MEMO

TO: Laura Schreiner, Conservation Halton

FROM: WSP

SUBJECT: **Response to Conservation Halton Review of 7th EIR/FSS Submission - 3269 and 3271 Dundas Street West Conservation Halton Comments (January 22, 2021)**

DATE: **March 23, 2021**

Conservation Halton	**WSP Response**
Conservation Halton (CH) has reviewed the seventh submission of the EIR/FSS in support of the above-noted subdivision. Documents reviewed are listed in Appendix B. Key comments are below. Detailed comments are provided in Appendix A. Please note that three new detailed comments have been provided (comment # 76 – 78).	
Key Comments: 1. CH's previous comments affecting Draft Plan Approval have now been resolved. CH has provided one new comment regarding a suggested revision to the Draft Plan to clarify the width of Open Space/NHS Blocks 12 and 13 adjacent Avenue Three, which is deferred to the Town (comment #76). (This revision should not impact block sizing or layout, just labels.) Staff is now in a position to provide Draft Plan Conditions at the Town's request.	Noted.
2. CH has outstanding comments which should be addressed through finalization of the EIR/FSS as a condition of draft plan approval, or at detailed design, as indicated in Appendix A.	Noted.
APPENDIX A: Detailed Comments	
29. Section 6.4.2.4, Proposed Channel Morphology – Reach 14W-23	

Conservation Halton	WSP Response
d) Not addressed. Update Figure 6.4.4 to illustrate the revised corridor design, including incorporation of the 7.5 m allowance from the Regulatory Storm floodplain within the Total Corridor Width. Updated figure may be provided for insertion into the current EIR/FSS document as a condition of Draft Plan Approval.	Noted.
35. Section 6.5.7, Riparian Storage Assessment – The following must be addressed prior to Draft Plan Approval.	
a) Reach 14W-16 and 14W-12, Table 6.23, Riparian Storage Analysis for Standardized Flow Rates – Not fully addressed. However, no further action required at this time. The explanation provided does not explain the predicted increase in riparian flood storage in Reach 14W-16. A further review of the hydraulic model revealed that a few interpolated cross-sections for this reach are inconsistent between Existing and Ultimate conditions. These inconsistencies can be corrected in the hydraulic models submitted at the detailed design stage.	Noted.
40. Section 7.6.1, Pond Design Overview — (Now Section 7.8.3, Pond Design Overview and Control Criteria)	
d) Pond 5, Drawing SWM4	
i) Addressed. CH staff calculated slightly different flow rates for the quantity/flood control weir, however, we are satisfied this can be revisited by the future EIR/FSS Addendum for the adjacent development.	Noted.
B. Additional Comment Based on Revised Design - Reach 14W-21 CH's comments addressed. Proposed grading within the Highway 407 Transitway in the vicinity of Reach 14W-21 but outside of the NHS Block is deferred to Town staff.	Noted.
b) through d) No further action required at this time. Please note that Reach 14W-22's Regulatory floodline will extend part way up Reach 14W-21. As this does not affect the proposed development limits, no further action is required at this time. At detailed design, CH will require final mapping to reflect the full extent Of Reach 14-W22's floodplain to ensure that CH's Approximate Regulation Limit mapping accurately reflects the regulated flood hazards.	Noted.
66. EIR Sections 5 and 6 — Answer provided in response matrix is sufficient, however it is recommended that new/existing wetland areas be included in Figure 5.2 Vegetation Communities. The sizes of wetland communities should be numerically specified on Figure 5.2 as well. This can be done as part of the finalization of the EIR/FSS.	Figure 5.2 Vegetation Communities has been updated to include the proposed new offline wetland creation areas (2.443 ha) adjacent to the realigned channels of 14W-21 and 14W-22.

Conservation Halton	WSP Response
75. The Detailed Design Commitments Table addresses specific environmental requirements only. This table must be read in conjunction with the commitments made throughout the EIR/FSS and as provided in past engineering correspondence.	Noted.
New Comments Resulting from Revised Draft Plan: 76. Sections 6.0 Water Resources and 7.0 Stormwater Management were not updated to reflect the revised Highway 407 Transitway Block. The larger Transitway may result in slightly higher flow rates at the top end of Reaches 14W-21, 14W-22, and 14W-23, however, the proposed NHS Blocks should be able to accommodate the additional flows. The area's Stormwater Management plan should be refined accordingly at the detailed design stage of Phase 1, including updates to the GAWSER hydrologic model. The GAWSER model should be reviewed. and updated as needed. In conjunction with each phase of development, to ensure the model adequately represents final site conditions.	Noted.
Measurements provided on the Draft Plan of Subdivision along Avenue Three adjacent to NHS/Open Space Blocks 12 and 13 do not reflect the proposed width of the NHS/Open space blocks and may be misleading to users. Consideration should be given to revising the Draft Plan prior to approval to prevent future confusion. This matter is deferred to Town staff.	Noted.
New Comments — Other: 77. For Conservation Halton to update our Approximate Regulation Limit Mapping, please forward a digital copy of the Existing Conditions Floodlines and Existing Conditions Meanderbelts with Factor of Safety. The drawing(s) must be provided in ESRI Shapefile or AutoCAD 2010 (file format in order of preference dwg, dgn, and dxf); properly georeferenced to the NAD83, UTM, Zone 17 coordinate system. Due to the significant number of layers typically included in GIS files, features relevant to the hazards and associated labels Should be submitted in a separate GIS file in addition to the main drawings, clearly attributed in the GIS file, and named in the correspondence accompanying the submission. 78. At the next submission, staff request that the applicant split the pdf of the EIR/FSS into multiple files for ease of navigation. The present file sizes are so large they are quite difficult to navigate digitally. One method we have seen that has worked well is having one pdf of the text of the report, another containing the tracked-changes version of the text, a folder containing all figures and drawings (each saved as a separate pdf and labelled clearly), and a separate folder for each appendix as necessary. Feel free to contact the undersigned to discuss prior to submission.	Noted.

MEMO

TO: Bernie Steiger, Region of Halton

FROM: WSP

SUBJECT: **Response to Conservation Halton Review of 7th EIR/FSS Submission - 3269 and 3271 Dundas Street West**

Region of Halton Comments (January 13, 2021)

DATE: **March 23, 2021**

Region of Halton	WSP Response
The last comments provided by CH (March 30, 2020) on this file indicated that there are several issues remaining that must be addressed prior to draft plan approval. As the Region is relying on CH for the review of technical matters related to the Natural Heritage System, within the North Oakville West Secondary Plan, the Region requires confirmation that CH is satisfied with respect to the implementation of the Natural Heritage policies of the Region OP and the North Oakville West Secondary Plan prior to providing draft plan conditions and recommending approval.	
Site Contamination: Section 147(17) of the ROP requires that prior to the Region considering any development application proposals, the proponent must identify whether there is any potential for soils on the site to be contaminated. Regional Staff note that the Phase 1 ESA that was provided as part of a previous submission is out of date and will require updating based upon O.reg. 153/04 standards and requirements. Further, among other recommendations, it recommends a limited Phase 2 ESA be undertaken.	Noted.
Once the Region is ready to issue conditions on this plan, a condition will be imposed to require the submission of a satisfactory Phase 1 and 2 ESA (prior to any site alteration) and to ensure the recommendations are implemented.	Noted.
Summary: Subject to addressing comments by CH related to impacts on the Regional Natural Heritage System and addressing the other technical comments provided in this letter	

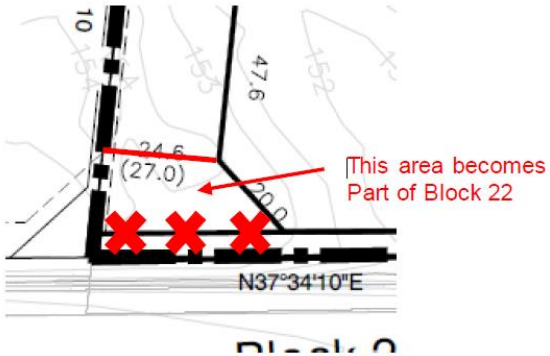
Region of Halton	WSP Response
such as those made with respect to environmental site contamination, transportation and servicing, the proposed plan would conform to the policies of the ROP.	
Water Servicing: The FSS proposes to service the development by providing a watermain network to be located within the proposed road network for the subdivision. As part of this network, a 600mm diameter trunk watermain is proposed on Avenue One and local watermains are to be provided on Avenue Two and Avenue Three. This network will be connected to the existing external 1200mm diameter trunk watermain on Dundas Street where Avenue Two and Avenue Three intersect Dundas Street. This proposed water system is in accordance with the ASP.	Noted.
Please note that the existing 1200mm diameter trunk watermain is located in the southerly boulevard of Dundas Street. When this watermain was constructed, no crossing stubs/connections were provided for or constructed across Dundas Street at the future intersections of Avenue Two and Avenue Three. Valve chambers were provided in the general vicinity of these intersections in order to accommodate these future connections. The developer should consider funding these watermain crossings, and have the Region design, and construct the crossings as part of the Region's Dundas Street road construction project. The applicant may wish to discuss options in this regard with our project team for the reconstruction project.	Noted. The developer understands that the crossings of Dundas Street will need to be funded by the developer. This is noted in Section 8.3.11.1 of the FSS. Discussions with the Region will be held at the appropriate time during the development phase.
The proposed 600mm diameter watermain on Avenue One is a DC reimbursable project (ID #5627). The project is not currently included in a current Regional budget. Should the funding not be available at the time of proceeding with the design and construction of this section of watermain, then the developer will have to front-end the funding of the design and construction of the watermain and be reimbursed in the future once funding becomes available in a Regional budget.	It is understood by the developer that the DC reimbursable project may need to be front ended at the time of construction.
The looping of the watermain system within this subdivision is contingent on watermains that are to be located on the adjacent lands that are both east and west of this subdivision. Avenue Two is located on both the lands of this subdivision and also on the adjacent lands to the west. Avenue Three is located on the lands of this subdivision and also the adjacent lands to the east. The FSS does not address how the watermain system/loop is to be completed by providing the external connections on these adjoining lands. The timing of the development of the adjacent lands could also be problematic in terms of providing proper watermain looping since it could result in temporary looping connections within the subdivision and/or possible long term temporary dead end watermains.	The FSS indicates that temporary looping will be provided through certain development blocks until the full area is built out (see section 8.6). The interim servicing design does not include dead end watermains. As the design and build-out evolves the interim servicing will be updated and the Region will have an opportunity to review and comment to ensure the servicing will be in alignment with the Region's requirements.

Region of Halton	WSP Response
An external local watermain will be required to be constructed within the north boulevard of Dundas Street in order to service the blocks fronting on this street and also to provide fire protection for these blocks.	Yes, agreed.
The subdivision is located within the Zone 3 pressure zone. The FSS notes that the proposed water system was modeled using the Region's existing hydraulic model. The results show that there are parts of the subdivision that will be located in the lower end of the pressure range in this zone. Consideration may have to be given to providing pressure booster units in the buildings that are located on the lower end of the pressure range.	At the detailed design stage, the design of the boosters will be utilized where required.
Water Pressure Zone Realignment: The Region is currently undergoing a program to realign the water pressure zones in the Region. As part of this program, it is proposed to implement both an interim zone condition and an ultimate zone condition within the Region's water distribution system. The timing of implementing the new pressure zone boundaries may take several years to complete. It is possible that the proposed development may be impacted by the changes to the pressure zones in both the interim and ultimate conditions depending on the timing of the implementation of these changes. Please note that minimum service levels for both water pressure and flow will be maintained throughout the Region during this process. Buildings and units within the development may undergo changes to their water pressure when the zones are changed over from the existing zone to the interim zone and also when the interim zone is changed to the ultimate zone.	Noted with appreciation.
The Region requires that the FSS be revised prior to the engineering drawing submission to include water modelling of the development that addresses watermain sizing, flows, pressures, dead-end watermains and the proposed water pressure zone realignment.	The FSS will be updated as the development evolves when building sizing and the limits of phasing are known to address the items known.
Wastewater Servicing: The FSS notes that the wastewater servicing of this subdivision will be by an internal gravity sewer system that will convey flows to a proposed Regional trunk sanitary sewer that is to be located on Dundas Street West. The flows from this trunk sewer flow eastward to the existing trunk sewer located on Colonel William Parkway.	Noted.
The Dundas Street sanitary trunk sewer is a development charges project (ID #6911) and it is currently being designed as part of the Region's Dundas Street road reconstruction project. Funding for the construction of this sewer still has to be secured in a Regional budget. The trunk sewer is required to service this development. The	We understand that the timing of funding will impact the timing of possible development. The developer is aware that in order to facilitate development, front ending of this project may be

Region of Halton	WSP Response
status of the funding may impact the timing of this development. In order to have the trunk sewer designed and constructed in advance of the Region funding being available the developer may have to accelerate this project and front end the financing of this project. The developer would then be reimbursed for the cost of this sewer once Regional funding became available. The timing of the construction of the trunk sewer in relation to the timing of the proposed development could be a factor in the development proceeding.	required. This matter will be discussed when future development applications are made.
Phasing of the Development: The FSS notes that this development will be phased in Phase 1A, Phase 1B and Phase 2. Due to this, the servicing of the development will also be phased. Further, it appears that this draft plan of subdivision will proceed prior to the adjacent lands being developed. This is problematic from a servicing perspective since full road connections throughout the entire secondary plan area will not occur at the same time. This will impact the watermain system in the area since it will result in temporary dead-end watermains. The FSS notes that temporary and/or interim watermains may be required for looping. Servicing Plans for the different phases were included in the FSS. The interim watermain proposed can be summarized as follows:	
Phase 1A: • A local watermain is proposed on Avenue Two and a short section of watermain is proposed on Burnhamthorpe Road. • A temporary watermain is proposed through Block 3 and Block 1 and connects to the existing 1200mm dia. watermain on Dundas Street. This main would eventually be decommissioned and abandoned. This watermain would have to be in a temporary Regional easement. • This results in a dead end watermain on Burnhamthorpe Road.	— There is only one section of watermain on Burnhamthorpe Road. Correct/Noted. — There is no dead end watermain proposed for Phase 1A, there is simply a stub with a closed valve to allow for future connection of the watermain in future phases. We have revised Figure x-x to more clearly show the proposed phasing.
Phase 1B: • A local watermain would be constructed on the remaining portion of Burnhamthorpe Road that is within the limits of this subdivision. A small portion of local watermain would also be constructed on Avenue Three. • A temporary local watermain would be constructed southward along the eastern limit of the property and connect to the existing 1200mm dia. watermain on Dundas Street. This watermain would have to be in a temporary Regional easement. • The temporary watermain that was constructed in Phase 1A within Blocks 3 and 1 would be decommissioned, removed and/or abandoned in this phase.	— Correct/Noted. — Correct/Noted. — Correct/Noted.

Region of Halton	WSP Response
Phase 2: • A local watermain would be constructed on a portion of Avenue Three that is north of Burnhamthorpe Road. • A 600mm dia. trunk watermain would be constructed on the eastern portion of Avenue One. • A temporary local watermain would be constructed along the eastern limit of the property just south of Avenue One. This watermain would have to be in a temporary Regional easement. • The temporary watermain that was constructed in Phase 1B along the eastern limit would be decommissioned, removed and/or abandoned in this phase. • <u>This results in a dead end watermain on Avenue One.</u> • A temporary watermain is proposed through Block 7 and would connect to what would be then an existing local watermain on Burnhamthorpe Road. This main would eventually be decommissioned and abandoned. This watermain would have to be in a temporary Regional easement.	— Correct/Noted. — Correct/Noted. — Correct/Noted. — Correct/Noted. — There is no dead end watermain proposed for Phase 2, there is simply a stub with a closed valve to allow for future connection of the watermain for the connection to the lands to the west. We have revised Figure 8.7 to more clearly show the proposed phasing.
The FSS provided no further phases that showed when and how the remaining portion of the proposed 600mm dia. trunk watermain would be constructed and when the remaining temporary watermains constructed in Phase 2 would be decommissioned.	The EIR/FSS is for the Subject Property application only and our client has no control over the development of external lands. There are no further phases for the development of the subject lands. We have added commentary to Section x-x that watermain connections would be made to the external lands as they are developed. The decommissioning of interim watermains will be done after the watermain connection is completed to provide adequate watermain looping.
The FSS notes that where temporary looping cannot be provided that a regular flushing program will be required at these dead ends. Temporary flushing hydrants would have to be installed at these dead-ends. This is problematic to the Region since these dead-ends, although temporary, may be in place for long extended periods. The FSS did not address how such a flushing program would be funded and what forces would provide this flushing service. Further, the assumption of the subdivision by the Region could be affected by these temporary dead-ends and hydrants since the Region would not assume these works until the proper and ultimate watermain system is installed according to the ASP.	We are not currently proposing any temporary dead ends. The use of Autoflushers would only be utilized with approval by the Region of Halton should the situation arise where there is a dead end watermain. Section 8.3.11.2 on page 8-14 of the FSS explicitly states that the funding of the autoflushing program would be that of the developer. The same section notes that a private contractor approved by the Region and funded by the developer would provide the flushing service.
The FSS is required to be revised to address the temporary looping, dead-end watermains and to demonstrate how the ultimate watermain system is to be constructed.	The FSS has been updated to address temporary looping, dead-end watermains, and discusses the manner in which the ultimate system is to be built out.
<u>Reconstruction of Dundas Street:</u>	

Region of Halton	WSP Response
The Region is planning to reconstruct Dundas Street from Appleby Line to Bronte Road under Project PR-2671B/2672B. The project is currently under design; however, the scope of work for the reconstruction of Dundas Street does not include the design of the local watermain crossings required along Dundas Street. There is a possibility that the trunk sanitary sewer may be added to the scope of work for this project. If the funding for the trunk sewer is delayed then consideration should be given to having the developers in the area provide the front-end financing for these projects in order that they can be included in scope of work for the road reconstruction project.	We understand that the watermain connections crossing Dundas Street will be the responsibility of the developer. The timing of the development will dictate if front ending of the watermain connections is required.
The local watermain crossings required at Avenue Two and Avenue Three are considered local watermains and are not eligible as DC infrastructure. For these crossings to be included in the scope of work for the reconstruction of Dundas Street, the developer would have to provide the funding to the Region and the Region would construct the crossings on their behalf.	
Existing Private Water Well & Septic System Decommissioning: The FSS did not indicate if there where private wells and/or septic systems located on the property from former use of these lands. Any existing private wells and/or septic systems are to be decommissioned prior to construction commencing on the site. Both existing wells and septic systems, if present on the site are to be decommissioned and removed from the site according to the proper MOE guidelines.	The decommissioning of existing wells is explicitly noted in section 8.7 on page 8-17. Recommendations to decommission wells are provided in the Hydrogeology section of the EIS submission.
Storm Water Drainage on Regional Roads: Dundas Street West is adjacent to this subdivision and it is slated for reconstruction and urbanization by the Region. Section 7.8.2 of the FSS addresses storm drainage from the reconstructed Dundas Street being accommodated in SWM Pond 2 that is located in this subdivision and this pond is to be constructed in the first phase of the subdivision (Phase 1A). The FSS indicates that a small section 2.24 ha) of Dundas Street is proposed to drain to Pond 2 in the subdivision. This pond and some of the internal storm sewers in the subdivision will have to be designed to accommodate the storm water drainage from this section of roadway.	The storm pond and relevant internal storm sewers have been designed to accommodate the runoff from Dundas Street.
Please note that the Region previously had the EIR/FSS peered reviewed in regards to impacts of storm drainage from this development on Dundas Street. In particular, the Region retained MMM Group to review an interim EIR/FSS (date unknown) and they provided their comments to the Region in a memo dated on Dec 14/15. In this memo it was noted that there is a potential for parts of Dundas Street to be in an overtopping condition for a Regional Storm Event in the post development period. The location that this could occur is at Culvert FM-D2 using the existing culvert at this location. This	Noted.

Region of Halton	WSP Response
culvert is slated for replacement and upsizing when Dundas Street is reconstructed which is to remove the overtopping issue.	
The FSS should be revised to address the potential overtopping issues on Dundas Street.	The development will likely proceed after the completion of the Dundas Street road widening and therefore the overtopping potential will be eliminated. This is reflected in the FSS.
Official Plan/Transportation Master Plan Right-ofWay Requirements: Any lands within 25m of the centre line of the original right-of-way of Dundas Street (Regional Road 5) that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The applicant is to provide confirmation that the proposed widening blocks on the plan would achieve the Region's road widening requirements (including those set out in the Dundas Street EA and as part of the Dundas Street widening project).	We have reviewed the requirement and can confirm the proposed widening blocks on the plan achieve the Region's road widening requirements.
Daylight triangles measuring 15m along Dundas Street (Regional Road 5) and 15m along Street "Avenue Two" shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The daylight triangle on the most current draft plan (May 2020) appears to be insufficient in size. The owner shall submit a revised plan that indicates the correct size of daylight triangle (and demonstrate with a dimensioned drawing that the above-noted requirement is achieved). In addition, the Region's jurisdiction at an intersection extends to the end of the daylight triangle. As such the road widening block (Block 22) and extent of Avenue Two need to be revised to reflect this as show below:  	The daylight triangle and Block 22 has been revised in accordance with the comment.

Region of Halton	WSP Response
Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street Corridor Improvements Brant Street (Regional Road 18) to Bronte Road (Regional Road 25) Municipal Class Environmental Assessment Study/Environmental Study Report, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.	Noted. There does not appear to be any additional land requirements from this property.
Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street from Bronte Road (Regional Road 25) to Appleby Line (Regional Road 20) Detailed Design Project, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.	Noted. There does not appear to be any additional land requirements from this property.
The plan of subdivision has been circulated to the Project Team (Project Manager, Jennifer Trimble, Public Works) for the Dundas Street widening/reconstruction project for review and comment. They will advise with regard to any additional requirements or impacts (e.g. additional right-of-way, easements, swm impacts). Additional comments will be provided once received.	We have not received any additional property requests from the Region.
Other Comments: All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or their designate. Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property). The location of the future intersection to Dundas Street must be as per the approved North Oakville West Secondary Plan.	Noted and accepted.
Transportation Impact Study: The Transportation Impact Study (TIS) by WSP dated August 4, 2020, submitted as part of this application review, has been sent out for peer review. The study has been reviewed by CIMA Canada Inc. and comments are provided below:	See transportation comment response table/memo.
Provide detailed 15-minute TMCs breakdowns and use the same PHF across all existing scenarios;	See transportation comment response table/memo.
Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;	See transportation comment response table/memo.

Region of Halton	WSP Response
State potential implications if the Burnhamthorpe extension is not completed by 2025 through the Bentall site;	See transportation comment response table/memo.
Provide raw TTS data outputs in the Appendices;	See transportation comment response table/memo.
Adjust background growth rates using 3.0 percent in the first year and 4.0 percent in all subsequent years as outlined in Section 6.2 and results must be updated accordingly;	See transportation comment response table/memo.
Provide alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West;	See transportation comment response table/memo.
Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.	See transportation comment response table/memo.
Agreements/Permits: The owner will be required to enter into a Subdivision Agreement through the Development Project Manager) for the completion of required Works for all development associated road improvements along Dundas Street and/or at any new intersections. The owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.	Noted and Agreed.
Finance: The Owner will be required to pay all applicable Regional Development Charges in accordance with the Region of Halton Development Charge By-law(s), as amended. Please visit our website at https://www.halton.ca/The-Region/Finance-and-Transparency/Financing-Growth/Development-Charges-Front-ending-Recovery-Payment to obtain the most current Development Charge and Front-ending Recovery Payment information, which is subject to change.	Noted and Agreed.
Conclusion: We require that the following matters be addressed before we are in a position to provide conditions of draft approval:	
Receipt of a satisfactory FSS. In particular, the FSS is required to be revised to address the temporary looping, dead-end watermains and to demonstrate how the ultimate watermain system is to be constructed. We are not in support of the dead-end watermains as proposed.	Dead-end watermains are not proposed. The other items have been addressed in the revised FSS.

Region of Halton	WSP Response
Receipt of a satisfactory Transportation Impact Study.	In 2021 WSP was seeking for clarifications on previous comments from the Region and we suggested that we would not be updating the TIS as it would be redundant (i.e. the previous report had 682 pages with the Appendices) but provide a response letter, response matrix and relevant attachments. On June 3, 2021 the Region confirmed that they find the proposed approach by WSP acceptable if the Town agrees to it. On June 7, 2021 the Town also confirmed that the letter, matrix and attachments are fine and that there is no need to submit the entire document. Based on receiving these clarifications WSP submitted a response to comments letter, dated June 30, 2021 with relevant attachments in the Appendices and a separate response matrix. If the context of the responses are satisfactory this should satisfy the requirement for a satisfactory TIS.
Confirmation from CH that the matters identified to be fulfilled in advanced of draft plan approval in correspondence dated March 30, 2020 have been satisfactorily resolved.	CH has confirmed their acceptance of the EIR/FSS with conditions outlined in their last comment letter.
That a revised draft plan of subdivision be submitted that correctly reflects the daylight and property dedication requirements and that the split between Region and Town jurisdiction at the Avenue Two/Dundas Street intersection is depicted as per the comments in this letter. Receipt of comments from Public Works in regard to the Dundas Street project is required in this regard.	The draft plan has been revised to indicate the daylight and property dedication requirements. See the attached transportation response memo for responses related to the Dundas Street Project.
It is recommended that the applicant not resubmit the draft plan until comments from our Capital Works group regarding the Dundas Street project are received in order that their comments can be incorporated into the plan/resubmission.	See the attached transportation response memo for responses related to the Dundas Street Project.
Finally, the owner may wish to engage in discussions with our Public Work Dundas Street capital project team regarding co-ordination/funding of works identified in this letter such as the Dundas Street local watermain crossings and the Dundas Street local watermain extension.	Depending on timing of the development, the developer will engage in discussions with the Town

MEMO

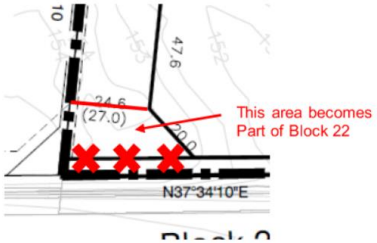
TO: Robert Thun, Town of Oakville

FROM: WSP

SUBJECT: **Response to Region of Halton Transportation Comments (January 13, 2021 and April 19, 2021) - 3269 and 3271 Dundas Street West**

DATE: **June 30, 2021**

Region of Halton	WSP Response
Regional Transportation: Section 173(8) of the ROP states that the Region and the Local municipalities will work together to control access to Arterial Roads in accordance with Council adopted access 10 management policies. On Map 3 of the ROP, Regional Road 5 (Dundas Street) is defined as Major Arterial road. In considering development applications, the ROP further requires that the proponent for any development considered to have a transportation impact prepare a detailed transportation study to assess the impact of the proposal and to recommend necessary improvements is required. In addition, the ROP provides direction to restrict access to Major Arterial Roads, and require land dedication for road widening and daylight triangle purposes as defined by the ROP. The following comments are provided in relation to the materials provided as part of the above noted development resubmission.	Acknowledged.
Halton's Capital Implementation Plan (2018 – 2031): The updated timing of Halton's capital works, is as follows (all timing subject to change):	
Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Bronte Road - Q2 2022 to Q4 2024	Acknowledged.
Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Appleby Line - Q3 2020 to Q3 2023	Acknowledged.

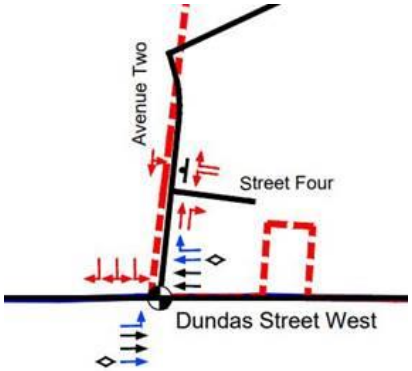
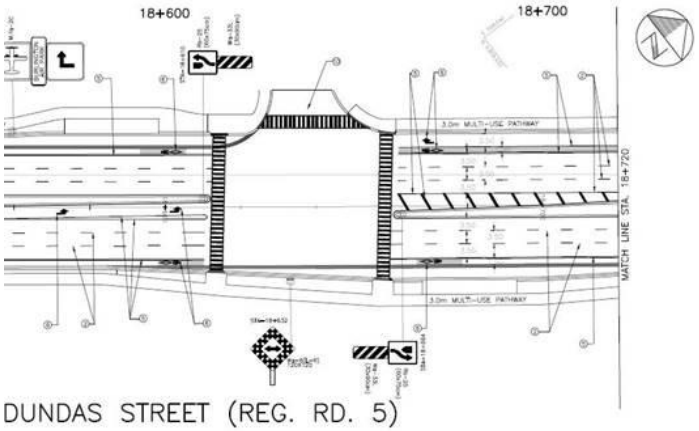
Region of Halton	WSP Response
Bronte Road Widening - 4 to 6 lanes from Speers Road to Derry Road - 2025 to 2027	Acknowledged.
William Halton Parkway - 2 to 4 Lanes Widening from Old Bronte Road to Hospital Gate - Q2 2023 to Q4 2023	Acknowledged.
Tremaine Road - 2 to 4 lane widening from Dundas Street to Lower Base Line - start of construction 2024	Acknowledged.
Official Plan/Transportation Master Plan Right-of-Way Requirements: Any lands within 25 metres of the centre line of the original right-of-way of Dundas Street (Regional Road 5) that are part of the subject property shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The applicant is to provide confirmation that the proposed widening blocks on the plan would achieve the Region's road widening requirements (including those set out in the Dundas Street EA and as part of the Dundas Street widening project).	A figure is provided in Appendix C of WSP June 2021 Response Letter, which shows that the property line is 27m from the centre line of the original right-of-way of Dundas Street (Regional Road 5. The proposed road widening for Dundas Street as provided by the Region is shown as the proposed property line for the subject property. The property line is beyond the 25 m from the centre line of the original right-of-way of Dundas Street (Regional Road 5). Therefore, the proposed property line achieves the Region's road widening requirements – the Dundas Street EA requirements and the Official Plan / Transportation Master Plan requirements.
Daylight triangles measuring 15 metres along Dundas Street (Regional Road 5) and 15 metres along Street "Avenue Two" shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The daylight triangle on the most current draft plan (May 2020) appears to be insufficient in size. The owner shall submit a revised plan that indicates the correct size of daylight triangle (and demonstrate with a dimensioned drawing that the above-noted requirement is achieved). In addition, the Region's jurisdiction at an intersection extends to the end of the daylight triangle. As such the road widening block (Block 22) and extent of Avenue Two need to be revised to reflect this as follows:  	Due to the intersection angle of 84 degrees the daylight triangle has been revised to 16.8m by 15.0m along the proposed streetline for Avenue 2 and the proposed road widening for Dundas Street as shown in Appendix C of the WSP June 2021 Response Letter. The hypotenuse of the daylight triangle is 21.2m. Based on Transportation Association of Canada (TAC) Geometric Design Guide intersection angles should be between 70 and 110 degrees. The proposed intersection angle of 84 degrees is acceptable.

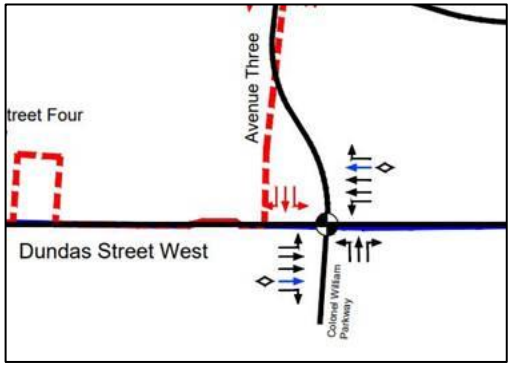
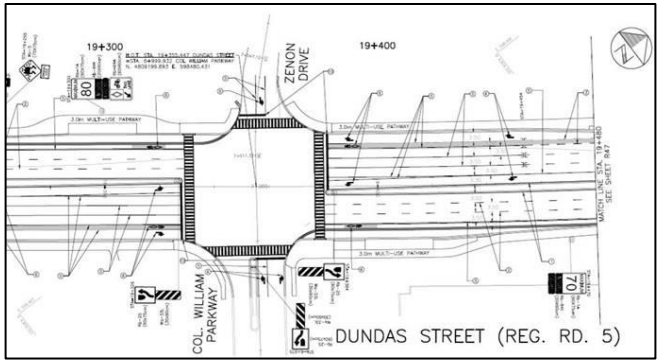
Region of Halton	WSP Response
Municipal Class Environmental Assessment Study/Environmental Study Report (Transportation Planning) Right-of-Way Requirements – Dundas Street: Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street Corridor Improvements Brant Street (Regional Road 18) to Bronte Road (Regional Road 25) Municipal Class Environmental Assessment Study/Environmental Study Report, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.	Acknowledged.
Detail Design Project (Engineering & Construction) Right-of-Way Requirements – Dundas Street: Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street from Bronte Road (Regional Road 25) to Appleby Line (Regional Road 20) Detailed Design Project, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The plan of subdivision has been circulated to the Project Team (Project Manager, Jennifer Trimble, Public Works) for the Dundas Street widening/reconstruction project for review and comment. They will advise with regard to any additional requirements or impacts (e.g. additional right-of-way, easements, swm impacts). Additional comments will be provided once received.	Acknowledged. Additional comments were provided on April 19, 2021. The comments and responses are provided towards the end of the WSP June 2021 Response Letter (comment 11 onwards).
Other Comments: All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or their designate. Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property). The location of the future intersection to Dundas Street must be in accordance with the approved North Oakville West Secondary Plan.	Acknowledged.
Transportation Impact Study:	Acknowledged.

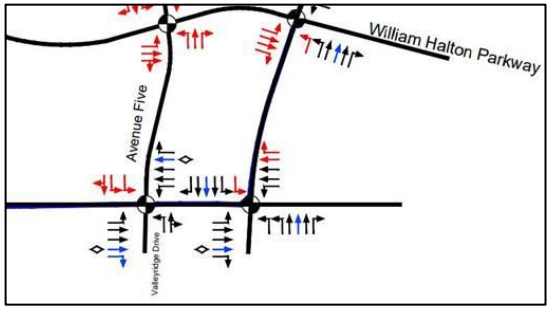
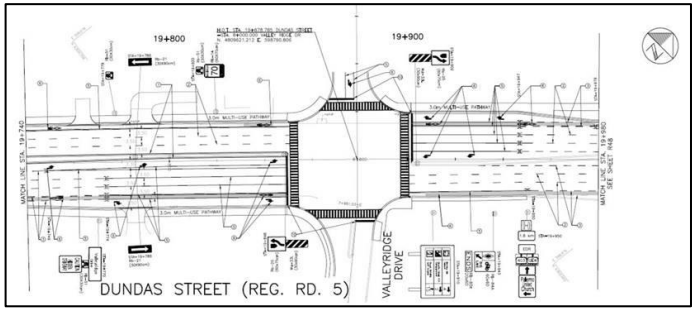
Region of Halton	WSP Response
The Transportation Impact Study (TIS) by WSP dated August 4, 2020, submitted as part of this application review, has been sent out for peer review. The study has been reviewed by CIMA Canada Inc. and comments are provided below:	
Provide detailed 15-minute TMCs breakdowns and use the same PHF across all existing scenarios;	The detailed 15-minute TMC are provided in Appendix D of the WSP June 2021 Response Letter. WSP calculated the peak hour factor for the AM and PM peak hours for each intersection and used the consistent peak hour factor for existing conditions. The exception is Dundas Street at Tremaine Road in the PM peak hour where the overall intersection PHF was 0.95. The peak hour factor for the east approach was calculated to be 0.97 and this peak hour factor was applied to the east approach of the intersection as part of the calibration. As shown in Table 4-2 of the report, the resulting westbound through V/C was 0.99 for the calibrated Synchro model was 0.99. If the overall PHF of 0.95 was used the V/C for the westbound through would increase to 1.01 as shown in Appendix E of the WSP June 2021 Response Letter. WSP acknowledges that this adjustment to the PHF should have been documented on page 22 of the report.
Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;	The proposed Phase 2 (2030) lane configuration is provided in Figure 5-2 of the report. The proposed Phase 2A (2030) lane configuration is provided in Figure 5-3 of the report. The estimate 95th percentile queue lengths and recommended storage lanes are provided in the response to comment 8 g) in the WSP June 2021 Response Letter. The intersection improvements, responsibility and the proposed development cost share percentage for each intersection improvement is provided in Appendix F of the WSP June 2021 Response Letter. The cost share percentage for the proposed development was calculated by determining the site traffic percentage relative to the total additional traffic at the intersections from background developments and growth. In general, the Region would be responsible for the Tremaine Road and Bronte Road widening for which a future EA will be completed. The Region would also be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of improvements along Dundas Street West and roadways connecting to Dundas Street West be completed through the Dundas Street widening Phase 2 contract.

