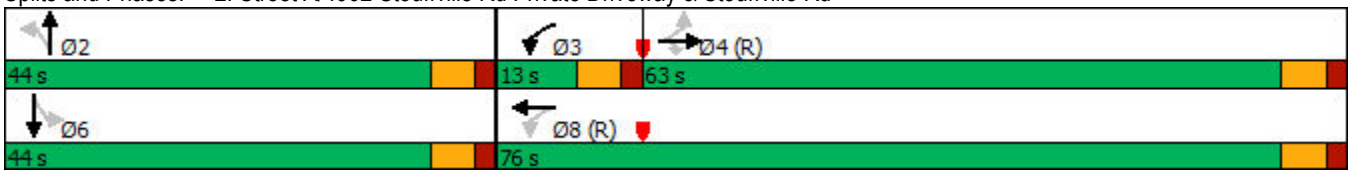
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.22	0.62	0.03	0.32	0.67		0.83	0.02			0.01	
Control Delay	38.1	32.6	6.5	12.1	15.9		62.2	0.1			29.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	38.1	32.6	6.5	12.1	15.9		62.2	0.1			29.7	
LOS	D	C	A	B	B		E	A			C	
Approach Delay		32.1			15.7			60.4			29.7	
Approach LOS		C			B			E			C	
Queue Length 50th (m)	5.2	103.5	0.0	7.1	112.0		68.2	0.0			0.6	
Queue Length 95th (m)	m10.0	153.2	m1.3	16.2	166.8		93.8	0.0			2.9	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	144	1918	936	269	2223		449	609			447	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.22	0.62	0.03	0.32	0.67		0.65	0.01			0.01	

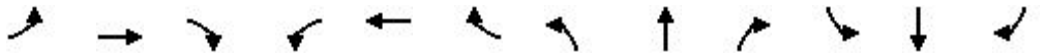
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 83.6% ICU Level of Service E
Analysis Period (min) 15

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

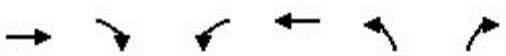
Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1097	27	78	1364	10	267	0	8	3	0	0
Future Volume (vph)	29	1097	27	78	1364	10	267	0	8	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1785	3400	1597	1785	3397		1785	1597			1785	
Flt Permitted	0.14	1.00	1.00	0.14	1.00		0.76	1.00			0.75	
Satd. Flow (perm)	258	3400	1597	269	3397		1420	1597			1412	
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)	32	1192	29	85	1483	11	290	0	9	3	0	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	32	1192	16	85	1494	0	290	2	0	0	3	0
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	66.5	66.5	66.5	78.5	78.5		29.5	29.5			29.5	
Effective Green, g (s)	66.5	66.5	66.5	78.5	78.5		29.5	29.5			29.5	
Actuated g/C Ratio	0.55	0.55	0.55	0.65	0.65		0.25	0.25			0.25	
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)	142	1884	885	251	2222		349	392			347	
v/s Ratio Prot		0.35		0.02	c0.44			0.00				
v/s Ratio Perm	0.12		0.01	0.20			c0.20				0.00	
v/c Ratio	0.23	0.63	0.02	0.34	0.67		0.83	0.01			0.01	
Uniform Delay, d1	13.6	18.4	12.0	11.8	12.8		42.9	34.2			34.2	
Progression Factor	1.86	1.58	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.7	1.2	0.0	0.8	1.6		15.4	0.0			0.0	
Delay (s)	28.1	30.1	12.1	12.6	14.5		58.2	34.2			34.2	
Level of Service	C	C	B	B	B		E	C			C	
Approach Delay (s)		29.7			14.3			57.5			34.2	
Approach LOS		C			B			E			C	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1059	62	0	1469	0	142
Future Volume (Veh/h)	1059	62	0	1469	0	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1151	67	0	1597	0	154
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.76		0.86	0.76
vC, conflicting volume			1151		1950	576
vC1, stage 1 conf vol					1151	
vC2, stage 2 conf vol					798	
vCu, unblocked vol			575		536	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			769		396	832

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	576	576	67	798	798	154
Volume Left	0	0	0	0	0	0
Volume Right	0	0	67	0	0	154
cSH	1700	1700	1700	1700	1700	832
Volume to Capacity	0.34	0.34	0.04	0.47	0.47	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.3
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.3
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

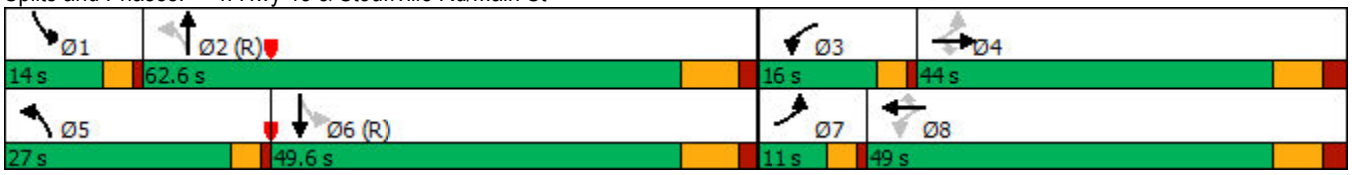
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Future Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.959			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3433	1521	1785	3400	1551	1684	3183	0	1684	3163	0
Flt Permitted	0.124			0.134			0.120			0.439		
Satd. Flow (perm)	233	3433	1521	252	3400	1551	213	3183	0	778	3163	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			381			135		47			110	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Adj. Flow (vph)	67	756	502	191	929	88	313	412	154	173	552	355
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	756	502	191	929	88	313	566	0	173	907	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	44.0	44.0	16.0	49.0	49.0	27.0	62.6		14.0	49.6	
Total Split (%)	8.1%	32.2%	32.2%	11.7%	35.9%	35.9%	19.8%	45.8%		10.2%	36.3%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	45.5	34.7	34.7	54.5	41.9	41.9	74.1	56.3		58.4	44.6	
Actuated g/C Ratio	0.33	0.25	0.25	0.40	0.31	0.31	0.54	0.41		0.43	0.33	

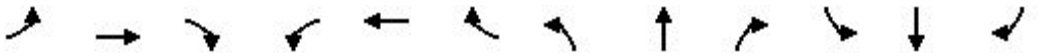
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.42	0.87	0.75	0.81	0.89	0.15	0.90	0.42		0.44	0.82	
Control Delay	33.8	60.1	18.8	54.0	57.1	1.7	59.5	27.6		21.9	44.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.8	60.1	18.8	54.0	57.1	1.7	59.5	27.6		21.9	44.9	
LOS	C	E	B	D	E	A	E	C		C	D	
Approach Delay		43.1			52.6			39.0			41.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	11.5	106.9	30.4	35.5	133.5	0.0	63.1	55.6		24.9	115.1	
Queue Length 95th (m)	21.7	132.3	76.9	#68.9	#171.6	3.0	#115.9	72.5		39.0	#144.8	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	158	912	683	237	1045	570	363	1343		401	1106	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.42	0.83	0.73	0.81	0.89	0.15	0.86	0.42		0.43	0.82	

Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 44.4 Intersection LOS: D
Intersection Capacity Utilization 92.1% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

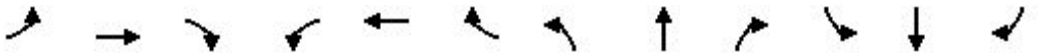
Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Future Volume (vph)	61	688	457	174	845	80	285	375	140	157	502	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.94	
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)	1785	3433	1521	1785	3400	1551	1684	3184		1684	3164	
Flt Permitted	0.12	1.00	1.00	0.13	1.00	1.00	0.12	1.00		0.44	1.00	
Satd. Flow (perm)	232	3433	1521	252	3400	1551	212	3184		779	3164	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	67	756	502	191	929	88	313	412	154	173	552	355
RTOR Reduction (vph)	0	0	282	0	0	61	0	28	0	0	75	0
Lane Group Flow (vph)	67	756	220	191	929	27	313	538	0	173	832	0
Heavy Vehicles (%)	0%	4%	5%	0%	5%	3%	6%	7%	9%	6%	7%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	41.2	35.5	35.5	51.6	41.9	41.9	69.4	55.5		53.7	43.8	
Effective Green, g (s)	41.2	35.5	35.5	51.6	41.9	41.9	69.4	55.5		53.7	43.8	
Actuated g/C Ratio	0.30	0.26	0.26	0.38	0.31	0.31	0.51	0.41		0.39	0.32	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	134	892	395	230	1042	475	340	1293		371	1014	
v/s Ratio Prot	0.02	0.22		c0.07	c0.27		c0.15	0.17		0.03	0.26	
v/s Ratio Perm	0.13		0.14	0.24		0.02	c0.32			0.15		
v/c Ratio	0.50	0.85	0.56	0.83	0.89	0.06	0.92	0.42		0.47	0.82	
Uniform Delay, d1	36.5	48.0	43.7	32.8	45.2	33.4	36.0	29.0		28.0	42.8	
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	2.9	7.5	1.7	21.7	9.8	0.1	29.4	1.0		0.9	7.4	
Delay (s)	39.4	55.5	45.4	54.5	54.9	33.5	65.4	30.0		29.0	50.2	
Level of Service	D	E	D	D	D	C	E	C		C	D	
Approach Delay (s)		50.9			53.3			42.6			46.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



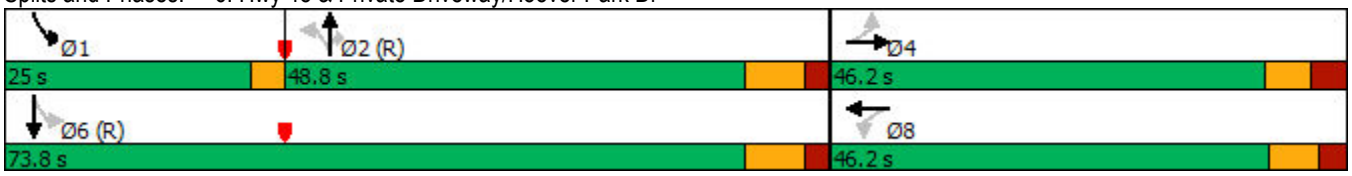
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Future Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt					0.857				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1716	1580	0	1879	3275	1536	1700	3336	0
Flt Permitted				0.749						0.310		
Satd. Flow (perm)	0	1879	0	1353	1580	0	1879	3275	1536	555	3336	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					437				432			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Adj. Flow (vph)	0	13	0	480	21	437	0	590	432	594	710	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	480	458	0	0	590	432	594	710	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		10.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		39.2	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	46.2	46.2		46.2	46.2		48.8	48.8	48.8	25.0	73.8	
Total Split (%)	38.5%	38.5%		38.5%	38.5%		40.7%	40.7%	40.7%	20.8%	61.5%	
Yellow Time (s)	4.1	4.1		4.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		2.7	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		7.2	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	
Act Effct Green (s)		39.8		40.1	40.1			40.0	40.0	69.7	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.58	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.02		1.06	0.56			0.54	0.54	1.12	0.39	
Control Delay		27.2		98.8	6.4			34.8	5.5	94.6	16.8	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		27.2		98.8	6.4			34.8	5.5	94.6	16.8	
LOS		C		F	A			C	A	F	B	
Approach Delay		27.3			53.7			22.4			52.2	
Approach LOS		C			D			C			D	
Queue Length 50th (m)		2.2		~131.0	3.5			62.2	0.0	~112.3	51.6	
Queue Length 95th (m)		6.9		#197.5	29.7			81.0	23.3	#210.0	65.9	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		623		452	818			1121	810	532	1837	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.02		1.06	0.56			0.53	0.53	1.12	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 43.2 Intersection LOS: D
Intersection Capacity Utilization 116.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Future Volume (vph)	0	12	0	432	19	393	0	531	389	535	639	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frt		1.00		1.00	0.86			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1716	1580			3275	1536	1700	3336	
Flt Permitted		1.00		0.75	1.00			1.00	1.00	0.31	1.00	
Satd. Flow (perm)		1879		1353	1580			3275	1536	554	3336	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	13	0	480	21	437	0	590	432	594	710	0
RTOR Reduction (vph)	0	0	0	0	291	0	0	0	288	0	0	0
Lane Group Flow (vph)	0	13	0	480	167	0	0	590	144	594	710	0
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	9%	4%	5%	7%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Effective Green, g (s)		39.8		40.1	40.1			40.0	40.0	65.0	65.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.33	0.33	0.54	0.54	
Clearance Time (s)		7.5		7.2	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		623		452	527			1091	512	510	1807	
v/s Ratio Prot		0.01			0.11			0.18		c0.21	0.21	
v/s Ratio Perm				c0.35					0.09	c0.42		
v/c Ratio		0.02		1.06	0.32			0.54	0.28	1.16	0.39	
Uniform Delay, d1		27.0		40.0	29.8			32.5	29.4	21.0	16.0	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		59.7	0.3			1.9	1.4	93.8	0.6	
Delay (s)		27.0		99.7	30.1			34.5	30.8	114.8	16.7	
Level of Service		C		F	C			C	C	F	B	
Approach Delay (s)		27.0			65.7			32.9			61.4	
Approach LOS		C			E			C			E	