Region of Halton	WSP Response
	The remaining intersections would be developed as part of the North Oakville West Secondary Plan roadway network.
State potential implications if the Burnhamthorpe extension is not completed by 2025 through the Bentall site;	WSP analysis (Figure 5-1) assumed that Burnhamthorpe Road would be constructed between Avenue Two and Avenue 3 by 2025. All site traffic (Figure 5-4 and Figure 5-5) was assigned to Avenue Two. Should Burnhamthorpe Road not be constructed through Bentall lands, Blocks C4-1, C5-1, G5-2 and G5-1 (see Figure 3-1) would not have access to the external roadways unless Avenue 3 is constructed.
Provide raw TTS data outputs in the Appendices;	The 2016 Transportation Tomorrow Survey (TTS) data associated with mode split in the Town of Oakville referenced in Section 5.3.4 on page 31 and associated with trip distribution referenced in Section 5.4 on page 34 is provided in Appendix G of the WSP 2021 Response Letter.
Adjust background growth rates using 3.0 percent in the first year and 4.0 percent in all subsequent years as outlined in Section 6.2 and results must be updated accordingly;	As documented in Section 6.2 a through traffic growth rate of 3.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff, between 2020 and 2021. Subsequent to 2021, a growth rate of 4.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff. The traffic growth along Tremaine Road was distributed along Dundas Street West based on the existing trip distribution at the study intersection. Background growth rates were correctly applied as documented in Section 6.2 and figures 6-5 to 6-8. For additional clarifications of figures 6-5 to 6-6, as part of this response WSP prepared the figures in Appendix H of the WSP June 2021 Response Letter to show how traffic growth was derived between 2020 and 2021, 2021 to 2025. Since the growth rates were correctly applied, it is our opinion that the analysis does not require to be updated.
Provide alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West;	The alternate parallel routes for redistributed traffic from Bronte Road are: — Appleby Line — Tremaine Road — Third Line — Sixth Line

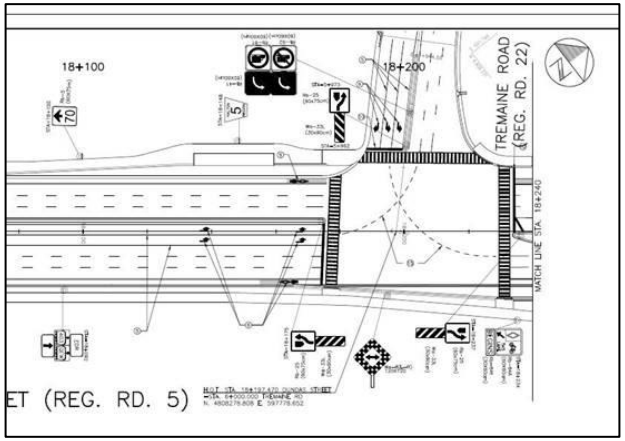
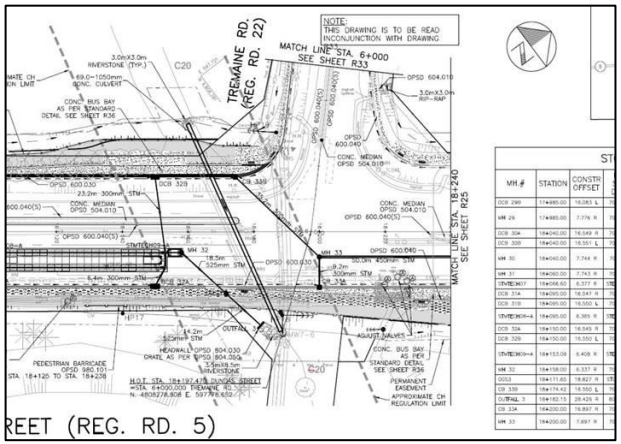
Region of Halton	WSP Response
	The alternate parallel routes for redistributed traffic from Dundas Street West are: — Highway 407 — Upper Middle Road West — Highway 403
Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.	WSP completed the SimTraffic analysis for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2 and Phase 2A. The estimated average and 95th percentile queues for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2 and recommended storage lengths are provided in Table 1 of the WSP June 2021 Response Letter. The estimated average and 95th percentile queues for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2A and recommended storage lengths are provided in Table 2 of the WSP June 2021 Response Letter. The SimTraffic reports are provided in Appendix I of the WSP June 2021 Response Letter.
Agreements/Permits: The owner will be required to enter into a Subdivision Agreement through the Development Project Manager) for the completion of required Works for all development associated road improvements along Dundas Street and/or at any new intersections. The owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.	Acknowledged.
Finance: The Owner will be required to pay all applicable Regional Development Charges in accordance with the Region of Halton Development Charge By-law(s), as amended. Please visit our website at https://www.halton.ca/The-Region/Finance-andTransparency/Financing-Growth/Development-Charges-Front-ending-RecoveryPayment to obtain the most current Development Charge and Front-ending Recovery Payment information, which is subject to change.	Acknowledged.

Region of Halton	WSP Response
The proposed lane configurations at Avenue Two do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will not accommodate the proposed right / right-left / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / right-left / left configuration. There may be additional property required to add a south bound turn lane. The west side of the north leg is quite close to the property line that we have on our property plans. If we can shift the north leg it may be able to accommodate the additional south bound lane.   	WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.

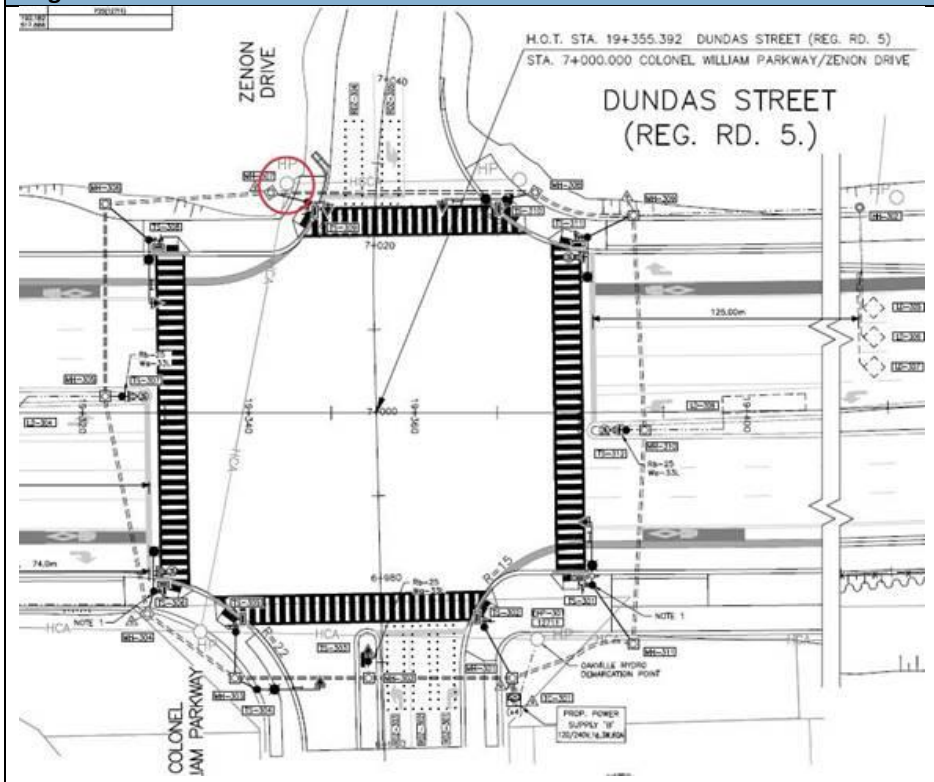
Region of Halton	WSP Response
The proposed lane configurations at Avenue Three do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / through / left configuration. The available property seems to accommodate the extra SB Lane; however, there may be impacts on the bus bay at this location.   	WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.

Region of Halton	WSP Response
The proposed lane configurations at Avenue Five do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the through-right / left / left configuration. Impacts on the 3111 Dundas should be manageable if an additional SB lane is added to the north leg. It appears to be far enough east to accommodate an additional lane.  	WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.
Based on the above assessment, we kindly request confirmation of the proposed intersection configurations so that we can ensure that we have made the correct provisions in the contract package to minimize the potential for throw away and/or rework. To adjust the north intersection legs to match the configurations shown in the Transportation Impact Study, we will need to make some geometric revisions and electrical modifications to adjust our current design plan to match.	WSP acknowledges Stantec's comment and confirms that we recommend the intersection configurations documented in the TIS.

Region of Halton	WSP Response
We also wanted to highlight that the Transportation Impact Study recommends changes to the boundary road network to improve 2025 traffic operations following the implementation of the Phase 1 development, including the following (See TIS, pg. 73 and pg. 93): Dundas Street at Tremaine Road: • Modify the existing permissive southbound right-turn movement to provide a free channelized right turn lane along with an additional receiving lane on Dundas Street West that would taper off. Channelized southbound right-turn lane at the intersection of Dundas Street West and Tremaine Road with additional receiving lane at the west leg of the intersection - $279,500 Dundas Street at Bronte Road: • Introduce a dual southbound left-turn movement. Conversion of the existing single southbound left-turn lane to double left-turn lanes at the intersection of Dundas Street West and Bronte Road - $45,500 • Introduce an exclusive westbound right-turn lane. Addition of an exclusive westbound right-turn lane at the intersection of Dundas Street West and Bronte Road - $270,400	WSP recommends that these recommendations be adopted and included as part of the Dundas Street widening Phase 2 contract.
The implementation of a channelized right turn movement at Tremaine Road would have implications to the current design plan (please see excerpts from the current new construction and pavement marking/signing plans for reference). Shifting and widening the alignment of the NW intersection radius to the west to accommodate a channelized refuge island would also shift the bus bay and realigned culvert C20 to the west and the addition of a WB receiving lane would shift these elements to the north including a longer Culvert C20. This may also trigger additional and/or revised permits from CH. Additional property would be required from the Evergreen development in the NW quadrant to allow for the incorporation of a channelized refuge island if the current horizontal alignment of Tremaine Road is maintained. There is also a large hydro pole located in the NW quadrant that would be impacted. Moving this hydro pole could prove problematic and very expensive. There is a large number of circuits and lines attached. This is also an area where Burlington and Oakville hydro transitions so there may be potential impacts on the SE corner of Dundas and Tremaine.	As a sensitivity analysis, WSP modelled the intersection without the free channelized lane. The Synchro and Sim Traffic reports are provided in Appendix J of the WSP June 2021 Response Letter. It was found that in the PM peak period of both the Phase 2 and 2A scenarios, the intersection without the free channelized lane would operate significantly over capacity (overall intersection V/C ratio of 1.42 or higher). In fact, the southbound right lane is expected to experience significant delays (+10 minutes) and be severely congested (V/C ratios of 2.25 or higher). The average and 95th percentile queues for the southbound approach is expected to extend beyond 250 metres, which will block the intersection of Burnhamthorpe Road and Tremaine Avenue. The free channelized lane and additional receiving lane will provide the southbound right turn lane more capacity at the intersection. As shown in the Phase 2 and 2A models with the channelized lane, the intersection and all movements operate within capacity at acceptable levels of service. The southbound right movement is expected to operate at

Region of Halton	WSP Response
 	V/C ratios of 0.77 or less and experience 3 seconds delays or less during both the AM and PM peak periods. The expected queues on the southbound approach are still expected to be long and may extend past Burnhamthorpe Road and Tremaine Avenue, however the queues are slightly shorter with the channelized lane compared to without it. Therefore, WSP recommends providing a free channelized southbound right turn lane at the intersection with an additional receiving lane on Dundas Street that tapers off. WSP recommends that this improvement be implemented through the Dundas Street widening Phase 2 contract.
Electrical Design Moon Matz has completed the electrical design for Dundas Street Phase 2 Detail Design. The design includes the north leg of the proposed intersections for Avenues Two, Three, and Five based on the road design noted above. At Avenue Two, the traffic signal design consists of underground provisions for future traffic signals only. If the signal design is required now, we would need to	WSP acknowledges these comments that the electrical design for traffic signals and illumination will need to be revised to match the intersection configurations recommended in the TIS and that tThe traffic signals at the new Street 'A' intersection will need to be coordinated with the signals at the Dundas Street / Tremaine Road intersection.

Region of Halton	WSP Response
update the design to accommodate it. In addition, if we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated. At Avenue Three, the traffic signal design includes the full layout since Zenon Drive is currently an active roadway north of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated. At Avenue Five, the traffic signal design includes the full layout at existing Valleyridge Drive, which is currently an active roadway south of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated. If we need to accommodate the differences in north leg lane configuration noted in the above Road Design comments, we will need to revisit and update the electrical design for traffic signals and illumination to match the geometric changes to ensure that the pole and associated underground structures are in the correct location. The temporary traffic signal layouts will need to be reviewed to confirm that the temporary pole location locations can accommodate any geometric changes required to the north approach legs at these three intersections. The traffic signals at the new Street 'A' intersection will need to be coordinated with the signals at the Dundas Street / Tremaine Road intersection.	
Utilities The addition of a third lane to the north approach leg at Avenue Three (Zenon Drive) will conflict with the position of an Oakville Hydro pole in the NW quadrant of the intersection. Please see screenshot below. Oakville Hydro has completed their design for Dundas Street Phase 2 Detail Design. Changes to the pole location should ideally be made now to avoid a future relocation.	WSP acknowledges these comments. For the reasons documented in Response #16 in the WSP June 2021 Response Letter, WSP recommends providing a free channelized southbound right turn lane at the intersection with an additional receiving lane on Dundas Street that tapers off. WSP recommends that this improvement be implemented through the Dundas Street widening Phase 2 contract.

Region of Halton	WSP Response
 The addition of a channelized right turn lane to the north approach leg at the Dundas Street West / Tremaine Road intersection would impact a large hydro pole located in the NW quadrant that may require relocation.	

MEMO

TO: Robert Thun, Town of Oakville

FROM: WSP

SUBJECT: **Response to Comments on Interim Partial EIR/FSS September 2018 (24T-11001/1333) 7th Submission - 3269 and 3271 Dundas Street West Town of Oakville Development Engineering Comments (January 26, 2021)**

DATE: **March 23, 2021**

Development Engineering	WSP Response
Development Engineering Staff have reviewed the updated EIR/FSS document and wish to offer the following comments. Staff have comments remaining that can be addressed through conditions of draft plan approval. Staff also have minor comments remaining related to edits for the final EIR. For the purposes of tracking comments over time, the status of items discussed over the various submissions has been summarized using the original comment numbering systems for responses to Development Engineering comments since May 11, 2012:	
3. Interim drainage conditions: Staff had concerns regarding interim drainage conditions as these will likely be a "long term condition" scenario. Staff required further details to confirm SWMP design sizing has considered the interim conditions appropriately, as well as details on impacts to flow regime, timing of diversion and pond operations during these conditions. These comments have been addressed. Lands to the west have been included in sizing of Pond 2 for interim phases, but excluded for the ultimate condition. Staff note continued coordination with the adjacent landowners is needed.	These comments have been addressed.
5. Erosion Threshold: Staff expressed concerned with the analysis supporting the erosion threshold work including the selection of sensitive reaches, as well as, methods to analyze the flow duration, frequency and erosion index values. Staff required justification for the proposed changes to erosion threshold exceedances. This work was peer reviewed. Staff are comfortable moving forward given that a robust monitoring program will be required to support this work.	Noted with thanks.

Development Engineering	WSP Response
6. Location and Size of Stormwater Management Ponds: Staff requested further details for all ponds within the EIR catchments, including grading, cross sectional, stage/storage, drawdown, key elevations, outlet configurations, operations and tailwater analyses information. These details have been provided for all stages/phases of development, including figures and schematics. Continued coordination with the Region regarding drainage from Dundas Street is required. For consistency and to avoid confusion through detailed design, please update the Regional flood elevation for Pond 3 on Figure D3 to be inserted into the Final EIR.	The Regional Flood Elevation in Figure D3 for Pond 3 has been updated and included in this submission.
7. Grading Plan: Several iterations of updates for a fulsome grading plan have occurred that provide sufficient information to ensure block sizing is adequate. Access to the NHS has been demonstrated via the partial submission of December 2019. As discussed, a condition of draft plan approval will be to provide updated sections to demonstrate access between the two channels, 14W-16 and 14W-22 to the satisfaction of the town prior to site alteration. See comment **15** below regarding concern that grading is shown within the transit way along 14W-21.	Noted. We will demonstrate access between the two channels prior to site alteration.
8. Storm Drainage Plan Details: Staff requested updates to the proposed storm drainage plan, as well as additional details regarding the proposed infiltration trenches for all phases of development. These details have been provided. With respect to the holdout property just upstream of FM-D3, a binding agreement with the current owner was provided by Quadreal.	This comment has been addressed.
9. SWM Plan Components: Staff requested further details on proposed infiltration galleries and supplemental system for 14W-12A. These details were provided. As discussed, the subdivision agreement will speak to the infiltration systems and requirement to construct, operate and maintain. The agreement will also speak to the stormwater system to supplement 14W-12A, including that all infrastructure associated with the system should be located within a town-owned block, or if possible within a right of way. These details should remain part of the letter of commitment to carry through to detailed design throughout the phasing plan	This comment has been addressed. The relevant requirements will be included in the subdivision agreement.
16. Monitoring Program: A detailed monitoring program will be required at the engineering design stage and should be prepared in accordance with “The Town of Oakville Stormwater Monitoring Program” for ponds located in North Oakville.	Noted. A detailed monitoring program will be provided at the engineering design stage.
17. Trails Impact Assessment: Staff appreciate the updated drawings and cross-sections that provide details on the implementation of infiltration swales and grading requirements adjacent to trails.	Figure 3.3 has been updated and is included in this submission.

Development Engineering	WSP Response
Figure 3.3 of the EIR/FSS requires updating to reflect the revised trail system so that it matches that shown on the grading plan.	
19. Thermal Mitigation: The proposed SWMPs will have deeper permanent pools as per direction from MNRF. Thermal trenches at pond outlets were discussed, however they would require on-going maintenance within the valley along a reach that is considered red side dace habitat. As discussed, a condition of draft plan approval will be that opportunities to enhance thermal mitigation be considered through detailed design.	Additional thermal mitigation measures will be considered through detailed design.
21. Road Network and Servicing: Comments related to the road network and servicing were provided from Development Engineering under separate cover. Confirmation is needed to confirm these comments have been addressed.	Our understanding is that these comments have been addressed.
13. Viability of Proposed Block P1: The frontage for this block will be at minimum 15 m.	The frontage of Block P1 is greater than 15m.
22. Commitment Table: A section has been included within the EIR that provides a commitment table summary. This summary includes conditions and items to work through during detailed design and provides guidance of next steps through detailed design to implementation. The summary tables for the stormwater plan (infiltration trenches, supplement system to 14W-12A and ponds) is part of this section. The commitment table was provided in the sixth submission.	Noted.
24. 407 Corridor Drainage: The proposed location of the corridor for 14W-21 has been shifted south of the transit way corridor. However, minor grading is shown within the transit way in this area. A revised draft plan is required that removes any grading proposed within the transit way corridor. A condition of draft plan approval will be that further details of the design for 14 W-21 can be considered through detailed design.	There is no grading proposed in the 407 transitway corridor. The draft plan has been revised accordingly.
25. NEW- Draft Plan: The dimensions shown on the draft plan to describe the width of Open Space/NHS Blocks 12 and 13 at Avenue Three are conflicting. A revised draft plan is required to properly label these dimensions.	A dimension has been added to the Draft Plan to provide clarity to the width of the Open Space/NHS Blocks.
26. NEW- CH Comment 76 (Schreiner:Thun, January 22, 2021): Staff are in agreement that the proposed NHS Blocks should be able to accommodate the additional flows from the larger Highway 407 Transitway.	The Stormwater Management Plan and model will be updated through detailed design of Phase 1 and as the project progresses through each phase of development.

Development Engineering	WSP Response
As such, a condition of draft plan approval will be that the GAWSER model and Stormwater Management Plan be updated to reflect these changes through detailed design of Phase 1. Updates to the GAWSER model and revisiting of the Stormwater Management Plan are required as needed, through each phase of development.	
27. Staff request that the updates noted above be made for the final EIR/FSS (updates can be inserted). Staff request a consolidated response table for all comments for our records. Items that have been noted to be dealt with through detailed design will be addressed through draft plan conditions.	We have provided the updated Draft Plan and components of the EIR/FSS with this submission.
Via Email: With respect to the surface water compensation to support 14W-12A (the hook), a prescriptive plan has been provided within the commitment table for drainage areas needed to support the system for various phases. While the block required to contain the infrastructure has been shown on the stormwater figures, it has not been included on the draft plan. Recognizing that it is unknown how the larger blocks will be subdivided into lots, the town-owned block needs to be shown with minimum 6 m width on the draft plan as per the stormwater figures, for red line revision after with the note “schematically shown subject to land division process”. Please adjust the draft plan.	As per the email from Kristina Parker on October 4, 2021, the Town has not requested the addition of a block for this infrastructure. We have therefore not updated the Draft Plan to include this block and this will be addressed through a holding provision.

QUADREAL PROPERTY GROUP

407 WEST EMPLOYEMENT AREA, LAZY PAT FARMS

TRAFFIC IMPACT STUDY - RESPONSE TO COMMENTS

June 30, 2021

June 30, 2021

QuadReal Property Group
Commerce Court West
199 Bay Street, Suite 4900
P.O Box 373
CC Postal Station
Toronto, Ontario M5L 1G2

Attention: **Michael Reel, Vice President, Investment Management**

Subject: **Transportation Impact Study – Response to Comments – Lazy Pat Farms Property (3269 and 3271 Dundas Street West)**

Dear Mr. Reel,

In August 2020, WSP submitted a Transportation Impact Study Update related to the proposed development located north of Dundas Street West and mid-block between Bronte Road and Tremaine Road at 3269 and 3271 Dundas Street West, in the Town of Oakville.

Following the submission, Halton Region provided comments on the study in a letter dated January 13, 2021 and in an e-mail dated April 19, 2021 (see Appendix A). WSP provided the Region with some additional details associated with the comments and asked for clarifications on several comments before proceeding with preparing this response letter. The Region provided clarifications via e-mail on April 9, 2021, June 3, 2021 and June 7, 2021 (see Appendix B).

Halton Region transportation related comments and WSP responses are provided below.

The responses to transportation comments are also provided in a separate response matrix prepared by WSP Planning, Landscape Architecture and Urban Design (PLAUD) where responses are provided to comments from all disciplines.

JANUARY 13, 2021 COMMENTS

Comment #1:

Section 173(8) of the ROP states that the Region and the Local municipalities will work together to control access to Arterial Roads in accordance with Council adopted access 10 management policies. On Map 3 of the ROP, Regional Road 5 (Dundas Street) is defined as Major Arterial road.

In considering development applications, the ROP further requires that the proponent for any development considered to have a transportation impact prepare a detailed transportation study to assess the impact of the proposal and to recommend necessary improvements is required. In addition, the ROP provides direction to restrict access to Major Arterial Roads, and require land dedication for road widening and daylight triangle purposes as defined by the ROP. The following comments are provided in relation to the materials provided as part of the above noted development resubmission.

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WSP Response #1:

Acknowledged.

Comment #2:

The updated timing of Halton's capital works, is as follows (all timing subject to change):

a) *Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Bronte Road - Q2 2022 to Q4 2024*

b) *Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Appleby Line - Q3 2020 to Q3 2023*

c) *Bronte Road Widening - 4 to 6 lanes from Speers Road to Derry Road - 2025 to 2027*

d) *William Halton Parkway - 2 to 4 Lanes Widening from Old Bronte Road to Hospital Gate - Q2 2023 to Q4 2023*

e) *Tremaine Road - 2 to 4 lane widening from Dundas Street to Lower Base Line - start of construction 2024*

WSP Response #2:

a) Acknowledged.

b) Acknowledged.

c) Acknowledged.

d) Acknowledged.

e) Acknowledged.

Comment #3:

Any lands within 25 metres of the centre line of the original right-of-way of Dundas Street (Regional Road 5) that are part of the subject property shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The applicant is to provide confirmation that the proposed widening blocks on the plan would achieve the Region's road widening requirements (including those set out in the Dundas Street EA and as part of the Dundas Street widening project).

WSP Response #3:

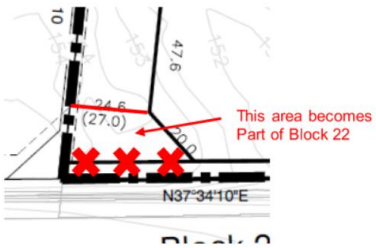
A figure is provided in Appendix C, which shows that the property line is 27m from the centre line of the original right-of-way of Dundas Street (Regional Road 5). The proposed road widening for Dundas Street as provided by the Region is shown as the proposed property line for the subject property.

The property line is beyond the 25 m from the centre line of the original right-of-way of Dundas Street (Regional Road 5). Therefore, the proposed property line achieves the Region's road widening requirements – the Dundas Street EA requirements and the Official Plan / Transportation Master Plan requirements.

Comment #4:

Daylight triangles measuring 15 metres along Dundas Street (Regional Road 5) and 15 metres along Street "Avenue Two" shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The daylight triangle on the most current draft plan (May 2020) appears to be insufficient in size. The owner shall submit a revised plan that indicates the correct size of daylight triangle (and demonstrate with a dimensioned drawing that the above-noted requirement is achieved).

In addition, the Region's jurisdiction at an intersection extends to the end of the daylight triangle. As such the road widening block (Block 22) and extent of Avenue Two need to be revised to reflect this as follows:



WSP Response #4:

Due to the intersection angle of 84 degrees the daylight triangle has been revised to 16.8m by 15.0m along the proposed streetline for Avenue 2 and the proposed road widening for Dundas Street as shown in Appendix C. The hypotenuse of the daylight triangle is 21.2m. Based on Transportation Association of Canada (TAC) Geometric Design Guide intersection angles should be between 70 and 110 degrees. The proposed intersection angle of 84 degrees is acceptable.

Comment #5:

Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street Corridor Improvements Brant Street (Regional Road 18) to Bronte Road (Regional Road 25) Municipal Class Environmental Assessment Study/Environmental Study Report, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

WSP Response #5:

Acknowledged.

Comment #6:

Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street from Bronte Road (Regional Road 25) to Appleby Line (Regional Road 20) Detailed Design Project, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

The plan of subdivision has been circulated to the Project Team (Project Manager, Jennifer Trimble, Public Works) for the Dundas Street widening/reconstruction project for review and comment. They will advise with regard to any additional requirements or impacts (e.g. additional right-of-way, easements, swm impacts). Additional comments will be provided once received.

WSP Response #6:

Acknowledged. Additional comments were provided on April 19, 2021. The comments and responses are provided towards the end of this letter (comment 11 onwards).

Comment #7:

All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or their designate.

Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property).

The location of the future intersection to Dundas Street must be in accordance with the approved North Oakville West Secondary Plan.

WSP Response #7:

Acknowledged.

Comment #8:

The Transportation Impact Study (TIS) by WSP dated August 4, 2020, submitted as part of this application review, has been sent out for peer review. The study has been reviewed by CIMA Canada Inc. and comments are provided below:

a) Provide detailed 15-minute TMCs breakdowns and use the same PHF across all existing scenarios;

b) Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;

c) State potential implications if the Burnhamthorpe extension is not completed by 2025 through the Bentall site;

d) Provide raw TTS data outputs in the Appendices;

e) Adjust background growth rates using 3.0 percent in the first year and 4.0 percent in all subsequent years as outlined in Section 6.2 and results must be updated accordingly;

f) Provide alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West;

g) Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.

WSP Response #8:

a) The detailed 15-minute TMC are provided in Appendix D.

WSP calculated the peak hour factor for the AM and PM peak hours for each intersection and used the consistent peak hour factor for existing conditions.

The exception is Dundas Street at Tremaine Road in the PM peak hour where the overall intersection PHF was 0.95. The peak hour factor for the east approach was calculated to be 0.97 and this peak hour factor was applied to the east approach of the intersection as part of the calibration. As shown in Table 4-2 of the report, the resulting westbound through V/C was 0.99 for the calibrated Synchro model was 0.99. If the overall PHF of 0.95 was used the V/C for the westbound through would increase to 1.01 as shown in Appendix E.

WSP acknowledges that this adjustment to the PHF should have been documented on page 22 of the report.

b) The proposed Phase 2 (2030) lane configuration is provided in Figure 5-2 of the report. The proposed Phase 2A (2030) lane configuration is provided in Figure 5-3 of the report. The estimate 95th percentile queue lengths and recommended storage lanes are provided in the response to comment 8 g) in this letter.

The intersection improvements, responsibility and the proposed development cost share percentage for each intersection improvement is provided in Appendix F. The cost share percentage for the proposed development was calculated by determining the site traffic percentage relative to the total additional traffic at the intersections from background developments and growth.

In general, the Region would be responsible for the Tremaine Road and Bronte Road widening for which a future EA will be completed. The Region would also be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of improvements along Dundas Street West and roadways connecting to Dundas Street West be completed through the Dundas Street widening Phase 2 contract.

The remaining intersections would be developed as part of the North Oakville West Secondary Plan roadway network.

c) WSP analysis (Figure 5-1) assumed that Burnhamthorpe Road would be constructed between Avenue Two and Avenue 3 by 2025. All site traffic (Figure 5-4 and Figure 5-5) was assigned to Avenue Two. Should Burnhamthorpe Road not be constructed through Bentall lands, Blocks C4-1, C5-1, G5-2 and G5-1 (see Figure 3-1) would not have access to the external roadways unless Avenue 3 is constructed.

d) The 2016 Transportation Tomorrow Survey (TTS) data associated with mode split in the Town of Oakville referenced in Section 5.3.4 on page 31 and associated with trip distribution referenced in Section 5.4 on page 34 is provided in Appendix G.

e) As documented in Section 6.2 a through traffic growth rate of 3.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff, between 2020 and 2021. Subsequent to 2021, a growth rate of 4.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff. The traffic growth along Tremaine Road was distributed along Dundas Street West based on the existing trip distribution at the study intersection.

   Background growth rates were correctly applied as documented in Section 6.2 and figures 6-5 to 6-8. For additional clarifications of figures 6-5 to 6-6, as part of this response WSP prepared the figures in Appendix H to show how traffic growth was derived between 2020 and 2021, 2021 to 2025.

   Since the growth rates were correctly applied, it is our opinion that the analysis does not require to be updated.

f) The alternate parallel routes for redistributed traffic from Bronte Road are:

   - Appleby Line
   - Tremaine Road
   - Third Line
   - Sixth Line

   The alternate parallel routes for redistributed traffic from Dundas Street West are:

   - Highway 407
   - Upper Middle Road West
   - Highway 403

g) WSP completed the SimTraffic analysis for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2 and Phase 2A.

   The estimated average and 95th percentile queues for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2 and recommended storage lengths are provided in Table 1. The estimated average and 95th percentile queues for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes for Phase 2A and recommended storage lengths are provided in Table 2. The SimTraffic reports are provided in Appendix I.

Table 1: Phase 2 (2030) Future Total Traffic Conditions, SimTraffic Queues & Proposed Turn Storage Lengths

Intersection	Movement	AM Peak Hour		PM Peak Hour		[1] Proposed Storage Length (m)
		Average Queue (m)	95th Percentile Queues (m)	Average Queue (m)	95th Percentile Queues (m)	
Tremaine Rd & Avenue One	EBL			1	4	10
	WBL	5	14	91	179	180
	NBL	11	23	11	25	30
	SBL	8	19	11	54	60
Avenue Two & Avenue One	NBL	1	5	4	15	20
Avenue Three & Avenue One	EBR	3	11	10	27	30
	WBL	5	27	19	34	40
	NBL	36	58	11	23	60
	NBR	13	25	3	9	30
Avenue Five & Avenue One	NBL	9	19	4	12	20
Bronte Road & Avenue One	EBL	13	28	64	154	160
	NBL	78	100	25	42	100
	NBL	76	96	33	60	100
	SBR	49	81	8	16	90
Tremaine Rd & Burnhamthorpe Road	EBL			2	7	10
	NBL	15	31	4	15	40
	SBL	7	17	16	58	60
Avenue two & Burnhamthorpe Road	EBL	12	24	4	12	30
	EBR	2	8	6	17	20
	WBL	10	22	19	35	40
	WBR	14	29	8	18	30
	NBL	9	21	7	16	30
	NBR	4	10	7	14	20
	SBL	9	19	27	45	50
	SBR	2	6	6	13	20
Avenue Three & Burnhamthorpe Road	EBL	0	1	4	14	20
	WBL	10	23	11	23	30
	WBR	10	39	1	5	40
	NBL	8	18	12	23	30
	NBR	7	19	11	21	30
	SBL	5	15	20	35	40
Avenue Five & Burnhamthorpe Road	EBL	13	26	9	33	40
	WBL	8	22	15	31	40
	WBR	11	31	7	21	40
	NBL	11	23	6	15	30
	NBR	7	15	13	26	30
	SBL	10	22	38	64	70
	SBR	5	12	10	18	20
Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway	EBL	25	46	63	107	110
	EBR	14	32	143	217	220
	WBL	24	60	68	100	110
	WBR	19	41	63	101	110
	NBL	56	81	15	30	90
	NBL	60	89	18	32	90
	NBR	6	18	1	4	20
	SBL	52	78	75	184	190
	SBL	63	109	172	310	310
	SBR	65	107	15	66	110
Avenue Two & Street Four	WBL	7	13	14	19	20
	NBR	4	14	3	12	20
Dundas Street West/Dundas St W & Tremaine Rd	EBL	99	133	55	80	140
	EBL	108	146	62	87	150
	WBR	22	42	40	98	100
	SBL	43	66	13	34	70
	SBL	45	68	145	326	330
	SBR	18	50	254	258	260

Table 1: Phase 2 (2030) Future Total Traffic Conditions, SimTraffic Queues & Proposed Turn Storage Lengths

Intersection	Movement	AM Peak Hour		PM Peak Hour		[(1)] Proposed Storage Length (m)
		Average Queue (m)	95th Percentile Queues (m)	Average Queue (m)	95th Percentile Queues (m)	
Dundas St W & Avenue two	EBL	17	30	19	36	40
	WBR	9	21	10	20	30
	SBL	5	14	31	50	60
	SBR	3	9	30	53	60
Colonel William Pkwy/Avenue Three & Dundas St W	EBL	19	37	15	30	40
	EBR	12	24	6	15	30
	WBL	10	22	17	31	40
	WBR	18	33	16	38	40
	NBL	19	36	46	68	70
	NBR	24	46	10	28	50
	SBL	22	43	66	80	80
	SBR	2	8	24	51	60
Valleyridge Dr/Avenue Five & Dundas St W	EBL	25	69	8	19	70
	EBR	14	65	4	12	70
	WBL	6	14	7	17	20
	WBR	28	68	9	29	70
	NBL	22	39	13	25	40
	SBL	5	14	32	55	60
	SBL	9	20	46	69	70
Bronte Rd & Dundas St W	EBL	132	196	89	157	200
	EBR	50	102	79	135	140
	WBL	67	147	150	227	230
	WBR	89	104	82	117	120
	NBL	44	81	169	255	260
	NBL	250	322	209	313	330
	NBR	25	59	103	178	180
	SBL	26	48	192	264	270
	SBL	29	83	214	308	310
	SBR	46	128	50	119	130

Note: (1) - Proposed storage lengths are based on the 95th percentile queues, unless noted otherwise. The proposed storage lengths takes the maximum observed 95th percentile queue in the AM and PM peak hours, then rounded up to the nearest 10 metres.

Table 2: Phase 2A (2030) Future Total Traffic Conditions, SimTraffic Queues & Proposed Turn Storage Lengths

Intersection	Movement	AM Peak Hour		PM Peak Hour		[(1)] Proposed Storage Length (m)
		Average Queue (m)	95th Percentile Queues (m)	Average Queue (m)	95th Percentile Queues (m)	
Tremaine Rd & Avenue One	EBL	0	0	1	5	10
	WBL	3	9	14	34	40
	NBL	12	25	9	20	30
	SBL	3	9	3	29	30
Avenue Two & Avenue One	NBL	0	3	2	9	10
Avenue Three & Avenue One	EBR	12	20	58	91	100
	NBL	97	110	26	44	110
Avenue Five & Avenue One	NBL	12	18	2	7	20
Bronte Road & Avenue One	EBL	7	18	42	68	70
	NBL	34	53	10	22	60
	NBL	36	54	8	19	60
	SBR	13	25	4	11	30
Tremaine Rd & Burnhamthorpe Road	EBL	0	0	2	7	10
	NBL	15	34	4	19	40
	SBL	13	26	8	40	40
Avenue two & Burnhamthorpe Road	EBL	15	29	5	13	30
	EBR	2	7	7	15	20
	WBL	12	25	28	52	60
	WBR	28	49	12	25	50
	NBL	9	20	6	15	30
	NBR	8	16	8	16	20
	SBL	15	27	54	83	90
	SBR	2	7	7	15	20
Avenue Three & Burnhamthorpe Road	EBL	27	49	14	50	50
	WBL	11	28	30	54	60
	WBR	62	88	16	53	90
	NBL	14	28	18	35	40
	NBR	15	25	16	31	40
	SBL	12	23	113	172	180
Avenue Five & Burnhamthorpe Road	EBL	57	84	21	62	90
	WBL	23	71	21	42	80
	WBR	56	119	9	38	120
	NBL	19	35	9	21	40
	NBR	7	16	18	34	40
	SBL	8	19	71	101	110
	SBR	11	25	32	64	70
Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway	EBL	33	58	89	140	150
	EBR	7	32	182	234	240
	WBL	36	88	38	69	90
	WBR	38	116	66	104	120
	NBL	92	116	35	55	120
	NBL	95	120	37	57	120
	NBR	8	20	2	8	20
	SBL	106	159	24	41	160
	SBL	135	201	29	46	210
	SBR	79	86	9	25	90
Avenue Two & Street Four	WBL	7	13	14	20	20
	NBR	4	13	3	11	20
Dundas Street West/Dundas St W & Tremaine Rd	EBL	100	135	55	80	140
	EBL	110	150	62	87	150
	WBR	19	42	40	97	100
	SBL	42	63	14	36	70
	SBL	44	65	133	313	320
	SBR	20	53	254	259	260

Table 2: Phase 2A (2030) Future Total Traffic Conditions, SimTraffic Queues & Proposed Turn Storage Lengths

Intersection	Movement	AM Peak Hour		PM Peak Hour		[(1)] Proposed Storage Length (m)
		Average Queue (m)	95th Percentile Queues (m)	Average Queue (m)	95th Percentile Queues (m)	
Dundas St W & Avenue two	EBL	17	32	19	37	40
	WBR	10	23	10	21	30
	SBL	5	13	35	54	60
	SBR	3	9	29	50	50
Colonel William Pkwy/Avenue Three & Dundas St W	EBL	19	35	9	20	40
	EBR	11	22	5	13	30
	WBL	11	24	15	28	30
	WBR	21	39	12	28	40
	NBL	21	40	46	68	70
	NBR	24	44	8	21	50
	SBL	19	38	64	81	90
	SBR	2	8	18	39	40
Valleyridge Dr/Avenue Five & Dundas St W	EBL	41	111	8	18	120
	EBR	15	70	4	12	70
	WBL	5	15	8	17	20
	WBR	14	27	9	26	30
	NBL	22	44	13	26	50
	SBL	6	17	30	54	60
	SBL	9	20	44	66	70
Bronte Rd & Dundas St W	EBL	149	196	83	158	200
	EBR	49	94	76	127	130
	WBL	71	158	125	211	220
	WBR	89	100	81	117	120
	NBL	42	73	137	237	240
	NBL	247	331	224	325	340
	NBR	24	49	108	180	180
	SBL	26	46	182	258	260
	SBL	26	43	189	273	280
	SBR	18	44	50	118	120

Note: (1) - Proposed storage lengths are based on the 95th percentile queues, unless noted otherwise. The proposed storage lengths takes the maximum observed 95th percentile queue in the AM and PM peak hours, then rounded up to the nearest 10 metres.

Comment #9:

The owner will be required to enter into a Subdivision Agreement through the Development Project Manager) for the completion of required Works for all development associated road improvements along Dundas Street and/or at any new intersections. The owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.

WSP Response #9:

Acknowledged.

Comment #10:

The Owner will be required to pay all applicable Regional Development Charges in accordance with the Region of Halton Development Charge By-law(s), as amended. Please visit our website at https://www.halton.ca/The-Region/Finance-andTransparency/Financing-Growth/Development-Charges-Front-ending-RecoveryPayment to obtain the most current Development Charge and Front-ending Recovery Payment information, which is subject to change.

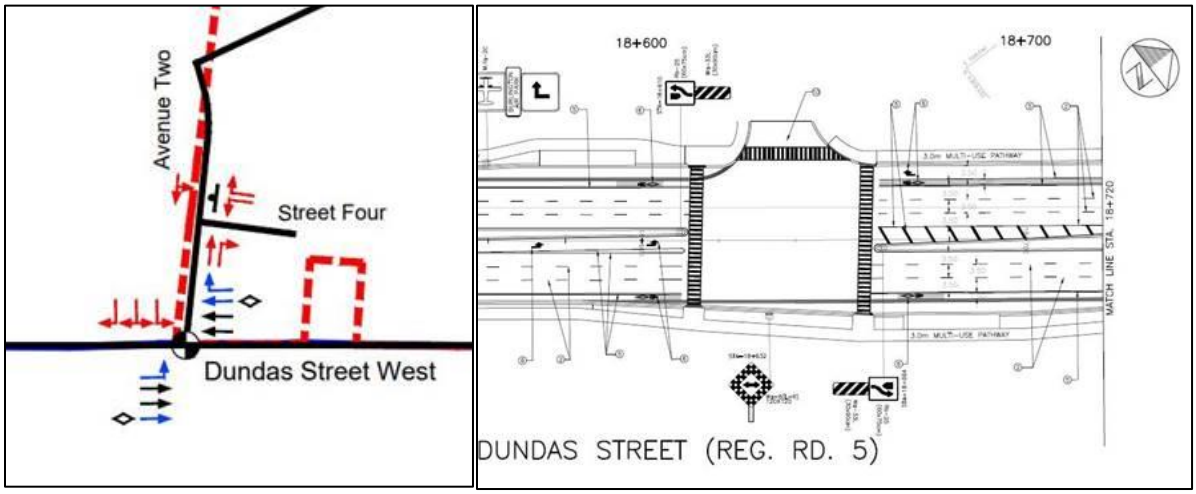
WSP Response #10:

Acknowledged.

APRIL 19, 2021 COMMENTS

Comment #11:

The proposed lane configurations at Avenue Two do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will not accommodate the proposed right / right-left / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / right-left / left configuration. There may be additional property required to add a south bound turn lane. The west side of the north leg is quite close to the property line that we have on our property plans. If we can shift the north leg it may be able to accommodate the additional south bound lane.

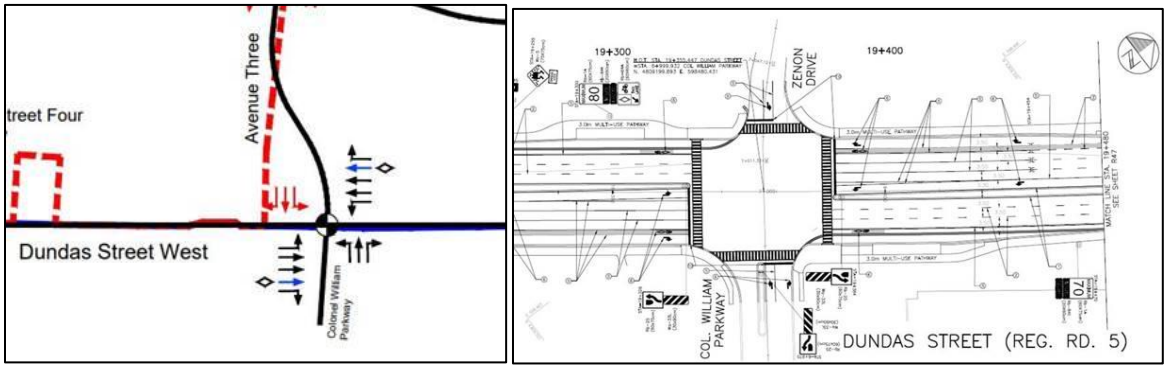


WSP Response #11:

WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.

Comment #12:

The proposed lane configurations at Avenue Three do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / through / left configuration. The available property seems to accommodate the extra SB Lane; however, there may be impacts on the bus bay at this location.

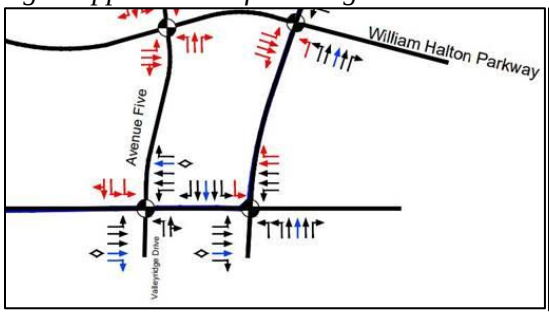


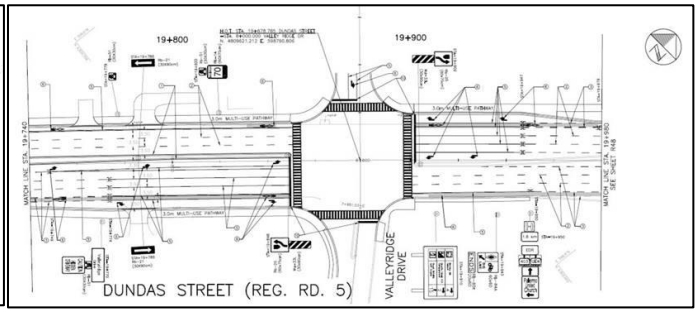
WSP Response #12:

WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.

Comment #13:

The proposed lane configurations at Avenue Five do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the through-right / left / left configuration. Impacts on the 3111 Dundas should be manageable if an additional SB lane is added to the north leg. It appears to be far enough east to accommodate an additional lane.





WSP Response #13:

WSP acknowledges Stantec's comment and recommends that the proposed configuration of the north leg from the TIS be implemented through the Dundas Street widening Phase 2 contract.

Comment #14:

Based on the above assessment, we kindly request confirmation of the proposed intersection configurations so that we can ensure that we have made the correct provisions in the contract package to minimize the potential for throw away and/or rework. To adjust the north intersection legs to match the configurations shown in the Transportation Impact Study, we will need to make some geometric revisions and electrical modifications to adjust our current design plan to match.

WSP Response #14:

WSP acknowledges Stantec's comment and confirms that we recommend the intersection configurations documented in the TIS.

Comment #15:

We also wanted to highlight that the Transportation Impact Study recommends changes to the boundary road network to improve 2025 traffic operations following the implementation of the Phase 1 development, including the following (See TIS, pg. 73 and pg. 93):

Dundas Street at Tremaine Road:

- *Modify the existing permissive southbound right-turn movement to provide a free channelized right turn lane along with an additional receiving lane on Dundas Street West that would taper off. Channelized southbound right-turn lane at the intersection of Dundas Street West and Tremaine Road with additional receiving lane at the west leg of the intersection - $279,500*

Dundas Street at Bronte Road:

- *Introduce a dual southbound left-turn movement. Conversion of the existing single southbound left-turn lane to double left-turn lanes at the intersection of Dundas Street West and Bronte Road - $45,500*

Introduce an exclusive westbound right-turn lane. Addition of an exclusive westbound right-turn lane at the intersection of Dundas Street West and Bronte Road - $270,400.

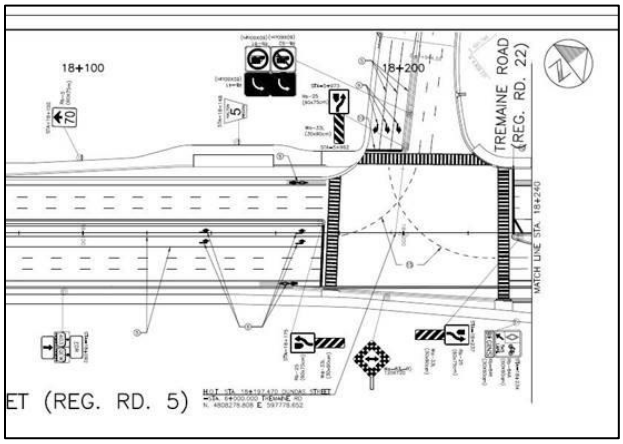
Does the Region of Halton intend to adopt any of these recommendations? If so, does the Region of Halton intend to implement them as separate projects or is there any intention to include them in the Dundas Street widening Phase 2 contract?

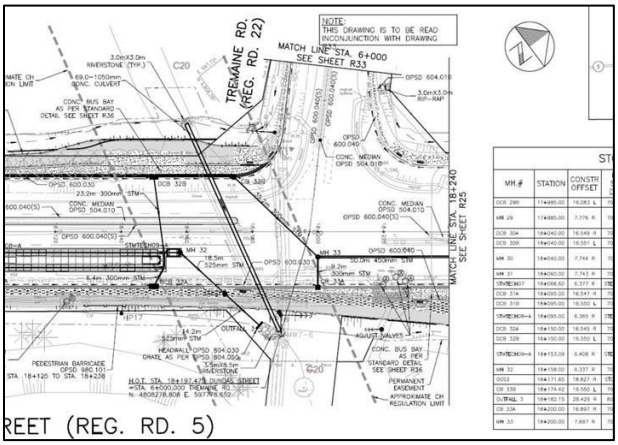
WSP Response #15:

WSP recommends that these recommendations be adopted and included as part of the Dundas Street widening Phase 2 contract.

Comment #16:

The implementation of a channelized right turn movement at Tremaine Road would have implications to the current design plan (please see excerpts from the current new construction and pavement marking/signing plans for reference). Shifting and widening the alignment of the NW intersection radius to the west to accommodate a channelized refuge island would also shift the bus bay and realigned culvert C20 to the west and the addition of a WB receiving lane would shift these elements to the north including a longer Culvert C20. This may also trigger additional and/or revised permits from CH. Additional property would be required from the Evergreen development in the NW quadrant to allow for the incorporation of a channelized refuge island if the current horizontal alignment of Tremaine Road is maintained. There is also a large hydro pole located in the NW quadrant that would be impacted. Moving this hydro pole could prove problematic and very expensive. There is a large number of circuits and lines attached. This is also an area where Burlington and Oakville hydro transitions so there may be potential impacts on the SE corner of Dundas and Tremaine.





WSP Response #16:

As a sensitivity analysis, WSP modelled the intersection without the free channelized lane. The Synchro and Sim Traffic reports are provided in Appendix J.

It was found that in the PM peak period of both the Phase 2 and 2A scenarios, the intersection without the free channelized lane would operate significantly over capacity (overall intersection V/C ratio of 1.42 or higher). In fact, the southbound right lane is expected to experience significant delays (+10 minutes) and be severely congested (V/C ratios of 2.25 or higher). The average and 95th percentile queues for the southbound approach is expected to extend beyond 250 metres, which will block the intersection of Burnhamthorpe Road and Tremaine Avenue.

The free channelized lane and additional receiving lane will provide the southbound right turn lane more capacity at the intersection. As shown in the Phase 2 and 2A models with the channelized lane, the intersection and all movements operate within capacity at acceptable levels of service. The southbound right movement is expected to

operate at V/C ratios of 0.77 or less and experience 3 seconds delays or less during both the AM and PM peak periods. The expected queues on the southbound approach are still expected to be long and may extend past Burnhamthorpe Road and Tremaine Avenue, however the queues are slightly shorter with the channelized lane compared to without it.

Therefore, WSP recommends providing a free channelized southbound right turn lane at the intersection with an additional receiving lane on Dundas Street that tapers off.

WSP recommends that this improvement be implemented through the Dundas Street widening Phase 2 contract.

Comment #17:

Electrical Design

Moon Matz has completed the electrical design for Dundas Street Phase 2 Detail Design. The design includes the north leg of the proposed intersections for Avenues Two, Three, and Five based on the road design noted above.

At Avenue Two, the traffic signal design consists of underground provisions for future traffic signals only. If the signal design is required now, we would need to update the design to accommodate it. In addition, if we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

At Avenue Three, the traffic signal design includes the full layout since Zenon Drive is currently an active roadway north of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

At Avenue Five, the traffic signal design includes the full layout at existing Valleyridge Drive, which is currently an active roadway south of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

If we need to accommodate the differences in north leg lane configuration noted in the above Road Design comments, we will need to revisit and update the electrical design for traffic signals and illumination to match the geometric changes to ensure that the pole and associated underground structures are in the correct location. The temporary traffic signal layouts will need to be reviewed to confirm that the temporary pole location locations can accommodate any geometric changes required to the north approach legs at these three intersections.

The traffic signals at the new Street 'A' intersection will need to be coordinated with the signals at the Dundas Street / Tremaine Road intersection.

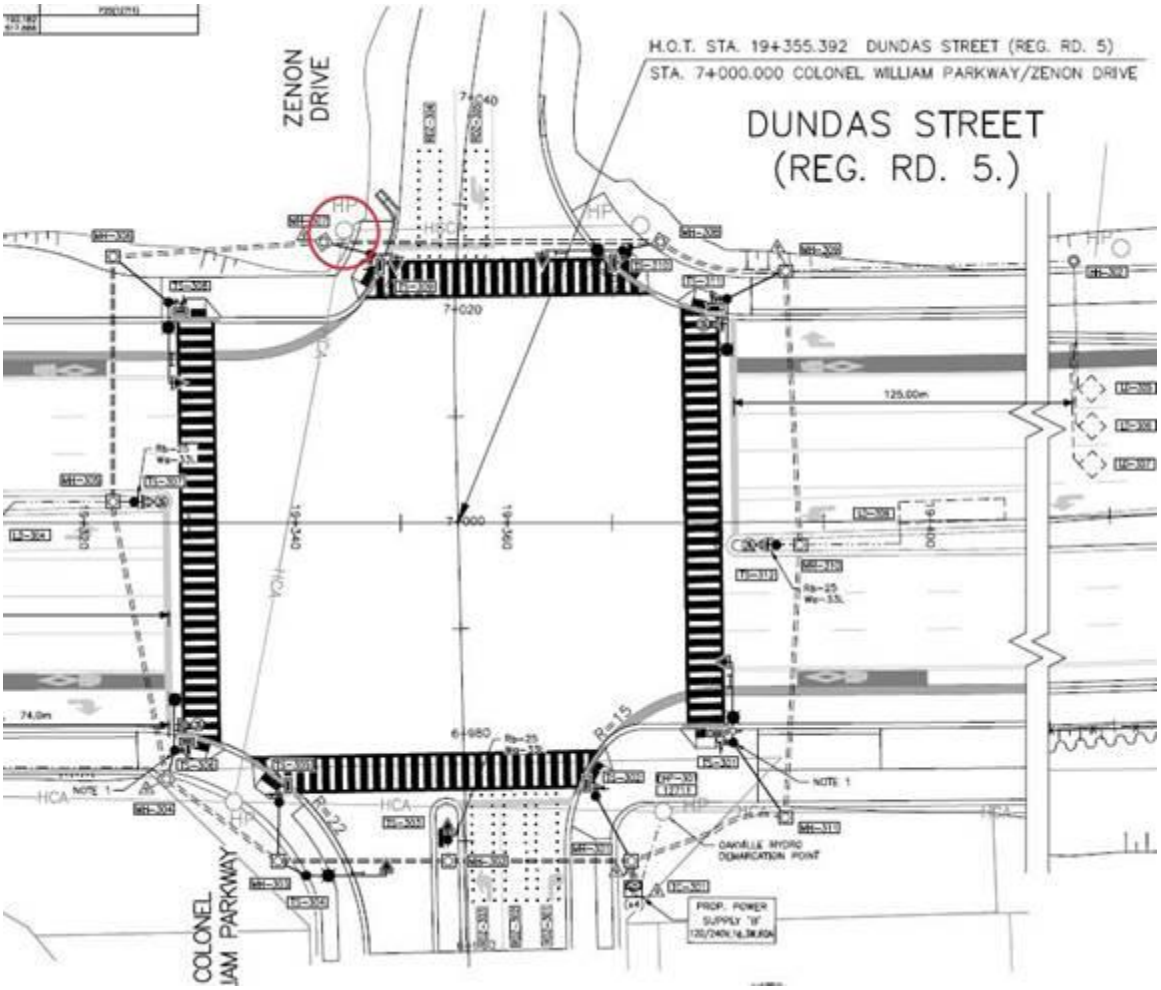
WSP Response #17:

WSP acknowledges these comments that the electrical design for traffic signals and illumination will need to be revised to match the intersection configurations recommended in the TIS and that the traffic signals at the new Street 'A' intersection will need to be coordinated with the signals at the Dundas Street / Tremaine Road intersection.

Comment #18:

Utilities

The addition of a third lane to the north approach leg at Avenue Three (Zenon Drive) will conflict with the position of an Oakville Hydro pole in the NW quadrant of the intersection. Please see screenshot below. Oakville Hydro has completed their design for Dundas Street Phase 2 Detail Design. Changes to the pole location should ideally be made now to avoid a future relocation.



The addition of a channelized right turn lane to the north approach leg at the Dundas Street West / Tremaine Road intersection would impact a large hydro pole located in the NW quadrant that may require relocation.

WSP Response #18:

WSP acknowledges these comments. For the reasons documented in Response #16, WSP recommends providing a free channelized southbound right turn lane at the intersection with an additional receiving lane on Dundas Street that tapers off.

WSP recommends that this improvement be implemented through the Dundas Street widening Phase 2 contract.

We trust that the responses provided in this letter addresses the comments. Should you have any questions about the content of this letter, please do not hesitate to contact us.

Kind regards,

David Lukezic, M.Eng., LEL, RPP
Project Manager
Transportation Planning and Science

Brittany Chung, MASc
Designer EIT

APPENDICES

Appendix A – Halton Region Comments

Appendix B – Halton Region Comment Clarifications

Appendix C – Land Dedication

Appendix D – TMC Data

Appendix E – Synchro Output for Dundas and Tremaine PM with 0.95 PHF

Appendix F – Intersection Improvements, Responsibility and Cost Sharing Percentages

Appendix G – 2016 Transportation Tomorrow Survey Data

Appendix H – Growth Breakdown Between 2020 and 2025

Appendix I – SimTraffic Reports

Appendix J – Dundas Street W at Tremaine Road Sensitivity Analysis

APPENDIX

A HALTON REGION COMMENTS

APPENDIX

APPENDIX

A-1 *JANUARY 13, 2021 COMMENTS*

APPENDIX

Legislative and Planning Services
Halton Region
1151 Bronte Road
Oakville, ON, L6M 3L1
Fax: (905) 825-8822

January 13, 2021

Robert Thun, Senior Planner
Town of Oakville, Planning Services Department
1225 Trafalgar Rd
Oakville, ON L6H 0H3

Re: **Region of Halton Comments -7th Submission**
Proposed Draft Plan of Subdivision and Application to Amend the Zoning By-law
Part of Lots 33 and 34, Concession 11, NDS
File: 24T-11001/1333, Z.1333.01
QuadReal Properties Group/bcIMC Corporation/Bentall
3269, 3271 Dundas St. West

Regional Staff has reviewed revised submission (7th submission) for the above-noted application and provide the following comments. Our last comments were provided in a letter dated April 7, 2020.

The current submission includes the following documents:

- EIR/FSS Complete Report and Appendices, prepared by WSP, dated September 2020;
- Transportation Study Update, prepared by WSP, dated August 4, 2020, and
- Draft Plan of Subdivision, dated May 28, 2020.

The subject applications consist of a draft plan of subdivision for employment and service employment uses which also includes blocks for stormwater management, natural heritage system, park, transitway, road widening blocks and a zoning amendment application to rezone the lands from an Existing Development 'ED' zone to Light Employment 'LE', General Employment 'GE', Service Area 'SA', and other zone categories to implement stormwater management, natural heritage system and park purposes.

It appears the main changes over the previous version of the draft plan include:

- provision of a new Block at the north end of the plan to accommodate right-of-way for the future 407 Transitway with corresponding adjustments to the NHS blocks in the area;
- adjustments to the right-of-way width for Avenue Three in the vicinity of its intersection with the Burnhamthorpe Road Extension. With corresponding adjustments to the adjacent employment blocks
- Slight change in size to Stormwater Management Block 10

Matters of Provincial & Regional Interest:

Provincial Policy Statement and Growth Plan:

Regional Staff has considered the applications in the context of the Provincial Policy Statement, 2020 (PPS) and 2020 Growth Plan (GP) and is of the opinion that these applications will assist in achieving the natural heritage, growth management and employment area policy directions of the Policy Statement and Growth Plan.

Regional Staff is also of the opinion that, subject to the comments contained herein, and once the technical comments identified in this letter have been addressed, the applications will generally be consistent with the PPS and conform to the GP.

Region of Halton Official Plan:

The subject lands are designated as 'Urban Area' and 'Regional Natural Heritage System' within the 2009 Official Plan (ROP). The subject lands are also identified as forming part of the 'Employment Area – Overlay'. Dundas Street is designated a "Higher Order Transit Corridor" on Map 3: Functional Plan of Major Transportation Facilities. Dundas Street is also identified as an "Intensification Area", based on the policies of the ROP.

Urban Area/Employment Area Policies

The policies of Urban Area designation support a range of uses and the development of vibrant and healthy mixed use communities which afford maximum choices for residence, work and leisure. Policy 76 states that the range of permitted uses and the creation of new lots in the Urban Area will be in accordance with Local Official Plans and Zoning By-laws. All development, however, shall be subject to the policies of this Plan.

The Employment Area policies provide for the planning, protection and development of Employment Areas for employment purposes. In addition, the ROP provides for promotion of intensification and increased densities of Employment Areas, where appropriate.

Higher Order Transit/Intensification Policies:

Higher Order Transit corridors are outlined in support of Plan objectives to establish a balanced transportation system that reduces dependency on automobile use and provides for a safe, convenient, accessible, affordable and efficient public transit

system. Intensification Areas are a component of the overall urban structure and are identified as locations where intensification and mixed-uses are to be directed such that they develop into transit-supportive areas with integrated active transportation facilities. Accordingly, the Plan directs Area Municipalities to set out specific policies related to densities, active transportation, transit-supportive urban design and integration with higher order transit, among other matters. It also requires Area Municipalities to promote development densities that support existing or planned transit facilities. (Section 81.7-d).

Regional Natural Heritage System:

Portions of the site are designated as being part of the Regional Natural Heritage system. Policy 116.3 states that within the North Oakville West Secondary Plan Area, the Regional Natural Heritage System will be delineated and implemented in accordance with the decision of the Ontario Municipal Board with respect to Town of Oakville Official Plan Amendment No. 289.

Conservation Halton (CH) staff provides environmental advisory services to the Region and Town in relation to the protection of certain natural heritage features and area and natural hazard land management.

The last comments provided by CH (March 30, 2020) on this file indicated that there are several issues remaining that must be addressed prior to draft plan approval. As the Region is relying on CH for the review of technical matters related to the Natural Heritage System, within the North Oakville West Secondary Plan, the Region requires confirmation that CH is satisfied with respect to the implementation of the Natural Heritage policies of the Region OP and the North Oakville West Secondary Plan prior to providing draft plan conditions and recommending approval.

Site Contamination:

Section 147(17) of the ROP requires that prior to the Region considering any development application proposals, the proponent must identify whether there is any potential for soils on the site to be contaminated. Regional Staff note that the Phase 1 Environmental Site Assessment (ESA) that was provided as part of a previous submission is out of date and will require updating based upon O.reg. 153/04 standards and requirements. Further, among other recommendations, it recommends a limited Phase 2 ESA be undertaken.

Once the Region is ready to issue conditions on this plan, a condition will be imposed to require the submission of a satisfactory Phase 1 and 2 ESA (prior to any site alteration) and to ensure the recommendations are implemented.

Archaeological Resources:

Our previous comments dated April 7, 2020 indicated that our concerns related to archaeological resources had been addressed.

Summary:

Subject to addressing comments by CH related to impacts on the Regional Natural Heritage System and addressing the other technical comments provided in this letter such as those made with respect to environmental site contamination, transportation and servicing, the proposed plan would conform to the policies of the ROP.

Other Matters of Regional Interest:

Water/Wastewater Servicing:

A revised Functional Servicing Study (FSS) was submitted as part of the Environmental Implementation Report (EIR) prepared by MMM Group and WSP (dated September 2020). This report was revised numerous times and these submissions can be summarized as follows:
May 2011
December 2012
November 2014
June 2017
August 2018 (Addendum)
May 2019
September 2020

These servicing comments are based on the review of the latest FSS. Please note that the FSS addresses the servicing of lands well outside the limits of this development and reiterates the concepts and methodology used to service the entire secondary plan area as noted in the Area Servicing Plan (ASP).

The servicing for the western portion of the North Oakville West Secondary Plan (NOWSP) is addressed in the 407 West Employment Area - Area Servicing Plan. The ASP provides the overall servicing plan for the ultimate servicing and infrastructure requirements for this part of the NOWSP.

The existing services in the area of the site are:

Watermain:

- A 1200mm dia. trunk watermain is located on Dundas Street West adjacent to the property.

Sanitary Sewer:

- There are no existing sanitary sewers located adjacent to the property.

Water Servicing:

The FSS proposes to service the development by providing a watermain network to be located within the proposed road network for the subdivision. As part of this network, a 600mm diameter trunk watermain is proposed on Avenue One and local watermains are to be provided on Avenue Two and Avenue Three. This network will be connected to the existing external 1200mm diameter trunk watermain on Dundas Street where Avenue Two and Avenue Three intersect Dundas Street. This proposed water system is in accordance with the ASP.

Please note that the existing 1200mm diameter trunk watermain is located in the southerly boulevard of Dundas Street. When this watermain was constructed, no crossing stubs/connections were provided for or constructed across Dundas Street at the future intersections of Avenue Two and Avenue Three. Valve chambers were provided in the general vicinity of these intersections in order to accommodate these future connections. The developer should consider funding these watermain crossings, and have the Region design, and construct the crossings as part of the Region's Dundas Street road construction project. The applicant may wish to discuss options in this regard with our project team for the reconstruction project.

The proposed 600mm diameter watermain on Avenue One is a DC reimbursable project (ID #5627). The project is not currently included in a current Regional budget.

Should the funding not be available at the time of proceeding with the design and construction of this section of watermain, then the developer will have to front-end the funding of the design and construction of the watermain and be reimbursed in the future once funding becomes available in a Regional budget.

The looping of the watermain system within this subdivision is contingent on watermains that are to be located on the adjacent lands that are both east and west of this subdivision. Avenue Two is located on both the lands of this subdivision and also on the adjacent lands to the west. Avenue Three is located on the lands of this subdivision and also the adjacent lands to the east. The FSS does not address how the watermain system/loop is to be completed by providing the external connections on these adjoining

lands. The timing of the development of the adjacent lands could also be problematic in terms of providing proper watermain looping since it could result in temporary looping connections within the subdivision and/or possible long term temporary dead end watermains.

An external local watermain will be required to be constructed within the north boulevard of Dundas Street in order to service the blocks fronting on this street and also to provide fire protection for these blocks.

The subdivision is located within the Zone 3 pressure zone. The FSS notes that the proposed water system was modeled using the Region's existing hydraulic model. The results show that there are parts of the subdivision that will be located in the lower end of the pressure range in this zone. Consideration may have to be given to providing pressure booster units in the buildings that are located on the lower end of the pressure range.

Water Pressure Zone Realignment:

The Region is currently undergoing a program to realign the water pressure zones in the Region. As part of this program, it is proposed to implement both an interim zone condition and an ultimate zone condition within the Region's water distribution system. The timing of implementing the new pressure zone boundaries may take several years to complete. It is possible that the proposed development may be impacted by the changes to the pressure zones in both the interim and ultimate conditions depending on the timing of the implementation of these changes. Please note that minimum service levels for both water pressure and flow will be maintained throughout the Region during this process. Buildings and units within the development may undergo changes to their water pressure when the zones are changed over from the existing zone to the interim zone and also when the interim zone is changed to the ultimate zone.

The Region requires that the FSS be revised prior to the engineering drawing submission to include water modelling of the development that addresses watermain sizing, flows, pressures, dead-end watermains and the proposed water pressure zone realignment.

Wastewater Servicing:

The FSS notes that the wastewater servicing of this subdivision will be by an internal gravity sewer system that will convey flows to a proposed Regional trunk sanitary sewer that is to be located on Dundas Street West. The flows from this trunk sewer flow eastward to the existing trunk sewer located on Colonel William Parkway.

The Dundas Street sanitary trunk sewer is a development charges project (ID #6911) and it is currently being designed as part of the Region's Dundas Street road reconstruction project. Funding for the construction of this sewer still has to be secured in a Regional budget. The trunk sewer is required to service this development. The status of the funding may impact the timing of this development. In order to have the trunk sewer designed and constructed in advance of the Region funding being available the developer may have to accelerate this project and front end the financing of this project. The developer would then be reimbursed for the cost of this sewer once Regional funding became available. The timing of the construction of the trunk sewer in relation to the timing of the proposed development could be a factor in the development proceeding.

Phasing of the Development:

The FSS notes that this development will be phased in Phase 1A, Phase 1B and Phase 2. Due to this, the servicing of the development will also be phased. Further, it appears that this draft plan of subdivision will proceed prior to the adjacent lands being developed. This is problematic from a servicing perspective since full road connections throughout the entire secondary plan area will not occur at the same time. This will impact the watermain system in the area since it will result in temporary dead-end watermains. The FSS notes that temporary and/or interim watermains may be required for looping. Servicing Plans for the different phases were included in the FSS. The interim watermain proposed can be summarized as follows:

Phase 1A:

- A local watermain is proposed on Avenue Two and a short section of watermain is proposed on Burnhamthorpe Road.
- A temporary watermain is proposed through Block 3 and Block 1 and connects to the existing 1200mm dia. watermain on Dundas Street. This main would eventually be decommissioned and abandoned. This watermain would have to be in a temporary Regional easement.
- This results in a dead-end watermain on Burnhamthorpe Road.

Phase 1B:

- A local watermain would be constructed on the remaining portion of Burnhamthorpe Road that is within the limits of this subdivision. A small portion of local watermain would also be constructed on Avenue Three.
- A temporary local watermain would be constructed southward along the eastern limit of the property and connect to the existing 1200mm dia. watermain on Dundas Street. This watermain would have to be in a temporary Regional easement.
- The temporary watermain that was constructed in Phase 1A within Blocks 3 and 1 would be decommissioned, removed and/or abandoned in this phase.

Phase 2:

- A local watermain would be constructed on a portion of Avenue Three that is north of Burnhamthorpe Road.
- A 600mm dia. trunk watermain would be constructed on the eastern portion of Avenue One.
- A temporary local watermain would be constructed along the eastern limit of the property just south of Avenue One. This watermain would have to be in a temporary Regional easement.
- The temporary watermain that was constructed in Phase 1B along the eastern limit would be decommissioned, removed and/or abandoned in this phase.
- This results in a dead-end watermain on Avenue One.
- A temporary watermain is proposed through Block 7 and would connect to what would be then an existing local watermain on Burnhamthorpe Road. This main would eventually be decommissioned and abandoned. This watermain would have to be in a temporary Regional easement.

The FSS provided no further phases that showed when and how the remaining portion of the proposed 600mm dia. trunk watermain would be constructed and when the remaining temporary watermains constructed in Phase 2 would be decommissioned.

The FSS notes that where temporary looping cannot be provided that a regular flushing program will be required at these dead ends. Temporary flushing hydrants would have to be installed at these dead-ends. This is problematic to the Region since these dead-ends, although temporary, may be in place for long extended periods. The FSS did not address how such a flushing program would be funded and what forces would provide this flushing service. Further, the assumption of the subdivision by the Region could be affected by these temporary dead-ends and hydrants since the Region would not assume these works until the proper and ultimate watermain system is installed according to the ASP.

The FSS is required to be revised to address the temporary looping, dead-end watermains and to demonstrate how the ultimate watermain system is to be constructed.

Reconstruction of Dundas Street:

The Region is planning to reconstruct Dundas Street from Appleby Line to Bronte Road under Project PR-2671B/2672B. The project is currently under design; however, the scope of work for the reconstruction of Dundas Street does not include the design of the local watermain crossings required along Dundas Street. There is a possibility that the trunk sanitary sewer may be added to the scope of work for this project. If the funding for the trunk sewer is delayed then consideration should be given to having the developers in the area provide the front-end financing for these projects in order that they can be included in scope of work for the road reconstruction project.

The local watermain crossings required at Avenue Two and Avenue Three are considered local watermains and are not eligible as DC infrastructure. For these crossings to be included in the scope of work for the reconstruction of Dundas Street, the developer would have to provide the funding to the Region and the Region would construct the crossings on their behalf.

Existing Private Water Well & Septic System Decommissioning:

The FSS did not indicate if there where private wells and/or septic systems located on the property from former use of these lands. Any existing private wells and/or septic systems are to be decommissioned prior to construction commencing on the site. Both existing wells and septic systems, if present on the site are to be decommissioned and removed from the site according to the proper MOE guidelines.

Storm Water Drainage on Regional Roads:

Dundas Street West is adjacent to this subdivision and it is slated for reconstruction and urbanization by the Region. Section 7.8.2 of the FSS addresses storm drainage from the reconstructed Dundas Street being accommodated in SWM Pond 2 that is located in this subdivision and this pond is to be constructed in the first phase of the subdivision (Phase 1A). The FSS indicates that a small section 2.24 ha) of Dundas Street is proposed to drain to Pond 2 in the subdivision. This pond and some of the internal storm sewers in the subdivision will have to be designed to accommodate the storm water drainage from this section of roadway.

Please note that the Region previously had the EIR/FSS peered reviewed in regards to impacts of storm drainage from this development on Dundas Street. In particular, the Region retained MMM Group to review an interim EIR/FSS (date unknown) and they provided their comments to the Region in a memo dated on Dec 14/15. In this memo it was noted that there is a potential for parts of Dundas Street to be in an overtopping condition for a Regional Storm Event in the post development period. The location that this could occur is at Culvert FM-D2 using the existing culvert at this location. This culvert is slated for replacement and upsizing when Dundas Street is reconstructed which is to remove the overtopping issue.

<u>The FSS is to be revised to address the potential overtopping issues on Dundas Street.</u>

Regional Transportation:

Section 173(8) of the ROP states that the Region and the Local municipalities will work together to control access to Arterial Roads in accordance with Council adopted access

management policies. On Map 3 of the ROP, Regional Road 5 (Dundas Street) is defined as Major Arterial road.

In considering development applications, the ROP further requires that the proponent for any development considered to have a transportation impact prepare a detailed transportation study to assess the impact of the proposal and to recommend necessary improvements is required. In addition, the ROP provides direction to restrict access to Major Arterial Roads, and require land dedication for road widening and daylight triangle purposes as defined by the ROP. The following comments are provided in relation to the materials provided as part of the above noted development resubmission.

Halton's Capital Implementation Plan (2018 – 2031):

The updated timing of Halton's capital works, is as follows (all timing subject to change):

- Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Bronte Road – Q2 2022 to Q4 2024
- Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Appleby Line – Q3 2020 to Q3 2023
- Bronte Road - Widening - 4 to 6 lanes from Speers Road to Derry Road -- 2025 to 2027
- William Halton Parkway - 2 to 4 Lanes Widening from Old Bronte Road to Hospital Gate -- Q2 2023 to Q4 2023
- William Halton Parkway -- 4 lanes from Third Line to Neyagawa Boulevard -- Q3 2020 to Q3 2023
- Tremaine Road -- 2 to 4 lane widening from Dundas Street to Lower Base Line -- start of construction 2024

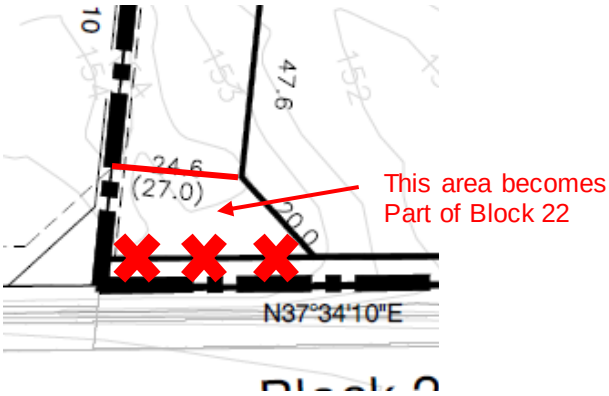
Official Plan/Transportation Master Plan Right-of-Way Requirements:

Any lands within 25 metres of the centre line of the original right-of-way of Dundas Street (Regional Road 5) that are part of the subject property shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The applicant is to provide confirmation that the proposed widening blocks on the plan would achieve the Region's road widening requirements (including those set out in the Dundas Street EA and as part of the Dundas Street widening project).

Daylight triangles measuring 15 metres along Dundas Street (Regional Road 5) and 15 metres along Street "Avenue Two" shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The daylight triangle on the most current draft plan (May 2020) appears to be insufficient in size. The owner shall submit a revised plan that indicates the

correct size of daylight triangle (and demonstrate with a dimensioned drawing that the above-noted requirement is achieved).

In addition, the Region's jurisdiction at an intersection extends to the end of the daylight triangle. As such the road widening block (Block 22) and extent of Avenue Two need to be revised to reflect this as follows:



Municipal Class Environmental Assessment Study/Environmental Study Report (Transportation Planning) Right-of-Way Requirements – Dundas Street:

Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street Corridor Improvements Brant Street (Regional Road 18) to Bronte Road (Regional Road 25) Municipal Class Environmental Assessment Study/Environmental Study Report, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

Detail Design Project (Engineering & Construction) Right-of-Way Requirements – Dundas Street:

Any additional lands that are part of the subject property and have been identified as required for the future widening and of Dundas Street (Regional Road 5), as identified in the Dundas Street from Bronte Road (Regional Road 25) to Appleby Line (Regional Road 20) Detailed Design Project, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

The plan of subdivision has been circulated to the Project Team (Project Manager, Jennifer Trimble, Public Works) for the Dundas Street widening/reconstruction project for review and comment. They will advise with regard to any additional requirements or impacts (e.g. additional right-of-way, easements, swm impacts). Additional comments will be provided once received.

Other Comments:

All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or their designate.

Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property).

The location of the future intersection to Dundas Street must be in accordance with the approved North Oakville West Secondary Plan.

Transportation Impact Study:

The Transportation Impact Study (TIS) by WSP dated August 4, 2020, submitted as part of this application review, has been sent out for peer review. The study has been reviewed by CIMA Canada Inc. and comments are provided below:

- Provide detailed 15-minute TMCs breakdowns and use the same PHF across all existing scenarios;
- Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;
- State potential implications if the Burnhamthorpe extension is not completed by 2025 through the Bentall site;
- Provide raw TTS data outputs in the Appendices;
- Adjust background growth rates using 3.0 percent in the first year and 4.0 percent in all subsequent years as outlined in Section 6.2 and results must be updated accordingly;
- Provide alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West;
- Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.

Agreements/Permits:

The owner will be required to enter into a Subdivision Agreement through the Development Project Manager) for the completion of required Works for all development associated road improvements along Dundas Street and/or at any new intersections. The owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.

Finance:

The Owner will be required to pay all applicable Regional Development Charges in accordance with the Region of Halton Development Charge By-law(s), as amended. Please visit our website at *https://www.halton.ca/The-Region/Finance-and-Transparency/Financing-Growth/Development-Charges-Front-ending-Recovery-Payment* to obtain the most current Development Charge and Front-ending Recovery Payment information, which is subject to change.

Conclusion:

We require that the following matters be addressed before we are in a position to provide conditions of draft approval:

- Receipt of a satisfactory FSS. In particular, the FSS is required to be revised to address the temporary looping, dead-end watermains and to demonstrate how the ultimate watermain system is to be constructed. We are not in support of the dead-end watermains as proposed.

- Receipt of a satisfactory Transportation Impact Study.

- Confirmation from CH that the matters identified to be fulfilled in advanced of draft plan approval in correspondence dated March 30, 2020 have been satisfactorily resolved.