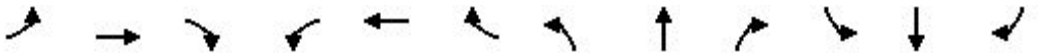
Intersection Summary			
HCM 2000 Control Delay	53.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	116.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	28	114	21	25	37
Future Volume (Veh/h)	53	28	114	21	25	37
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)	58	30	124	23	27	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	230	136			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	136			147	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			98	
cM capacity (veh/h)	749	919			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	147	67
Volume Left	58	0	27
Volume Right	30	23	0
cSH	799	1700	1447
Volume to Capacity	0.11	0.09	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	10.1	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	3.1
Approach LOS	B		

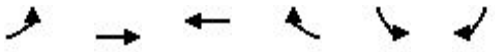
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
Future Volume (vph)	21	48	0	0	129	65	0	0	0	16	0	53
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)	23	52	0	0	140	71	0	0	0	17	0	58

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	75	211	0	75
Volume Left (vph)	23	0	0	17
Volume Right (vph)	0	71	0	58
Hadj (s)	0.06	-0.20	0.00	-0.42
Departure Headway (s)	4.3	3.9	4.6	4.1
Degree Utilization, x	0.09	0.23	0.00	0.09
Capacity (veh/h)	806	894	743	815
Control Delay (s)	7.8	8.1	7.6	7.5
Approach Delay (s)	7.8	8.1	0.0	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	0	0	0	0	84
Future Volume (Veh/h)	21	0	0	0	0	84
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	0	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				46	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				46	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	92
cM capacity (veh/h)	1636				956	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	23	0	91
Volume Left	23	0	0
Volume Right	0	0	91
cSH	1636	1700	1091
Volume to Capacity	0.01	0.00	0.08
Queue Length 95th (m)	0.3	0.0	2.2
Control Delay (s)	7.2	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	7.2	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Future Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.168			0.067			0.679			0.647		
Satd. Flow (perm)	304	3535	1536	122	3500	1597	1215	3535	1566	1216	3400	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288			50			133			118
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		805.1			1439.1			697.0			730.5	
Travel Time (s)		41.4			74.0			35.8			37.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Adj. Flow (vph)	79	1813	288	237	1510	29	217	166	150	79	115	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1813	288	237	1510	29	217	166	150	79	115	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	39.0	39.0	39.0	5.0	39.0	39.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.0	47.0	47.0	13.0	47.0	47.0	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (s)	59.5	59.5	59.5	15.0	74.5	74.5	45.5	45.5	45.5	45.5	45.5	45.5
Total Split (%)	49.6%	49.6%	49.6%	12.5%	62.1%	62.1%	37.9%	37.9%	37.9%	37.9%	37.9%	37.9%
Yellow Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	51.5	51.5	51.5	76.7	76.7	76.7	26.8	26.8	26.8	26.8	26.8	26.8
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.61	1.20	0.35	0.77	0.68	0.03	0.80	0.21	0.33	0.29	0.15	0.05
Control Delay	49.5	126.7	3.6	42.7	23.4	4.7	64.3	36.8	9.4	39.1	35.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	126.7	3.6	42.7	23.4	4.7	64.3	36.8	9.4	39.1	35.7	0.2
LOS	D	F	A	D	C	A	E	D	A	D	D	A
Approach Delay		107.7			25.7			40.3			33.5	
Approach LOS		F			C			D			C	
Queue Length 50th (m)	14.8	~286.2	0.0	41.4	145.7	0.1	51.1	17.7	3.3	16.4	12.1	0.0
Queue Length 95th (m)	#40.1	#330.7	16.3	m#114.1	m188.7	m1.0	72.8	24.6	18.5	27.7	18.2	0.0
Internal Link Dist (m)		781.1			1415.1			673.0			706.5	
Turn Bay Length (m)	105.0		170.0	125.0		65.0	140.0		150.0	75.0		110.0
Base Capacity (vph)	130	1517	823	308	2235	1038	374	1089	574	374	1048	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	1.20	0.35	0.77	0.68	0.03	0.58	0.15	0.26	0.21	0.11	0.04

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 65.7 Intersection LOS: E
Intersection Capacity Utilization 117.8% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: McCowan Rd & Stouffville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Future Volume (vph)	73	1668	265	218	1389	27	200	153	138	73	106	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1716	3535	1536	1733	3500	1597	1700	3535	1566	1785	3400	1452
Flt Permitted	0.17	1.00	1.00	0.07	1.00	1.00	0.68	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	304	3535	1536	123	3500	1597	1215	3535	1566	1215	3400	1452
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)	79	1813	288	237	1510	29	217	166	150	79	115	21
RTOR Reduction (vph)	0	0	164	0	0	10	0	0	103	0	0	16
Lane Group Flow (vph)	79	1813	124	237	1510	19	217	166	47	79	115	5
Heavy Vehicles (%)	4%	1%	4%	3%	2%	0%	5%	1%	2%	0%	5%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	51.5	51.5	51.5	76.7	76.7	76.7	26.8	26.8	26.8	26.8	26.8	26.8
Effective Green, g (s)	51.5	51.5	51.5	76.7	76.7	76.7	26.8	26.8	26.8	26.8	26.8	26.8
Actuated g/C Ratio	0.43	0.43	0.43	0.64	0.64	0.64	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
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)	130	1517	659	309	2237	1020	271	789	349	271	759	324
v/s Ratio Prot		c0.51		0.11	c0.43			0.05			0.03	
v/s Ratio Perm	0.26		0.08	0.38		0.01	c0.18		0.03	0.06		0.00
v/c Ratio	0.61	1.20	0.19	0.77	0.68	0.02	0.80	0.21	0.13	0.29	0.15	0.01
Uniform Delay, d1	26.4	34.2	21.3	35.8	13.7	7.9	44.1	38.0	37.3	38.7	37.5	36.3
Progression Factor	1.00	1.00	1.00	0.94	1.44	3.52	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.3	94.6	0.6	8.1	1.2	0.0	15.5	0.1	0.2	0.6	0.1	0.0
Delay (s)	45.8	128.8	21.9	41.9	21.0	27.9	59.6	38.1	37.5	39.3	37.6	36.3
Level of Service	D	F	C	D	C	C	E	D	D	D	D	D
Approach Delay (s)		111.7			23.9			46.7			38.1	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	117.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

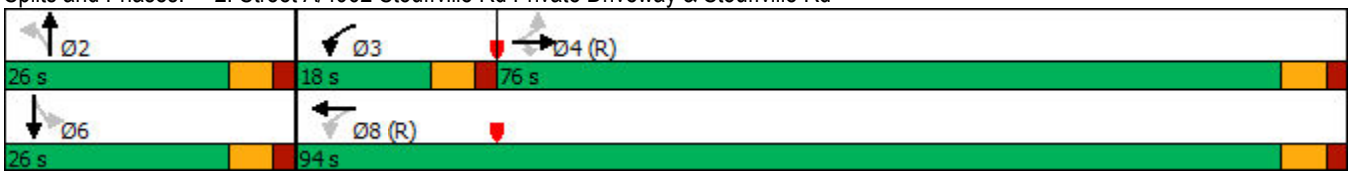
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1773	72	215	1453	68	191	0	5	3	0	27
Future Volume (vph)	32	1773	72	215	1453	68	191	0	5	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		30.0	30.0		30.0	50.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	100.0			100.0			40.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.850			0.877	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1785	3535	1597	1785	3478	0	1785	1597	0	0	1640	0
Flt Permitted	0.133			0.053			0.736				0.984	
Satd. Flow (perm)	250	3535	1597	100	3478	0	1383	1597	0	0	1621	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		10			169			82	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		1439.1			197.2			172.2			197.2	
Travel Time (s)		86.3			11.8			12.4			14.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	1948	79	236	1597	75	210	0	5	3	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1948	79	236	1672	0	210	5	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	26.0	26.0	26.0	13.0	26.0		22.0	22.0		22.0	22.0	
Total Split (s)	76.0	76.0	76.0	18.0	94.0		26.0	26.0		26.0	26.0	
Total Split (%)	63.3%	63.3%	63.3%	15.0%	78.3%		21.7%	21.7%		21.7%	21.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Act Effct Green (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Actuated g/C Ratio	0.58	0.58	0.58	0.74	0.74		0.16	0.16			0.16	

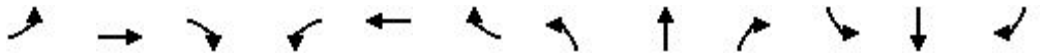
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.24	0.94	0.08	0.96	0.65		0.93	0.01			0.10	
Control Delay	7.9	25.5	2.0	81.3	9.5		94.2	0.0			0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	7.9	25.5	2.0	81.3	9.5		94.2	0.0			0.6	
LOS	A	C	A	F	A		F	A			A	
Approach Delay		24.3			18.4			92.0			0.6	
Approach LOS		C			B			F			A	
Queue Length 50th (m)	3.2	270.8	2.6	42.2	97.3		51.7	0.0			0.0	
Queue Length 95th (m)	m3.2	m230.9	m2.2	#95.4	117.4		#98.9	0.0			0.0	
Internal Link Dist (m)		1415.1			173.2			148.2			173.2	
Turn Bay Length (m)	30.0		30.0	30.0			50.0					
Base Capacity (vph)	145	2062	965	246	2563		230	407			338	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.24	0.94	0.08	0.96	0.65		0.91	0.01			0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 24.9 Intersection LOS: C
Intersection Capacity Utilization 93.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Street A/4962 Stouffville Rd Private Driveway & Stouffville Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1773	72	215	1453	68	191	0	5	3	0	27
Future Volume (vph)	32	1773	72	215	1453	68	191	0	5	3	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85			0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1785	3535	1597	1785	3479		1785	1597			1641	
Flt Permitted	0.13	1.00	1.00	0.05	1.00		0.74	1.00			0.98	
Satd. Flow (perm)	251	3535	1597	99	3479		1382	1597			1621	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	35	1948	79	236	1597	75	210	0	5	3	0	30
RTOR Reduction (vph)	0	0	33	0	3	0	0	4	0	0	28	0
Lane Group Flow (vph)	35	1948	46	236	1669	0	210	1	0	0	5	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Effective Green, g (s)	70.0	70.0	70.0	88.4	88.4		19.6	19.6			19.6	
Actuated g/C Ratio	0.58	0.58	0.58	0.74	0.74		0.16	0.16			0.16	
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)	146	2062	931	247	2562		225	260			264	
v/s Ratio Prot		0.55		c0.10	0.48			0.00				
v/s Ratio Perm	0.14		0.03	c0.61			c0.15				0.00	
v/c Ratio	0.24	0.94	0.05	0.96	0.65		0.93	0.00			0.02	
Uniform Delay, d1	12.1	23.2	10.7	42.2	8.0		49.6	42.0			42.1	
Progression Factor	0.56	1.02	0.88	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	1.3	0.0	44.6	1.3		41.6	0.0			0.0	
Delay (s)	7.1	25.0	9.4	86.8	9.3		91.2	42.0			42.2	
Level of Service	A	C	A	F	A		F	D			D	
Approach Delay (s)		24.1			18.9			90.1			42.2	
Approach LOS		C			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1574	170	0	1744	0	101
Future Volume (Veh/h)	1574	170	0	1744	0	101
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1711	185	0	1896	0	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	197			303		
pX, platoon unblocked			0.47		0.61	0.47
vC, conflicting volume			1711		2659	856
vC1, stage 1 conf vol					1711	
vC2, stage 2 conf vol					948	
vCu, unblocked vol			279		458	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			614		346	517