- That a revised draft plan of subdivision be submitted that correctly reflects the daylight and property dedication requirements and that the split between Region and Town jurisdiction at the Avenue Two/Dundas Street intersection is depicted as per the comments in this letter. Receipt of comments from Public Works in regard to the Dundas Street project is required in this regard.

It is recommended that the applicant not resubmit the draft plan until comments from our Capital Works group regarding the Dundas Street project are received in order that their comments can be incorporated into the plan/resubmission.

Finally, the owner may wish to engage in discussions with our Public Work Dundas Street capital project team regarding co-ordination/funding of works identified in this letter such as the Dundas Street local watermain crossings and the Dundas Street local watermain extension.

I trust these comments are of assistance to you. Should you have any questions or require additional information, please do not hesitate to contact me directly at (905) 825-6000, extension 7060.

Sincerely,

Bernie Steiger, MCIP RPP
Senior Planner

c: Ron Mackenzie, Development Project Manager, Halton Region (via email)
Matt Krusto, Transportation Coordinator, Halton Region (via email)
Jennifer Trimble, Senior Project Manager, Halton Region (via email)
Laura Schreiner, Conservation Halton (via email)
Rebecca Tannahill, WSP (by email)

APPENDIX

A-2 APRIL 19, 2021 COMMENTS

APPENDIX

Lukezic, Dave

From: Tannahill, Rebecca
Sent: Monday, April 19, 2021 2:15 PM
To: Lukezic, Dave; Williams, Alex
Cc: Tyrrell, Chris
Subject: FW: Quadreal -Region Capital Comments. 24T-11001_1333. Z.1333.01

Hi Dave & Alex,

Just received this from Halton – please let me know if you'd like to discuss.

Thanks,

Rebecca

Rebecca Tannahill, MES PL., MCIP, RPP
Senior Planner, PLAUD
T 289-982-4378
C 416-402-1237

***New phone number**

From: Steiger, Bernie <Bernie.Steiger@halton.ca>
Sent: Monday, April 19, 2021 2:08 PM
To: Robert Thun <robert.thun@oakville.ca>; Tannahill, Rebecca <Rebecca.Tannahill@wsp.com>
Cc: MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: Quadreal -Region Capital Comments. 24T-11001_1333. Z.1333.01

Hi,
In our letter of January 13, 2021, we advised that we were waiting on comments from our Capital Group and would forward these once received. We have now been provided these comments, the plans/reports were vetted by Capital's consultant (Stantec) on the Dundas Street road project.

We are forwarding the following comments as it relates to the TIS and transportation matters. WSP can review these and provide a response table; advising which they see as impacting the subject plan.
We are reviewing comments related to servicing, drainage and the EIR to see if any need to be forwarded to you.

I trust that this is of assistance.

Bernie

"All details for this proposed development will need to be coordinated as the Dundas Street Phase 2 Detail Design progresses. We have prepared the following comments that are specific to the coordination of the developer's design against the proposed road widening for Dundas Street phase 2:

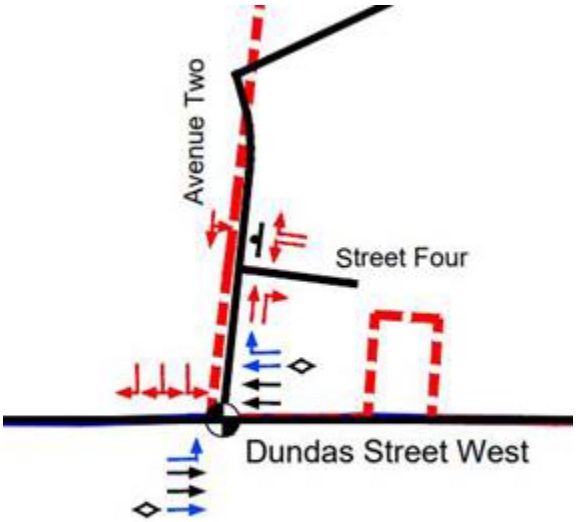
Road Design:

There have been several iterations of Transportation Impact Study completed related to this subject property / development including several peer reviews completed on behalf of the Town of Oakville and the Region of Halton. The

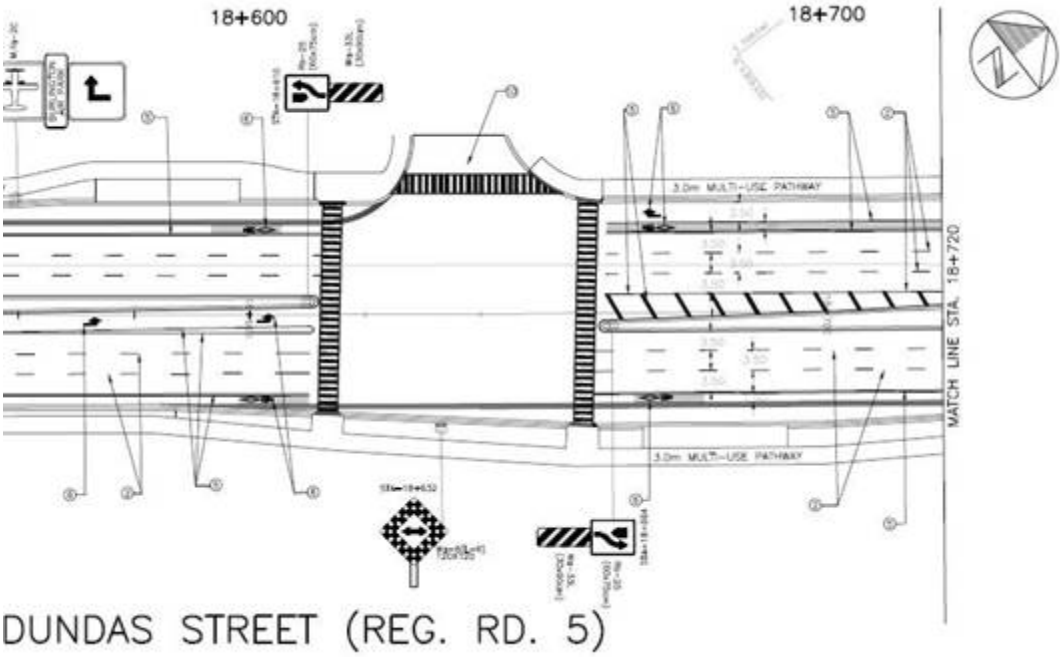
current Transportation Study Update was completed by WSP and dated August 4, 2020, which we understand has addressed all previous regional and municipal comments and has been completed using updated capital works timing.

Based on the Transportation Impact Study, Avenue Two will be constructed as part of Phase 1 (2025) while Avenue Three and Avenue Five would be constructed as Part of Phase 2 (2030). All three of these intersections have been included in the detail design plan for the Dundas Street Phase 2 Detail Design project. Stantec has not completed a review of the Transportation Impact Study as this has already been completed by the Region of Halton and Town of Oakville. The main purpose of our review is to ensure that the Dundas Street Phase 2 Detail Design project has incorporated the proposed intersection configurations based on the updated Transportation Impact Study.

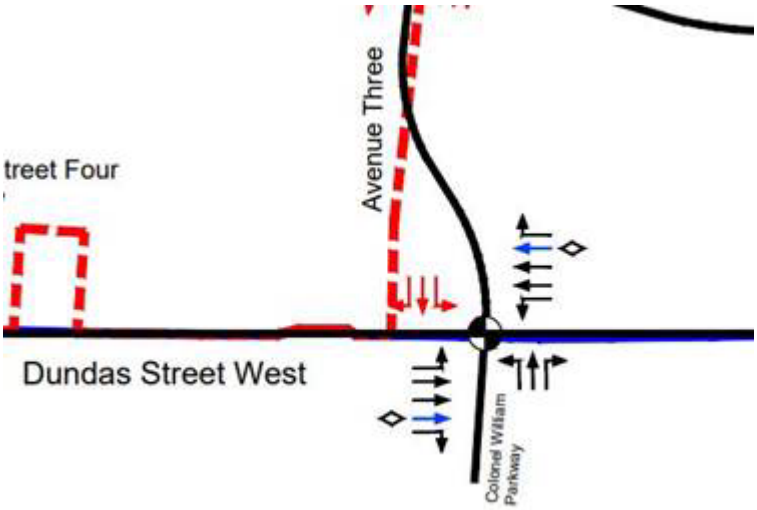
The proposed lane configurations at the Avenue Two intersection are as follows:



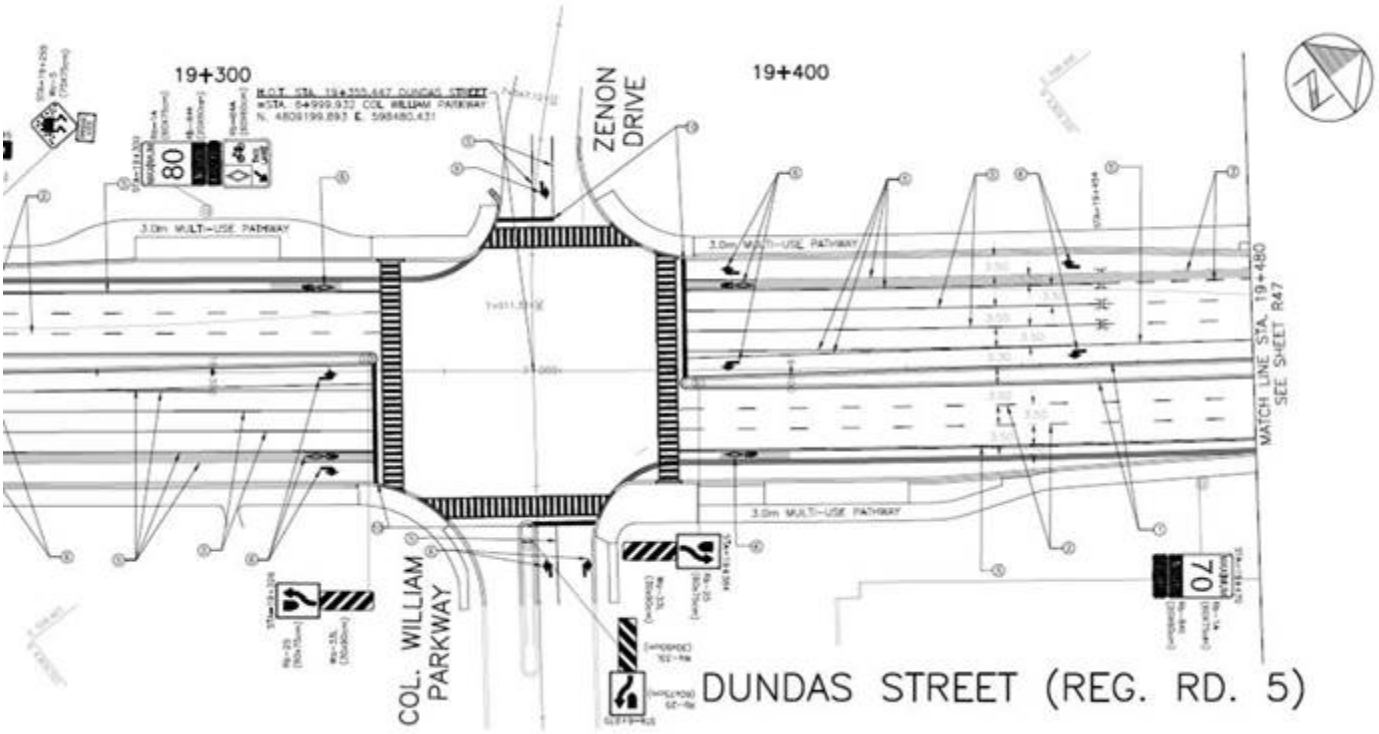
The proposed lane configurations at Avenue Two do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will not accommodate the proposed right / right-left / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / right-left / left configuration. There may be additional property required to add a south bound turn lane. The west side of the north leg is quite close to the property line that we have on our property plans. If we can shift the north leg it may be able to accommodate the additional south bound lane.



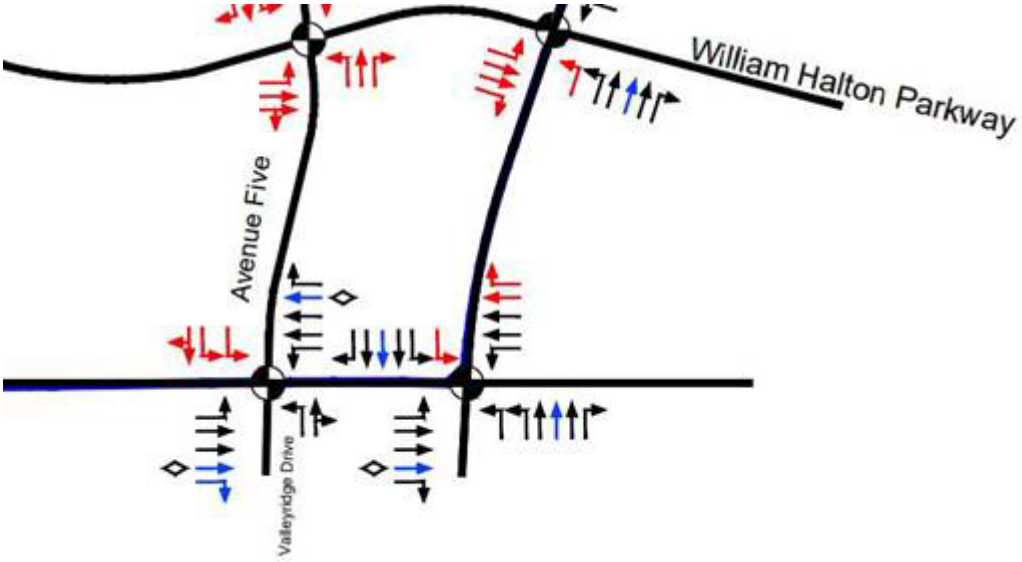
The proposed lane configurations at the Avenue Three (Zenon Drive) intersection are as follows:



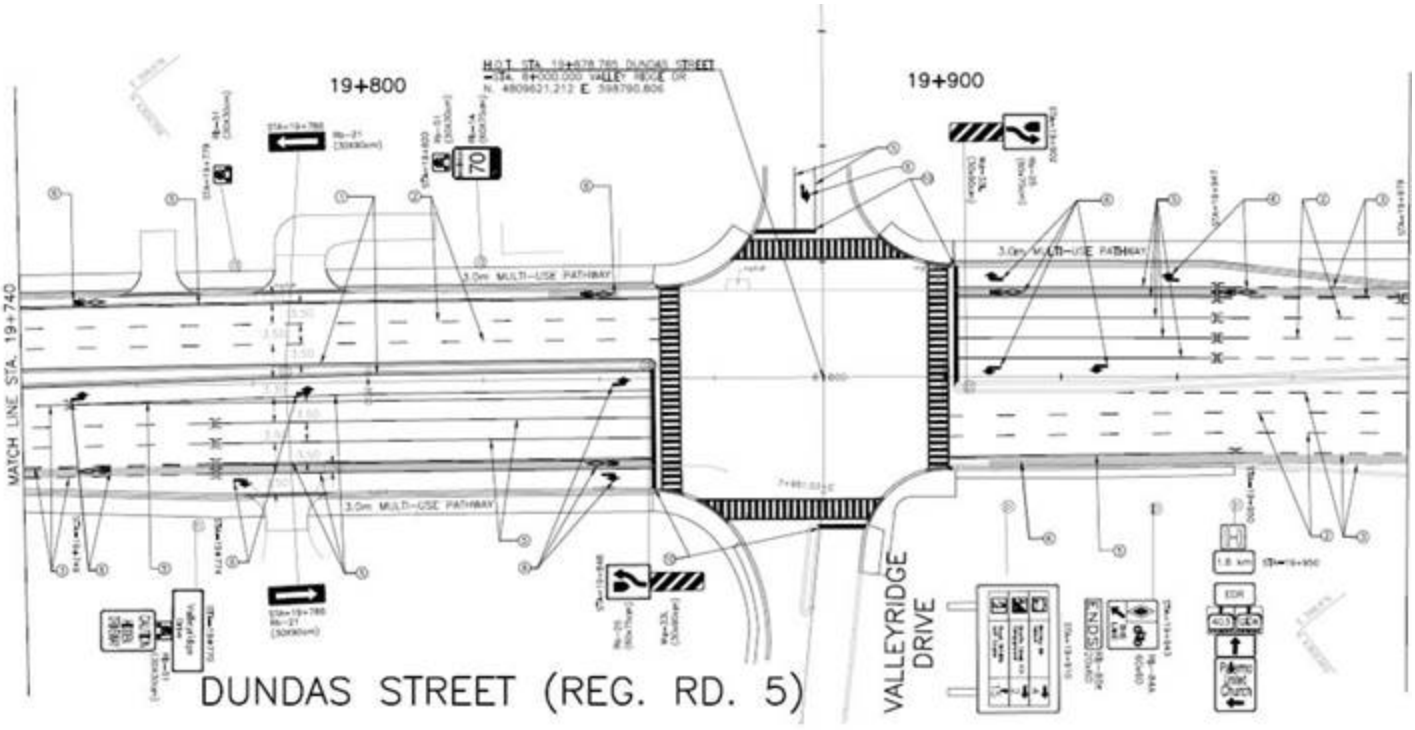
The proposed lane configurations at Avenue Three do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the right / through / left configuration. The available property seems to accommodate the extra SB Lane; however, there may be impacts on the bus bay at this location.



The proposed lane configurations at the Avenue Five intersection are as follows:



The proposed lane configurations at Avenue Five do not match what has been proposed in the Transportation Impact Study. The throat for the north leg of the intersection will accommodate a through-right / left configuration and one NB lane. To match the Transportation Impact Study proposed configuration, we will have to add an additional SB lane at the north leg of the intersection to provide the through-right / left / left configuration. Impacts on the 3111 Dundas should be manageable if an additional SB lane is added to the north leg. It appears to be far enough east to accommodate an additional lane.



Based on the above assessment, we kindly request confirmation of the proposed intersection configurations so that we can ensure that we have made the correct provisions in the contract package to minimize the potential for throw away and/or rework. To adjust the north intersection legs to match the configurations shown in the Transportation Impact Study, we will need to make some geometric revisions and electrical modifications to adjust our current design plan to match.

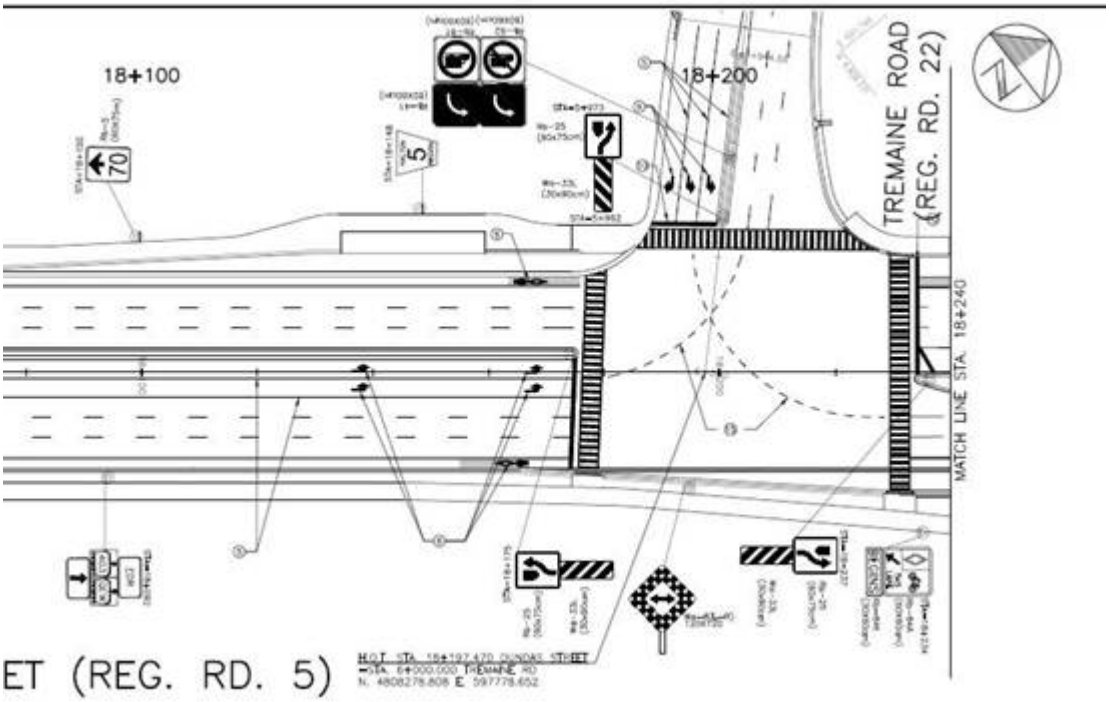
We also wanted to highlight that the Transportation Impact Study recommends changes to the boundary road network to improve 2025 traffic operations following the implementation of the Phase 1 development, including the following (See TIS, pg. 73 and pg. 93):

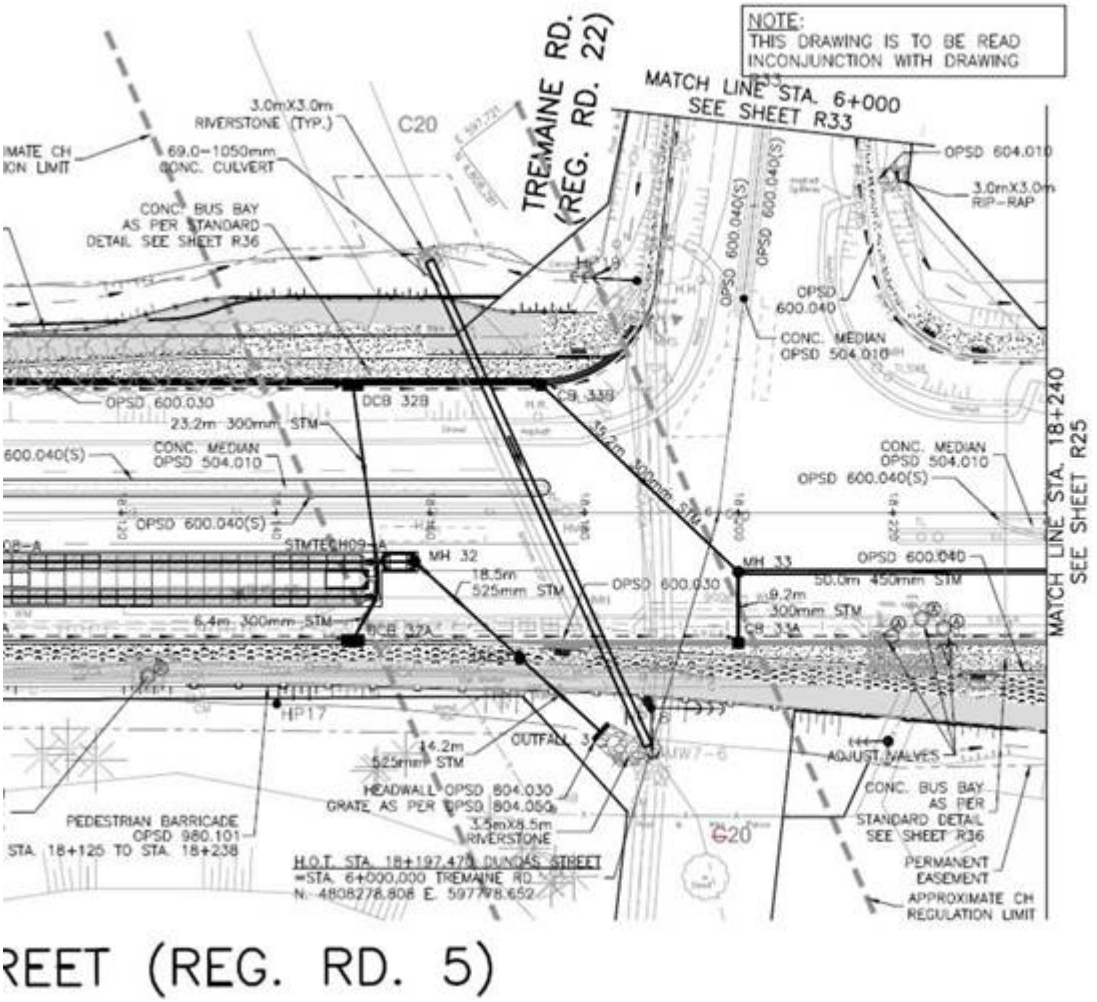
- Dundas Street at Tremaine Road:
    - Modify the existing permissive southbound right-turn movement to provide a free channelized right turn lane along with an additional receiving lane on Dundas Street West that would taper off. Channelized southbound right-turn lane at the intersection of Dundas Street West and Tremaine Road with additional receiving lane at the west leg of the intersection - $279,500
- Dundas Street at Bronte Road:
    - Introduce a dual southbound left-turn movement. Conversion of the existing single southbound left-turn lane to double left-turn lanes at the intersection of Dundas Street West and Bronte Road - $45,500
    - Introduce an exclusive westbound right-turn lane. Addition of an exclusive westbound right-turn lane at the intersection of Dundas Street West and Bronte Road - $270,400

Does the Region of Halton intend to adopt any of these recommendations? If so, does the Region of Halton intend to implement them as separate projects or is there any intention to include them in the Dundas Street widening Phase 2 contract?

The implementation of a channelized right turn movement at Tremaine Road would have implications to the current design plan (please see excerpts from the current new construction and pavement marking/signing plans for reference). Shifting and widening the alignment of the NW intersection radius to the west to accommodate a channelized refuge island would also shift the bus bay and realigned culvert C20 to the west and the addition of a WB receiving lane would shift these elements to the north including a longer Culvert C20. This may also trigger additional and/or revised permits from CH. Additional property would be required from the Evergreen development in the NW quadrant to allow for the incorporation of a channelized refuge island if the current horizontal alignment of Tremaine Road is maintained. There

is also a large hydro pole located in the NW quadrant that would be impacted. Moving this hydro pole could prove problematic and very expensive. There is a large number of circuits and lines attached. This is also an area where Burlington and Oakville hydro transitions so there may be potential impacts on the SE corner of Dundas and Tremaine.





MH.#	STATION	CONSTR OFFSET	
DCB 29D	17+985.00	16.083 L	70
MH 29	17+985.00	7.776 R	70
DCB 30A	18+040.00	16.549 R	70
DCB 30B	18+040.00	16.551 L	70
MH 30	18+040.00	7.744 R	70
MH 31	18+060.00	7.743 R	70
STMTECH07	18+066.60	6.377 R	STE
DCB 31A	18+095.00	16.547 R	70
DCB 31B	18+095.00	16.550 L	70
STMTECH08-A	18+095.00	6.365 R	STE
DCB 32A	18+150.00	16.545 R	70
DCB 32B	18+150.00	16.550 L	70
STMTECH09-A	18+153.09	6.408 R	STE
MH 32	18+158.00	6.337 R	70
OGS3	18+171.65	18.827 R	STC
CB 33B	18+174.42	16.550 L	70
OUTFALL 3	18+182.15	28.426 R	80
CB 33A	18+200.00	16.897 R	70
MH 33	18+200.00	7.697 R	70

Electrical Design

Moon Matz has completed the electrical design for Dundas Street Phase 2 Detail Design. The design includes the north leg of the proposed intersections for Avenues Two, Three, and Five based on the road design noted above.

At Avenue Two, the traffic signal design consists of underground provisions for future traffic signals only. If the signal design is required now, we would need to update the design to accommodate it. In addition, if we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

At Avenue Three, the traffic signal design includes the full layout since Zenon Drive is currently an active roadway north of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

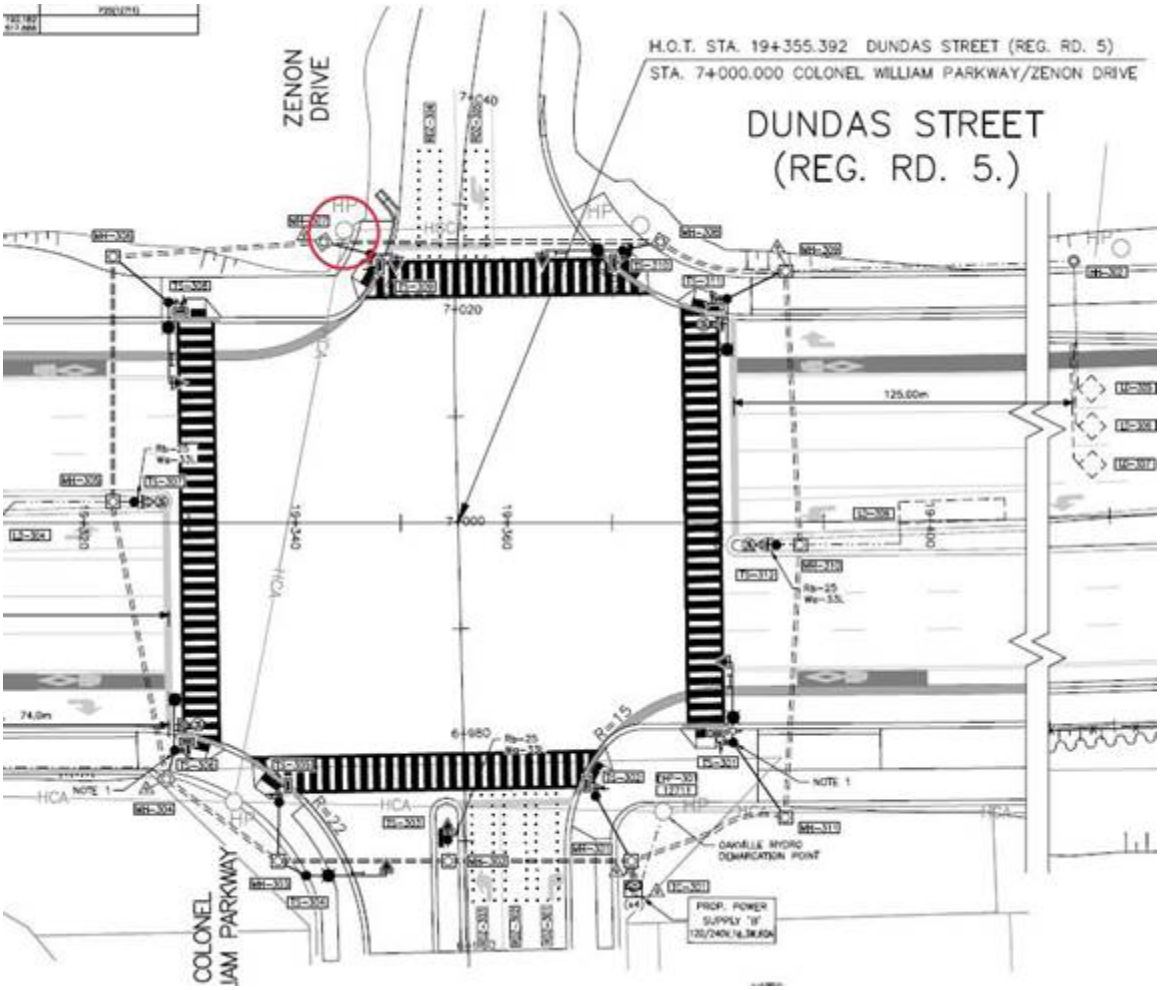
At Avenue Five, the traffic signal design includes the full layout at existing Valleyridge Drive, which is currently an active roadway south of Dundas Street West. If we need to accommodate three SB lanes at the north approach leg, the electrical design will need to be updated.

If we need to accommodate the differences in north leg lane configuration noted in the above Road Design comments, we will need to revisit and update the electrical design for traffic signals and illumination to match the geometric changes to ensure that the pole and associated underground structures are in the correct location. The temporary traffic signal layouts will need to be reviewed to confirm that the temporary pole location locations can accommodate any geometric changes required to the north approach legs at these three intersections.

The traffic signals at the new Street ‘A’ intersection will need to be coordinated with the signals at the Dundas Street / Tremaine Road intersection.

Utilities

The addition of a third lane to the north approach leg at Avenue Three (Zenon Drive) will conflict with the position of an Oakville Hydro pole in the NW quadrant of the intersection. Please see screenshot below. Oakville Hydro has completed their design for Dundas Street Phase 2 Detail Design. Changes to the pole location should ideally be made now to avoid a future relocation.



The addition of a channelized right turn lane to the north approach leg at the Dundas Street West / Tremaine Road intersection would impact a large hydro pole located in the NW quadrant that may require relocation."

Bernie Steiger, MCIP, RPP
Acting Manager-South
Planning Services
Legislative & Planning Services
Halton Region
905-825-6000, ext. 7060 | 1-866-442-5866

Halton REGION

halton.ca 311

APPENDIX

B HALTON REGION CLARIFICATIONS

APPENDIX

Lukezic, Dave

From: Steiger, Bernie <Bernie.Steiger@halton.ca>
Sent: Thursday, April 08, 2021 4:23 PM
To: Tannahill, Rebecca
Cc: Lukezic, Dave; Krusto, Matt
Subject: RE: Quadreal Oakville - TIS Comments

Hi Rebecca,
Please find below the comments from Matt.
I trust that this is of assistance.
Bernie

Land Dedication:

Halton: Any lands within 25 metres of the centre line of the original right-of-way of Dundas Street (Regional Road 5) that are part of the subject property shall be gratuitously dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. The applicant is to provide confirmation that the proposed widening blocks on the plan would achieve the Region's road widening requirements (including those set out in the Dundas Street EA and as part of the Dundas Street widening project).

WSP: We are showing the proposed road widening for Dundas Street as provided by the Region that as the proposed property line for the subject property as shown in Attachment 4. The daylight triangle has been shown as 25m by 25m along the proposed streetline for Avenue 2 and the proposed road widening for Dundas Street as shown in Attachment 4.

Halton: There are no dimensions on attachment #4. Also, if this is a plan based on the Dundas Street capital project, it still has to also show/account for the 25m from centerline (OP/TMP requirement). The onus remains on the applicant to ensure to proper right-of-way is clearly defined. Also, the daylight triangles are 15m x 15m, from the approved land dedication line.

TIS Information:

Halton: Provide detailed 15-minute TMCs breakdowns and use the same PHF across all existing scenarios;

WSP: The detailed 15-minute TMC are provided in Attachment 1.

WSP calculated the peak hour factor for the AM and PM peak hours for each intersection and used the consistent peak hour factor for existing conditions.

The exception is Dundas Street at Tremaine Road in the PM peak hour where the overall intersection PHF was 0.95. The peak hour factor for the east approach was calculated to be 0.97 and this peak hour factor was applied to the east approach of the intersection as part of the calibration. As shown in Table 4-2 of the report, the resulting westbound through V/C was 0.99 for the calibrated Synchro model was 0.99. If the overall PHF of 0.95 was used the V/C for the westbound through would increase to 1.01 as shown in Attachment 2.

WSP acknowledges that this adjustment to the PHF should have been documented on page 22 of the report.

Halton: Acceptable.

Halton: Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;

WSP: WSP will provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development.

Halton: Acceptable.

Halton: Provide raw TTS data outputs in the Appendices;

WSP: WSP will provide the TTS outputs as an Attachment

Halton: Acceptable.

Halton: Adjust background growth rates using 3.0 percent in the first year and 4.0 percent in all subsequent years as outlined in Section 6.2 and results must be updated accordingly;

WSP: As documented in Section 6.2 a through traffic growth rate of 3.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff, between 2020 and 2021. Subsequent to 2021, a growth rate of 4.0 percent per annum (linear) was applied to Tremaine Road as directed by Region staff. The traffic growth along Tremaine Road was distributed along Dundas Street West based on the existing trip distribution at the study intersection.

Background growth rates were correctly applied as documented in Section 6.2 and figures 6.5 to 6.8. For additional clarifications of figures 6-5 to 6-6, as part of this response WSP prepared the figures in Attachment 3 to show how traffic growth was derived between 2020 and 2021, 2021 to 2025.

Since the growth rates were correctly applied, it is our opinion that the analysis would not require to be updated.

Halton: Acceptable.

Halton: Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.

WSP: WSP will complete this analysis for the 2030 future total AM and PM conditions using the Sensitivity Scenario traffic volumes.

Halton: Acceptable.

Bernie Steiger, MCIP, RPP
Acting Manager-South
Planning Services
Legislative & Planning Services

Halton Region
905-825-6000, ext. 7060 | 1-866-442-5866

From: Tannahill, Rebecca [mailto:Rebecca.Tannahill@wsp.com]
Sent: Friday, March 19, 2021 3:57 PM
To: Steiger, Bernie <Bernie.Steiger@halton.ca>
Cc: Lukezic, Dave <David.Lukezic@wsp.com>
Subject: Quadreal Oakville - TIS Comments

Hi Bernie,

We are currently working on the resubmission, including the TIS. To try to ensure that this is the last resubmission, we would like to obtain input/agreement on some of the comments provided. In the attached table, the items highlighted in green are what we are looking for Regional sign off on before completing the TIS updates. Previously we have been asked to submit this through the planner on the file, for circulation to Regional transportation staff and their peer reviewer. If you would like to discuss, please let me know.

Thanks,

Rebecca

Rebecca Tannahill, MES PL., MCIP, RPP
Senior Planner, Planning, Landscape Architecture and Urban Design

T 289-982-4378
C 416-402-1237

***New phone number**

-LAEmHhHzdJzBlTWfa4Hgs7pbKI

Lukezic, Dave

From: Tannahill, Rebecca
Sent: Thursday, June 03, 2021 4:39 PM
To: Lukezic, Dave; Williams, Alex; Tyrrell, Chris
Subject: FW: Quadreal Properties -24T-11001_1333.

Please see below response from Halton on outstanding TIS comments

Rebecca Tannahill, MES PL., MCIP, RPP
Senior Planner, PLAUD
T 289-982-4378
C 416-402-1237

***New phone number**

From: Steiger, Bernie <Bernie.Steiger@halton.ca>
Sent: Thursday, June 03, 2021 4:33 PM
To: Tannahill, Rebecca <Rebecca.Tannahill@wsp.com>
Cc: Krusto, Matt <Matt.Krusto@halton.ca>; Robert Thun <robert.thun@oakville.ca>; MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>
Subject: RE: Quadreal Properties -24T-11001_1333.

Hi Rebecca,
Apologies for the delay, here are our further responses.

Land Dedication (per your email below):
The plan that was last sent to us did not show the correct configuration for the daylight triangle, nor size. A 15x15 triangle, has a hypotenuse of about 22 metres, the one on the plan showed 20. Also, the land shown as a widening block to go to the Region needs to go to the end of the triangle as per the sketch that was provided in our comments.

Also you should confirm to us that widening achieves our requirements as per our letter.

TIS Clarification Questions:
The following comments are provided (in red).

From Comment Clarification matrix:

Provide distinction for which roadway improvement are to be built by the Region and those built as part of the proposed development;	WSP will provide distinction for which roadway improvement are those built as part of the proposed development.

Ok.

Provide raw TTS data outputs in the Appendices;	WSP will provide the TTS outputs as an Attachment.

Ok.

Conduct a SimTraffic analysis to assess the 95th percentile queues and recommend the appropriate storage capacity based on the SimTraffic analysis.	WSP will complete this analysis for the 2030 future total AM and Sensitivity Scenario traffic volumes.

Ok.

Please note that clarifications were provided to all of our responses except on our response regarding alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West (bottom of page 5). We would appreciate if you could provide clarification on that response as well.

Provide alternate parallel routes for redistributed traffic from Bronte Road and Dundas Street West;	The alternate parallel routes for redistributed traffi — Appleby Line — Tremaine Road — Third Line — Sixth Line The alternate parallel routes for redistributed traffi — Highway 407 — Upper Middle Ro — Highway 403

Ok.

From WSP (David Lukezic) email of April 9, 2021:
Our Land Development Group will inform if they need any further clarification / information to respond to the land dedication comment.
Ok

We will wait on comments from the capital group before we finalize the analysis and response matrix.
We provided those comments in an email April 19, 2021. If something further is required please advise.

Note that we would not be updating the TIS as it would be redundant (i.e. the previous report had 682 pages with the Appendices) but provide a response letter, response matrix and relevant attachments
OK, if Town of Oakville also agrees.

I trust that this is of assistance.
Bernie

From: Tannahill, Rebecca [mailto:Rebecca.Tannahill@wsp.com]
Sent: Friday, May 28, 2021 3:38 PM
To: Steiger, Bernie <Bernie.Steiger@halton.ca>
Subject: RE: Quadreal Properties -24T-11001_1333.

Hi Bernie,

Can you provide clarification on what the Region wants, with regards to this comment:

I have attached the draft plan that was sent to us. I can advise that it does not reflect our comments of January 13, 2021, regarding the daylight triangle (it doesn't show it as 15x15) and the correct configuration where the Region's ownership ends.

Can you also confirm when we will receive a response from Matt on the outstanding TIS clarification question.

Thanks,

Rebecca

Rebecca Tannahill, MES PL., MCIP, RPP
Senior Planner, PLAUD
T 289-982-4378
C 416-402-1237

***New phone number**

From: Steiger, Bernie <Bernie.Steiger@halton.ca>
Sent: Wednesday, May 05, 2021 3:55 PM
To: Tannahill, Rebecca <Rebecca.Tannahill@wsp.com>
Cc: Robert Thun <robert.thun@oakville.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>
Subject: Quadreal Properties -24T-11001_1333.

Hi,
This is a bit of an omnibus email to deal with a few things.

Informal Draft Plan Circulation
Rebecca, you had emailed indicating that Rob had circulated the draft plan informally in March requesting comments before making a formal submission.
I did receive the plan from the Town. I understood the request was that we provide conditions/comments based on the revised plan and also comments on the plan itself.

I have attached the draft plan that was sent to us. I can advise that it does not reflect our comments of January 13, 2021, regarding the daylight triangle (it doesn't show it as 15x15) and the correct configuration where the Region's ownership ends. You should also confirm if our widening requirements are met and how the property requirements from our Capital Group as it relates to the Dundas Street project relate to the ROP requirements (are they lesser or greater?).

I haven't started to prepare conditions at this time. I note CH did still have a minor matter related to the DP, before they were in a position to issue conditions (which is our trigger to issue conditions).

Dave Lukezic email April 28, 2021
We will respond to this shortly.

Further Comments from Capital/Servicing
In our email of April 19, 2021, which relayed comments from Capital, we indicated that we would follow up in relation to servicing/drainage.
I can provide those comments now.

Servicing
With respect to servicing we note that there may not be sufficient space within the right-of-way extents that Capital is working within to accommodate the local water and sanitary that are needed to service this development. The Region's consultant has been asked to look to confirm this and to see if space can be reserved to accommodate the local services in the right-of-way so that Quadreal can install them when they develop.
If not, the services will need to be accommodated in either a Region easement on the subdivision lands (or they may fit within the ultimate right-of-way if that is greater than that which Capital is working with).

If Quadreal is considering having the servicing and intersection works included in the Dundas project, then you need to reach out to Ron MacKenzie (cc'd on this email), to initiate that discussion.
Our initial feel is that the Dundas project is too far along at this point to be able to include items from the Quadreal development.

Drainage
With regard to drainage we advise follows (the main takeaway being that there is no plan at this time to utilize the proposed SWM pond within the subdivision to capture storm drainage from Dundas Street. Instead the design of Dundas Street will incorporate measures to control flow and water quality within the road allowance. Due to this the applicant should be advised not to oversize the proposed SWM pond in the subdivision to accommodate drainage from Dundas Street).

"As noted in the Stormwater Management Design Report – Dundas Street Widening – Appleby Line to Bronte Road (Town of Oakville and City of Burlington) prepared by Stantec (March 20, 2020), the Environmental Implementation Report / Functional Servicing Study (EIR/FSS) for the Lazy Pat Farm Development, under review by various approval agencies, indicates that the flows from drainage area D21B of Dundas Street can be treated in the proposed SWM Pond 2 (as noted in the EIR/FSS) for the proposed development. Depending on the schedule of the Lazy Pat Farm Development and Dundas Street Widening projects, the runoff from this portion of Dundas Street can be managed within the proposed SWM Pond 2. Since the Dundas Street widening will proceed in advance of the Lazy Pat Farm development, the runoff from Dundas Street will be managed within underground pipe storage and treated by OGS and outlet to the south side of Dundas Street. Section 7.8.2 of the EIR / FSS has assumed that this area would drain to SWM Pond 2. However, this will not be the case. Additional information is provided below with reference to the screenshots from the new construction plans from Dundas Street Widening Phase 2.

With reference to our current Dundas Street Detail Design Phase 2 new construction plan sheets R24 through R32, we have added red arrows to highlight the drainage flows in the vicinity of the development (please see screenshots below for reference) based on the proposed design. Blue arrows have been added to show the direction of the existing storm sewer system. Please note that all of the surface drainage from Dundas Street between the rounding break points drains toward the roadway gutters. The Dundas Street surface run off drains to the new storm sewer system and into the Stormtech chambers before being outlet to the south side of Dundas Street. The only portion of the Dundas Street drainage on the north side of the cross section is from fill cross sections where a small ditch is required to collect the runoff and guide it to the nearest crossing culvert, which conveys the water to the south away from the development area. There is also an outlet for the existing storm sewer at the east end of the project that conveys the drainage from Bronte Road at the east end to an outlet at approximately Sta. 19+720 to the east of Culvert C23. The outfall enters the watercourse at C23 within the proposed Halton Region ROW and then through culvert C23 to the south. Based on the proposed drainage scheme, there will not be any water from Dundas Street entering the Lazy Pat Farms development property.

APPENDIX

C LAND DEDICATION

APPENDIX

EX. PROPERTY LINE

NEW PROPERTY LINE/EDGE OF ROAD WIDENING

EXISTING EDGE OF PAVEMENT

16.8 m

21.2 m

84°

15.0 m

EX. CENTER LINE OF DUNDAS STREET WEST

DUNDAS STREET WEST

LOT 34 CONCESSION 1 NORTH OF DUNDAS STREET (TRAFALGAR)

LOT 33 CONCESSION 1 NORTH OF DUNDAS STREET (TRAFALGAR)

GRAVEL DRIVEWAY

0.64

3.27

0.27SW

3.0m MULTI-USE PATHWAY

C21B

CLIENT

QUADREAL

TITLE

DUNDAS ST WEST ROAD WIDENING

wsp

100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1

t: 905.882.1100 f: 905.882.0055 www.wsp.com

Checked	A.W.	Drawn	10/12 Cad
Date	JUNE 2021	Proj. No.	14-09222
Scale	1:2000	Figure No.	A-1

FILE NAME: X:\Dnt01\14-09222\Main\Figures\14-09222 - Dundas Widening.dwg_ST W ROAD PRINTED ON: Thursday 06/24/2021

APPENDIX

D TMC DATA

APPENDIX

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Oakville
Site #: 1816200001
Intersection: Dundas St W & Tremaine Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

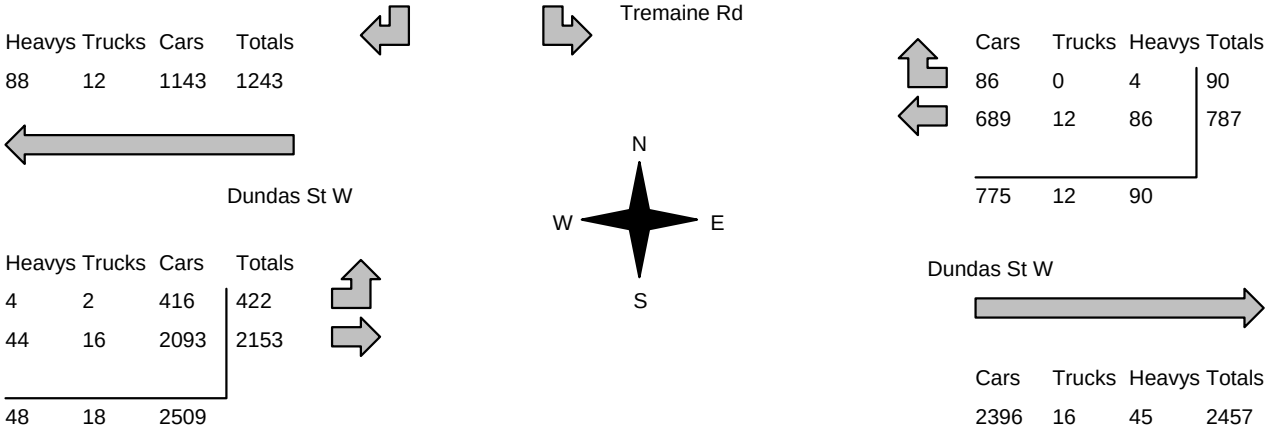
Major Road: Dundas St W runs W/E

North Leg Total: 1272
North Entering: 760
North Peds: 0
Peds Cross: ⋈

Heavys	2	1	3
Trucks	0	0	0
Cars	454	303	757
Totals	456	304	

Heavys	8
Trucks	2
Cars	502
Totals	512

East Leg Total: 3334
East Entering: 877
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 1
West Entering: 2575
West Leg Total: 3818

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Oakville
Site #: 1816200001
Intersection: Dundas St W & Tremaine Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

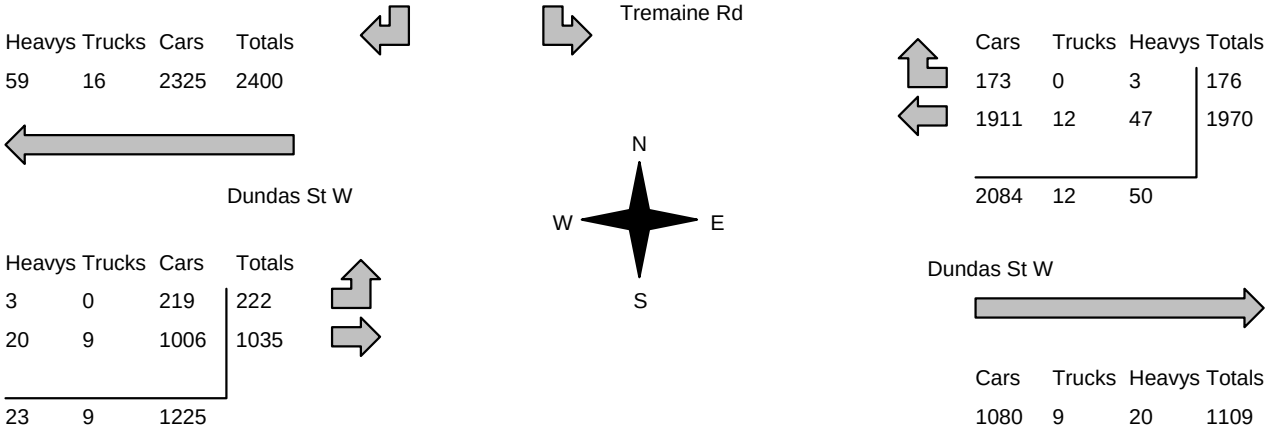
Major Road: Dundas St W runs W/E

North Leg Total: 902
North Entering: 504
North Peds: 0
Peds Cross: ⋈

Heavys	12	0	12
Trucks	4	0	4
Cars	414	74	488
Totals	430	74	

Heavys	6
Trucks	0
Cars	392
Totals	398

East Leg Total: 3255
East Entering: 2146
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 1257
West Leg Total: 3657

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Total Count Diagram

Municipality: Oakville
Site #: 1816200001
Intersection: Dundas St W & Tremaine Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

North Leg Total: 3650
North Entering: 2033
North Peds: 0
Peds Cross: ⋈

Heavys	24	3	27
Trucks	8	1	9
Cars	1406	591	1997
Totals	1438	595	

Heavys	25
Trucks	6
Cars	1586
Totals	1617

East Leg Total: 12177
East Entering: 5603
East Peds: 0
Peds Cross: ⧖

Tremaine Rd

Heavys	Trucks	Cars	Totals
233	55	6265	6553

Dundas St W

Heavys	Trucks	Cars	Totals
15	4	1110	1129
174	43	5762	5979
189	47	6872	

Cars	Trucks	Heavys	Totals
476	2	10	488
4859	47	209	5115
5335	49	219	

N
W E
S

Dundas St W

Cars	Trucks	Heavys	Totals
6353	44	177	6574

Peds Cross: ⧖
West Peds: 2
West Entering: 7108
West Leg Total: 13661

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Traffic Count Summary

Intersection: Dundas St W & Tremaine Rd | **Count Date:** 11-Dec-18 | **Municipality:** Oakville

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*203*	*0*	*296*	*499*	*0*	*499*	*8:00:00*	*0*	*0*	*0*	*0*	*0*
9:00:00	*246*	*0*	*382*	*628*	*0*	*628*	*9:00:00*	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*63*	*0*	*442*	*505*	*0*	*505*	*17:00:00*	*0*	*0*	*0*	*0*	*0*
18:00:00	*83*	*0*	*318*	*401*	*0*	*401*	*18:00:00*	*0*	*0*	*0*	*0*	*0*
Totals:	595	0	1438	2033	0	2033	S Totals:	0	0	0	0	0

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*542*	*64*	*606*	*0*	*3069*	*8:00:00*	*379*	*2084*	*0*	*2463*	*0*
9:00:00	*0*	*916*	*73*	*989*	*0*	*3191*	*9:00:00*	*289*	*1913*	*0*	*2202*	*2*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*2001*	*159*	*2160*	*0*	*3356*	*17:00:00*	*216*	*980*	*0*	*1196*	*0*
18:00:00	*0*	*1656*	*192*	*1848*	*0*	*3095*	*18:00:00*	*245*	*1002*	*0*	*1247*	*0*
Totals:	0	5115	488	5603	0	12711	W Totals:	1129	5979	0	7108	2

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*203*	*248*	*0*	*63*	*83*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	20	20	0	0	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	20	0	0	0	44	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	118	98	0	0	168	124	0	0	0	0	0	0	1	1	0	0	1	1	0	0
8:00:00	202	84	0	0	295	127	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8:15:00	272	70	0	0	397	102	0	0	0	0	0	0	1	0	0	0	2	1	0	0
8:30:00	323	51	0	0	498	101	0	0	0	0	0	0	1	0	0	0	2	0	0	0
8:45:00	396	73	0	0	598	100	0	0	0	0	0	0	2	1	0	0	4	2	0	0
9:00:00	446	50	0	0	668	70	1	1	0	0	2	2	2	0	0	0	8	4	0	0
9:15:00	446	0	0	0	668	0	1	0	0	0	2	0	2	0	0	0	8	0	0	0
16:00:00	446	0	0	0	668	0	1	0	0	0	2	0	2	0	0	0	8	0	0	0
16:15:00	463	17	0	0	771	103	1	0	0	0	4	2	2	0	0	0	11	3	0	0
16:30:00	481	18	0	0	871	100	1	0	0	0	4	0	2	0	0	0	15	4	0	0
16:45:00	500	19	0	0	989	118	1	0	0	0	6	2	2	0	0	0	21	6	0	0
17:00:00	509	9	0	0	1089	100	1	0	0	0	8	2	2	0	0	0	23	2	0	0
17:15:00	537	28	0	0	1185	96	1	0	0	0	8	0	2	0	0	0	23	0	0	0
17:30:00	559	22	0	0	1254	69	1	0	0	0	8	0	3	1	0	0	23	0	0	0
17:45:00	577	18	0	0	1335	81	1	0	0	0	8	0	3	0	0	0	23	0	0	0
18:00:00	591	14	0	0	1406	71	1	0	0	0	8	0	3	0	0	0	24	1	0	0
18:15:00	591	0	0	0	1406	0	1	0	0	0	8	0	3	0	0	0	24	0	0	0
18:15:15	591	0	0	0	1406	0	1	0	0	0	8	0	3	0	0	0	24	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	75	75	7	7	0	0	2	2	0	0	0	0	2	2	1	1	0	0
7:30:00	0	0	196	121	20	13	0	0	7	5	1	1	0	0	10	8	1	0	0	0
7:45:00	0	0	319	123	35	15	0	0	10	3	1	0	0	0	28	18	1	0	0	0
8:00:00	0	0	484	165	62	27	0	0	13	3	1	0	0	0	45	17	1	0	0	0
8:15:00	0	0	680	196	94	32	0	0	18	5	1	0	0	0	73	28	4	3	0	0
8:30:00	0	0	885	205	106	12	0	0	19	1	1	0	0	0	96	23	5	1	0	0
8:45:00	0	0	1065	180	123	17	0	0	25	6	1	0	0	0	107	11	5	0	0	0
9:00:00	0	0	1292	227	129	6	0	0	29	4	1	0	0	0	137	30	7	2	0	0
9:15:00	0	0	1292	0	129	0	0	0	29	0	1	0	0	0	137	0	7	0	0	0
16:00:00	0	0	1292	0	129	0	0	0	29	0	1	0	0	0	137	0	7	0	0	0
16:15:00	0	0	1762	470	161	32	0	0	31	2	2	1	0	0	148	11	7	0	0	0
16:30:00	0	0	2290	528	198	37	0	0	37	6	2	0	0	0	161	13	9	2	0	0
16:45:00	0	0	2778	488	245	47	0	0	41	4	2	0	0	0	178	17	9	0	0	0
17:00:00	0	0	3228	450	285	40	0	0	41	0	2	0	0	0	190	12	9	0	0	0
17:15:00	0	0	3673	445	334	49	0	0	43	2	2	0	0	0	195	5	10	1	0	0
17:30:00	0	0	4124	451	390	56	0	0	44	1	2	0	0	0	203	8	10	0	0	0
17:45:00	0	0	4486	362	435	45	0	0	45	1	2	0	0	0	206	3	10	0	0	0
18:00:00	0	0	4859	373	476	41	0	0	47	2	2	0	0	0	209	3	10	0	0	0
18:15:00	0	0	4859	0	476	0	0	0	47	0	2	0	0	0	209	0	10	0	0	0
18:15:15	0	0	4859	0	476	0	0	0	47	0	2	0	0	0	209	0	10	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	56	56	432	432	0	0	0	0	1	1	0	0	2	2	37	37	0	0	0	0
7:30:00	139	83	907	475	0	0	0	0	3	2	0	0	3	1	57	20	0	0	0	0
7:45:00	243	104	1435	528	0	0	0	0	5	2	0	0	5	2	68	11	0	0	0	0
8:00:00	373	130	1989	554	0	0	1	1	12	7	0	0	5	0	83	15	0	0	0	0
8:15:00	466	93	2519	530	0	0	1	0	16	4	0	0	6	1	92	9	0	0	0	0
8:30:00	555	89	3000	481	0	0	2	1	19	3	0	0	7	1	101	9	0	0	1	1
8:45:00	609	54	3439	439	0	0	3	1	21	2	0	0	9	2	117	16	0	0	2	1
9:00:00	654	45	3835	396	0	0	4	1	29	8	0	0	10	1	133	16	0	0	2	0
9:15:00	654	0	3835	0	0	0	4	0	29	0	0	0	10	0	133	0	0	0	2	0
16:00:00	654	0	3835	0	0	0	4	0	29	0	0	0	10	0	133	0	0	0	2	0
16:15:00	711	57	4046	211	0	0	4	0	30	1	0	0	10	0	140	7	0	0	2	0
16:30:00	753	42	4284	238	0	0	4	0	32	2	0	0	12	2	144	4	0	0	2	0
16:45:00	804	51	4538	254	0	0	4	0	34	2	0	0	13	1	151	7	0	0	2	0
17:00:00	867	63	4786	248	0	0	4	0	36	2	0	0	13	0	155	4	0	0	2	0
17:15:00	930	63	5052	266	0	0	4	0	39	3	0	0	13	0	160	5	0	0	2	0
17:30:00	1002	72	5318	266	0	0	4	0	42	3	0	0	13	0	165	5	0	0	2	0
17:45:00	1056	54	5541	223	0	0	4	0	42	0	0	0	13	0	170	5	0	0	2	0
18:00:00	1110	54	5762	221	0	0	4	0	43	1	0	0	15	2	174	4	0	0	2	0
18:15:00	1110	0	5762	0	0	0	4	0	43	0	0	0	15	0	174	0	0	0	2	0
18:15:15	1110	0	5762	0	0	0	4	0	43	0	0	0	15	0	174	0	0	0	2	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Oakville
Site #: 1816200002
Intersection: Dundas St W & Colonel William Pk
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

North Leg Total:	172
North Entering:	8
North Peds:	3
Peds Cross:	⋈

Heavys	0	0	1	1
Trucks	0	0	0	0
Cars	2	0	5	7
Totals	2	0	6	

Heavys	1
Trucks	0
Cars	163
Totals	164

East Leg Total:	3190
East Entering:	984
East Peds:	3
Peds Cross:	⧖

Zenon Dr

Heavys	Trucks	Cars	Totals
83	18	807	908

Cars	Trucks	Heavys	Totals
90	0	0	90
738	18	81	837
52	0	5	57
880	18	86	

Dundas St W

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	72	73
47	20	1969	2036
3	1	255	259
51	21	2296	

Dundas St W

Cars	Trucks	Heavys	Totals
2128	20	58	2206

Colonel William Pkwy

Peds Cross:	⧖
West Peds:	2
West Entering:	2368
West Leg Total:	3276

Cars	307			
Trucks	1			
Heavys	8			
Totals	316			

Cars	67	1	154	222
Trucks	0	0	0	0
Heavys	2	0	10	12
Totals	69	1	164	

Peds Cross:	⋈
South Peds:	0
South Entering:	234
South Leg Total:	550

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

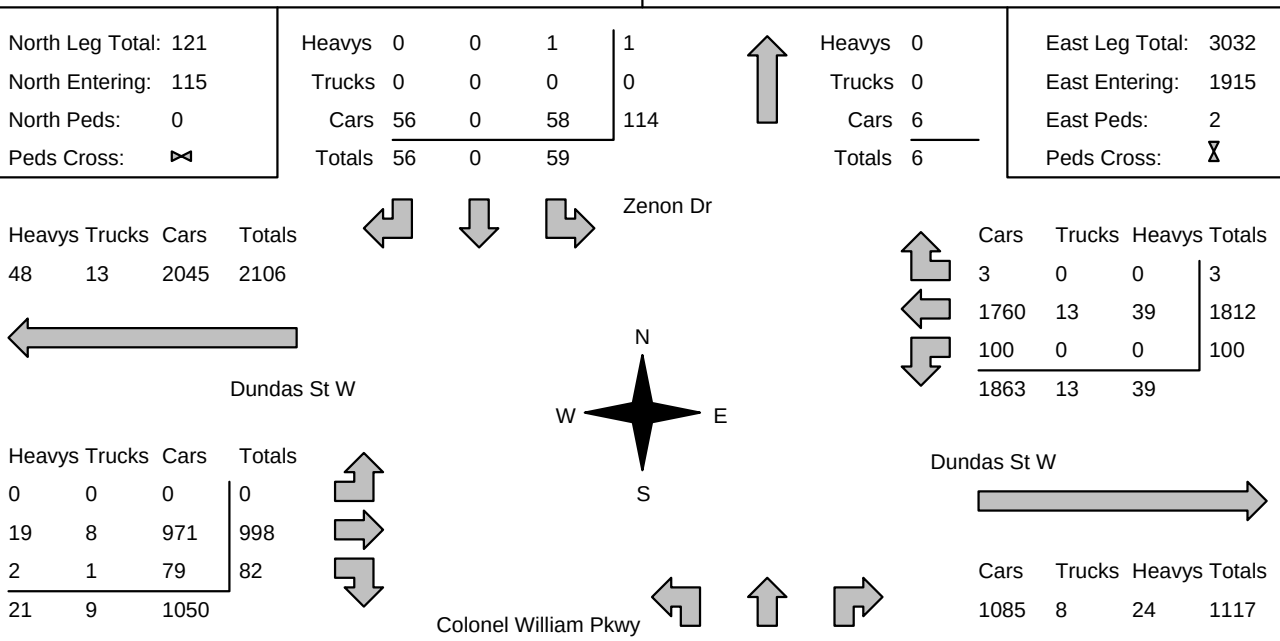
Municipality: Oakville
Site #: 1816200002
Intersection: Dundas St W & Colonel William Pk
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Total Count Diagram

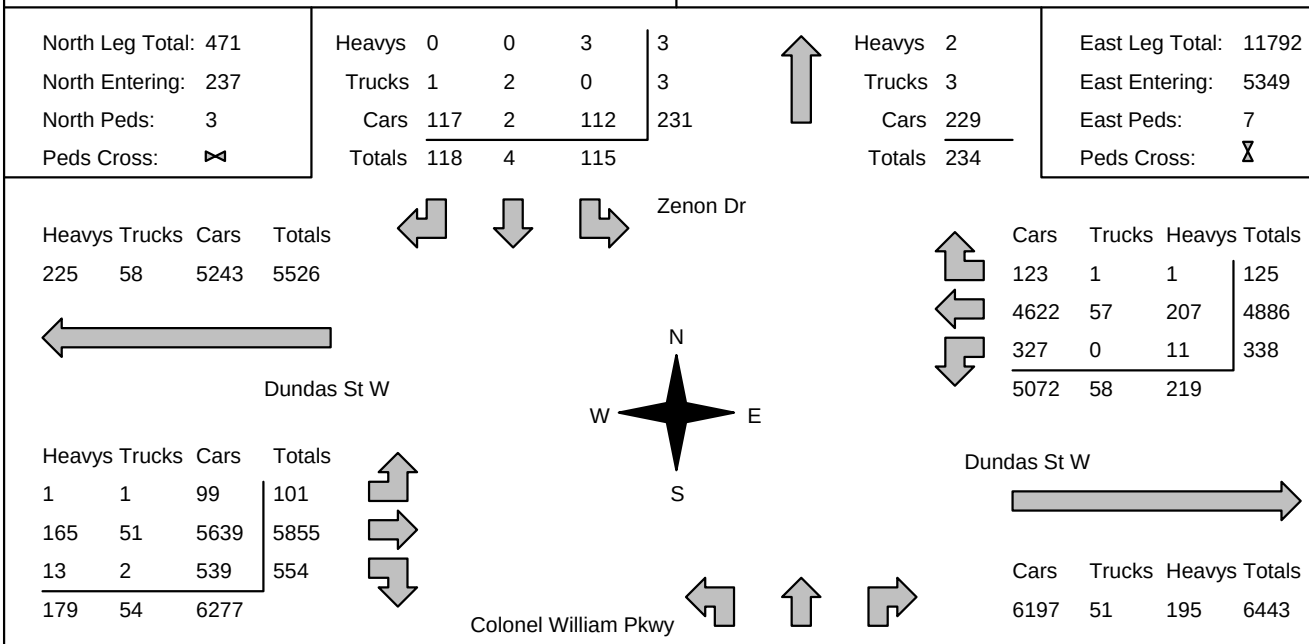
Municipality: Oakville
Site #: 1816200002
Intersection: Dundas St W & Colonel William Pk
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Traffic Count Summary

Intersection: Dundas St W & Colonel William P | **Count Date:** 11-Dec-18 | **Municipality:** Oakville

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*
8:00:00	*1*	*0*	*1*	*2*	*0*	*179*
9:00:00	*8*	*0*	*3*	*11*	*3*	*293*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*43*	*1*	*44*	*88*	*0*	*372*
18:00:00	*63*	*3*	*70*	*136*	*0*	*396*
Totals:	115	4	118	237	3	1240

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*37*	*0*	*140*	*177*	*0*
9:00:00	*79*	*2*	*201*	*282*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*216*	*3*	*65*	*284*	*0*
18:00:00	*190*	*3*	*67*	*260*	*0*
S Totals:	522	8	473	1003	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*
8:00:00	*25*	*559*	*40*	*624*	*1*	*2864*
9:00:00	*82*	*894*	*77*	*1053*	*4*	*3234*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*94*	*1874*	*4*	*1972*	*2*	*2998*
18:00:00	*137*	*1559*	*4*	*1700*	*0*	*2763*
Totals:	338	4886	125	5349	7	11859

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*20*	*2061*	*159*	*2240*	*2*
9:00:00	*81*	*1867*	*233*	*2181*	*3*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*951*	*75*	*1026*	*1*
18:00:00	*0*	*976*	*87*	*1063*	*0*
W Totals:	101	5855	554	6510	6

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*41*	*96*	*0*	*265*	*256*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	3	2	0	0	2	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1
8:30:00	5	2	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
8:45:00	6	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	2
9:00:00	7	1	0	0	3	1	0	0	0	0	1	1	2	1	0	0	0	0	3	0
9:15:00	7	0	0	0	3	0	0	0	0	0	1	0	2	0	0	0	0	0	3	0
16:00:00	7	0	0	0	3	0	0	0	0	0	1	0	2	0	0	0	0	0	3	0
16:15:00	18	11	0	0	14	11	0	0	1	1	1	0	2	0	0	0	0	0	3	0
16:30:00	26	8	0	0	17	3	0	0	1	0	1	0	2	0	0	0	0	0	3	0
16:45:00	37	11	0	0	30	13	0	0	1	0	1	0	3	1	0	0	0	0	3	0
17:00:00	49	12	0	0	47	17	0	0	1	0	1	0	3	0	0	0	0	0	3	0
17:15:00	76	27	0	0	70	23	0	0	1	0	1	0	3	0	0	0	0	0	3	0
17:30:00	97	21	0	0	99	29	0	0	1	0	1	0	3	0	0	0	0	0	3	0
17:45:00	106	9	2	2	107	8	0	0	2	1	1	0	3	0	0	0	0	0	3	0
18:00:00	112	6	2	0	117	10	0	0	2	0	1	0	3	0	0	0	0	0	3	0
18:15:00	112	0	2	0	117	0	0	0	2	0	1	0	3	0	0	0	0	0	3	0
18:15:15	112	0	2	0	117	0	0	0	2	0	1	0	3	0	0	0	0	0	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	82	82	4	4	0	0	3	3	0	0	0	0	4	4	0	0	0	0
7:30:00	7	4	203	121	5	1	0	0	10	7	0	0	2	2	10	6	0	0	1	1
7:45:00	14	7	329	126	13	8	0	0	14	4	0	0	2	0	31	21	1	1	1	0
8:00:00	23	9	495	166	39	26	0	0	17	3	0	0	2	0	47	16	1	0	1	0
8:15:00	35	12	700	205	53	14	0	0	23	6	0	0	6	4	77	30	1	0	2	1
8:30:00	50	15	889	189	77	24	0	0	26	3	0	0	6	0	100	23	1	0	2	0
8:45:00	66	16	1067	178	103	26	0	0	32	6	0	0	7	1	112	12	1	0	4	2
9:00:00	99	33	1276	209	116	13	0	0	35	3	0	0	8	1	142	30	1	0	5	1
9:15:00	99	0	1276	0	116	0	0	0	35	0	0	0	8	0	142	0	1	0	5	0
16:00:00	99	0	1276	0	116	0	0	0	35	0	0	0	8	0	142	0	1	0	5	0
16:15:00	121	22	1744	468	116	0	0	0	39	4	1	1	9	1	155	13	1	0	5	0
16:30:00	148	27	2243	499	117	1	0	0	45	6	1	0	9	0	167	12	1	0	6	1
16:45:00	170	22	2698	455	118	1	0	0	50	5	1	0	9	0	180	13	1	0	6	0
17:00:00	192	22	3087	389	119	1	0	0	50	0	1	0	9	0	190	10	1	0	7	1
17:15:00	221	29	3504	417	119	0	0	0	52	2	1	0	9	0	194	4	1	0	7	0
17:30:00	249	28	3921	417	120	1	0	0	53	1	1	0	9	0	201	7	1	0	7	0
17:45:00	288	39	4258	337	122	2	0	0	54	1	1	0	11	2	204	3	1	0	7	0
18:00:00	327	39	4622	364	123	1	0	0	57	3	1	0	11	0	207	3	1	0	7	0
18:15:00	327	0	4622	0	123	0	0	0	57	0	1	0	11	0	207	0	1	0	7	0
18:15:15	327	0	4622	0	123	0	0	0	57	0	1	0	11	0	207	0	1	0	7	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	0	0	31	31	0	0	0	0	0	0	0	0	0	0	2	2	0	0
7:30:00	10	8	0	0	58	27	0	0	0	0	0	0	1	1	0	0	3	1	0	0
7:45:00	23	13	0	0	100	42	0	0	0	0	0	0	1	0	0	0	5	2	0	0
8:00:00	36	13	0	0	131	31	0	0	0	0	0	0	1	0	0	0	9	4	0	0
8:15:00	50	14	0	0	173	42	0	0	0	0	0	0	1	0	0	0	9	0	0	0
8:30:00	70	20	1	1	202	29	0	0	0	0	0	0	3	2	0	0	12	3	0	0
8:45:00	90	20	1	0	254	52	0	0	0	0	0	0	3	0	0	0	15	3	0	0
9:00:00	110	20	2	1	324	70	0	0	0	0	0	0	6	3	0	0	17	2	0	0
9:15:00	110	0	2	0	324	0	0	0	0	0	0	0	6	0	0	0	17	0	0	0
16:00:00	110	0	2	0	324	0	0	0	0	0	0	0	6	0	0	0	17	0	0	0
16:15:00	146	36	2	0	344	20	0	0	0	0	0	0	8	2	0	0	20	3	0	0
16:30:00	192	46	2	0	362	18	0	0	0	0	0	0	10	2	0	0	22	2	0	0
16:45:00	249	57	5	3	372	10	0	0	0	0	0	0	14	4	0	0	23	1	0	0
17:00:00	317	68	5	0	382	10	0	0	0	0	0	0	15	1	0	0	24	1	0	0
17:15:00	375	58	5	0	400	18	0	0	0	0	0	0	17	2	0	0	24	0	0	0
17:30:00	421	46	5	0	416	16	0	0	0	0	0	0	18	1	0	0	25	1	0	0
17:45:00	464	43	7	2	434	18	0	0	1	1	0	0	18	0	0	0	26	1	0	0
18:00:00	504	40	7	0	446	12	0	0	1	0	0	0	18	0	0	0	27	1	0	0
18:15:00	504	0	7	0	446	0	0	0	1	0	0	0	18	0	0	0	27	0	0	0
18:15:15	504	0	7	0	446	0	0	0	1	0	0	0	18	0	0	0	27	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	416	416	20	20	0	0	3	3	0	0	0	0	35	35	2	2	1	1
7:30:00	6	4	871	455	40	20	0	0	6	3	0	0	0	0	53	18	6	4	1	0
7:45:00	10	4	1412	541	80	40	0	0	9	3	0	0	0	0	64	11	7	1	2	1
8:00:00	20	10	1967	555	151	71	0	0	16	7	1	1	0	0	78	14	7	0	2	0
8:15:00	37	17	2473	506	223	72	0	0	20	4	1	0	0	0	87	9	9	2	3	1
8:30:00	56	19	2931	458	293	70	0	0	26	6	1	0	0	0	95	8	10	1	3	0
8:45:00	82	26	3381	450	335	42	0	0	29	3	1	0	1	1	111	16	10	0	4	1
9:00:00	99	17	3765	384	380	45	1	1	37	8	1	0	1	0	126	15	11	1	5	1
9:15:00	99	0	3765	0	380	0	1	0	37	0	1	0	1	0	126	0	11	0	5	0
16:00:00	99	0	3765	0	380	0	1	0	37	0	1	0	1	0	126	0	11	0	5	0
16:15:00	99	0	3967	202	394	14	1	0	38	1	1	0	1	0	132	6	11	0	5	0
16:30:00	99	0	4202	235	416	22	1	0	40	2	1	0	1	0	137	5	11	0	5	0
16:45:00	99	0	4448	246	434	18	1	0	41	1	2	1	1	0	143	6	12	1	6	1
17:00:00	99	0	4688	240	453	19	1	0	44	3	2	0	1	0	147	4	12	0	6	0
17:15:00	99	0	4938	250	473	20	1	0	46	2	2	0	1	0	151	4	13	1	6	0
17:30:00	99	0	5214	276	499	26	1	0	49	3	2	0	1	0	156	5	13	0	6	0
17:45:00	99	0	5436	222	519	20	1	0	49	0	2	0	1	0	161	5	13	0	6	0
18:00:00	99	0	5639	203	539	20	1	0	51	2	2	0	1	0	165	4	13	0	6	0
18:15:00	99	0	5639	0	539	0	1	0	51	0	2	0	1	0	165	0	13	0	6	0
18:15:15	99	0	5639	0	539	0	1	0	51	0	2	0	1	0	165	0	13	0	6	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Oakville
Site #: 1816200003
Intersection: Dundas St W & Valleyridge Dr
TFR File #: 1
Count date: 11-Dec-18

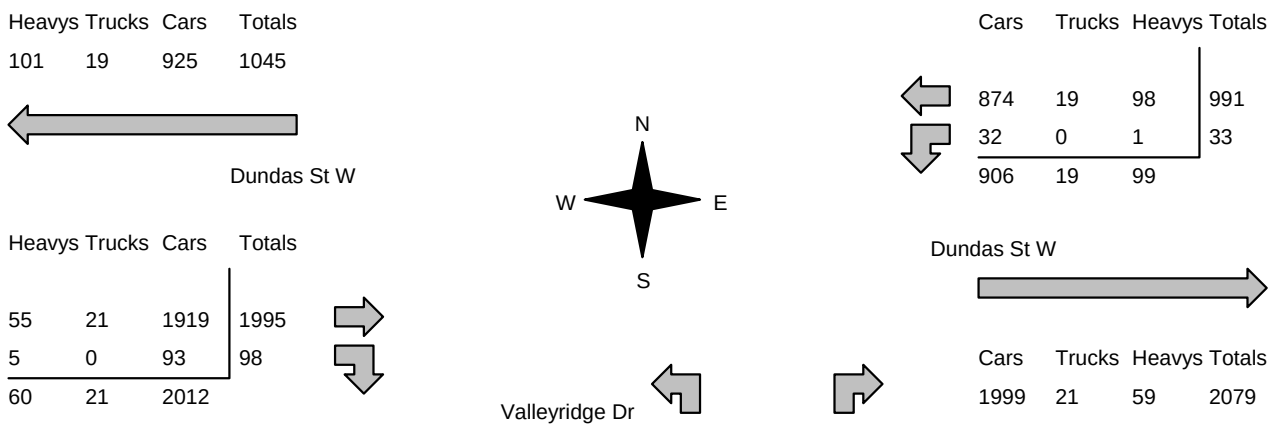
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