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	856	856	185	948	948	110
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	110
cSH	1700	1700	1700	1700	1700	517
Volume to Capacity	0.50	0.50	0.11	0.56	0.56	0.21
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.8
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.8
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Future Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		135.0	60.0		105.0	50.0		0.0	45.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	50.0			50.0			15.0			65.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.960			0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3500	1581	1785	3535	1581	1684	3317	0	1750	3285	0
Flt Permitted	0.097			0.094			0.103			0.181		
Satd. Flow (perm)	182	3500	1581	177	3535	1581	183	3317	0	333	3285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			449			183		46			57	
Link Speed (k/h)		60			50			80			80	
Link Distance (m)		302.9			1290.6			420.9			878.3	
Travel Time (s)		18.2			92.9			18.9			39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Adj. Flow (vph)	67	1199	570	139	980	183	600	821	297	149	616	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	1199	570	139	980	183	600	1118	0	149	912	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	33.0		7.0	33.0	
Minimum Split (s)	11.0	40.7	40.7	11.0	40.7	40.7	11.0	40.9		11.0	40.9	
Total Split (s)	11.0	48.0	48.0	11.0	48.0	48.0	34.0	64.6		13.0	43.6	
Total Split (%)	8.1%	35.1%	35.1%	8.1%	35.1%	35.1%	24.9%	47.3%		9.5%	31.9%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.9		3.0	5.9	
All-Red Time (s)	1.0	2.7	2.7	1.0	2.7	2.7	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	51.0	40.3	40.3	51.8	42.5	42.5	73.6	56.8		48.5	35.7	
Actuated g/C Ratio	0.37	0.30	0.30	0.38	0.31	0.31	0.54	0.42		0.36	0.26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.45	1.16	0.73	0.93	0.89	0.30	1.40	0.80		0.71	1.01	
Control Delay	35.1	126.5	15.3	89.1	56.6	6.1	226.9	38.5		40.5	79.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.1	126.5	15.3	89.1	56.6	6.1	226.9	38.5		40.5	79.9	
LOS	D	F	B	F	E	A	F	D		D	E	
Approach Delay		88.6			53.0			104.3			74.4	
Approach LOS		F			D			F			E	
Queue Length 50th (m)	11.7	~211.8	28.7	25.3	143.2	0.0	~211.3	139.3		20.6	~133.3	
Queue Length 95th (m)	22.0	#256.2	77.4	#66.3	#185.7	17.8	#286.7	168.7		#41.8	#180.0	
Internal Link Dist (m)		278.9			1266.6			396.9			854.3	
Turn Bay Length (m)	45.0		135.0	60.0		105.0	50.0			45.0		
Base Capacity (vph)	150	1032	782	149	1099	618	428	1406		211	900	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.45	1.16	0.73	0.93	0.89	0.30	1.40	0.80		0.71	1.01	

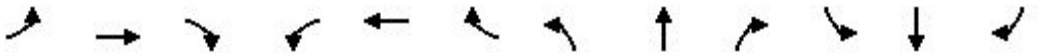
Intersection Summary

Area Type: Other
Cycle Length: 136.6
Actuated Cycle Length: 136.6
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 82.8 Intersection LOS: F
Intersection Capacity Utilization 113.8% ICU Level of Service H
Analysis Period (min) 15

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

Splits and Phases: 4: Hwy 48 & Stouffville Rd/Main St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Future Volume (vph)	60	1079	513	125	882	165	540	739	267	134	554	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
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)	1785	3500	1581	1785	3535	1581	1684	3317		1750	3286	
Flt Permitted	0.10	1.00	1.00	0.09	1.00	1.00	0.10	1.00		0.18	1.00	
Satd. Flow (perm)	183	3500	1581	177	3535	1581	182	3317		333	3286	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	1199	570	139	980	183	600	821	297	149	616	296
RTOR Reduction (vph)	0	0	314	0	0	126	0	27	0	0	42	0
Lane Group Flow (vph)	67	1199	256	139	980	57	600	1091	0	149	870	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	1%	6%	2%	7%	2%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.0		43.8	34.9	
Effective Green, g (s)	46.7	41.1	41.1	49.5	42.5	42.5	68.9	56.0		43.8	34.9	
Actuated g/C Ratio	0.34	0.30	0.30	0.36	0.31	0.31	0.50	0.41		0.32	0.26	
Clearance Time (s)	4.0	7.7	7.7	4.0	7.7	7.7	4.0	7.9		4.0	7.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.6		3.0	4.6	
Lane Grp Cap (vph)	128	1053	475	146	1099	491	421	1359		199	839	
v/s Ratio Prot	0.02	c0.34		c0.05	0.28		c0.31	0.33		0.05	0.26	
v/s Ratio Perm	0.16		0.16	0.30		0.04	c0.40			0.19		
v/c Ratio	0.52	1.14	0.54	0.95	0.89	0.12	1.43	0.80		0.75	1.04	
Uniform Delay, d1	34.1	47.7	39.8	37.3	44.9	33.6	42.7	35.4		35.0	50.8	
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	3.8	74.2	1.2	59.8	9.3	0.1	204.7	5.1		14.3	40.9	
Delay (s)	37.9	121.9	41.0	97.0	54.2	33.7	247.4	40.5		49.3	91.7	
Level of Service	D	F	D	F	D	C	F	D		D	F	
Approach Delay (s)		93.8			55.9			112.8			85.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	89.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	136.6	Sum of lost time (s)	23.6
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

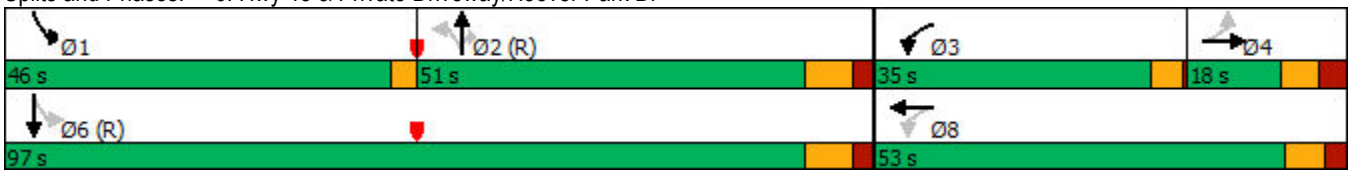
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Future Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	125.0		150.0	220.0		0.0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			50.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99				0.99		1.00	
Frt					0.855				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1879	0	1750	1556	0	1879	3400	1597	1767	3428	0
Flt Permitted				0.459						0.092		
Satd. Flow (perm)	0	1879	0	845	1556	0	1879	3400	1576	171	3428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					548				490			
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		157.7			554.4			427.8			397.4	
Travel Time (s)		11.4			39.9			22.0			20.4	
Confl. Peds. (#/hr)	1					1	1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Adj. Flow (vph)	0	31	0	449	30	898	0	1022	490	700	752	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	449	928	0	0	1022	490	700	753	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		4.0	10.0		40.0	40.0	40.0	7.0	40.0	
Minimum Split (s)	14.5	14.5		8.0	39.2		47.7	47.7	47.7	10.0	47.7	
Total Split (s)	18.0	18.0		35.0	53.0		51.0	51.0	51.0	46.0	97.0	
Total Split (%)	12.0%	12.0%		23.3%	35.3%		34.0%	34.0%	34.0%	30.7%	64.7%	
Yellow Time (s)	4.1	4.1		3.5	4.5		5.4	5.4	5.4	3.0	5.4	
All-Red Time (s)	3.4	3.4		0.5	2.7		2.3	2.3	2.3	0.0	2.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.5		4.0	7.2		7.7	7.7	7.7	3.0	7.7	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	C-Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.1		49.0	45.8			43.3	43.3	94.0	89.3	
Actuated g/C Ratio		0.06		0.33	0.31			0.29	0.29	0.63	0.60	
v/c Ratio		0.27		0.89	1.09			1.04	0.61	1.24	0.37	
Control Delay		72.8		66.4	76.7			91.2	6.8	160.1	16.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		72.8		66.4	76.7			91.2	6.8	160.1	16.4	
LOS		E		E	E			F	A	F	B	
Approach Delay		72.8			73.3			63.9			85.6	
Approach LOS		E			E			E			F	
Queue Length 50th (m)		9.4		127.6	~198.4			~181.5	0.0	~252.9	61.6	
Queue Length 95th (m)		21.0		#174.5	#274.7			#221.4	27.3	#327.3	74.2	
Internal Link Dist (m)		133.7			530.4			403.8			373.4	
Turn Bay Length (m)									150.0	220.0		
Base Capacity (vph)		131		506	855			981	803	564	2040	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.24		0.89	1.09			1.04	0.61	1.24	0.37	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 74.1 Intersection LOS: E
Intersection Capacity Utilization 136.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Hwy 48 & Private Driveway/Hoover Park Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Future Volume (vph)	0	28	0	400	27	799	0	910	436	623	669	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Lane Util. Factor		1.00		1.00	1.00			0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99			1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt		1.00		1.00	0.85			1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1879		1750	1555			3400	1576	1767	3428	
Flt Permitted		1.00		0.46	1.00			1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1879		845	1555			3400	1576	172	3428	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	31	0	449	30	898	0	1022	490	700	752	1
RTOR Reduction (vph)	0	0	0	0	370	0	0	0	358	0	0	0
Lane Group Flow (vph)	0	31	0	449	558	0	0	1022	132	700	753	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	1%	4%	100%
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Effective Green, g (s)		6.3		48.8	48.8			40.3	40.3	86.3	86.3	
Actuated g/C Ratio		0.04		0.33	0.33			0.27	0.27	0.58	0.58	
Clearance Time (s)		7.5		4.0	7.2			7.7	7.7	3.0	7.7	
Vehicle Extension (s)		3.0		3.0	3.0			4.6	4.6	3.0	4.6	
Lane Grp Cap (vph)		78		505	505			913	423	556	1972	
v/s Ratio Prot		0.02		0.23	c0.36			0.30		c0.36	0.22	
v/s Ratio Perm				0.06					0.08	c0.36		
v/c Ratio		0.40		0.89	1.11			1.12	0.31	1.26	0.38	
Uniform Delay, d1		70.0		46.0	50.6			54.9	43.8	45.7	17.3	
Progression Factor		1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.3		17.2	72.1			68.3	1.9	130.6	0.6	
Delay (s)		73.3		63.2	122.7			123.1	45.7	176.3	17.9	
Level of Service		E		E	F			F	D	F	B	
Approach Delay (s)		73.3			103.3			98.0			94.2	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	98.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	136.5%	ICU Level of Service	H
Analysis Period (min)	15		

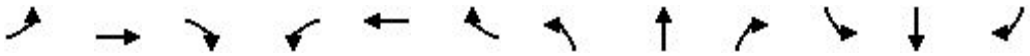
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	20	81	58	69	101
Future Volume (Veh/h)	38	20	81	58	69	101
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)	41	22	88	63	75	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	120			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	120			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	98			95	
cM capacity (veh/h)	594	938			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	151	185
Volume Left	41	0	75
Volume Right	22	63	0
cSH	681	1700	1442
Volume to Capacity	0.09	0.09	0.05
Queue Length 95th (m)	2.4	0.0	1.3
Control Delay (s)	10.8	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	3.3
Approach LOS	B		

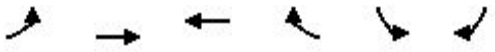
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
Future Volume (vph)	58	131	0	0	92	46	0	0	0	43	0	38
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)	63	142	0	0	100	50	0	0	0	47	0	41

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	205	150	0	88
Volume Left (vph)	63	0	0	47
Volume Right (vph)	0	50	0	41
Hadj (s)	0.06	-0.20	0.00	-0.17
Departure Headway (s)	4.3	4.1	4.8	4.5
Degree Utilization, x	0.25	0.17	0.00	0.11
Capacity (veh/h)	810	835	692	735
Control Delay (s)	8.7	8.0	7.8	8.1
Approach Delay (s)	8.7	8.0	0.0	8.1
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	0	0	0	0	60
Future Volume (Veh/h)	58	0	0	0	0	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	0	0	0	0	65
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0				126	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				126	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	94
cM capacity (veh/h)	1636				840	1091

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	63	0	65
Volume Left	63	0	0
Volume Right	0	0	65
cSH	1636	1700	1091
Volume to Capacity	0.04	0.00	0.06
Queue Length 95th (m)	1.0	0.0	1.5
Control Delay (s)	7.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E

TTS Data

Mode Split

Sun May 24 2026 14:26:55 GMT-0400 (Eastern Daylight Time) - Run Time: 2097ms

Cross Tabulation Query Form - Trip - 2022

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

RowG:
ColG:(2707-2709)
TblG:

Filters:
2006 GTA zone of household - gta06_hhld In 2707-2709

Trip 2022
Table:

	1
Transit excluding GO rail	315
Cycle	96
Auto driver	16041
GO rail only	136
Joint GO rail and local transit	103
Auto passenger	5043
School bus	676
Walk	2473
TOTAL	24883

SOV	HOV	Transit	Walk & Cycle	Total
64%	23%	3%	10%	101%
			Auto	87%
			Non-Auto	13%

RESIDENTIAL

AM Out

Row Labels	Sum of %
HWY 48 NB	1%
HWY 48 SB	16%
MCCOWAN SB	18%
STOUFFVILLE EB	18%
STOUFFVILLE WB	47%
Grand Total	**100%**

Nominal 5% to McCowan and Hwy 48 NB

Road	Base	Adjusted
HWY 48 NB	1%	5%
HWY 48 SB	16%	14%
MCCOWAN NB	0%	5%
MCCOWAN SB	18%	17%
STOUFFVILLE EB	18%	17%
STOUFFVILLE WB	47%	42%
	100%	100%

100

PM In

Row Labels	Sum of %
HWY 48 NB	16%
HWY 48 SB	8%
MCCOWAN NB	14%
STOUFFVILLE EB	38%
STOUFFVILLE WB	25%
Grand Total	**100%**

Nominal 5% to McCowan NB

Road	Base	Adjusted
HWY 48 NB	16%	15%
HWY 48 SB	8%	8%
MCCOWAN NB	0%	5%
MCCOWAN SB	14%	13%
STOUFFVILLE EB	38%	35%
STOUFFVILLE WB	25%	24%
	100%	100%

RESIDENTIAL TRIP DISTRIBUTION

Corridor	Direction	AM IN	AM OUT	PM IN	PM OUT
Hwy 48	NB	15%	5%	15%	5%
	SB	8%	14%	8%	14%
McCowan Rd	NB	5%	5%	5%	5%
	SB	13%	17%	13%	17%
Stouffville Rd / Main St	EB	35%	17%	35%	17%
	WB	24%	42%	24%	42%
	Total	100%	100%	100%	100%

99

DAYCARE

AM Inbound

Row Labels	Sum of %
HWY 48 NB	2%
HWY 48 SB	18%
MCCOWAN NB	0%
MCCOWAN SB	0%
STOUFFVILLE WB	80%
Grand Total	**100%**

Road	Base	Adjusted
HWY 48 NB	2%	5%
HWY 48 SB	18%	15%
MCCOWAN NB	0%	5%
MCCOWAN SB	0%	5%
STOUFFVILLE EB	0%	5%
STOUFFVILLE WB	80%	65%
	100%	100%

100

AM OUTBOUND

Row Labels	Sum of %
HWY 48 SB	38%
STOUFFVILLE EB	62%
Grand Total	**100%**

Nominal 5% to direction with no distribution.

Road	Base	Adjusted
HWY 48 NB	0%	5%
HWY 48 SB	38%	30%
MCCOWAN NB	0%	5%
MCCOWAN SB	0%	5%
STOUFFVILLE EB	62%	50%
STOUFFVILLE WB	0%	5%
	100%	100%

100

DAYCARE TRIP DISTRIBUTION

Corridor	Direction	AM IN	AM OUT	PM IN	PM OUT
Hwy 48	NB	5%	5%	30%	15%
	SB	15%	30%	5%	5%
McCowan Rd	NB	5%	5%	5%	5%
	SB	5%	5%	5%	5%
Stouffville Rd / Main St	EB	5%	50%	5%	65%
	WB	65%	5%	50%	5%
	Total	100%	100%	100%	100%

PM Assumed opposite to AM.

RESIDENTIAL

AM Outbound

Thu Dec 12 2024 11:57:39 GMT-0500 (Eastern Standard Time) - Run Time: 2368ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(2708-2709)
TblG:

Filters:
2006 GTA zone of origin - gta06_orig In 2708-2709
and
Start time of trip - start_time In 700-959
and
Primary travel mode of trip - mode_prime In D M P S T U
and
Trip purpose - trip_purp In 1 2 3
and
Planning district of destination - pd_dest In 30

Thu Dec 12 2024 11:58:53 GMT-0500 (Eastern Standard Time) - Run Time: 2537ms

Cross Tabulation Query Form - Trip - 2016

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

RowG:
ColG:(2708-2709)
TblG:

Filters:
2006 GTA zone of origin - gta06_orig In 2708-2709
and
Start time of trip - start_time In 700-959
and
Primary travel mode of trip - mode_prime In D M P S T U
and
Trip purpose - trip_purp In 1 2 3
and
Planning district of destination - pd_dest Not In 30

AM Outbound

Interest TAZs: 2708-2709

TAZ/PD	Count	%	Assignment	
2702	31	1%	STOUFFVILLE WB	
2710	254	8%	STOUFFVILLE EB	
2711	23	1%	STOUFFVILLE EB	
2712	125	4%	STOUFFVILLE EB	
2713	107	3%	STOUFFVILLE EB	
2714	29	1%	STOUFFVILLE EB	
2717	31	1%	HWY 48 NB	
PD 1 of Toronto	196	6%	STOUFFVILLE WB	404
PD 4 of Toronto	113	4%	STOUFFVILLE WB	404
PD 5 of Toronto	37	1%	STOUFFVILLE WB	404
PD 6 of Toronto	28	1%	STOUFFVILLE WB	404
PD 11 of Toronto	129	4%	STOUFFVILLE WB	404
PD 12 of Toronto	73	2%	STOUFFVILLE WB	404
PD 13 of Toronto	77	2%	STOUFFVILLE WB	404
PD 13 of Toronto	77	2%	MCCOWAN SB	
PD 13 of Toronto	77	2%	HWY 48 SB	
PD 16 of Toronto	120	4%	MCCOWAN SB	
PD 16 of Toronto	119	4%	STOUFFVILLE WB	
PD 16 of Toronto	119	4%	HWY 48 SB	
Uxbridge	38	1%	STOUFFVILLE EB	
Ajax	27	1%	HWY 48 SB	
Whitby	15	0%	HWY 48 SB	
Georgina	7	0%	HWY 48 NB	404
Newmarket	17	1%	STOUFFVILLE WB	404
Aurora	78	2%	STOUFFVILLE WB	
Richmond Hill	160	5%	STOUFFVILLE WB	
Markham	339	11%	MCCOWAN SB	
Markham	339	11%	STOUFFVILLE WB	
Markham	340	11%	HWY 48 SB	
Vaughan	13	0%	STOUFFVILLE WB	
Oakville	25	1%	STOUFFVILLE WB	
		0%		
		0%		
		0%

Thu Dec 12 2024 11:55:04 GMT-0500 (Eastern Standard Time) - Run Time: 2917ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(2708-2709)
TblG:

Filters:
2006 GTA zone of destination - gta06_dest In 2708-2709
and
Start time of trip - start_time In 1600-1859
and
Primary travel mode of trip - mode_prime In D M P S T U
and
Trip purpose - trip_purp In 1 2 3
and
Planning district of origin - pd_orig In 30

Thu Dec 12 2024 11:56:24 GMT-0500 (Eastern Standard Time) - Run Time: 2877ms

Cross Tabulation Query Form - Trip - 2016

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(2708-2709)
TblG:

Filters:
2006 GTA zone of destination - gta06_dest In 2708-2709
and
Start time of trip - start_time In 1600-1859
and
Primary travel mode of trip - mode_prime In D M P S T U
and
Trip purpose - trip_purp In 1 2 3
and
Planning district of origin - pd_orig Not In 30

PM Inbound

Interest TAZs: 2708-2709

TAZ/PD	Count	%	Assignment
2706	11	0%	STOUFFVILLE EB
2710	270	8%	STOUFFVILLE WB
2711	86	2%	STOUFFVILLE WB
2712	419	12%	STOUFFVILLE WB
2713	24	1%	STOUFFVILLE WB
2714	86	2%	STOUFFVILLE WB
2715	80	2%	HWY 48 SB
2716	41	1%	HWY 48 SB
2717	58	2%	HWY 48 SB
2718	78	2%	HWY 48 SB
PD 1 of Toronto	154	4%	STOUFFVILLE EB
PD 3 of Toronto	24	1%	STOUFFVILLE EB
PD 4 of Toronto	89	3%	STOUFFVILLE EB
PD 5 of Toronto	37	1%	STOUFFVILLE EB
PD 6 of Toronto	28	1%	STOUFFVILLE EB
PD 8 of Toronto	51	1%	STOUFFVILLE EB
PD 11 of Toronto	38	1%	STOUFFVILLE EB
PD 13 of Toronto	60	2%	MCCOWAN NB
PD 13 of Toronto	60	2%	STOUFFVILLE EB
PD 13 of Toronto	61	2%	HWY 48 NB
PD 16 of Toronto	97	3%	MCCOWAN NB
PD 16 of Toronto	97	3%	STOUFFVILLE EB
PD 16 of Toronto	97	3%	HWY 48 NB
Pickering	53	1%	HWY 48 NB
Oshawa	23	1%	HWY 48 NB
Georgina	29	1%	HWY 48 SB
East Gwillimbury	64	2%	STOUFFVILLE EB
Newmarket	67	2%	STOUFFVILLE EB
Aurora	149	4%	STOUFFVILLE EB
Richmond Hill	43	1%	STOUFFVILLE EB
Markham	324	9%	MCCOWAN NB
Markham	325	9%	STOUFFVILLE EB
Markham	325	9%	HWY 48 NB
Vaughan	13	0%	STOUFFVILLE EB
Mississauga	60	2%	STOUFFVILLE EB
Oakville	25	1%	STOUFFVILLE EB
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
		0%	
	3546	100%	

DAYCARE

AM Inbound

Sun May 24 2026 14:45:21 GMT-0400 (Eastern Daylight Time) - Run Time: 3382ms

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(2707-2714)
TblG:

Filters:
2006 GTA zone of destination - gta06_dest In 2707-2714
and
Trip Purpose of Destination - purp_dest In D
and
Start time of trip - start_time In 700-959
and
Primary travel mode of trip - mode_prime In D P T U

Trip 2022
Table:

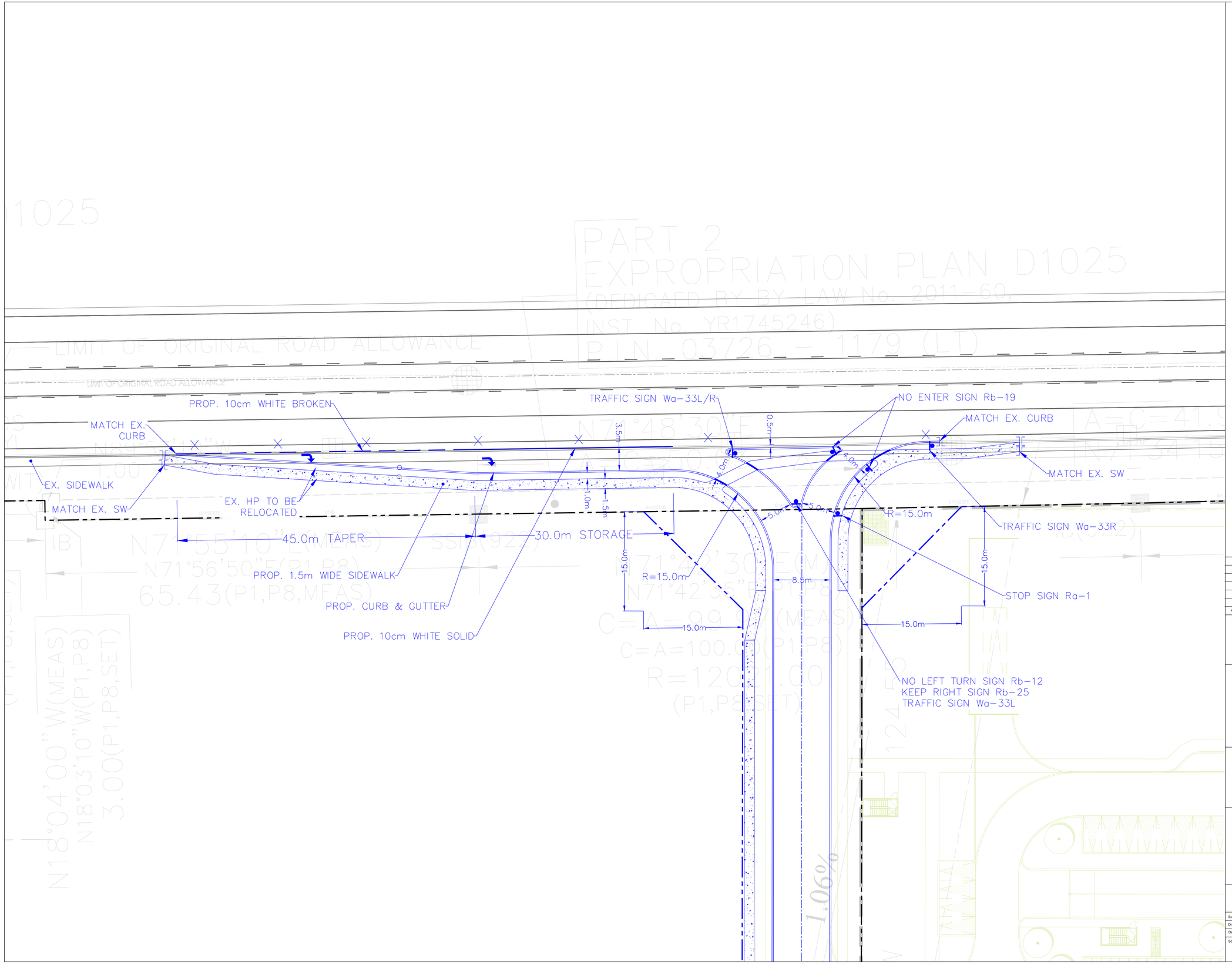
	1
2454	9
2708	30
2710	369
2712	76
2717	108

AM Inbound

	TAZ/PD	Count	%	Assignment
S	2454	9	2%	HWY 48 NB
NE-E	2708	30	5%	STOUFFVILLE WB
E	2710	369	62%	STOUFFVILLE WB
E	2712	76	13%	STOUFFVILLE WB
N	2717	108	18%	HWY 48 SB
			0%	
			0%	
			0%

Appendix F

Functional Plan Drawings



KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK. THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