East Leg Total: 3103
East Entering: 1024
East Peds: 1
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 2
West Entering: 2093
West Leg Total: 3138

Cars 125
Trucks 0
Heavys 6
Totals 131

Cars 51 80 131
Trucks 0 0 0
Heavys 3 4 7
Totals 54 84

Peds Cross: ⋈
South Peds: 0
South Entering: 138
South Leg Total: 269

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Oakville
Site #: 1816200003
Intersection: Dundas St W & Valleyridge Dr
TFR File #: 1
Count date: 11-Dec-18

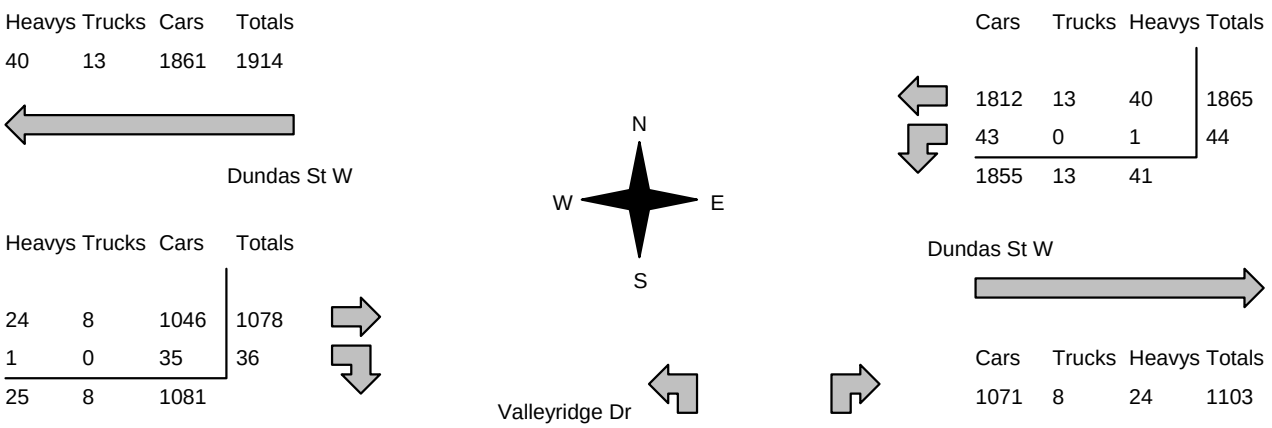
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

East Leg Total: 3012
East Entering: 1909
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 1114
West Leg Total: 3028

Cars 78
Trucks 0
Heavys 2
Totals 80

Cars 49 25 74
Trucks 0 0 0
Heavys 0 0 0
Totals 49 25

Peds Cross: ⋈
South Peds: 0
South Entering: 74
South Leg Total: 154

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Total Count Diagram

Municipality: Oakville
Site #: 1816200003
Intersection: Dundas St W & Valleyridge Dr
TFR File #: 1
Count date: 11-Dec-18

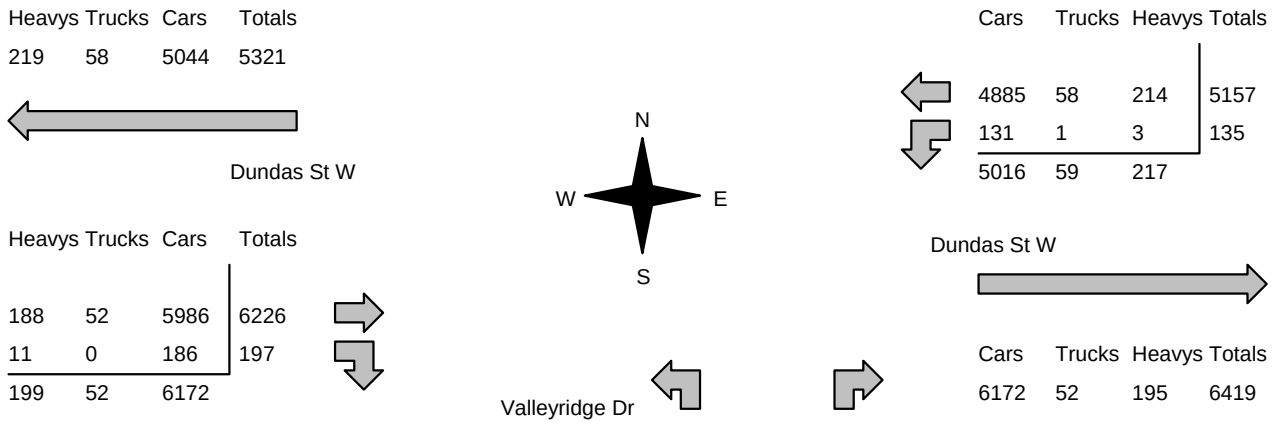
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

East Leg Total: 11711
East Entering: 5292
East Peds: 1
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 4
West Entering: 6423
West Leg Total: 11744

Cars 317
Trucks 1
Heavys 14
Totals 332

Cars 159 186 345
Trucks 0 0 0
Heavys 5 7 12
Totals 164 193

Peds Cross: ⋈
South Peds: 2
South Entering: 357
South Leg Total: 689

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Traffic Count Summary

Intersection: Dundas St W & Valleyridge Dr | **Count Date:** 11-Dec-18 | **Municipality:** Oakville

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*	*61*	*8:00:00*	*13*	*0*	*48*	*61*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*	*138*	*9:00:00*	*54*	*0*	*84*	*138*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*	*77*	*17:00:00*	*44*	*0*	*33*	*77*	*1*
18:00:00	*0*	*0*	*0*	*0*	*0*	*81*	*18:00:00*	*53*	*0*	*28*	*81*	*1*
Totals:	0	0	0	0	0	357	S Totals:	164	0	193	357	2

East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*7:00:00*	*0*	*0*	*0*	*0*	*0*
8:00:00	*11*	*613*	*0*	*624*	*0*	*2797*	*8:00:00*	*0*	*2143*	*30*	*2173*	*2*
9:00:00	*33*	*991*	*0*	*1024*	*1*	*3117*	*9:00:00*	*0*	*1995*	*98*	*2093*	*2*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*	*16:00:00*	*0*	*0*	*0*	*0*	*0*
17:00:00	*41*	*1912*	*0*	*1953*	*0*	*3000*	*17:00:00*	*0*	*1018*	*29*	*1047*	*0*
18:00:00	*50*	*1641*	*0*	*1691*	*0*	*2801*	*18:00:00*	*0*	*1070*	*40*	*1110*	*0*
Totals:	135	5157	0	5292	1	11715	W Totals:	0	6226	197	6423	4

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*15*	*57*	*0*	*44*	*53*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	89	89	0	0	1	1	3	3	0	0	0	0	4	4	0	0	0	0
7:30:00	4	1	215	126	0	0	1	0	10	7	0	0	0	0	12	8	0	0	0	0
7:45:00	8	4	355	140	0	0	1	0	14	4	0	0	0	0	33	21	0	0	0	0
8:00:00	9	1	547	192	0	0	1	0	17	3	0	0	1	1	49	16	0	0	0	0
8:15:00	19	10	772	225	0	0	1	0	23	6	0	0	1	0	82	33	0	0	0	0
8:30:00	24	5	996	224	0	0	1	0	26	3	0	0	1	0	105	23	0	0	0	0
8:45:00	32	8	1200	204	0	0	1	0	33	7	0	0	2	1	118	13	0	0	0	0
9:00:00	41	9	1421	221	0	0	1	0	36	3	0	0	2	0	147	29	0	0	1	1
9:15:00	41	0	1421	0	0	0	1	0	36	0	0	0	2	0	147	0	0	0	1	0
16:00:00	41	0	1421	0	0	0	1	0	36	0	0	0	2	0	147	0	0	0	1	0
16:15:00	47	6	1902	481	0	0	1	0	40	4	0	0	2	0	161	14	0	0	1	0
16:30:00	58	11	2417	515	0	0	1	0	46	6	0	0	3	1	173	12	0	0	1	0
16:45:00	66	8	2876	459	0	0	1	0	51	5	0	0	3	0	186	13	0	0	1	0
17:00:00	81	15	3269	393	0	0	1	0	51	0	0	0	3	0	196	10	0	0	1	0
17:15:00	90	9	3714	445	0	0	1	0	53	2	0	0	3	0	201	5	0	0	1	0
17:30:00	101	11	4138	424	0	0	1	0	54	1	0	0	3	0	206	5	0	0	1	0
17:45:00	112	11	4491	353	0	0	1	0	55	1	0	0	3	0	211	5	0	0	1	0
18:00:00	131	19	4885	394	0	0	1	0	58	3	0	0	3	0	214	3	0	0	1	0
18:15:00	131	0	4885	0	0	0	1	0	58	0	0	0	3	0	214	0	0	0	1	0
18:15:15	131	0	4885	0	0	0	1	0	58	0	0	0	3	0	214	0	0	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	2	0	0	0	21	7	0	0	0	0	0	0	0	0	0	0	1	1	0	0
7:45:00	7	5	0	0	33	12	0	0	0	0	0	0	1	1	0	0	1	0	0	0
8:00:00	12	5	0	0	47	14	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8:15:00	14	2	0	0	57	10	0	0	0	0	0	0	2	1	0	0	2	1	0	0
8:30:00	16	2	0	0	63	6	0	0	0	0	0	0	2	0	0	0	2	0	0	0
8:45:00	27	11	0	0	80	17	0	0	0	0	0	0	2	0	0	0	2	0	0	0
9:00:00	63	36	0	0	127	47	0	0	0	0	0	0	4	2	0	0	5	3	0	0
9:15:00	63	0	0	0	127	0	0	0	0	0	0	0	4	0	0	0	5	0	0	0
16:00:00	63	0	0	0	127	0	0	0	0	0	0	0	4	0	0	0	5	0	0	0
16:15:00	74	11	0	0	138	11	0	0	0	0	0	0	5	1	0	0	5	0	1	1
16:30:00	80	6	0	0	144	6	0	0	0	0	0	0	5	0	0	0	5	0	1	0
16:45:00	96	16	0	0	156	12	0	0	0	0	0	0	5	0	0	0	5	0	1	0
17:00:00	106	10	0	0	160	4	0	0	0	0	0	0	5	0	0	0	5	0	1	0
17:15:00	123	17	0	0	163	3	0	0	0	0	0	0	5	0	0	0	5	0	1	0
17:30:00	132	9	0	0	174	11	0	0	0	0	0	0	5	0	0	0	5	0	1	0
17:45:00	147	15	0	0	177	3	0	0	0	0	0	0	5	0	0	0	5	0	1	0
18:00:00	159	12	0	0	186	9	0	0	0	0	0	0	5	0	0	0	7	2	2	1
18:15:00	159	0	0	0	186	0	0	0	0	0	0	0	5	0	0	0	7	0	2	0
18:15:15	159	0	0	0	186	0	0	0	0	0	0	0	5	0	0	0	7	0	2	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	430	430	3	3	0	0	3	3	0	0	0	0	37	37	0	0	0	0
7:30:00	0	0	909	479	7	4	0	0	6	3	0	0	0	0	56	19	2	2	0	0
7:45:00	0	0	1474	565	14	7	0	0	9	3	0	0	0	0	67	11	4	2	2	2
8:00:00	0	0	2043	569	25	11	0	0	16	7	0	0	0	0	84	17	5	1	2	0
8:15:00	0	0	2582	539	43	18	0	0	20	4	0	0	0	0	94	10	5	0	2	0
8:30:00	0	0	3063	481	56	13	0	0	26	6	0	0	0	0	104	10	6	1	4	2
8:45:00	0	0	3539	476	79	23	0	0	29	3	0	0	0	0	121	17	9	3	4	0
9:00:00	0	0	3962	423	118	39	0	0	37	8	0	0	0	0	139	18	10	1	4	0
9:15:00	0	0	3962	0	118	0	0	0	37	0	0	0	0	0	139	0	10	0	4	0
16:00:00	0	0	3962	0	118	0	0	0	37	0	0	0	0	0	139	0	10	0	4	0
16:15:00	0	0	4184	222	121	3	0	0	38	1	0	0	0	0	147	8	10	0	4	0
16:30:00	0	0	4431	247	129	8	0	0	40	2	0	0	0	0	155	8	11	1	4	0
16:45:00	0	0	4689	258	140	11	0	0	41	1	0	0	0	0	163	8	11	0	4	0
17:00:00	0	0	4945	256	146	6	0	0	44	3	0	0	0	0	167	4	11	0	4	0
17:15:00	0	0	5230	285	156	10	0	0	46	2	0	0	0	0	171	4	11	0	4	0
17:30:00	0	0	5535	305	167	11	0	0	49	3	0	0	0	0	177	6	11	0	4	0
17:45:00	0	0	5776	241	177	10	0	0	50	1	0	0	0	0	183	6	11	0	4	0
18:00:00	0	0	5986	210	186	9	0	0	52	2	0	0	0	0	188	5	11	0	4	0
18:15:00	0	0	5986	0	186	0	0	0	52	0	0	0	0	0	188	0	11	0	4	0
18:15:15	0	0	5986	0	186	0	0	0	52	0	0	0	0	0	188	0	11	0	4	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Oakville
Site #: 1816200004
Intersection: Dundas St W & Bronte Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

North Leg Total:	2755			
North Entering:	1504			
North Peds:	0			
Peds Cross:	⋈			

Heavys	8	53	8	69
Trucks	3	21	2	26
Cars	163	1029	217	1409
Totals	174	1103	227	

Heavys	53	
Trucks	13	
Cars	1185	
Totals	1251	

East Leg Total:	2777	
East Entering:	910	
East Peds:	0	
Peds Cross:	⧖	

Bronte Rd

Heavys	Trucks	Cars	Totals
93	14	817	924

Dundas St W

Heavys	Trucks	Cars	Totals
5	4	317	326
30	12	1438	1480
12	3	443	458
47	19	2198	

N
W E
S

Cars	Trucks	Heavys	Totals
194	1	9	204
498	9	59	566
111	5	24	140
803	15	92	

Dundas St W

Cars	Trucks	Heavys	Totals
1803	18	46	1867

Bronte Rd

Peds Cross:	⧖			
West Peds:	0			
West Entering:	2264			
West Leg Total:	3188			

Cars	1583			
Trucks	29			
Heavys	89			
Totals	1701			

Cars	156	674	148	978
Trucks	2	8	4	14
Heavys	26	39	8	73
Totals	184	721	160	

Peds Cross:	⋈	
South Peds:	2	
South Entering:	1065	
South Leg Total:	2766	

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Oakville
Site #: 1816200004
Intersection: Dundas St W & Bronte Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E

North Leg Total: 2657
North Entering: 1075
North Peds: 0
Peds Cross: ⋈

Heavys	4	19	3	26
Trucks	1	2	1	4
Cars	251	571	223	1045
Totals	256	592	227	

Heavys	29
Trucks	13
Cars	1540
Totals	1582

East Leg Total: 2617
East Entering: 1506
East Peds: 0
Peds Cross: ⧖

Bronte Rd

Heavys	Trucks	Cars	Totals
33	8	1766	1807

Dundas St W

Cars	Trucks	Heavys	Totals
154	3	3	160
1163	6	22	1191
149	1	5	155
1466	10	30	

N
W E
S

Heavys	Trucks	Cars	Totals
2	3	213	218
15	5	751	771
3	0	175	178
20	8	1139	

Dundas St W

Cars	Trucks	Heavys	Totals
1072	9	30	1111

Bronte Rd

Peds Cross: ⧖
West Peds: 0
West Entering: 1167
West Leg Total: 2974

Cars	895
Trucks	3
Heavys	27
Totals	925

Cars	352	1173	98	1623
Trucks	1	7	3	11
Heavys	7	24	12	43
Totals	360	1204	113	

Peds Cross: ⋈
South Peds: 4
South Entering: 1677
South Leg Total: 2602

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Total Count Diagram

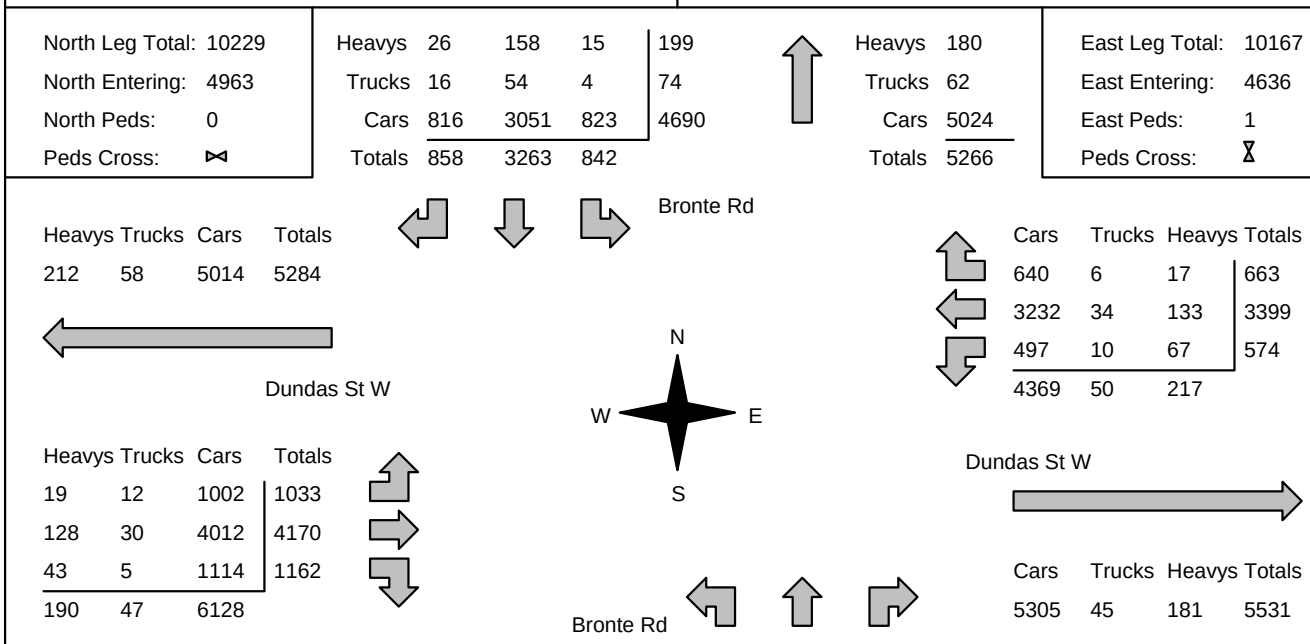
Municipality: Oakville
Site #: 1816200004
Intersection: Dundas St W & Bronte Rd
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Dundas St W runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Traffic Count Summary

Intersection: Dundas St W & Bronte Rd | **Count Date:** 11-Dec-18 | **Municipality:** Oakville

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*194*	*990*	*133*	*1317*	*0*
9:00:00	*225*	*1081*	*179*	*1485*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*202*	*582*	*308*	*1092*	*0*
18:00:00	*221*	*610*	*238*	*1069*	*0*
Totals:	842	3263	858	4963	0

North/South Total Approaches: 10079

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*137*	*645*	*151*	*933*	*1*
9:00:00	*192*	*643*	*151*	*986*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*376*	*1134*	*108*	*1618*	*3*
18:00:00	*322*	*1148*	*109*	*1579*	*4*
S Totals:	1027	3570	519	5116	9

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*107*	*362*	*153*	*622*	*1*
9:00:00	*156*	*654*	*167*	*977*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*151*	*1231*	*170*	*1552*	*0*
18:00:00	*160*	*1152*	*173*	*1485*	*0*
Totals:	574	3399	663	4636	1

East/West Total Approaches: 11001

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*325*	*1431*	*390*	*2146*	*0*
9:00:00	*299*	*1353*	*418*	*2070*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*208*	*662*	*168*	*1038*	*0*
18:00:00	*201*	*724*	*186*	*1111*	*0*
W Totals:	1033	4170	1162	6365	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*1322*	*1498*	*0*	*1712*	*1691*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200004

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	30	30	154	154	14	14	0	0	4	4	2	2	0	0	13	13	1	1	0	0
7:30:00	84	54	399	245	46	32	1	1	14	10	4	2	2	2	27	14	1	0	0	0
7:45:00	136	52	653	254	88	42	1	0	19	5	4	0	2	0	38	11	7	6	0	0
8:00:00	183	47	914	261	122	34	2	1	22	3	4	0	9	7	54	16	7	0	0	0
8:15:00	244	61	1181	267	166	44	3	1	28	6	6	2	9	0	64	10	8	1	0	0
8:30:00	301	57	1428	247	209	43	3	0	35	7	7	1	10	1	80	16	9	1	0	0
8:45:00	347	46	1685	257	251	42	3	0	40	5	10	3	11	1	104	24	12	3	0	0
9:00:00	404	57	1905	220	284	33	3	0	44	4	11	1	12	1	122	18	17	5	0	0
9:15:00	404	0	1905	0	284	0	3	0	44	0	11	0	12	0	122	0	17	0	0	0
16:00:00	404	0	1905	0	284	0	3	0	44	0	11	0	12	0	122	0	17	0	0	0
16:15:00	445	41	2032	127	360	76	3	0	47	3	13	2	12	0	126	4	20	3	0	0
16:30:00	490	45	2184	152	450	90	3	0	47	0	15	2	12	0	131	5	21	1	0	0
16:45:00	547	57	2304	120	519	69	4	1	48	1	16	1	14	2	138	7	22	1	0	0
17:00:00	602	55	2462	158	581	62	4	0	48	0	16	0	15	1	143	5	23	1	0	0
17:15:00	659	57	2603	141	642	61	4	0	48	0	16	0	15	0	148	5	25	2	0	0
17:30:00	713	54	2755	152	701	59	4	0	49	1	16	0	15	0	150	2	25	0	0	0
17:45:00	765	52	2900	145	755	54	4	0	50	1	16	0	15	0	152	2	26	1	0	0
18:00:00	823	58	3051	151	816	61	4	0	54	4	16	0	15	0	158	6	26	0	0	0
18:15:00	823	0	3051	0	816	0	4	0	54	0	16	0	15	0	158	0	26	0	0	0
18:15:15	823	0	3051	0	816	0	4	0	54	0	16	0	15	0	158	0	26	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200004

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	10	10	59	59	26	26	1	1	1	1	0	0	3	3	2	2	1	1	1	1
7:30:00	27	17	119	60	47	21	1	0	4	3	0	0	15	12	7	5	2	1	1	0
7:45:00	48	21	213	94	91	44	2	1	4	0	0	0	23	8	19	12	3	1	1	0
8:00:00	73	25	322	109	147	56	4	2	8	4	0	0	30	7	32	13	6	3	1	0
8:15:00	106	33	477	155	198	51	6	2	11	3	1	1	31	1	50	18	10	4	1	0
8:30:00	138	32	617	140	241	43	6	0	13	2	1	0	39	8	66	16	11	1	1	0
8:45:00	166	28	741	124	277	36	7	1	17	4	1	0	48	9	75	9	12	1	1	0
9:00:00	199	33	907	166	304	27	8	1	19	2	2	1	56	8	90	15	14	2	1	0
9:15:00	199	0	907	0	304	0	8	0	19	0	2	0	56	0	90	0	14	0	1	0
16:00:00	199	0	907	0	304	0	8	0	19	0	2	0	56	0	90	0	14	0	1	0
16:15:00	239	40	1230	323	352	48	9	1	19	0	2	0	60	4	100	10	14	0	1	0
16:30:00	270	31	1551	321	394	42	9	0	22	3	3	1	60	0	106	6	14	0	1	0
16:45:00	307	37	1856	305	431	37	9	0	26	4	4	1	62	2	114	8	17	3	1	0
17:00:00	341	34	2101	245	468	37	10	1	26	0	5	1	63	1	120	6	17	0	1	0
17:15:00	386	45	2438	337	508	40	10	0	28	2	6	1	64	1	124	4	17	0	1	0
17:30:00	419	33	2714	276	548	40	10	0	28	0	6	0	65	1	128	4	17	0	1	0
17:45:00	455	36	2965	251	603	55	10	0	31	3	6	0	67	2	131	3	17	0	1	0
18:00:00	497	42	3232	267	640	37	10	0	34	3	6	0	67	0	133	2	17	0	1	0
18:15:00	497	0	3232	0	640	0	10	0	34	0	6	0	67	0	133	0	17	0	1	0
18:15:15	497	0	3232	0	640	0	10	0	34	0	6	0	67	0	133	0	17	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200004

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	25	25	96	96	33	33	0	0	1	1	0	0	1	1	8	8	4	4	0	0
7:30:00	52	27	258	162	69	36	2	2	2	1	1	1	4	3	21	13	9	5	0	0
7:45:00	71	19	422	164	98	29	3	1	3	1	2	1	11	7	26	5	10	1	0	0
8:00:00	119	48	599	177	136	38	3	0	5	2	3	1	15	4	41	15	12	2	1	1
8:15:00	164	45	770	171	169	33	4	1	7	2	3	0	22	7	53	12	16	4	1	0
8:30:00	208	44	932	162	217	48	4	0	10	3	5	2	30	8	60	7	17	1	2	1
8:45:00	247	39	1087	155	246	29	4	0	17	7	6	1	31	1	67	7	17	0	2	0
9:00:00	285	38	1193	106	277	31	4	0	20	3	6	0	40	9	75	8	19	2	2	0
9:15:00	285	0	1193	0	277	0	4	0	20	0	6	0	40	0	75	0	19	0	2	0
16:00:00	285	0	1193	0	277	0	4	0	20	0	6	0	40	0	75	0	19	0	2	0
16:15:00	382	97	1401	208	301	24	5	1	28	8	7	1	42	2	91	16	22	3	2	0
16:30:00	471	89	1691	290	329	28	6	1	33	5	7	0	46	4	100	9	25	3	3	1
16:45:00	575	104	1948	257	350	21	6	0	35	2	8	1	50	4	106	6	27	2	4	1
17:00:00	647	72	2272	324	371	21	6	0	38	3	9	1	52	2	112	6	30	3	5	1
17:15:00	733	86	2544	272	398	27	6	0	39	1	10	1	53	1	117	5	34	4	7	2
17:30:00	823	90	2864	320	427	29	7	1	40	1	10	0	53	0	124	7	37	3	7	0
17:45:00	884	61	3148	284	446	19	8	1	42	2	11	1	53	0	130	6	38	1	7	0
18:00:00	966	82	3382	234	470	24	8	0	44	2	11	0	53	0	144	14	38	0	9	2
18:15:00	966	0	3382	0	470	0	8	0	44	0	11	0	53	0	144	0	38	0	9	0
18:15:15	966	0	3382	0	470	0	8	0	44	0	11	0	53	0	144	0	38	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200004

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	83	83	290	290	68	68	1	1	0	0	1	1	2	2	29	29	6	6	0	0
7:30:00	156	73	600	310	137	69	1	0	0	0	2	1	3	1	40	11	14	8	0	0
7:45:00	239	83	980	380	256	119	2	1	2	2	2	0	4	1	48	8	16	2	0	0
8:00:00	316	77	1365	385	369	113	3	1	7	5	3	1	6	2	59	11	18	2	0	0
8:15:00	397	81	1723	358	473	104	3	0	10	3	3	0	7	1	65	6	22	4	0	0
8:30:00	473	76	2038	315	580	107	5	2	12	2	5	2	8	1	70	5	26	4	0	0
8:45:00	539	66	2340	302	664	84	5	0	15	3	5	0	10	2	78	8	33	7	0	0
9:00:00	605	66	2670	330	766	102	7	2	21	6	5	0	12	2	93	15	37	4	0	0
9:15:00	605	0	2670	0	766	0	7	0	21	0	5	0	12	0	93	0	37	0	0	0
16:00:00	605	0	2670	0	766	0	7	0	21	0	5	0	12	0	93	0	37	0	0	0
16:15:00	645	40	2807	137	813	47	7	0	21	0	5	0	13	1	100	7	37	0	0	0
16:30:00	698	53	2962	155	851	38	7	0	23	2	5	0	16	3	105	5	38	1	0	0
16:45:00	752	54	3139	177	896	45	7	0	24	1	5	0	17	1	111	6	39	1	0	0
17:00:00	807	55	3306	167	931	35	8	1	26	2	5	0	17	0	114	3	40	1	0	0
17:15:00	849	42	3511	205	982	51	10	2	26	0	5	0	17	0	117	3	40	0	0	0
17:30:00	911	62	3713	202	1026	44	10	0	28	2	5	0	18	1	120	3	41	1	0	0
17:45:00	960	49	3885	172	1070	44	12	2	28	0	5	0	19	1	123	3	42	1	0	0
18:00:00	1002	42	4012	127	1114	44	12	0	30	2	5	0	19	0	128	5	43	1	0	0
18:15:00	1002	0	4012	0	1114	0	12	0	30	0	5	0	19	0	128	0	43	0	0	0
18:15:15	1002	0	4012	0	1114	0	12	0	30	0	5	0	19	0	128	0	43	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Oakville
Site #: 1816200005
Intersection: Bronte Rd & HWY 407 EB off Ram
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

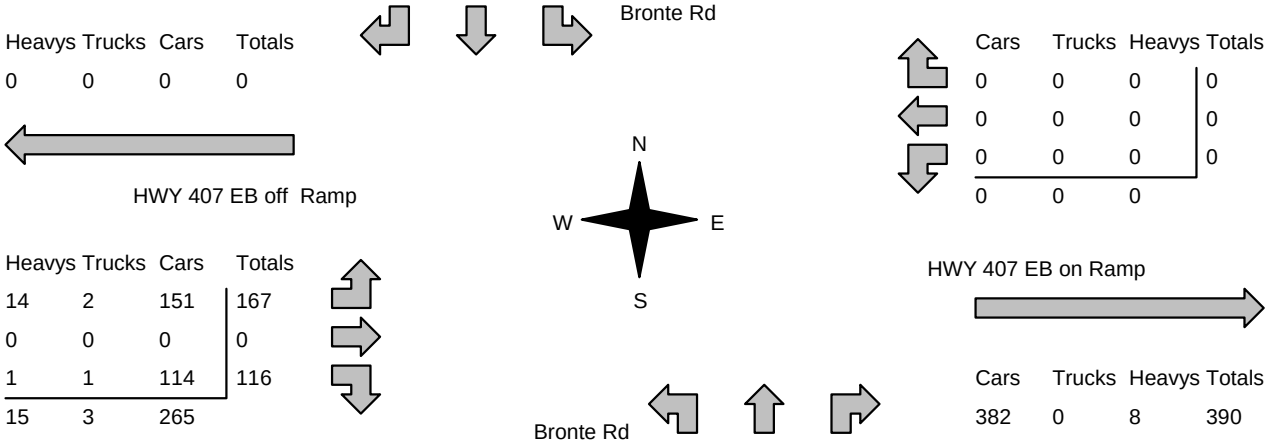
Major Road: Bronte Rd runs N/S

North Leg Total: 2988
North Entering: 1847
North Peds: 0
Peds Cross: ⋈

Heavys	0	79	0	79
Trucks	0	24	0	24
Cars	0	1744	0	1744
Totals	0	1847	0	

Heavys	68
Trucks	13
Cars	1060
Totals	1141

East Leg Total: 390
East Entering: 0
East Peds: 0
Peds Cross: ⧖



Heavys	Trucks	Cars	Totals
0	0	0	0

Cars	Trucks	Heavys	Totals
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	

Heavys	Trucks	Cars	Totals
14	2	151	167
0	0	0	0
1	1	114	116
15	3	265	

Cars	Trucks	Heavys	Totals
382	0	8	390

Peds Cross: ⧖
West Peds: 0
West Entering: 283
West Leg Total: 283

Cars	1858
Trucks	25
Heavys	80
Totals	1963

Cars	0	909	382	1291
Trucks	0	11	0	11
Heavys	0	54	8	62
Totals	0	974	390	

Peds Cross: ⋈
South Peds: 0
South Entering: 1364
South Leg Total: 3327

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Oakville
Site #: 1816200005
Intersection: Bronte Rd & HWY 407 EB off Ram
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

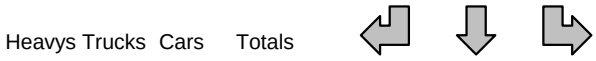
Major Road: Bronte Rd runs N/S

North Leg Total: 2978
North Entering: 1060
North Peds: 0
Peds Cross: ⋈

Heavys	0	20	0	20
Trucks	0	2	0	2
Cars	0	1038	0	1038
Totals	0	1060	0	

Heavys	29
Trucks	13
Cars	1876
Totals	1918

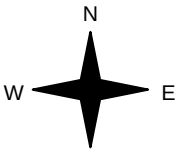
East Leg Total: 140
East Entering: 0
East Peds: 0
Peds Cross: ⧖



Heavys	Trucks	Cars	Totals
0	0	0	0

HWY 407 EB off Ramp

Cars	Trucks	Heavys	Totals
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	



Heavys	Trucks	Cars	Totals
3	0	108	111
0	0	0	0
1	0	46	47
4	0	154	

HWY 407 EB on Ramp

Cars	Trucks	Heavys	Totals
136	2	2	140

Peds Cross: ⧖
West Peds: 0
West Entering: 158
West Leg Total: 158

Cars	1084
Trucks	2
Heavys	21
Totals	1107

Cars	0	1768	136	1904
Trucks	0	13	2	15
Heavys	0	26	2	28
Totals	0	1807	140	

Peds Cross: ⋈
South Peds: 0
South Entering: 1947
South Leg Total: 3054

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Total Count Diagram

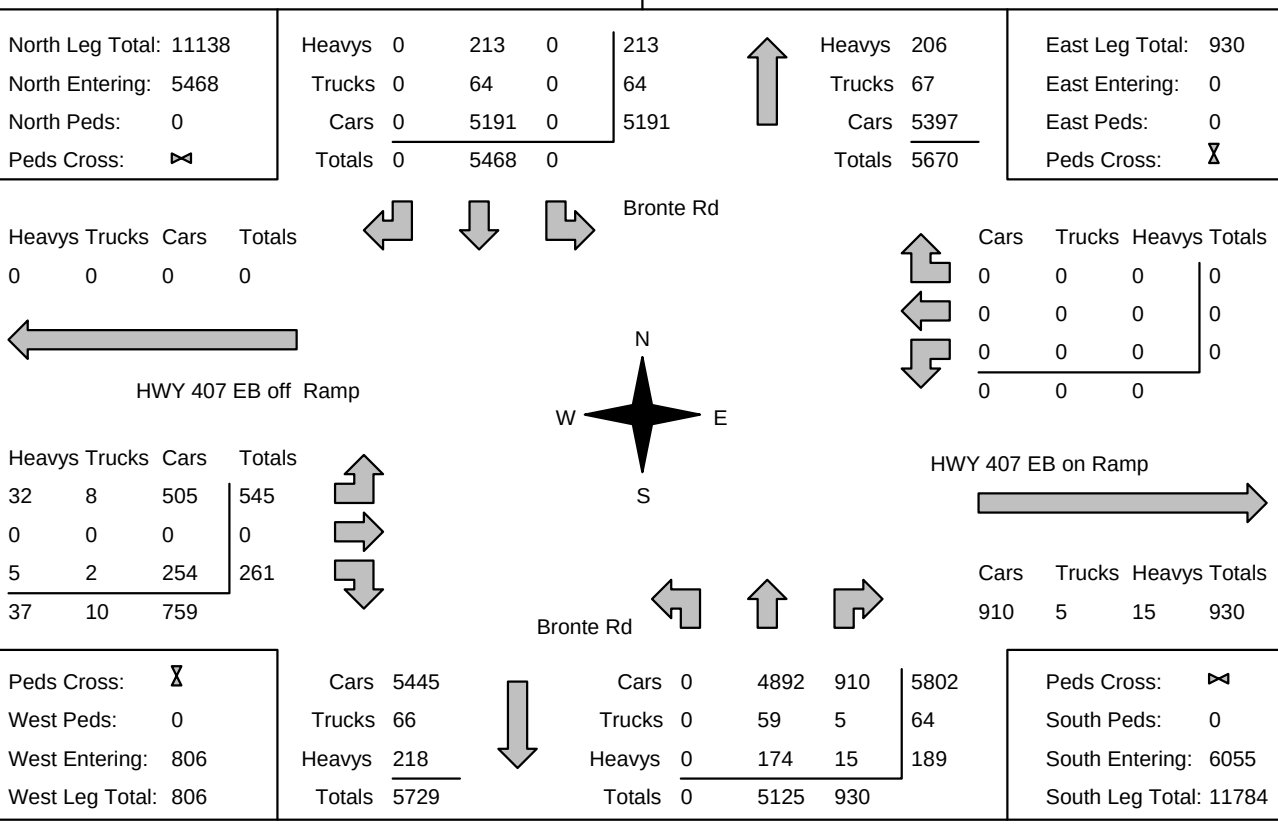
Municipality: Oakville
Site #: 1816200005
Intersection: Bronte Rd & HWY 407 EB off Ram
TFR File #: 1
Count date: 11-Dec-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Bronte Rd runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Traffic Count Summary

Intersection: Bronte Rd & HWY 407 EB off Ra | **Count Date:** 11-Dec-18 | **Municipality:** Oakville

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*1722*	*0*	*1722*	*0*
9:00:00	*0*	*1633*	*0*	*1633*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*1051*	*0*	*1051*	*0*
18:00:00	*0*	*1062*	*0*	*1062*	*0*
Totals:	0	5468	0	5468	0

North/South Total Approaches: 11523

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*885*	*297*	*1182*	*0*
9:00:00	*0*	*849*	*372*	*1221*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*1707*	*129*	*1836*	*0*
18:00:00	*0*	*1684*	*132*	*1816*	*0*
S Totals:	0	5125	930	6055	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*0*	*0*	*0*
Totals:	0	0	0	0	0

East/West Total Approaches: 806

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*141*	*0*	*98*	*239*	*0*
9:00:00	*172*	*0*	*87*	*259*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*124*	*0*	*35*	*159*	*0*
18:00:00	*108*	*0*	*41*	*149*	*0*
W Totals:	545	0	261	806	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*141*	*172*	*0*	*124*	*108*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200005

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	244	244	0	0	0	0	7	7	0	0	0	0	19	19	0	0	0	0
7:30:00	0	0	636	392	0	0	0	0	17	10	0	0	0	0	32	13	0	0	0	0
7:45:00	0	0	1091	455	0	0	0	0	23	6	0	0	0	0	53	21	0	0	0	0
8:00:00	0	0	1615	524	0	0	0	0	29	6	0	0	0	0	78	25	0	0	0	0
8:15:00	0	0	1989	374	0	0	0	0	35	6	0	0	0	0	90	12	0	0	0	0
8:30:00	0	0	2380	391	0	0	0	0	41	6	0	0	0	0	111	21	0	0	0	0
8:45:00	0	0	2788	408	0	0	0	0	47	6	0	0	0	0	139	28	0	0	0	0
9:00:00	0	0	3140	352	0	0	0	0	50	3	0	0	0	0	165	26	0	0	0	0
9:15:00	0	0	3140	0	0	0	0	0	50	0	0	0	0	0	165	0	0	0	0	0
16:00:00	0	0	3140	0	0	0	0	0	50	0	0	0	0	0	165	0	0	0	0	0
16:15:00	0	0	3399	259	0	0	0	0	53	3	0	0	0	0	173	8	0	0	0	0
16:30:00	0	0	3639	240	0	0	0	0	55	2	0	0	0	0	181	8	0	0	0	0
16:45:00	0	0	3898	259	0	0	0	0	57	2	0	0	0	0	188	7	0	0	0	0
17:00:00	0	0	4152	254	0	0	0	0	57	0	0	0	0	0	197	9	0	0	0	0
17:15:00	0	0	4414	262	0	0	0	0	57	0	0	0	0	0	203	6	0	0	0	0
17:30:00	0	0	4681	267	0	0	0	0	58	1	0	0	0	0	204	1	0	0	0	0
17:45:00	0	0	4936	255	0	0	0	0	59	1	0	0	0	0	208	4	0	0	0	0
18:00:00	0	0	5191	255	0	0	0	0	64	5	0	0	0	0	213	5	0	0	0	0
18:15:00	0	0	5191	0	0	0	0	0	64	0	0	0	0	0	213	0	0	0	0	0
18:15:15	0	0	5191	0	0	0	0	0	64	0	0	0	0	0	213	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200005