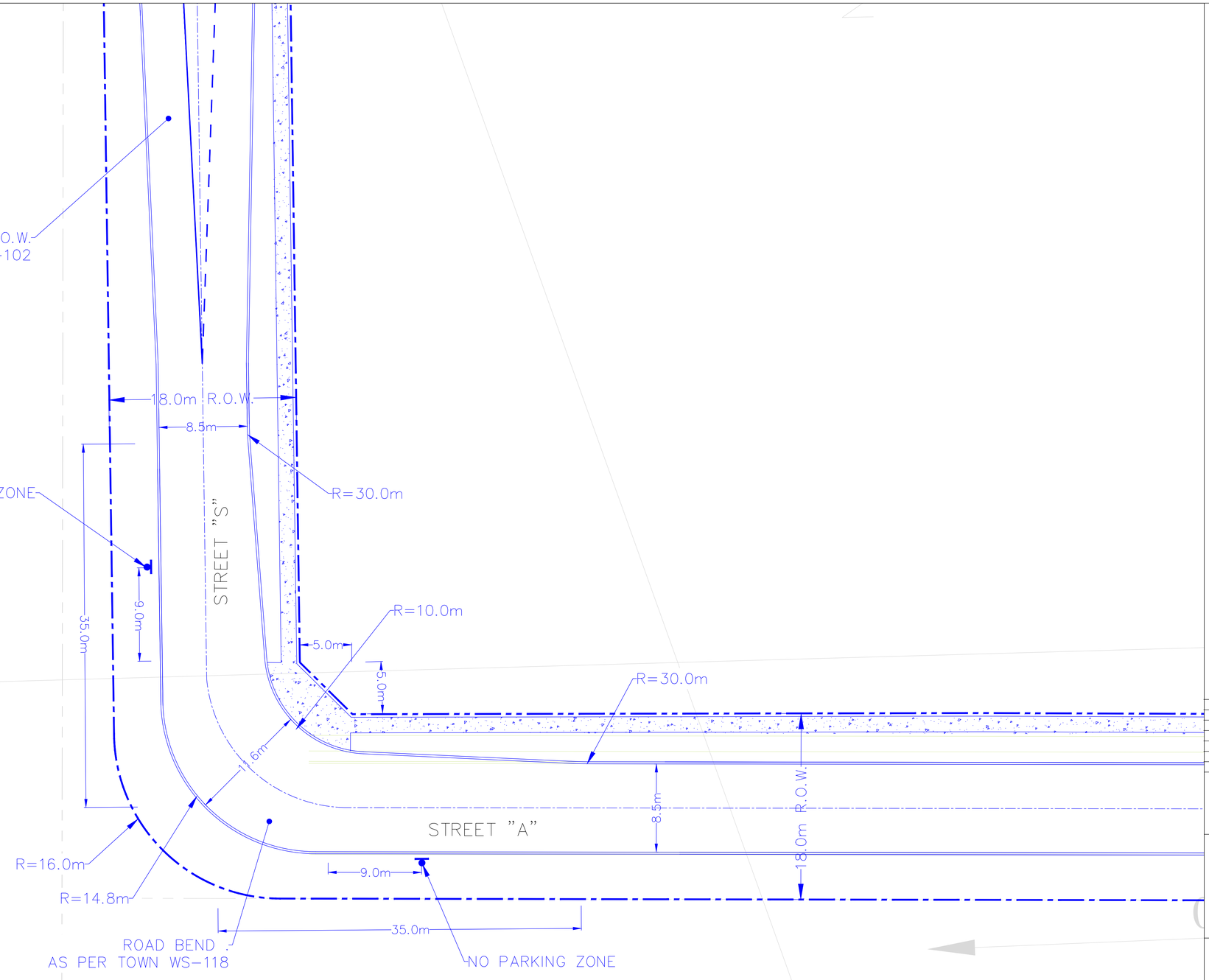
nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE
ONTARIO

FUNCTIONAL PLAN - RI/RO ENTRANCE

Surveyed by:	Checked by: R.P.	Project No.	NT-23-038
Drawn by: W.L.	Approved by: R.P.	Drawing No.	FP-1
Designed by: W.L.	Date: May/22/2024	Sheet No.	
Scale 1:250			



NOTE:
1. TRAFFIC SIGNS WILL BE INSTALLED IN INTERIM CONDITIONS;
2. TRAFFIC SIGNS WILL BE REMOVED IN ULTIMATE CONDITIONS.

KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK. THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

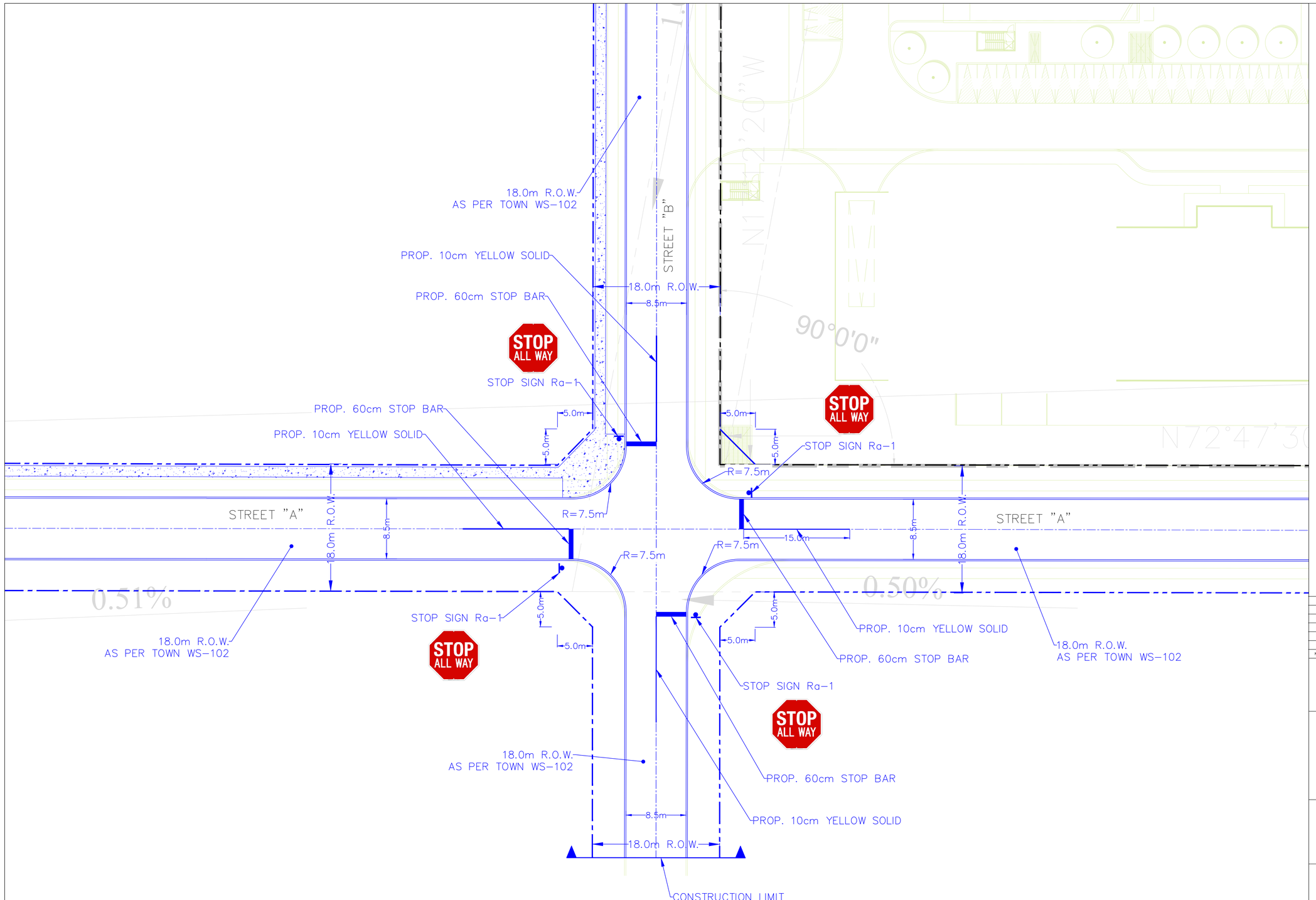
nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE
ONTARIO

FUNCTIONAL PLAN - ELBEND BOW

Surveyed by:		Checked by: R.P.	Project No. NT-23-038
Drawn by: W.L.		Approved by: R.P.	Drawing No. FP-2
Designed by: W.L.		Date: May/22/2024	Sheet No.
Scale 1:200			



NOTE:
1. TRAFFIC SIGNS WILL BE INSTALLED IN INTERIM CONDITIONS;
2. TRAFFIC SIGNS WILL BE REMOVED IN ULTIMATE CONDITIONS.

KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK. THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

nextrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE
ONTARIO

FUNCTIONAL PLAN - INTERSECTION OF STREET A & B

Surveyed by:		Checked by: R.P.	Project No. NT-23-038
Drawn by: W.L.		Approved by: R.P.	Drawing No. FP-3
Designed by: W.L.		Date: May/22/2024	Sheet No.
Scale 1:250			

PART 3
PLAN 65R-31860

PROP. 1.5m WIDE SW

DEAD END SIGN AND
BARRICADE
W14-1 & WA-8

STREET "A" CURB CUT

8.5m

1.50%

R=14.0m

10.0m

CURB CUT

PROP. 1.5m WIDE SW

R=20.0m

KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK. THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

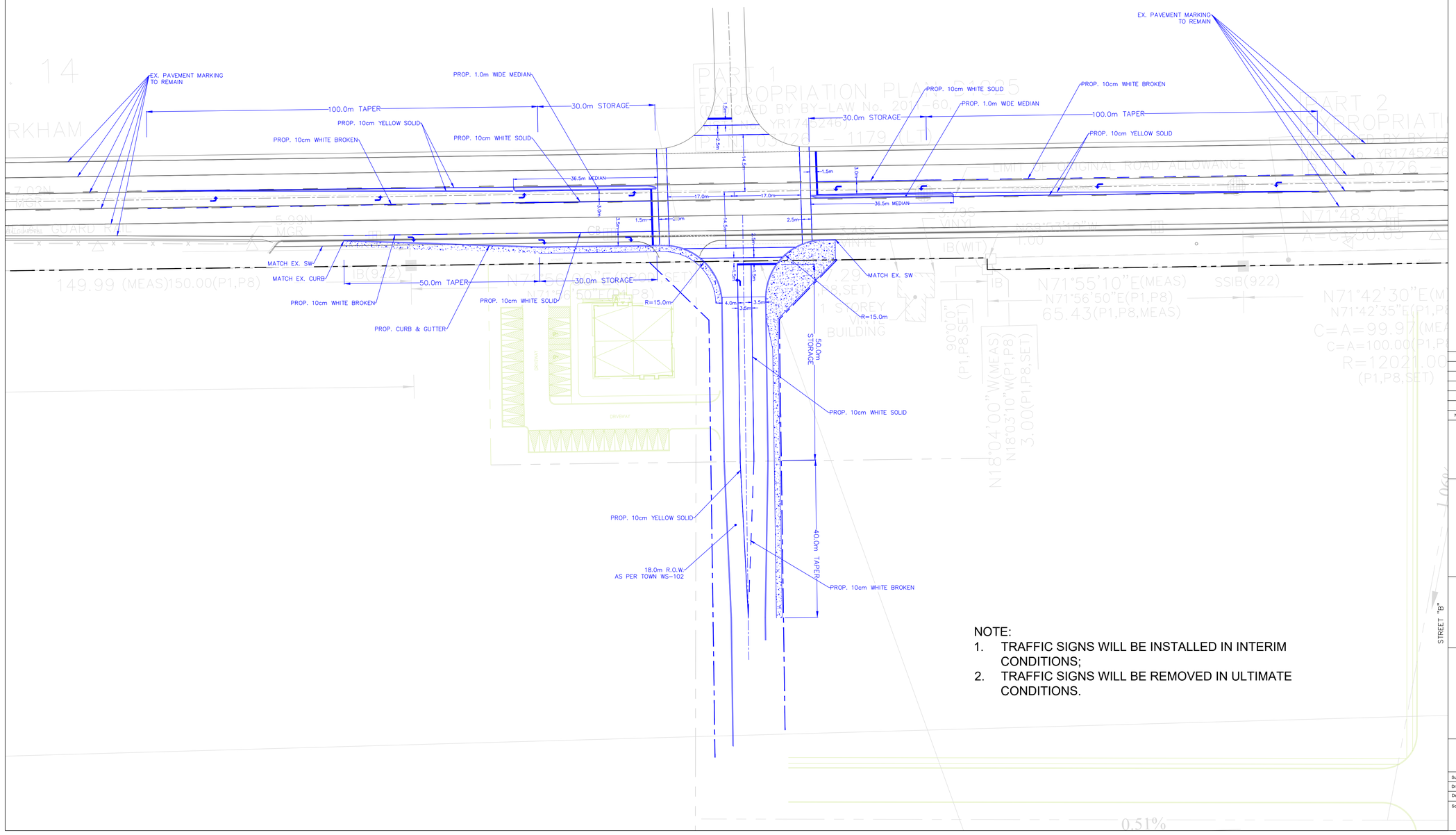
nextrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE
ONTARIO

FUNCTIONAL PLAN - CUL-DE-SAC DESIGN

Surveyed by:	Checked by: R.P.	Project No. NT-23-038
Drawn by: W.L.	Approved by: R.P.	Drawing No. FP-4
Designed by: W.L.	Date: May/22/2024	Sheet No.
Scale 1:200		



NOTE:

1. TRAFFIC SIGNS WILL BE INSTALLED IN INTERIM CONDITIONS;
2. TRAFFIC SIGNS WILL BE REMOVED IN ULTIMATE CONDITIONS.

KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

nexTrans CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

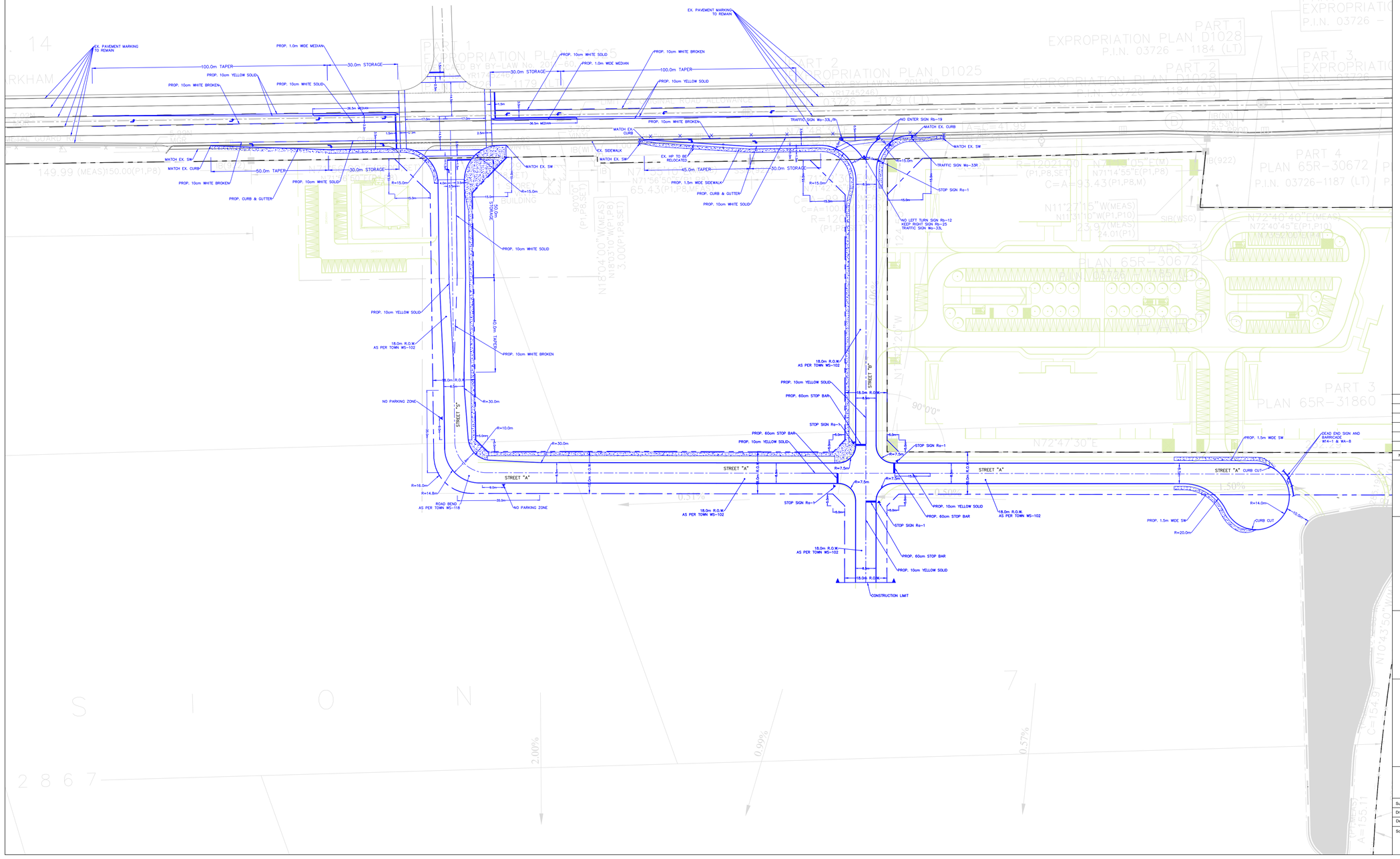
HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE
ONTARIO

FUNCTIONAL PLAN

- INTERSECTION OF STOUFFVILLE RD. & STREET A

Surveyed by:		Checked by: R.P.	Project No. NT-23-038
Drawn by: W.L.		Approved by: R.P.	Drawing No. FP-5
Designed by: W.L.		Date: May/22/2024	Sheet No.
Scale 1:500			



KEY PLAN



DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK. THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING CONDITIONS
- SITE DEVELOPMENT
- PROPOSED CONDITIONS
- CONCRETE SIDEWALK

No.	Revision	Date	By	Appr'd
6				
5				
4				
3				
2				
1	SUBMISSION FOR REVIEW	MAY 27 2024	W.L.	R.P.

CONSULTANT

DIRECTOR OF DEVELOPMENT ENGINEERING

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

HIGHWAY 48 & STOUFFVILLE ROAD

TOWN OF WHITCHURCH-STOUFFVILLE ONTARIO

FULL PLAN

Surveyed by:		Checked by:	R.P.
Drawn by:	W.L.	Approved by:	R.P.
Designed by:	W.L.	Date:	May/22/2024
Scale	1:800		

Project No. NT-23-038

Drawing No. FP-6

Sheet No.

Appendix G

Traffic Signal Warrant

Signal Warrant Calculation

Major Street: Stouffville Road

Minor Street: Street A / 4962 Stouffville Road Private Driveway

Comment 2029 Future Total Condition

Number of Approaches: 1 [ ] 2 [x]

Tee Intersection Configuration: Yes [ ] No [x]

Flow Condition: Free Fw (Rural) [ ] Restricted Flow (Urban) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	2,754	3,673	n/a	1,607
1B - Minor	278	226	25%	126
2A - Major	2,476	3,447	25%	1,481
2B - Crossi	270	302	25%	143

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

OVERALL WARRANT

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

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
ALL APPROACHES	480	720	600	900	1607
	% FULFILLED				179%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MINOR STREET APPROACHES	120	170	120	170	126
	% FULFILLED				74%

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

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MAJOR STREET APPROACHES	480	720	600	900	1481
	% FULFILLED				165%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	143
	% FULFILLED				191%

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

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

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

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

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

Signal Warrant Calculation

Major Street: Stouffville Road

Minor Street: Street A / 4962 Stouffville Road Private Driveway

Comment 2034 Future Total Condition

Number of Approaches: 1 [ ] 2 [x]

Tee Intersection Configuration: Yes [ ] No [x]

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

VOLUME	AM	PM	FACTOR *	
1A - All	2,883	3,839	n/a	1,681
1B - Minor	278	226	25%	126
2A - Major	2,605	3,613	25%	1,555
2B - Crossi	270	302	25%	143

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

OVERALL WARRANT

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

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
ALL APPROACHES	480	720	600	900	1681
	% FULFILLED				187%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MINOR STREET APPROACHES	120	170	120	170	126
	% FULFILLED				74%

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

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MAJOR STREET APPROACHES	480	720	600	900	1555
	% FULFILLED				173%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	143
	% FULFILLED				191%

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

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

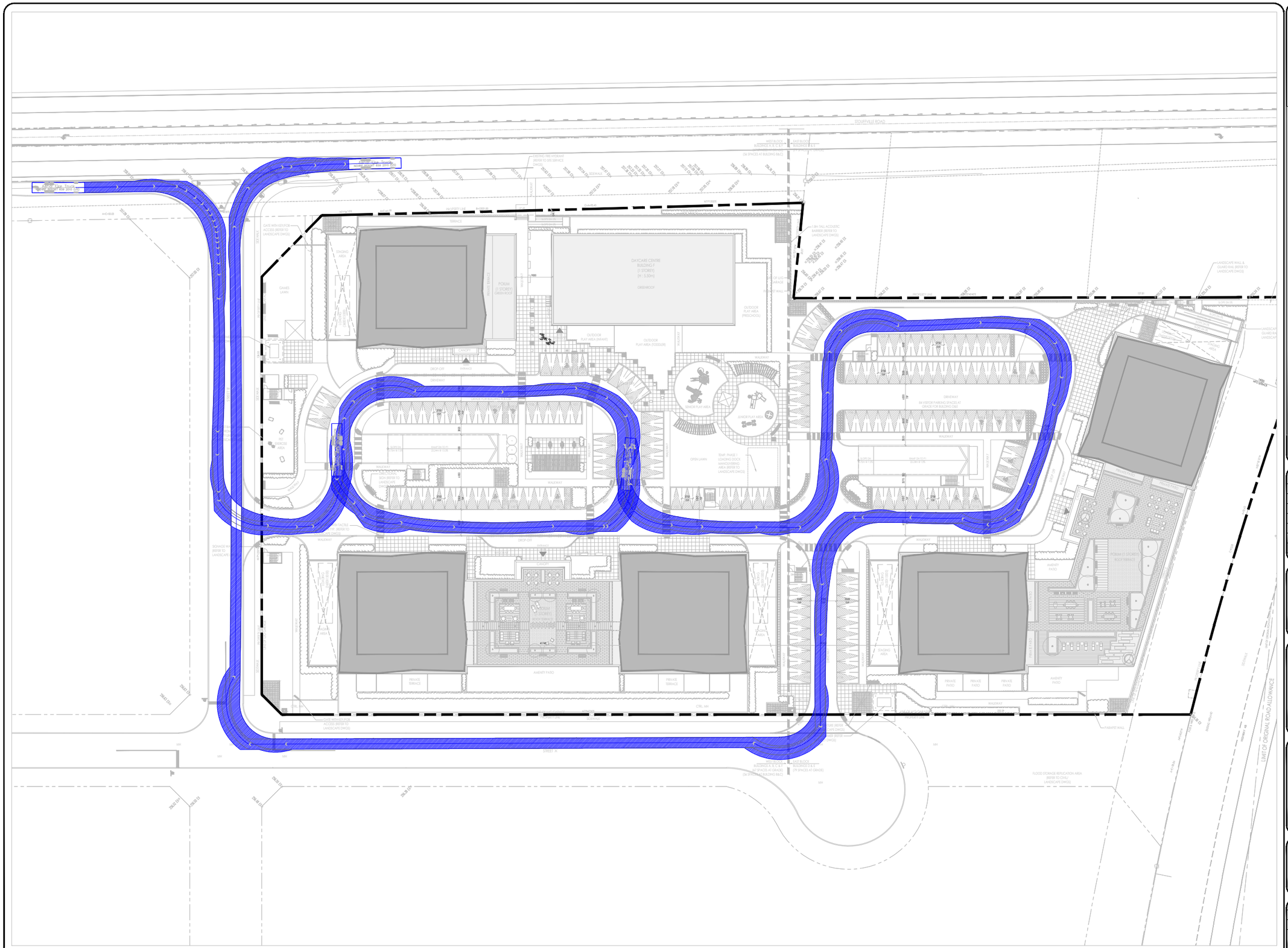
1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

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

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

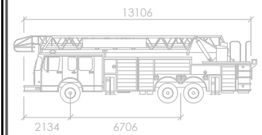
Appendix H

Vehicle Movement Diagrams (AutoTURN Analysis)



KEY PLAN

DESIGN VEHICLE



Aerial Fire Truck

	mm
Width	: 2591
Track	: 2591
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