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

Count Date: 11-Dec-18 Site #: 1816200005

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	156	156	57	57	0	0	1	1	0	0	0	0	12	12	0	0	0	0
7:30:00	0	0	352	196	123	66	0	0	3	2	0	0	0	0	24	12	0	0	0	0
7:45:00	0	0	573	221	201	78	0	0	4	1	0	0	0	0	34	10	3	3	0	0
8:00:00	0	0	828	255	291	90	0	0	7	3	0	0	0	0	50	16	6	3	0	0
8:15:00	0	0	1047	219	402	111	0	0	9	2	0	0	0	0	67	17	8	2	0	0
8:30:00	0	0	1261	214	505	103	0	0	14	5	0	0	0	0	78	11	8	0	0	0
8:45:00	0	0	1448	187	593	88	0	0	18	4	2	2	0	0	84	6	11	3	0	0
9:00:00	0	0	1614	166	656	63	0	0	24	6	2	0	0	0	96	12	11	0	0	0
9:15:00	0	0	1614	0	656	0	0	0	24	0	2	0	0	0	96	0	11	0	0	0
16:00:00	0	0	1614	0	656	0	0	0	24	0	2	0	0	0	96	0	11	0	0	0
16:15:00	0	0	1939	325	693	37	0	0	33	9	2	0	0	0	111	15	12	1	0	0
16:30:00	0	0	2385	446	722	29	0	0	39	6	3	1	0	0	124	13	12	0	0	0
16:45:00	0	0	2790	405	752	30	0	0	43	4	3	0	0	0	136	12	12	0	0	0
17:00:00	0	0	3251	461	782	30	0	0	48	5	4	1	0	0	142	6	12	0	0	0
17:15:00	0	0	3655	404	813	31	0	0	50	2	5	1	0	0	146	4	12	0	0	0
17:30:00	0	0	4107	452	852	39	0	0	52	2	5	0	0	0	154	8	14	2	0	0
17:45:00	0	0	4558	451	888	36	0	0	56	4	5	0	0	0	162	8	14	0	0	0
18:00:00	0	0	4892	334	910	22	0	0	59	3	5	0	0	0	174	12	15	1	0	0
18:15:00	0	0	4892	0	910	0	0	0	59	0	5	0	0	0	174	0	15	0	0	0
18:15:15	0	0	4892	0	910	0	0	0	59	0	5	0	0	0	174	0	15	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc

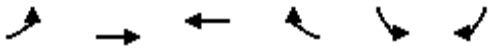
Count Date: 11-Dec-18 Site #: 1816200005

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	24	24	0	0	17	17	1	1	0	0	0	0	2	2	0	0	1	1	0	0
7:30:00	60	36	0	0	29	12	1	0	0	0	1	1	4	2	0	0	1	0	0	0
7:45:00	87	27	0	0	63	34	1	0	0	0	1	0	10	6	0	0	1	0	0	0
8:00:00	128	41	0	0	96	33	2	1	0	0	1	0	11	1	0	0	1	0	0	0
8:15:00	164	36	0	0	117	21	2	0	0	0	1	0	14	3	0	0	2	1	0	0
8:30:00	211	47	0	0	143	26	3	1	0	0	2	1	18	4	0	0	2	0	0	0
8:45:00	258	47	0	0	161	18	3	0	0	0	2	0	23	5	0	0	2	0	0	0
9:00:00	283	25	0	0	180	19	5	2	0	0	2	0	25	2	0	0	3	1	0	0
9:15:00	283	0	0	0	180	0	5	0	0	0	2	0	25	0	0	0	3	0	0	0
16:00:00	283	0	0	0	180	0	5	0	0	0	2	0	25	0	0	0	3	0	0	0
16:15:00	319	36	0	0	190	10	6	1	0	0	2	0	27	2	0	0	4	1	0	0
16:30:00	347	28	0	0	195	5	7	1	0	0	2	0	27	0	0	0	4	0	0	0
16:45:00	375	28	0	0	201	6	8	1	0	0	2	0	28	1	0	0	4	0	0	0
17:00:00	401	26	0	0	214	13	8	0	0	0	2	0	28	0	0	0	4	0	0	0
17:15:00	432	31	0	0	223	9	8	0	0	0	2	0	31	3	0	0	4	0	0	0
17:30:00	466	34	0	0	234	11	8	0	0	0	2	0	31	0	0	0	4	0	0	0
17:45:00	483	17	0	0	247	13	8	0	0	0	2	0	31	0	0	0	5	1	0	0
18:00:00	505	22	0	0	254	7	8	0	0	0	2	0	32	1	0	0	5	0	0	0
18:15:00	505	0	0	0	254	0	8	0	0	0	2	0	32	0	0	0	5	0	0	0
18:15:15	505	0	0	0	254	0	8	0	0	0	2	0	32	0	0	0	5	0	0	0

APPENDIX

E SYNCHRO OUTPUT FOR DUNDAS AND TREMAINE PM WITH 0.95 PHF

APPENDIX



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	235	1035	1970	187	79	456
Future Volume (vph)	235	1035	1970	187	79	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1301	3544	3544	1601	1825	1570
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	223	3544	3544	1601	1825	1570
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	247	1089	2074	197	83	480
RTOR Reduction (vph)	0	0	0	48	0	108
Lane Group Flow (vph)	247	1089	2074	149	83	372
Heavy Vehicles (%)	1%	3%	3%	2%	0%	4%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2			6		8
Actuated Green, G (s)	79.4	79.4	65.5	65.5	26.6	26.6
Effective Green, g (s)	80.4	83.4	69.5	69.5	30.6	30.6
Actuated g/C Ratio	0.67	0.70	0.58	0.58	0.26	0.26
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	5.5	5.5	5.5	2.5	2.5
Lane Grp Cap (vph)	247	2463	2052	927	465	400
v/s Ratio Prot	c0.09	0.31	c0.59		0.05	
v/s Ratio Perm	0.58			0.09		c0.24
v/c Ratio	1.00	0.44	1.01	0.16	0.18	0.93
Uniform Delay, d1	29.9	8.1	25.2	11.7	34.9	43.7
Progression Factor	1.00	1.00	1.10	0.89	1.00	1.00
Incremental Delay, d2	57.3	0.6	18.2	0.2	0.1	27.7
Delay (s)	87.2	8.6	46.1	10.7	35.0	71.4
Level of Service	F	A	D	B	D	E
Approach Delay (s)		23.2	43.0		66.0	
Approach LOS		C	D		E	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

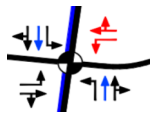
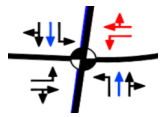
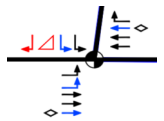
APPENDIX

F

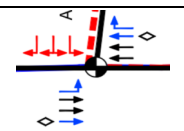
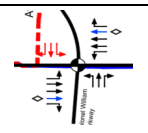
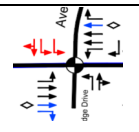
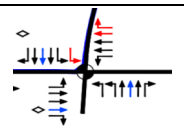
INTERSECTION IMPROVEMENTS, RESPONSIBILITY AND COST SHARING PERCENTAGES

APPENDIX

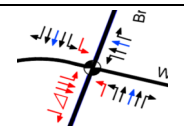
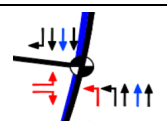
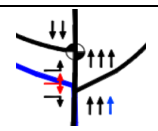
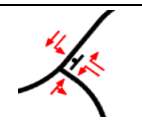
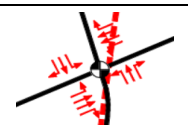
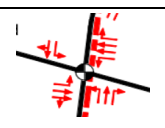
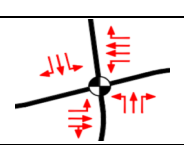
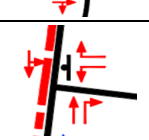
Intersection Improvements, Responsibility and Cost Sharing Percentages

Intersection Name	Phase 2 (2030) Recommended Lane Configuration	Phase 2A Recommended Lane Configuration	Phase 2 (2030)						Phase 2A (2030)						Phase 2			Phase 2A			Reponsibility Distribution Notes
			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Responsibility			Responsibility			
			AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Traffic Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	Other Background Developments - DC	Applicant	Region	Other Background Developments - DC	Applicant	Region	
Tremaine Road at Avenue One		Same as Phase 2	812	815	**86%**	136	132	**14%**	785	789	**95%**	40	42	**5%**	86%	14%	Tremaine Rd widening	95%	5%	Tremaine Rd widening	The Region would be responsible for the Tremaine Road widening for which a future EA will be completed. The east leg of the intersection would be a roadway improvement included as part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 14% (Phase 2) or 5% (Phase 2A) depending on the roadway network.
Tremaine Road at Burnhamthorpe Road		Same as Phase 2	1235	1222	**87%**	180	186	**13%**	1268	1196	**86%**	200	204	**14%**	87%	13%	Tremaine Rd widening	86%	14%	Tremaine Rd widening	The Region would be responsible for the Tremaine Road widening for which a future EA will be completed. The east leg of the intersection would be a roadway improvement included as part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 13% (Phase 2) or 14% (Phase 2A) depending on the roadway network.
Dundas Street West at Tremaine Road		Same as Phase 2	1148	1276	**77%**	365	375	**23%**	1198	1120	**76%**	364	374	**24%**	77%	23%	Dundas St widening	76%	24%	Dundas St widening	The Region would be responsible for the Tremaine Road widening for which a future EA will be completed. The Region would be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation be completed through the Dundas Street widening Phase 2 contract. The applicant should contribute 23% (Phase 2) or 24% (Phase 2A) depending on the roadway network.

Intersection Improvements, Responsibility and Cost Sharing Percentages

Intersection Name	Phase 2 (2030) Recommended Lane Configuration	Phase 2A Recommended Lane Configuration	Phase 2 (2030)						Phase 2A (2030)						Phase 2			Phase 2A			Reponsibility Distribution Notes
			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Responsibility			Responsibility			
			AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Traffic Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	Other Background Developments - DC	Applicant	Region	Other Background Developments - DC	Applicant	Region	
Dundas Street West at Avenue Two		Same as Phase 2	434	678	**60%**	356	398	**40%**	524	542	**59%**	356	398	**41%**	60%	40%	Dundas St widening	59%	41%	Dundas St widening	The Region would be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of the north leg be completed through the Dundas Street widening Phase 2 contract. The applicant should contribute 40% (Phase 2) or 41% (Phase 2A) depending on the roadway network.
Dundas Street West at Avenue Three		Same as Phase 2	682	1027	**71%**	340	373	**29%**	732	792	**68%**	339	372	**32%**	71%	29%	Dundas St widening	68%	32%	Dundas St widening	The Region would be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of the north leg be completed through the Dundas Street widening Phase 2 contract. The applicant should contribute 29% (Phase 2) or 32% (Phase 2A) depending on the roadway network.
Dundas Street West at Avenue Five		Same as Phase 2	902	1187	**72%**	395	429	**28%**	952	1019	**70%**	401	435	**30%**	72%	28%	Dundas St widening	70%	30%	Dundas St widening	The Region would be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of the north leg be completed through the Dundas Street widening Phase 2 contract. The applicant should contribute 28% (Phase 2) or 30% (Phase 2A) depending on the roadway network.
Dundas Street West at Bronte Road		Same as Phase 2	1806	1949	**63%**	1070	1100	**37%**	1855	1845	**63%**	1069	1100	**37%**	63%	37%	Dundas St widening	63%	37%	Dundas St widening	The Region would be responsible for the Dundas Street widening for which the EA was completed and is currently in the design phase. WSP recommends that the implementation of the north leg be completed through the Dundas Street widening Phase 2 contract. The applicant should contribute 37%.

Intersection Improvements, Responsibility and Cost Sharing Percentages

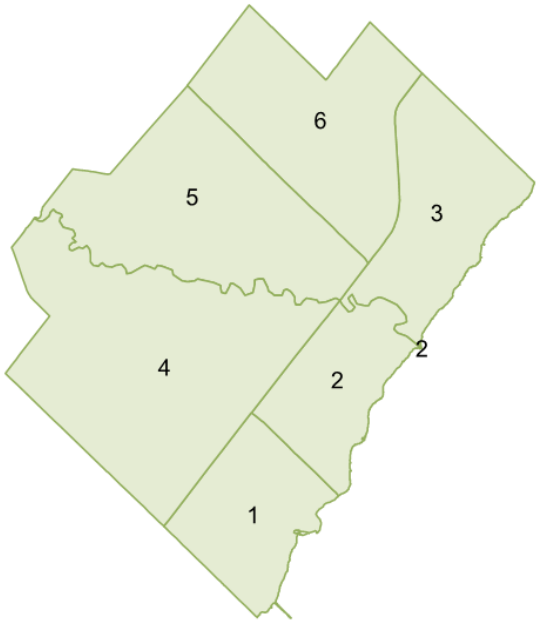
Intersection Name	Phase 2 (2030) Recommended Lane Configuration	Phase 2A Recommended Lane Configuration	Phase 2 (2030)						Phase 2A (2030)						Phase 2						Phase 2A						Reponsibility Distribution Notes
			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Additional Background Traffic with Sensitivity Volumes			Additional Site Traffic			Responsibility						Responsibility						
			AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Traffic Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	AM Peak Hour	PM Peak Hour	% of Additional Traffic	Other Background Developments - DC	Applicant	Region	Other Background Developments - DC	Applicant	Region							
Bronte Road at William Halton Parkway/Burnhamthorpe Road			2252	2236	**69%**	1020	1039	**31%**	2404	2416	**68%**	1108	1120	**32%**	69%	31%	Bronte Rd widening	68%	32%	Bronte Rd widening	The Region would be responsible for the Bronte Road widening for which a future EA will be completed. The west leg of the intersection would be a roadway improvement included as part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 31% (Phase 2) or 32% (Phase 2A) depending on the roadway network.
Bronte Road at Avenue One		Same as Phase 2	1106	1046	**61%**	711	677	**39%**	905	937	**78%**	264	269	**22%**	61%	39%	Bronte Rd widening	78%	22%	Bronte Rd widening	The Region would be responsible for the Bronte Road widening for which a future EA will be completed. The west leg of the intersection would be a roadway improvement included as part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 39% (Phase 2) or 22% (Phase 2A) depending on the roadway network.
Bronte Road at Hwy 407 EB Off-Ramp		Same as Phase 2	798	463	**75%**	244	176	**25%**	704	499	**74%**	244	176	**26%**	75%	25%	Bronte Rd widening	74%	26%	Bronte Rd widening	The Region would be responsible for the Bronte Road widening for which a future EA will be completed. The applicant should contribute 25% (Phase 2) or 26% (Phase 2A) depending on the roadway network.
Avenue One at Avenue Two		Same as Phase 2	212	188	**49%**	214	198	**51%**	349	301	**98%**	7	7	**2%**	49%	51%		98%	2%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 51% (Phase 2) or 2% (Phase 2A) depending on the roadway network.
Avenue One at Avenue Three		Same as Phase 2	683	592	**44%**	841	771	**56%**	149	144	**13%**	1037	952	**87%**	44%	56%		13%	87%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 56% (Phase 2) or 87% (Phase 2A) depending on the roadway network.
Avenue One at Avenue Five		Same as Phase 2	596	537	**47%**	677	625	**53%**	383	321	**81%**	85	84	**19%**	47%	53%		81%	19%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 53% (Phase 2) or 19% (Phase 2A) depending on the roadway network.
Burnhamthorpe Road at Avenue Two		Same as Phase 2	1144	1268	**80%**	297	323	**20%**	1546	1622	**79%**	415	432	**21%**	80%	20%		79%	21%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 20% (Phase 2) or 21% (Phase 2A) depending on the roadway network.
Burnhamthorpe Road at Avenue Three			1209	1368	**61%**	794	862	**39%**	1623	1698	**50%**	1635	1632	**50%**	61%	39%		50%	50%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 39% (Phase 2) or 50% (Phase 2A) depending on the roadway network.
Burnhamthorpe Road at Avenue Five		Same as Phase 2	1639	1697	**70%**	690	751	**30%**	2221	2194	**63%**	1283	1294	**37%**	70%	30%		63%	37%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 30% (Phase 2) or 37% (Phase 2A) depending on the roadway network.
Avenue Two at Street 4		Same as Phase 2	208	426	**41%**	426	484	**59%**	248	430	**43%**	426	484	**57%**	41%	59%		43%	57%		The intersection would be a part of the North Oakville West Secondary Plan roadway network. The applicant should contribute 59% (Phase 2) or 57% (Phase 2A) depending on the roadway network.

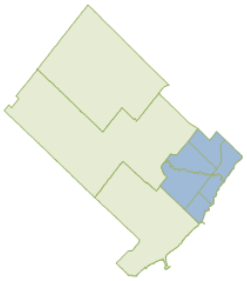
APPENDIX

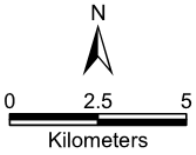
G 2016 TRANSPORTATION TOMORROW SURVEY DATA

APPENDIX

TOWN OF OAKVILLE







TOWN OF OAKVILLE

HOUSEHOLD CHARACTERISTICS

Households	Dwelling Type			Household Size					Number of Available Vehicles					Household Averages				
	House	Townhouse	Apartment	1	2	3	4	5+	0	1	2	3	4+	Persons	Workers	Drivers	Vehicles	Trips/Day
66,200	65%	17%	18%	18%	28%	18%	24%	12%	4%	30%	48%	13%	5%	2.9	1.6	2.1	1.9	6.1

POPULATION CHARACTERISTICS

Population	Age							Daily Trips per Person (age 11+)	Daily Work Trips per Worker	Population	Employment Type			Student	Licensed	Transit Pass
	0-10	11-15	16-25	26-45	46-64	65+	Median				Full Time	Part Time	At Home			
										Male						
										92,400	44%	6%	5%	26%	72%	24%
										Female						
191,000	13%	8%	13%	24%	28%	13%	41.3	2.4	0.70	98,600	30%	10%	5%	26%	70%	23%

TRIPS MADE BY RESIDENTS OF TOWN OF OAKVILLE

Time Period	Trips	% 24hr	Trip Purpose				Mode of Travel						Median Trip Length (km)			
			HB-W	HB-S	HB-D	N-HB	Driver	Pass.	Transit	GO Train	Walk & Cycle	Other	Driver	Pass.	Transit	GO Train
6-9 AM	101,000	24.9%	43%	22%	25%	9%	64%	12%	2%	9%	9%	5%	7.5	3.4	5.8	34.3
24 Hrs	405,500		29%	13%	44%	14%	69%	14%	2%	5%	7%	3%	5.7	4.6	5.0	34.3

TRIPS MADE TO TOWN OF OAKVILLE BY RESIDENTS OF THE TTS AREA

Time Period	Trips	% 24 hr	Trip Purpose				Mode of Travel						Median Trip Length (km)			
			Work	School	Home	Other	Driver	Pass.	Transit	GO Train	Walk & Cycle	Other	Driver	Pass.	Transit	GO Train
6-9 AM	103,200	25.2%	50%	23%	7%	21%	71%	12%	3%	0%	9%	5%	9.4	3.5	5.9	29.2
24 Hrs	409,600		20%	7%	42%	30%	71%	14%	3%	3%	7%	3%	6.1	4.6	5.4	34.1

Tue Dec 11 2018 13:17:44 GMT-0500 (Eastern Standard Time) - Run Time: 1820ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: Planning district of origin - pd_orig

Filters:
Planning district of origin - pd_orig In 39
and
Primary travel mode of trip - mode_prim
and
Trip purpose - trip_purp In 1

Trip 2016
Table:

Origin:	Oakville	%
Destination:		
PD 1 of Toronto	2464	2.4%
PD 2 of Toronto	1442	1.4%
PD 3 of Toronto	708	0.7%
PD 4 of Toronto	446	0.4%
PD 5 of Toronto	430	0.4%
PD 6 of Toronto	189	0.2%
PD 7 of Toronto	669	0.7%
PD 8 of Toronto	2410	2.4%
PD 9 of Toronto	603	0.6%
PD 10 of Toronto	744	0.7%
PD 11 of Toronto	283	0.3%
PD 12 of Toronto	221	0.2%
PD 13 of Toronto	246	0.2%
PD 14 of Toronto	54	0.1%
PD 15 of Toronto	54	0.1%
PD 16 of Toronto	209	0.2%
Pickering	54	0.1%
Ajax	57	0.1%
Whitby	49	0.0%
Oshawa	64	0.1%
Clarington	18	0.0%
Georgina	64	0.1%
Newmarket	82	0.1%
Richmond Hill	283	0.3%
Whitchurch-Stouffville	71	0.1%
Markham	639	0.6%
King	54	0.1%
Vaughan	1530	1.5%
Caledon	292	0.3%
Brampton	4051	4.0%
Mississauga	22765	22.4%
Halton Hills	802	0.8%
Milton	3782	3.7%
Oakville	27032	26.6%
Burlington	12838	12.6%
Flamborough	1170	1.2%
Dundas	291	0.3%
Ancaster	848	0.8%
Glanbrook	424	0.4%
Stoney Creek	1515	1.5%
Hamilton	5730	5.6%
Grimsby	940	0.9%
Lincoln	372	0.4%
Pelham	21	0.0%
Niagara-on-the-Lake	30	0.0%
St. Catharines	408	0.4%
Niagara Falls	236	0.2%
Welland	182	0.2%
Fort Erie	11	0.0%
West Lincoln	99	0.1%
Waterloo	188	0.2%
Kitchener	283	0.3%
Cambridge	795	0.8%
North Dumfries	69	0.1%
Wilmot	16	0.0%
Wellesley	15	0.0%
Woolwich	32	0.0%
City of Guelph	566	0.6%
Puslinch	59	0.1%
Guelph/Eramosa	113	0.1%
Centre Wellington	25	0.0%
Erin	190	0.2%
Orangeville	93	0.1%
Barrie	78	0.1%
Innisfil	32	0.0%
Bradford-West Gwillimbury	67	0.1%
New Tecumseth	22	0.0%
Adjala-Tosorontio	19	0.0%
Essa	74	0.1%
Kawartha Lakes	36	0.0%
Peterborough	24	0.0%
Brant	142	0.1%
Severn	19	0.0%
Mulmur	7	0.0%
Shelburne	75	0.1%
Mono	23	0.0%
Brantford	551	0.5%
External	39	0.0%
Total	101628	100%

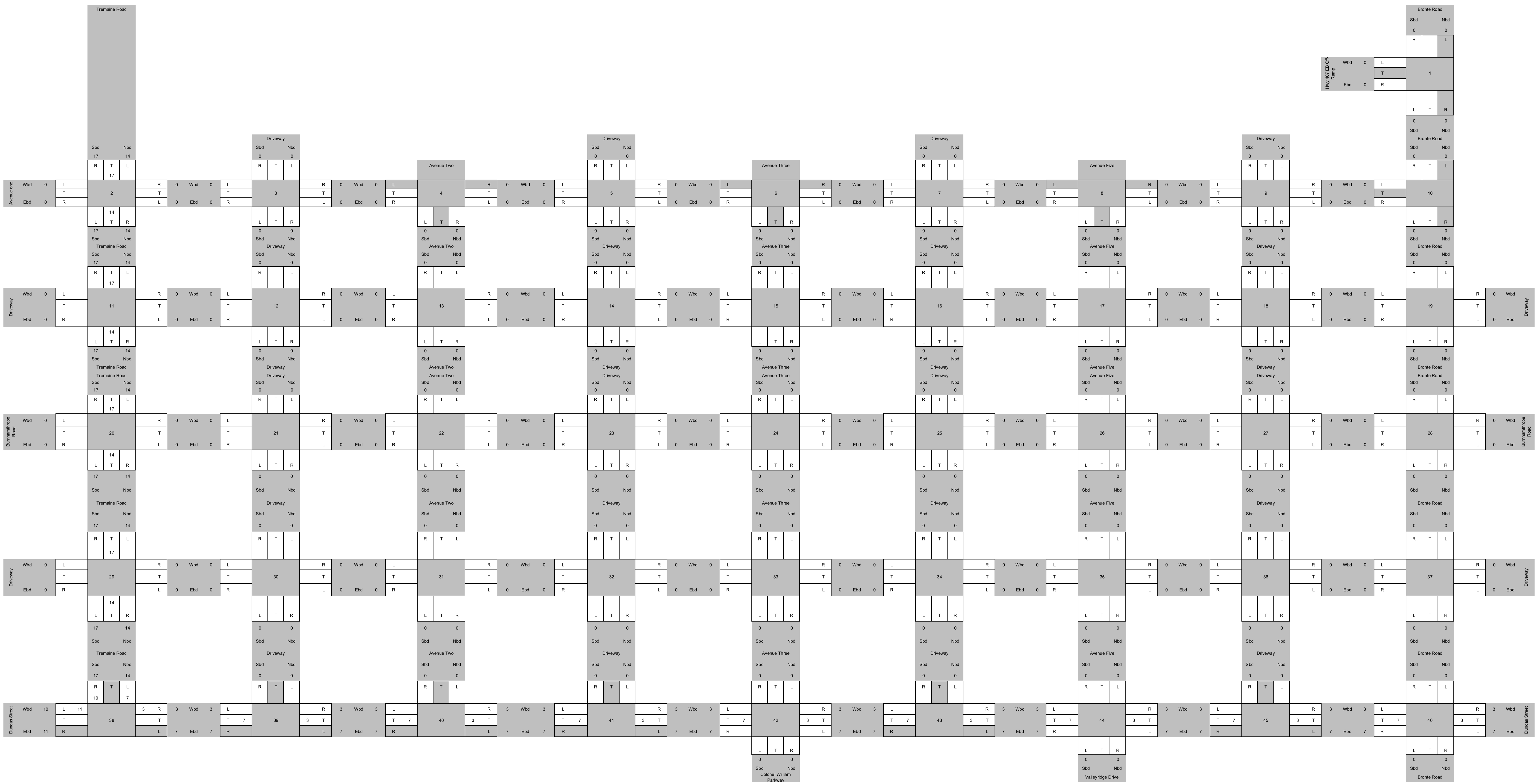
Direction	Percentage
Within Oakville	27%
Toronto	11%
York Region	3%
Peel Region	27%
Burlington	13%
Milton	4%
Halton Hills	1%
Hamilton-Niagara Region	12%
Waterloo Region	1%
Guelph	1%

Total: 100%

APPENDIX

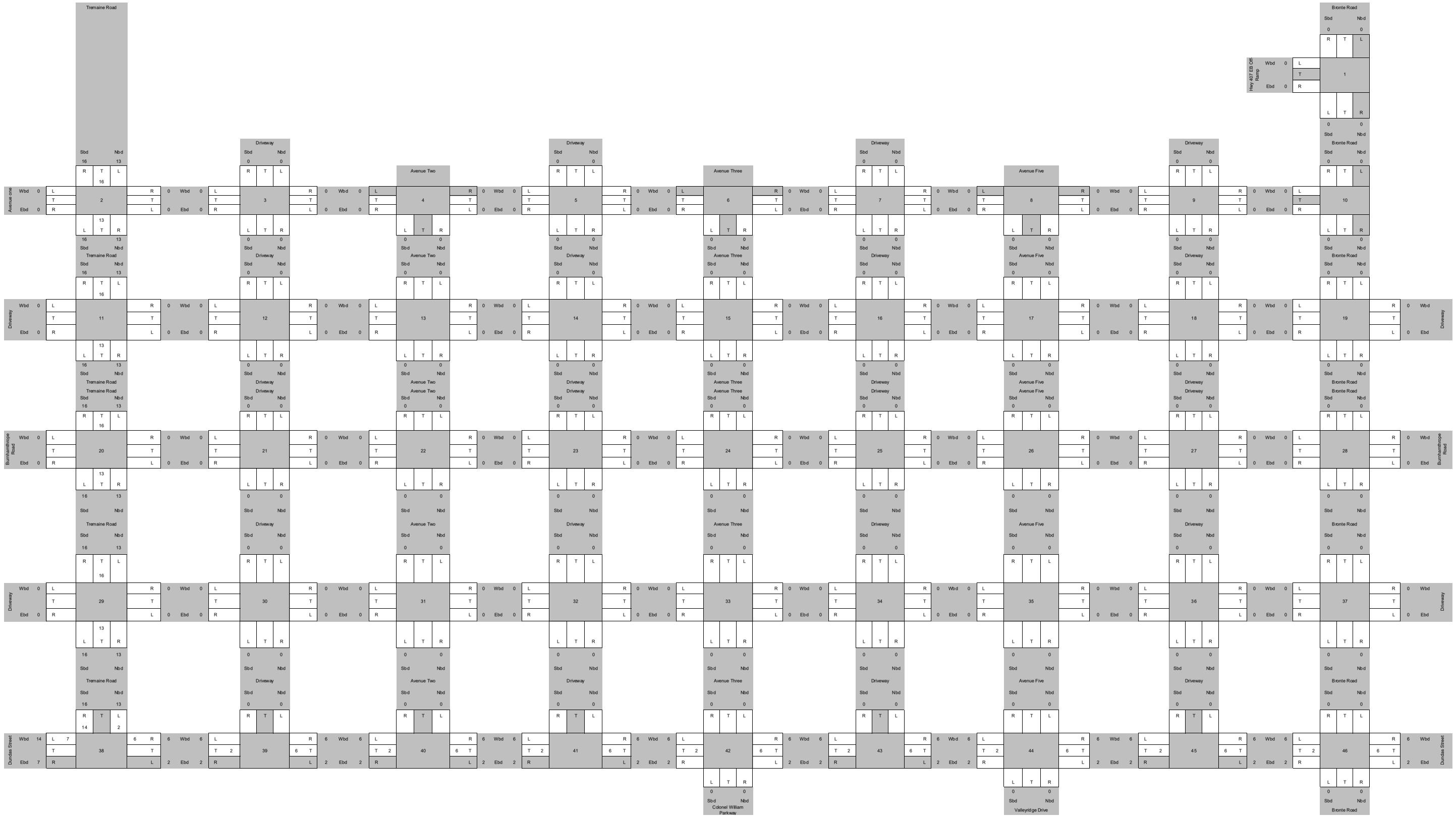
H GROWTH BREAKDOWN BETWEEN 2020 AND 2025

APPENDIX



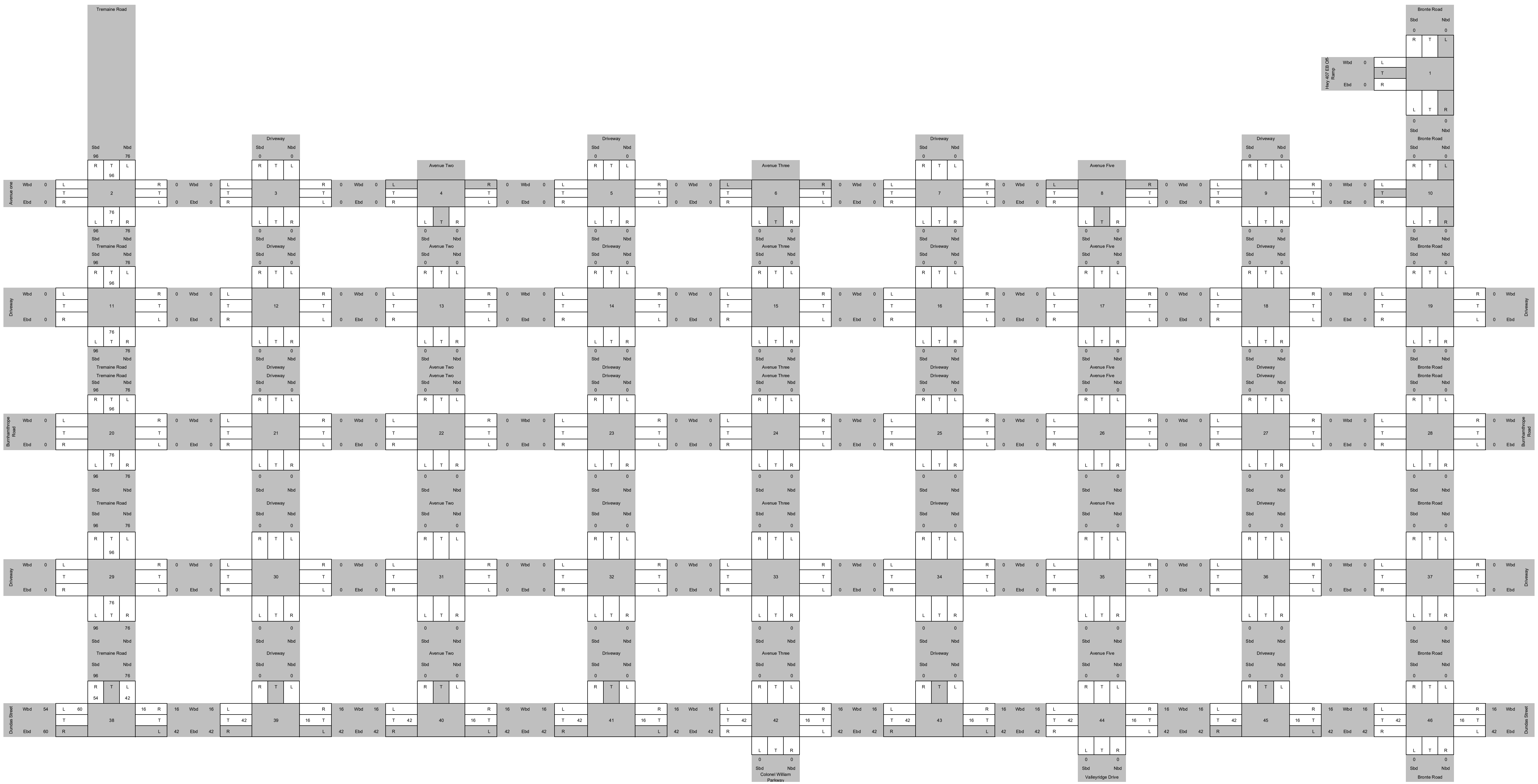
Appendix H-1
Traffic Growth from 2020 Volumes to 2021 - Weekday AM Peak Hour
407 West Employment Lands - North Oakville Transportation Study

14-00222_Traffic Model AM_20200622.xlsx



Scale NTS

Appendix H-2
Traffic Growth from2020 Volumes to 2021 - Weekday PM Peak Hour
407 West Employment Lands - North Oakville Transportation Study



Appendix H-3
Traffic Growth from derived 2021 Volumes (Existing with Applied Growth) to 2025 - Weekday AM Peak Hour
407 West Employment Lands - North Oakville Transportation Study

Appendix H-4
Traffic Growth from derived 2021 Volumes (Existing with Applied Growth) to 2025 - Weekday PM Peak Hour
407 West Employment Lands - North Oakville Transportation Study

14-08222_Traffic Model PM_20200622.xlsx

Scale: NTS

APPENDIX

I SIMTRAFFIC REPORTS

APPENDIX

APPENDIX

I-1 SIMTRAFFIC 2030 PHASE 2 FT

APPENDIX

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	12943	13120	12973	13014	13150	12971	13268
Vehs Exited	12774	12994	13022	12858	12982	12881	13112
Starting Vehs	1004	957	1039	1001	1043	1016	977
Ending Vehs	1173	1083	990	1157	1211	1106	1133
Travel Distance (km)	29337	29822	29675	29538	29778	29349	29948
Travel Time (hr)	1967.9	1865.1	1798.1	1847.5	1779.9	1919.7	1958.2
Total Delay (hr)	1450.2	1338.6	1275.3	1326.0	1254.4	1400.3	1429.7
Total Stops	30694	29414	29321	30315	30814	28763	31112
Fuel Used (l)	3573.0	3509.7	3457.9	3482.9	3443.0	3532.4	3613.8

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	13073	13121	13124	13077
Vehs Exited	13043	13019	13017	12974
Starting Vehs	1026	1038	983	1008
Ending Vehs	1056	1140	1090	1105
Travel Distance (km)	29750	29813	29754	29677
Travel Time (hr)	1809.9	1826.6	1872.0	1864.5
Total Delay (hr)	1283.4	1299.8	1346.6	1340.4
Total Stops	29992	30234	29679	30035
Fuel Used (l)	3462.4	3500.5	3517.1	3509.3

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	12943	13120	12973	13014	13150	12971	13268
Vehs Exited	12774	12994	13022	12858	12982	12881	13112
Starting Vehs	1004	957	1039	1001	1043	1016	977
Ending Vehs	1173	1083	990	1157	1211	1106	1133
Travel Distance (km)	29337	29822	29675	29538	29778	29349	29948
Travel Time (hr)	1967.9	1865.1	1798.1	1847.5	1779.9	1919.7	1958.2
Total Delay (hr)	1450.2	1338.6	1275.3	1326.0	1254.4	1400.3	1429.7
Total Stops	30694	29414	29321	30315	30814	28763	31112
Fuel Used (l)	3573.0	3509.7	3457.9	3482.9	3443.0	3532.4	3613.8

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	13073	13121	13124	13077
Vehs Exited	13043	13019	13017	12974
Starting Vehs	1026	1038	983	1008
Ending Vehs	1056	1140	1090	1105
Travel Distance (km)	29750	29813	29754	29677
Travel Time (hr)	1809.9	1826.6	1872.0	1864.5
Total Delay (hr)	1283.4	1299.8	1346.6	1340.4
Total Stops	29992	30234	29679	30035
Fuel Used (l)	3462.4	3500.5	3517.1	3509.3

Intersection: 1: Bronte Rd & 407 Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T	T
Maximum Queue (m)	65.0	65.9	57.4	19.9	27.2	26.4	177.3	179.5
Average Queue (m)	36.0	44.1	32.1	4.2	9.2	11.9	79.7	81.5
95th Queue (m)	59.3	62.0	54.8	14.8	21.4	24.2	139.2	143.5
Link Distance (m)	467.1	467.1		478.5	478.5	478.5	506.3	506.3
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			75.0					
Storage Blk Time (%)		0						
Queuing Penalty (veh)		0						