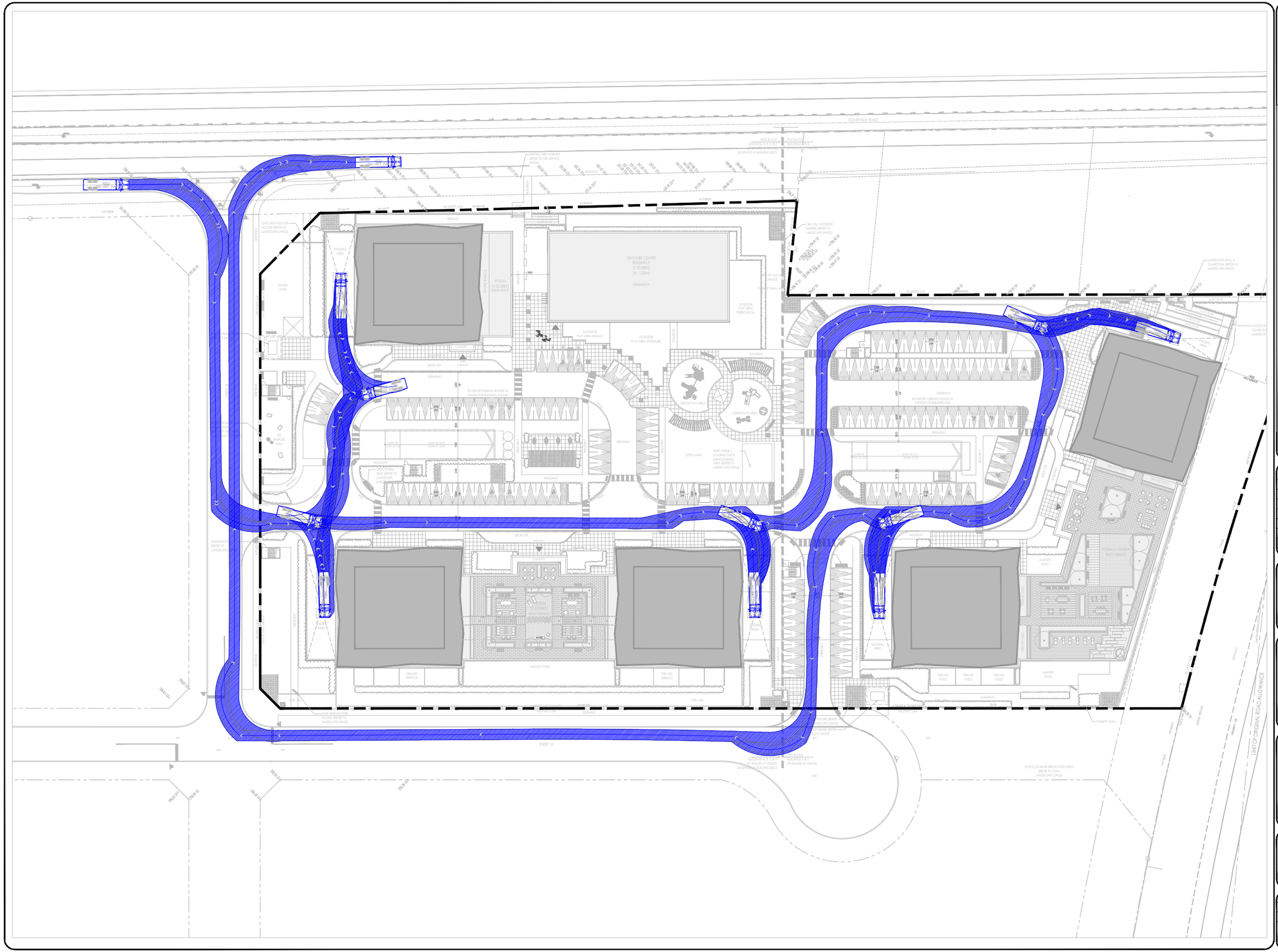
PROJECT NAME:
Mixed Use Development

5061 Stouffville Road

Town of Whitchurch-Stouffville

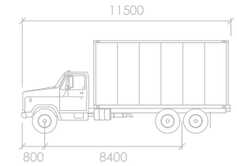
DRAWING TITLE:
AutoTURN Analysis
NCHRP Report 659
Aerial Fire Truck

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	DRAWING NO. AT-01
SCALE: 1:900	



KEY PLAN

DESIGN VEHICLE



HSU

		mm
Width	:	2600
Track	:	2600
Lock to Lock Time	:	6.0
Steering Angle	:	40.0

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

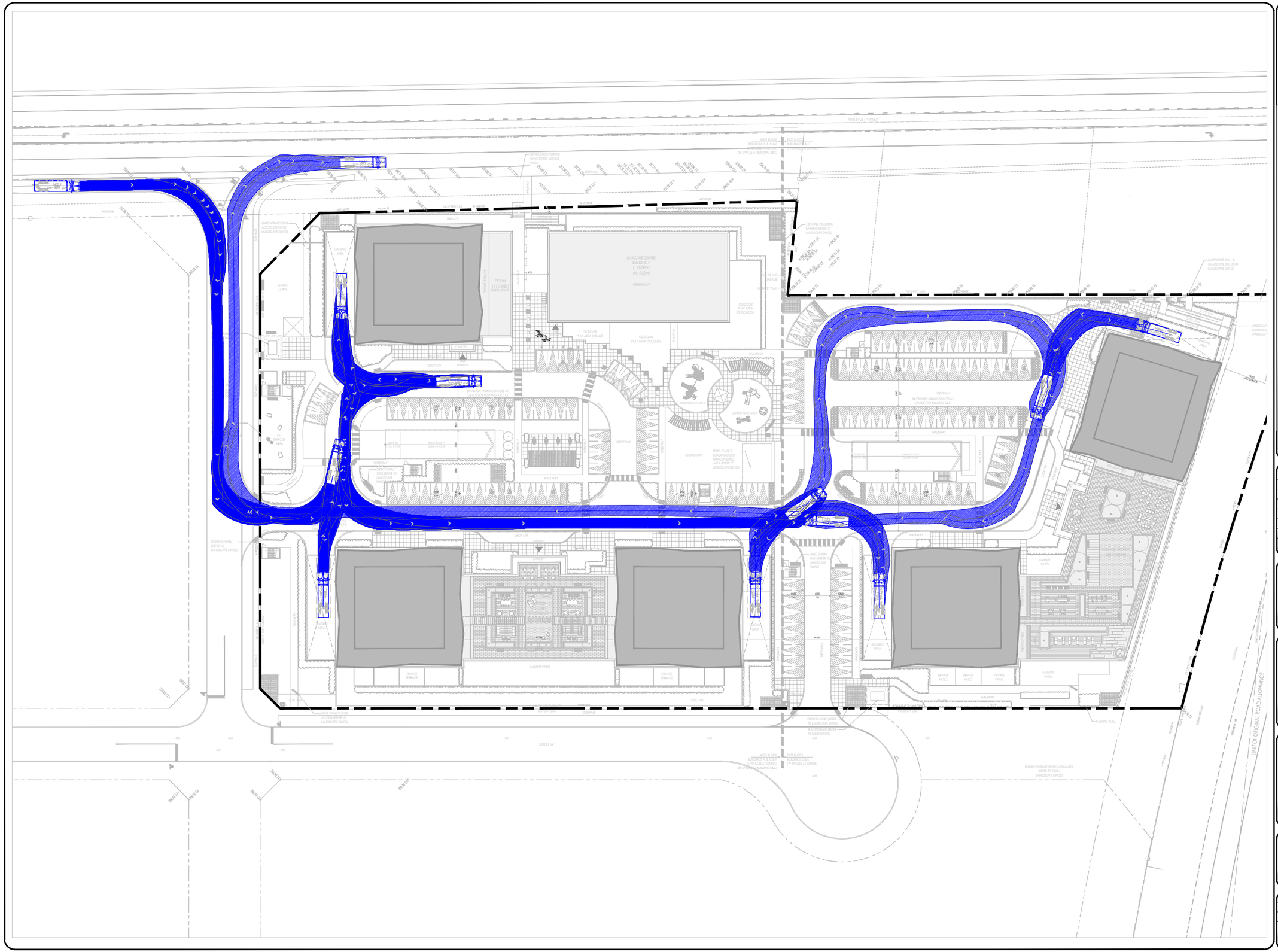
STAMP

nexTrans CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:
Mixed Use Development
5061 Stouffville Road
Town of Whitchurch–Stouffville

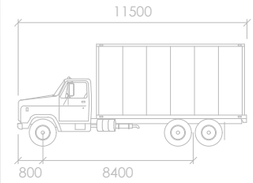
DRAWING TITLE:
AutoTURN Analysis
HSU TAC–2017
Front End Waste

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	
SCALE: 1:900	DRAWING NO. AT-02



KEY PLAN

DESIGN VEHICLE



HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

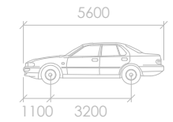
PROJECT NAME:
Mixed Use Development
5061 Stouffville Road
Town of Whitchurch-Stouffville

DRAWING TITLE:
AutoTURN Analysis
HSU TAC-2017
(LOADING)

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	
SCALE: 1:900	DRAWING NO. AT-03

KEY PLAN

DESIGN VEHICLE



P

		mm
Width	:	2000
Track	:	2000
Lock to Lock Time	:	6.0
Steering Angle	:	35.9

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

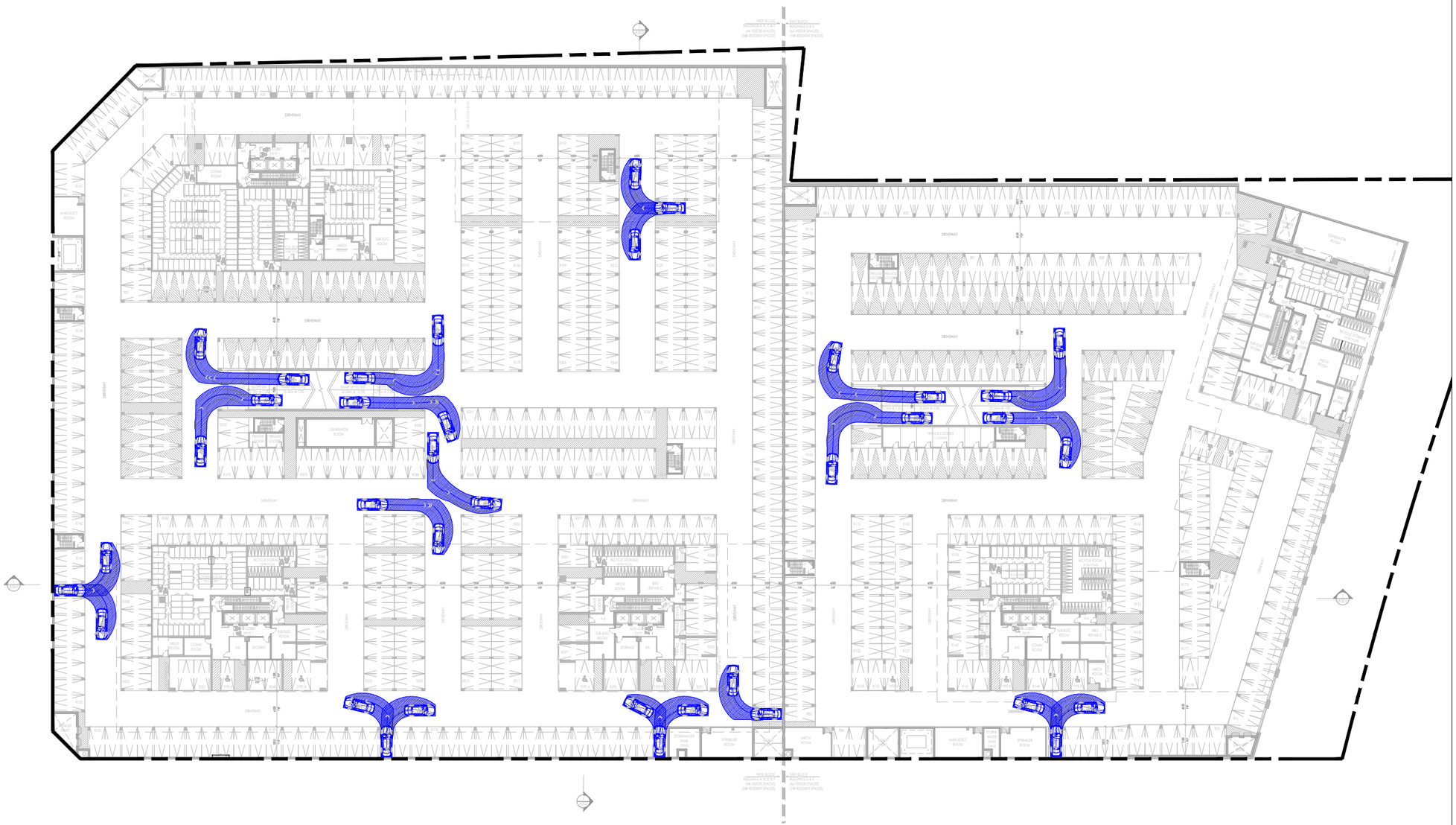
PROJECT NAME:
Mixed Use Development

5061 Stouffville Road

Town of Whitchurch-Stouffville

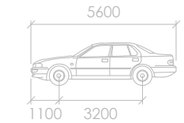
DRAWING TITLE:
AutoTURN Analysis
P TAC-2017

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	DRAWING NO. AT-04
SCALE: 1:900	



KEY PLAN

DESIGN VEHICLE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

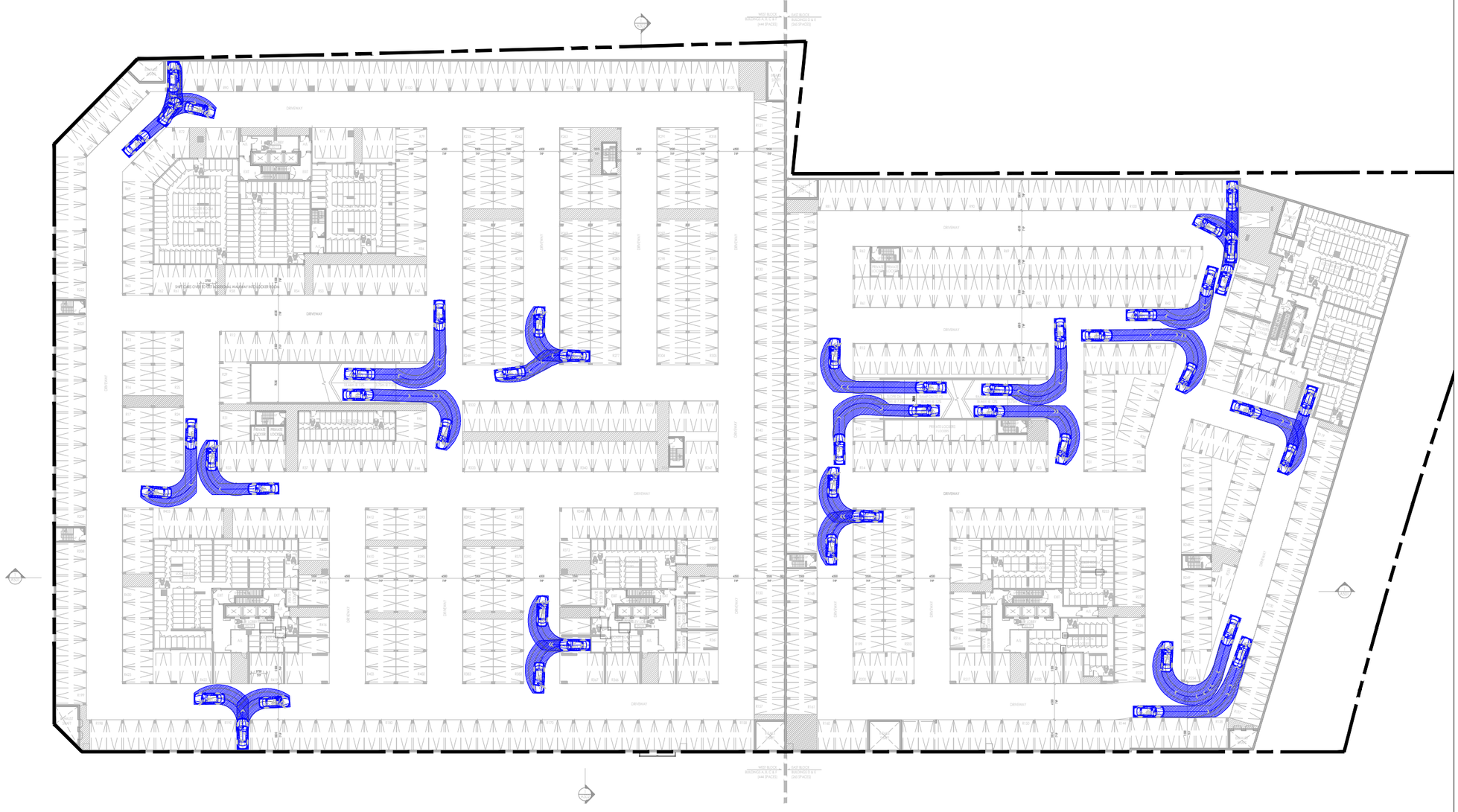
PROJECT NAME:
Mixed Use Development

5061 Stouffville Road

Town of
Whitchurch-Stouffville

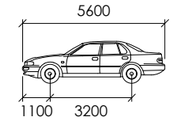
DRAWING TITLE:
AutoTURN Analysis
P TAC-2017

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	
SCALE: 1:800	DRAWING NO. AT-05



KEY PLAN

DESIGN VEHICLE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

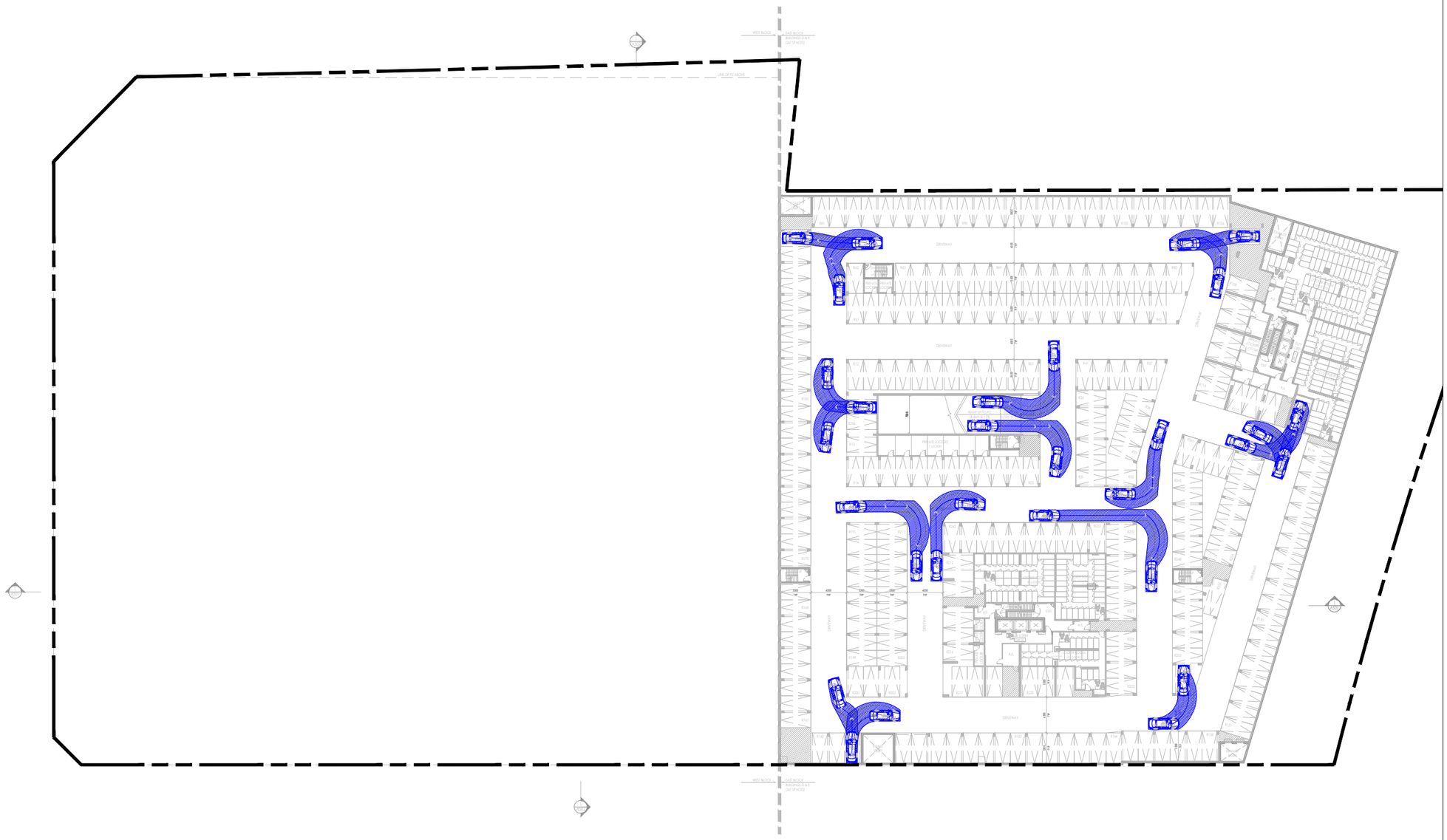
STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:
Mixed Use Development
5061 Stouffville Road
Town of Whitchurch-Stouffville

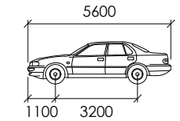
DRAWING TITLE:
AutoTURN Analysis
P TAC-2017

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	
SCALE: 1:800	DRAWING NO. AT-06



KEY PLAN

DESIGN VEHICLE



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

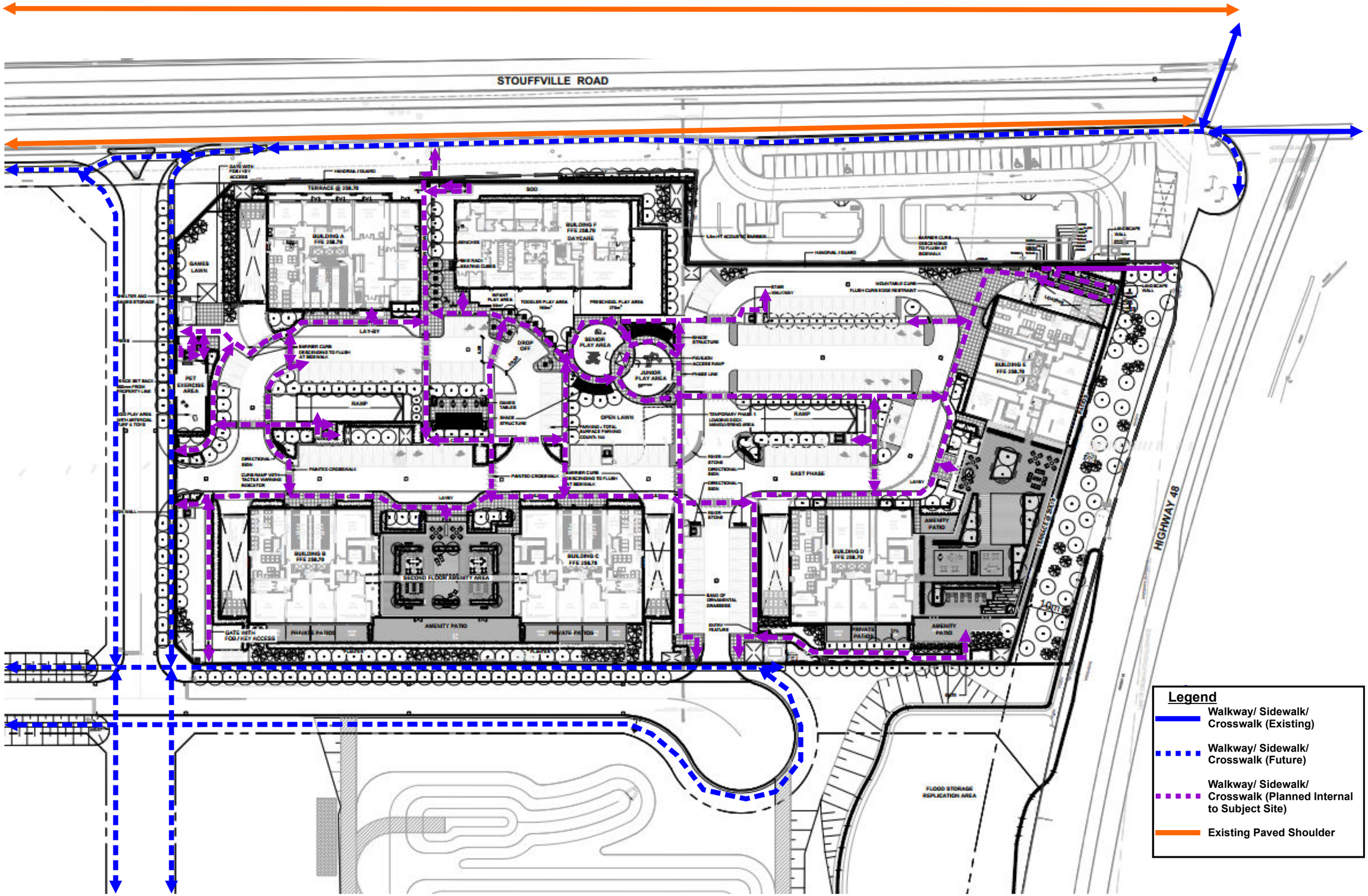
PROJECT NAME:
Mixed Use Development
5061 Stouffville Road
Town of Whitchurch-Stouffville

DRAWING TITLE:
AutoTURN Analysis
P TAC-2017

DESIGN BY: J.P.	DATE: May 26, 2026
CHECKED BY: J.N.	PROJECT NO. NT-23-038
DRAWN BY: J.P.	DRAWING NO. AT-07
SCALE: 1:800	

Appendix I

Pedestrian and Cycling
Circulation Plan


STOUFFVILLE ROAD
HIGHWAY 48
BUILDING A
FFE 258.70
BUILDING F
FFE 258.70
DAYCARE
BUILDING B
FFE 258.70
BUILDING C
FFE 258.70
BUILDING D
FFE 258.70
BUILDING E
FFE 258.70
SENIOR PLAY AREA
JUNIOR PLAY AREA
OPEN LAWN
SECOND FLOOR AMENITY AREA
AMENITY PATIO
PRIVATE PATIOS
EAST PHASE
FLOOD STORAGE REPLICATION AREA
DROP OFF
LAY-BY
RAMP
Legend
Walkway/ Sidewalk/ Crosswalk (Existing)
Walkway/ Sidewalk/ Crosswalk (Future)
Walkway/ Sidewalk/ Crosswalk (Planned Internal to Subject Site)
Existing Paved Shoulder