Intersection: 2: Tremaine Rd & Avenue One

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	31.0	17.3	24.4	28.6	54.5	62.4	22.2	33.7	36.8
Average Queue (m)	12.8	5.3	9.6	11.4	23.8	29.9	8.3	14.2	16.5
95th Queue (m)	24.6	13.5	21.0	23.2	47.9	57.5	18.5	29.0	31.9
Link Distance (m)	151.4		227.9		415.5	415.5		897.3	897.3
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)		100.0		15.0			15.0		
Storage Blk Time (%)	10			8	9		4	6	
Queuing Penalty (veh)	0			28	8		17	4	

Intersection: 4: Avenue Two & Avenue One

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (m)	0.7	13.9	8.1	17.7
Average Queue (m)	0.0	3.5	0.7	9.0
95th Queue (m)	0.7	11.6	4.5	15.0
Link Distance (m)	227.9	787.8		313.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			20.0	
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 6: Avenue Three & Avenue One

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (m)	30.9	12.4	46.1	137.3	65.2	32.2
Average Queue (m)	11.0	3.3	5.0	74.3	35.7	12.9
95th Queue (m)	25.0	10.8	26.6	123.0	58.0	24.9
Link Distance (m)	787.8			469.5		190.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		25.0	30.0		50.0	
Storage Blk Time (%)	1			17	4	
Queuing Penalty (veh)	0			4	6	

Intersection: 8: Avenue Five & Avenue One

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (m)	2.2	93.5	168.7	23.4	22.0
Average Queue (m)	0.1	9.2	25.9	9.4	8.9
95th Queue (m)	1.2	51.4	113.6	19.4	16.9
Link Distance (m)	469.5	441.1	441.1		268.3
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)				15.0	
Storage Blk Time (%)				5	0
Queuing Penalty (veh)				4	0

Intersection: 10: Bronte Road & Avenue One

Movement	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	T	R
Maximum Queue (m)	35.8	43.7	105.3	104.3	74.4	62.5	22.2	178.2	162.8	165.6	93.5
Average Queue (m)	13.3	18.9	78.1	76.0	9.7	8.6	7.3	130.3	123.4	123.1	49.3
95th Queue (m)	28.2	36.8	99.6	96.1	47.1	30.8	18.5	171.2	161.1	163.3	81.4
Link Distance (m)		441.1			121.5	121.5	121.5	478.5	478.5	478.5	
Upstream Blk Time (%)			0	0	0						
Queuing Penalty (veh)			0	0	1						
Storage Bay Dist (m)	230.0		205.0	205.0							230.0
Storage Blk Time (%)			0	0	0						
Queuing Penalty (veh)			0	0	1						

Intersection: 20: Tremaine Rd & Burnhamthorpe Road

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	31.0	30.0	13.5	43.0	90.3	104.0	21.4	43.9	51.8
Average Queue (m)	14.8	12.5	3.0	14.5	36.8	53.0	7.1	15.0	21.1
95th Queue (m)	27.1	24.7	10.4	31.3	76.4	96.8	17.1	33.8	42.0
Link Distance (m)	188.1	419.1	419.1		250.2	250.2		415.5	415.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)				15.0			15.0		
Storage Blk Time (%)	13			10	11		5	5	
Queuing Penalty (veh)	0			46	10		23	2	

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (m)	30.2	29.3	32.8	10.0	27.4	30.1	32.1	36.0	26.7	41.1	14.8	23.8
Average Queue (m)	11.9	11.2	16.2	1.8	10.0	10.6	12.3	14.3	9.3	17.7	4.3	8.7
95th Queue (m)	24.3	25.4	29.5	7.7	22.0	23.6	26.7	28.6	20.9	33.7	10.2	19.2
Link Distance (m)		419.1	419.1			639.5	639.5			241.3		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			15.0	80.0			60.0	50.0		25.0	50.0
Storage Blk Time (%)	6	3	8	0						4		
Queuing Penalty (veh)	10	3	2	0						5		

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	15.8	6.5
Average Queue (m)	4.1	1.6
95th Queue (m)	11.9	6.0
Link Distance (m)	313.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	TR
Maximum Queue (m)	1.4	42.0	40.3	30.7	81.8	88.1	69.4	21.7	54.4	29.2	20.0	20.1
Average Queue (m)	0.0	19.1	19.0	10.2	33.2	40.1	9.7	8.1	28.7	7.3	5.0	5.6
95th Queue (m)	1.0	34.4	34.6	23.3	64.6	70.9	39.4	18.2	47.8	19.3	14.5	15.7
Link Distance (m)		639.5	639.5		571.2	571.2			450.2			190.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			75.0			20.0	50.0		20.0	100.0	
Storage Blk Time (%)		8			0	11	1		22	0		
Queuing Penalty (veh)		0			0	18	3		24	0		

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (m)	33.2	16.4	20.0	31.9	76.3	83.3	54.1	28.2	46.8	15.7	25.0	14.6
Average Queue (m)	13.1	2.8	4.1	8.2	26.5	32.1	10.5	10.9	22.6	6.9	9.6	3.1
95th Queue (m)	25.8	10.2	13.5	21.7	63.7	70.8	30.7	23.2	40.0	14.7	21.7	10.3
Link Distance (m)		571.2	571.2		297.9	297.9			396.5			268.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	25.0			40.0			40.0	30.0		30.0	35.0	
Storage Blk Time (%)	2	0		0	3	4	0	1	8		0	1
Queuing Penalty (veh)	3	0		0	3	12	0	1	9		0	1

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	SB
Directions Served	R
Maximum Queue (m)	16.0
Average Queue (m)	4.6
95th Queue (m)	12.1
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	15.0
Storage Blk Time (%)	1
Queuing Penalty (veh)	1

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	T
Maximum Queue (m)	54.3	18.9	23.7	40.6	84.3	118.0	113.6	61.9	88.8	108.3	128.6	75.0
Average Queue (m)	24.8	5.9	9.4	13.8	23.7	71.0	71.3	18.8	56.2	60.4	75.8	33.5
95th Queue (m)	46.2	15.0	19.8	32.3	59.7	106.7	105.2	40.9	80.7	88.7	114.5	58.5
Link Distance (m)		297.9	297.9			575.5	575.5				144.3	144.3
Upstream Blk Time (%)											0	
Queuing Penalty (veh)											0	
Storage Bay Dist (m)	100.0			140.0	35.0			80.0	100.0	100.0		
Storage Blk Time (%)					1	51	8		0	0	2	
Queuing Penalty (veh)					4	37	14		0	1	14	

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	NB	NB	B14	B14	SB	SB	SB	SB	SB	SB	B12	B12
Directions Served	T	R	T	T	L	L	T	T	T	R	T	T
Maximum Queue (m)	65.9	25.6	1.0	1.0	86.5	133.3	165.7	177.6	182.1	80.0	18.3	12.8
Average Queue (m)	34.9	5.9	0.0	0.0	51.8	63.2	119.6	122.3	131.1	64.6	0.6	0.4
95th Queue (m)	56.1	18.0	1.0	1.0	77.8	109.1	162.5	168.8	180.1	106.6	13.3	12.6
Link Distance (m)	144.3		237.5	237.5			262.2	262.2	262.2		121.5	121.5
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (m)		150.0			100.0	100.0				15.0		
Storage Blk Time (%)						0	33		60	31		
Queuing Penalty (veh)						0	162		149	181		

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	B12
Directions Served	T
Maximum Queue (m)	5.2
Average Queue (m)	0.2
95th Queue (m)	2.7
Link Distance (m)	121.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 31: Avenue two & Street Four

Movement	WB	WB	NB	SB
Directions Served	L	R	R	LT
Maximum Queue (m)	13.3	9.3	16.0	17.1
Average Queue (m)	7.0	3.0	4.1	5.7
95th Queue (m)	12.7	8.7	13.5	15.5
Link Distance (m)		150.9		241.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0		15.0	
Storage Blk Time (%)	0	0	0	
Queuing Penalty (veh)	0	0	0	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	133.2	164.3	123.5	123.4	83.0	302.4	302.8	61.1	108.9	96.9	90.3	50.2
Average Queue (m)	98.8	107.8	39.3	44.4	42.4	35.2	30.8	2.0	66.3	60.0	56.7	22.1
95th Queue (m)	132.7	146.1	89.7	84.4	71.3	195.1	180.7	42.1	97.6	90.1	84.2	41.9
Link Distance (m)			285.2	285.2	285.2	298.0	298.0	298.0	401.7	401.7	401.7	
Upstream Blk Time (%)						1	0	0				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (m)	85.0	85.0										60.0
Storage Blk Time (%)	13	21	0								10	0
Queuing Penalty (veh)	91	153	1								19	0

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (m)	80.1	84.7	68.5
Average Queue (m)	42.7	45.3	17.9
95th Queue (m)	65.6	68.4	50.0
Link Distance (m)		250.2	250.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	70.0		
Storage Blk Time (%)	0	1	
Queuing Penalty (veh)	1	1	

Intersection: 40: Dundas St W & Avenue two

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	LR	R
Maximum Queue (m)	36.8	40.0	49.0	52.0	32.2	37.3	41.7	26.8	18.9	21.2	12.5
Average Queue (m)	17.0	20.3	23.3	29.6	11.6	12.1	14.4	8.7	5.0	9.7	3.3
95th Queue (m)	30.0	38.0	43.1	51.3	26.9	30.0	34.6	20.5	13.8	19.2	8.5
Link Distance (m)		401.7	401.7	401.7	712.0	712.0	712.0				129.6
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	130.0							90.0	185.0	185.0	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	44.6	67.7	77.8	83.8	31.7	26.8	58.6	68.8	72.9	39.6	44.7	72.2
Average Queue (m)	18.6	34.3	39.9	48.6	11.5	10.1	24.9	32.0	37.1	17.7	18.7	14.7
95th Queue (m)	36.7	61.0	68.4	77.1	24.0	22.2	45.8	52.9	60.0	32.7	36.2	44.1
Link Distance (m)		712.0	712.0	712.0			505.6	505.6	505.6			315.2
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	60.0				100.0	60.0				75.0	30.0	
Storage Blk Time (%)	0	1		0			0		0		3	1
Queuing Penalty (veh)	1	1		0			0		1		6	3

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	53.7	52.2	19.8	11.0
Average Queue (m)	24.4	22.1	2.5	2.2
95th Queue (m)	46.1	43.0	11.7	7.9
Link Distance (m)			450.2	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	20.0		20.0
Storage Blk Time (%)	8	29	0	0
Queuing Penalty (veh)	9	8	0	0

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	72.3	169.0	175.3	187.1	76.9	18.8	80.1	92.9	118.8	85.0	43.4	52.4
Average Queue (m)	24.8	74.3	77.9	95.7	14.1	5.6	46.5	55.7	68.4	27.7	21.5	22.3
95th Queue (m)	69.2	173.6	179.2	194.8	65.0	14.4	74.9	86.3	103.4	67.6	39.3	44.8
Link Distance (m)		505.6	505.6	505.6			215.3	215.3	215.3			325.1
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (m)	55.0				75.0	25.0				25.0	20.0	
Storage Blk Time (%)		17		13		0	19		27	2	22	18
Queuing Penalty (veh)		22		13		0	6		92	14	22	16

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	SB	SB	SB
Directions Served	L	L	TR
Maximum Queue (m)	16.3	24.1	14.4
Average Queue (m)	4.7	9.2	4.0
95th Queue (m)	13.5	19.8	10.6
Link Distance (m)			396.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	90.0	90.0	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 46: Bronte Rd & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (m)	164.9	216.7	220.4	208.8	128.3	169.0	767.5	772.6	775.0	90.0	94.3	260.0
Average Queue (m)	132.1	145.0	126.0	98.9	49.6	67.1	635.4	711.8	722.0	88.6	44.1	250.2
95th Queue (m)	195.6	247.0	223.3	166.3	102.2	146.5	961.2	918.6	913.4	104.4	80.9	322.4
Link Distance (m)		215.3	215.3	215.3			756.8	756.8	756.8			
Upstream Blk Time (%)		11	1	0			4	34	77			
Queuing Penalty (veh)		82	4	1			0	0	0			
Storage Bay Dist (m)	95.0				80.0	115.0				40.0	190.0	190.0
Storage Blk Time (%)	57	4		14	2	0	22		70	38		
Queuing Penalty (veh)	247	15		80	10	2	44		533	166		

Intersection: 46: Bronte Rd & Dundas St W

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB	B14	B14
Directions Served	T	T	T	R	L	L	T	T	T	R	T	T
Maximum Queue (m)	359.5	353.8	345.4	95.1	63.7	67.0	169.5	173.6	177.6	125.0	6.9	8.0
Average Queue (m)	350.5	325.2	211.0	25.2	25.5	29.4	122.3	124.1	124.0	45.7	0.7	0.9
95th Queue (m)	357.3	409.8	367.0	58.6	48.1	82.5	178.7	183.5	185.8	127.8	10.3	11.8
Link Distance (m)	341.6	341.6	341.6				237.5	237.5	237.5		144.3	144.3
Upstream Blk Time (%)	72	21	0			0	1	1	1			
Queuing Penalty (veh)	0	0	0			0	4	7	9			
Storage Bay Dist (m)				45.0	180.0	180.0				50.0		
Storage Blk Time (%)	88		16	2			2		34	0		
Queuing Penalty (veh)	549		52	10			6		58	0		

Intersection: 46: Bronte Rd & Dundas St W

Movement	B14
Directions Served	T
Maximum Queue (m)	7.3
Average Queue (m)	1.0
95th Queue (m)	13.2
Link Distance (m)	144.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3175

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	13179	13180	13252	13208	13139	13185	13295
Vehs Exited	12281	12052	12238	12115	12256	12394	12224
Starting Vehs	1054	1005	1032	1024	1035	1026	1063
Ending Vehs	1952	2133	2046	2117	1918	1817	2134
Travel Distance (km)	30342	30006	30123	29801	30140	30214	30266
Travel Time (hr)	1575.4	1674.5	1677.3	1674.0	1667.8	1581.1	1756.4
Total Delay (hr)	1039.0	1144.5	1144.6	1147.7	1134.1	1045.9	1219.3
Total Stops	37909	40126	38983	39367	38454	38379	41041
Fuel Used (l)	3270.5	3344.5	3344.2	3337.8	3338.3	3272.5	3415.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	13253	13202	13246	13212
Vehs Exited	12082	12180	12362	12219
Starting Vehs	1012	1033	1082	1038
Ending Vehs	2183	2055	1966	2028
Travel Distance (km)	29931	29877	30323	30102
Travel Time (hr)	1728.3	1610.5	1566.6	1651.2
Total Delay (hr)	1198.6	1081.9	1028.9	1118.5
Total Stops	39910	37961	36738	38887
Fuel Used (l)	3369.1	3268.3	3258.4	3321.9

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	13179	13180	13252	13208	13139	13185	13295
Vehs Exited	12281	12052	12238	12115	12256	12394	12224
Starting Vehs	1054	1005	1032	1024	1035	1026	1063
Ending Vehs	1952	2133	2046	2117	1918	1817	2134
Travel Distance (km)	30342	30006	30123	29801	30140	30214	30266
Travel Time (hr)	1575.4	1674.5	1677.3	1674.0	1667.8	1581.1	1756.4
Total Delay (hr)	1039.0	1144.5	1144.6	1147.7	1134.1	1045.9	1219.3
Total Stops	37909	40126	38983	39367	38454	38379	41041
Fuel Used (l)	3270.5	3344.5	3344.2	3337.8	3338.3	3272.5	3415.4

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	13253	13202	13246	13212
Vehs Exited	12082	12180	12362	12219
Starting Vehs	1012	1033	1082	1038
Ending Vehs	2183	2055	1966	2028
Travel Distance (km)	29931	29877	30323	30102
Travel Time (hr)	1728.3	1610.5	1566.6	1651.2
Total Delay (hr)	1198.6	1081.9	1028.9	1118.5
Total Stops	39910	37961	36738	38887
Fuel Used (l)	3369.1	3268.3	3258.4	3321.9

Intersection: 1: Bronte Rd & 407 Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T	T
Maximum Queue (m)	37.4	35.7	16.8	13.7	23.9	29.2	32.2	26.8
Average Queue (m)	18.0	15.0	5.0	2.0	6.0	6.1	11.4	7.2
95th Queue (m)	31.4	29.1	13.3	8.8	17.3	19.4	26.1	20.4
Link Distance (m)	467.1	467.1		478.5	478.5	478.5	506.3	506.3
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			75.0					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Tremaine Rd & Avenue One

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	6.6	54.9	149.7	227.8	30.8	70.8	75.0	79.8	906.2	903.8
Average Queue (m)	0.7	23.0	91.3	95.4	11.2	42.5	48.3	10.9	466.3	466.7
95th Queue (m)	4.2	48.6	179.1	248.1	24.8	68.1	73.7	54.3	1051.1	1042.7
Link Distance (m)		151.4		227.9		415.5	415.5		897.3	897.3
Upstream Blk Time (%)				16					24	23
Queuing Penalty (veh)				31					0	0
Storage Bay Dist (m)	15.0		100.0		15.0			15.0		
Storage Blk Time (%)		34	45	9	14	26		0	70	
Queuing Penalty (veh)		2	51	12	44	13		1	10	

Intersection: 4: Avenue Two & Avenue One

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (m)	0.6	153.6	16.0	14.9
Average Queue (m)	0.0	27.9	4.4	7.9
95th Queue (m)	0.6	140.6	14.9	13.6
Link Distance (m)	227.9	787.8		313.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			20.0	
Storage Blk Time (%)			5	0
Queuing Penalty (veh)			3	0

Intersection: 6: Avenue Three & Avenue One

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (m)	70.3	37.7	43.0	37.8	28.2	11.4
Average Queue (m)	29.2	10.1	18.6	7.1	11.4	3.3
95th Queue (m)	58.7	27.2	33.9	23.1	23.1	8.8
Link Distance (m)	787.8			469.5		190.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		25.0	30.0		50.0	
Storage Blk Time (%)	7	0	3	0		
Queuing Penalty (veh)	16	1	6	0		

Intersection: 8: Avenue Five & Avenue One

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (m)	14.1	32.9	4.3	11.9	25.4
Average Queue (m)	1.5	11.8	0.1	4.0	10.9
95th Queue (m)	7.7	25.5	3.4	11.6	20.0
Link Distance (m)	469.5	441.1	441.1		268.3
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)				15.0	
Storage Blk Time (%)				0	3
Queuing Penalty (veh)				0	1

Intersection: 9: Bend

Movement	WB
Directions Served	T
Maximum Queue (m)	31.1
Average Queue (m)	1.0
95th Queue (m)	30.6
Link Distance (m)	328.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Bronte Road & Avenue One

Movement	EB	EB	NB	NB	NB	NB	NB	B12	B12	B12	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	T	T	T
Maximum Queue (m)	170.0	240.2	46.9	77.2	95.5	104.0	106.0	1.9	8.4	11.8	91.1	79.5
Average Queue (m)	64.4	125.8	24.9	33.2	63.9	72.5	77.0	0.1	0.5	0.9	59.4	50.0
95th Queue (m)	154.2	232.6	41.9	59.5	93.8	101.4	105.9	1.4	5.5	7.3	83.0	72.7
Link Distance (m)		441.1			94.2	94.2	94.2	289.7	289.7	289.7	478.5	478.5
Upstream Blk Time (%)				0	1	2	4					
Queuing Penalty (veh)				0	4	15	27					
Storage Bay Dist (m)	230.0		205.0	205.0								
Storage Blk Time (%)	0	4		0	1							
Queuing Penalty (veh)	1	13		0	1							

Intersection: 10: Bronte Road & Avenue One

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	69.1	20.4
Average Queue (m)	39.5	8.3
95th Queue (m)	61.5	16.2
Link Distance (m)	478.5	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		230.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Tremaine Rd & Burnhamthorpe Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	9.6	34.1	313.0	246.7	21.8	88.8	100.0	79.7	429.0	428.7
Average Queue (m)	1.5	13.9	209.1	87.6	4.0	57.5	67.1	16.3	382.0	385.9
95th Queue (m)	6.7	28.2	399.2	279.4	14.7	84.1	95.6	57.8	530.5	520.9
Link Distance (m)		188.1	419.1	419.1		250.2	250.2		415.5	415.5
Upstream Blk Time (%)			3	1					43	54
Queuing Penalty (veh)			8	2					213	266
Storage Bay Dist (m)	15.0				15.0			15.0		
Storage Blk Time (%)	0	13			1	21		7	24	
Queuing Penalty (veh)	0	1			4	3		35	13	

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (m)	15.3	35.0	36.6	24.3	42.6	57.2	51.3	21.6	20.4	18.1	18.5	56.3
Average Queue (m)	4.3	15.0	15.2	6.4	18.6	28.0	22.2	8.4	6.5	4.8	6.9	27.0
95th Queue (m)	12.4	28.5	28.7	17.2	34.8	48.7	43.5	17.8	15.8	13.2	14.2	45.0
Link Distance (m)		419.1	419.1			639.5	639.5			241.3		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			15.0	80.0			60.0	50.0		25.0	50.0
Storage Blk Time (%)	1	7	7	1		0	1			0	0	1
Queuing Penalty (veh)	1	2	5	1		0	1			0	0	1

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	41.8	16.0
Average Queue (m)	16.6	6.0
95th Queue (m)	32.6	12.9
Link Distance (m)	313.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	TR
Maximum Queue (m)	22.5	70.0	76.6	30.6	50.7	51.5	8.9	27.4	23.5	25.7	40.9	53.2
Average Queue (m)	3.5	36.4	43.1	11.0	21.6	23.8	0.9	12.3	6.1	11.3	20.1	26.8
95th Queue (m)	13.9	59.0	66.7	23.4	42.2	44.1	4.5	23.4	16.2	21.1	34.9	44.3
Link Distance (m)		639.5	639.5		571.2	571.2			450.2			190.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			75.0			20.0	50.0		20.0	100.0	
Storage Blk Time (%)	0	20			0	6	0		0	1		
Queuing Penalty (veh)	1	3			0	2	0		1	1		

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (m)	52.8	329.6	337.9	34.9	49.4	57.0	22.5	18.4	20.4	30.5	76.7	72.1
Average Queue (m)	9.4	100.9	120.7	15.4	23.1	28.0	7.0	5.7	4.8	13.1	37.7	17.1
95th Queue (m)	32.5	302.3	312.0	30.8	44.3	51.4	21.0	15.2	14.4	25.6	64.1	49.9
Link Distance (m)		571.2	571.2		298.0	298.0			396.5			268.3
Upstream Blk Time (%)		0	0									
Queuing Penalty (veh)		1	1									
Storage Bay Dist (m)	25.0			40.0			20.0	30.0		30.0	35.0	
Storage Blk Time (%)	0	16		0	1	10	0		0	1	13	9
Queuing Penalty (veh)	1	8		1	1	6	1		0	0	28	34

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	SB
Directions Served	R
Maximum Queue (m)	22.4
Average Queue (m)	9.5
95th Queue (m)	18.1
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	15.0
Storage Blk Time (%)	2
Queuing Penalty (veh)	5

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	T
Maximum Queue (m)	112.3	250.2	285.4	189.7	84.9	299.3	285.8	112.0	33.1	38.0	70.4	80.1
Average Queue (m)	63.3	79.2	140.3	142.9	68.2	115.8	96.3	63.0	15.2	18.0	32.6	37.9
95th Queue (m)	106.5	208.6	325.2	217.4	100.4	319.3	293.8	100.9	30.2	32.1	64.4	71.3
Link Distance (m)		298.0	298.0			575.2	575.2				129.3	129.3
Upstream Blk Time (%)		0	7			0	0					
Queuing Penalty (veh)		0	49			0	0					
Storage Bay Dist (m)	100.0			140.0	35.0			80.0	100.0	100.0		
Storage Blk Time (%)	3	0	0	32	74	2		6				
Queuing Penalty (veh)	6	0	3	80	65	4		5				

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	NB	NB	B14	SB	SB	SB	SB	SB	SB	B12	B12	B12
Directions Served	T	R	T	L	L	T	T	T	R	T	T	T
Maximum Queue (m)	77.4	8.2	2.1	53.5	158.6	277.3	266.7	258.4	80.0	67.8	55.5	43.7
Average Queue (m)	39.4	0.9	0.1	21.8	75.1	171.6	154.1	154.6	53.0	14.6	9.4	6.6
95th Queue (m)	72.6	4.2	2.1	40.6	183.6	309.8	286.8	279.2	111.0	65.8	50.9	43.6
Link Distance (m)	129.3		252.8			289.7	289.7	289.7		94.2	94.2	94.2
Upstream Blk Time (%)						15	6	6		1	0	0
Queuing Penalty (veh)						80	30	33		6	2	1
Storage Bay Dist (m)		150.0		100.0	100.0				15.0			
Storage Blk Time (%)				0	0	48		72	2			
Queuing Penalty (veh)				0	0	102		102	7			

Intersection: 31: Avenue two & Street Four

Movement	WB	WB	NB	SB
Directions Served	L	R	R	LT
Maximum Queue (m)	18.3	45.8	14.3	27.6
Average Queue (m)	13.5	14.2	3.3	3.4
95th Queue (m)	19.3	34.2	12.0	14.9
Link Distance (m)		150.9		241.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0		15.0	
Storage Blk Time (%)	11	1	0	
Queuing Penalty (veh)	9	3	0	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (m)	90.8	96.4	39.8	32.5	25.9	128.3	137.4	143.3	110.0	45.9	258.4	261.2
Average Queue (m)	55.3	62.3	11.8	10.7	6.0	91.5	97.4	99.5	40.2	13.4	145.4	254.0
95th Queue (m)	80.4	87.4	29.0	24.6	18.0	122.9	127.6	131.2	97.8	33.9	325.7	258.1
Link Distance (m)			328.3	328.3	328.3	401.7	401.7	401.7			250.2	250.2
Upstream Blk Time (%)											3	31
Queuing Penalty (veh)											17	215
Storage Bay Dist (m)	85.0	85.0							60.0	70.0		
Storage Blk Time (%)	1	1						29	0			
Queuing Penalty (veh)	2	4						79	1			

Intersection: 40: Dundas St W & Avenue two

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB	
Directions Served	L	T	T	T	T	T	T	R	L	LR	R	
Maximum Queue (m)	44.7	36.9	35.2	46.2	93.0	99.2	105.5	25.5	56.6	67.1	63.3	
Average Queue (m)	19.0	14.0	16.4	19.2	52.4	59.4	64.3	9.7	31.3	40.3	30.4	
95th Queue (m)	36.4	28.2	31.8	37.2	82.5	91.1	97.1	20.0	50.4	59.3	53.0	
Link Distance (m)		401.7	401.7	401.7	712.0	712.0	712.0				129.6	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	130.0							90.0	185.0	185.0		
Storage Blk Time (%)							2					
Queuing Penalty (veh)							3					

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	39.9	56.3	54.9	62.1	19.8	38.0	129.1	134.5	141.8	57.7	59.9	122.2
Average Queue (m)	14.5	28.3	30.0	35.3	5.6	16.5	85.2	90.3	96.2	16.0	45.8	32.4
95th Queue (m)	29.8	48.6	48.7	57.0	14.5	30.7	117.1	121.0	127.3	38.0	68.2	102.8
Link Distance (m)		712.0	712.0	712.0			505.6	505.6	505.6			315.2
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	60.0				100.0	60.0				75.0	30.0	
Storage Blk Time (%)		0					25		26		39	0
Queuing Penalty (veh)		0					26		64		29	0

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	41.5	69.9	231.5	67.4
Average Queue (m)	9.5	66.4	124.4	24.2
95th Queue (m)	28.3	79.7	252.5	50.7
Link Distance (m)			450.2	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	20.0		20.0
Storage Blk Time (%)	0	66	1	23
Queuing Penalty (veh)	0	139	7	104

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	22.2	62.4	72.7	97.5	14.1	18.7	105.3	99.9	92.7	60.5	30.1	24.5
Average Queue (m)	8.4	27.4	34.3	52.1	4.0	7.4	54.1	63.0	69.5	8.7	12.7	7.6
95th Queue (m)	18.8	51.6	60.7	84.5	11.9	16.6	84.3	90.3	91.0	29.4	25.3	18.5
Link Distance (m)		505.6	505.6	505.6			215.3	215.3	215.3			325.1
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0				75.0	25.0				25.0	20.0	
Storage Blk Time (%)		1		2		0	18		23	0	9	1
Queuing Penalty (veh)		0		1		0	8		29	0	3	0

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	SB	SB	SB
Directions Served	L	L	TR
Maximum Queue (m)	61.8	79.7	51.5
Average Queue (m)	31.7	46.4	20.0
95th Queue (m)	55.2	69.1	39.2
Link Distance (m)			396.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	90.0	90.0	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 46: Bronte Rd & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (m)	139.5	163.1	165.1	157.6	140.8	175.0	698.8	695.3	696.8	90.0	221.7	260.0
Average Queue (m)	89.0	97.7	96.2	92.9	78.6	150.4	434.0	433.2	436.6	82.1	169.3	209.4
95th Queue (m)	156.9	160.8	150.6	138.5	134.6	227.4	782.7	772.9	770.8	117.0	254.9	312.8
Link Distance (m)		215.3	215.3	215.3			756.2	756.2	756.2			
Upstream Blk Time (%)		0	0	0			7	5	8			
Queuing Penalty (veh)		2	0	0			0	0	0			
Storage Bay Dist (m)	95.0				80.0	115.0				40.0	190.0	190.0
Storage Blk Time (%)	27	6		18	9	3	60		71	7	16	28
Queuing Penalty (veh)	105	12		111	33	16	176		212	37	68	120

Intersection: 46: Bronte Rd & Dundas St W

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB	B14	B14
Directions Served	T	T	T	R	L	L	T	T	T	R	T	T
Maximum Queue (m)	349.9	342.0	335.3	130.0	217.5	252.7	272.5	223.3	157.7	117.9	135.8	128.6
Average Queue (m)	269.2	256.2	238.7	103.0	191.8	213.9	207.5	113.3	110.0	50.2	67.4	13.2
95th Queue (m)	398.0	385.7	373.5	178.4	264.4	308.1	335.4	176.6	154.2	118.9	171.1	74.6
Link Distance (m)	341.6	341.6	341.6				252.8	252.8	252.8		129.3	129.3
Upstream Blk Time (%)	19	5	7			24	33	0			12	1
Queuing Penalty (veh)	0	0	0			0	255	0			90	4
Storage Bay Dist (m)				45.0	180.0	180.0				50.0		
Storage Blk Time (%)	49		75	6	57	63	1		44	3		
Queuing Penalty (veh)	305		155	24	246	275	5		114	12		

Intersection: 46: Bronte Rd & Dundas St W

Movement	B14
Directions Served	T
Maximum Queue (m)	59.1
Average Queue (m)	2.3
95th Queue (m)	28.7
Link Distance (m)	129.3
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 4602

APPENDIX

I-2 SIMTRAFFIC 2030 PHASE 2A FT

APPENDIX

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	13089	12939	12856	12889	12940	12962	12967
Vehs Exited	12794	12598	12670	12755	12733	12629	12611
Starting Vehs	990	956	997	952	1024	988	991
Ending Vehs	1285	1297	1183	1086	1231	1321	1347
Travel Distance (km)	29901	29581	29546	29524	29862	29644	29502
Travel Time (hr)	2085.0	2158.0	1976.1	1945.7	2141.4	2094.9	2050.7
Total Delay (hr)	1561.2	1639.3	1458.7	1427.8	1618.0	1574.6	1534.3
Total Stops	32413	32618	32337	30278	33096	33370	31573
Fuel Used (l)	3705.6	3734.9	3585.4	3543.1	3747.4	3689.6	3650.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	13088	12835	12990	12952
Vehs Exited	12888	12560	12686	12695
Starting Vehs	1039	958	982	986
Ending Vehs	1239	1233	1286	1248
Travel Distance (km)	30071	29356	29607	29660
Travel Time (hr)	2117.5	2006.0	2085.3	2066.1
Total Delay (hr)	1590.6	1491.2	1566.8	1546.2
Total Stops	33398	30413	32452	32187
Fuel Used (l)	3741.9	3596.2	3680.2	3667.5

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	13089	12939	12856	12889	12940	12962	12967
Vehs Exited	12794	12598	12670	12755	12733	12629	12611
Starting Vehs	990	956	997	952	1024	988	991
Ending Vehs	1285	1297	1183	1086	1231	1321	1347
Travel Distance (km)	29901	29581	29546	29524	29862	29644	29502
Travel Time (hr)	2085.0	2158.0	1976.1	1945.7	2141.4	2094.9	2050.7
Total Delay (hr)	1561.2	1639.3	1458.7	1427.8	1618.0	1574.6	1534.3
Total Stops	32413	32618	32337	30278	33096	33370	31573
Fuel Used (l)	3705.6	3734.9	3585.4	3543.1	3747.4	3689.6	3650.2

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	13088	12835	12990	12952
Vehs Exited	12888	12560	12686	12695
Starting Vehs	1039	958	982	986
Ending Vehs	1239	1233	1286	1248
Travel Distance (km)	30071	29356	29607	29660
Travel Time (hr)	2117.5	2006.0	2085.3	2066.1
Total Delay (hr)	1590.6	1491.2	1566.8	1546.2
Total Stops	33398	30413	32452	32187
Fuel Used (l)	3741.9	3596.2	3680.2	3667.5

Intersection: 1: Bronte Rd & 407 Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T	T
Maximum Queue (m)	61.0	66.4	59.6	28.1	23.3	20.3	114.8	123.6
Average Queue (m)	35.6	42.5	30.0	5.5	6.9	6.6	62.2	63.6
95th Queue (m)	56.6	60.8	52.8	19.2	18.4	17.0	101.1	105.0
Link Distance (m)	467.1	467.1		478.5	478.5	478.5	506.3	506.3
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			75.0					
Storage Blk Time (%)		0						
Queuing Penalty (veh)		0						

Intersection: 2: Tremaine Rd & Avenue One

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	28.6	12.1	27.8	33.5	49.9	52.9	12.4	35.4	36.6
Average Queue (m)	12.6	2.5	10.0	11.6	20.4	23.7	2.7	15.5	15.6
95th Queue (m)	23.8	9.2	23.1	24.6	42.7	49.2	9.0	30.3	31.3
Link Distance (m)	151.4		227.9		415.5	415.5		897.3	897.3
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)		100.0		15.0			15.0		
Storage Blk Time (%)	10			9	8		0	6	
Queuing Penalty (veh)	0			29	7		2	1	

Intersection: 4: Avenue Two & Avenue One

Movement	WB	NB	NB
Directions Served	LT	L	R
Maximum Queue (m)	7.4	5.4	20.6
Average Queue (m)	0.5	0.4	11.5
95th Queue (m)	3.7	3.4	17.5
Link Distance (m)	785.9		313.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		20.0	
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 6: Avenue Three & Avenue One

Movement	EB	NB	NB
Directions Served	R	L	R
Maximum Queue (m)	24.3	99.9	195.0
Average Queue (m)	11.6	96.9	135.1
95th Queue (m)	20.2	110.0	245.5
Link Distance (m)			190.0
Upstream Blk Time (%)			4
Queuing Penalty (veh)			42
Storage Bay Dist (m)	25.0	50.0	
Storage Blk Time (%)	0	33	
Queuing Penalty (veh)	0	0	

Intersection: 8: Avenue Five & Avenue One

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (m)	1.4	13.4	21.8	18.0
Average Queue (m)	0.0	0.8	11.7	10.2
95th Queue (m)	1.0	5.8	18.2	15.2
Link Distance (m)		441.1		268.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			1	0
Queuing Penalty (veh)			2	1

Intersection: 10: Bronte Road & Avenue One

Movement	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	T	R
Maximum Queue (m)	24.0	23.1	59.8	60.1	14.7	15.8	20.3	129.3	127.6	131.7	32.0
Average Queue (m)	6.8	7.3	34.2	36.1	1.2	3.3	6.7	71.8	67.5	74.1	12.8
95th Queue (m)	18.1	17.6	53.4	53.9	8.0	11.3	17.9	120.4	116.6	123.8	25.4
Link Distance (m)		441.1			394.3	394.3	394.3	478.5	478.5	478.5	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	230.0		205.0	205.0							230.0
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 20: Tremaine Rd & Burnhamthorpe Road

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	29.1	30.6	15.4	51.4	91.9	128.1	34.3	43.9	57.4
Average Queue (m)	14.4	13.0	4.3	14.8	40.7	60.6	12.8	15.7	22.2
95th Queue (m)	25.8	25.7	12.5	34.4	79.5	109.8	26.3	34.3	44.1
Link Distance (m)	188.1	419.1	419.1		250.2	250.2		415.5	415.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)				15.0			15.0		
Storage Blk Time (%)	13			9	12		14	6	
Queuing Penalty (veh)	0			36	12		60	5	

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (m)	34.6	43.1	39.3	9.3	31.8	29.3	32.1	61.2	26.1	29.2	20.7	31.5
Average Queue (m)	14.5	21.4	18.9	1.5	11.8	12.6	14.6	28.2	9.3	12.2	7.7	14.9
95th Queue (m)	29.2	38.6	35.3	6.7	25.2	24.7	27.8	49.3	20.1	24.5	15.5	27.4
Link Distance (m)		419.1	419.1			637.6	637.6			241.3		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			15.0	80.0			60.0	50.0		25.0	50.0
Storage Blk Time (%)	12	10	8	0				0		1	0	
Queuing Penalty (veh)	32	9	2	0				0		2	0	

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	17.2	7.9
Average Queue (m)	3.5	1.9
95th Queue (m)	11.5	6.7
Link Distance (m)	313.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	L
Maximum Queue (m)	58.8	66.8	31.8	43.9	125.7	203.1	70.0	33.5	42.2	29.9	28.8	25.7
Average Queue (m)	26.9	16.6	9.5	10.8	62.4	89.2	61.9	13.9	18.5	14.9	13.8	12.1
95th Queue (m)	49.3	45.3	23.4	28.4	104.4	164.5	87.7	28.0	35.8	24.5	26.1	23.4
Link Distance (m)		637.6	637.6		569.3	569.3			450.1			
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (m)	15.0			75.0			20.0	50.0		20.0	100.0	100.0
Storage Blk Time (%)	35	4			3	28	28	0	17	2		
Queuing Penalty (veh)	89	8			3	212	168	0	42	3		

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	SB
Directions Served	TR
Maximum Queue (m)	23.1
Average Queue (m)	7.9
95th Queue (m)	18.9
Link Distance (m)	190.0
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (m)	74.9	118.9	29.4	89.8	207.6	217.7	90.0	40.9	36.9	17.6	22.6	17.2
Average Queue (m)	56.7	28.8	8.5	22.5	121.9	137.8	56.4	18.6	15.7	6.9	7.9	2.3
95th Queue (m)	84.0	91.4	21.8	71.1	200.6	216.5	119.0	34.5	31.5	15.5	18.8	10.9
Link Distance (m)		569.3	569.3		297.2	297.2			396.5			268.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	25.0			40.0			40.0	30.0		30.0	35.0	
Storage Blk Time (%)	53	0			22	27	0	5	2			0
Queuing Penalty (veh)	114	1			22	79	1	7	4			1

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	SB
Directions Served	R
Maximum Queue (m)	32.4
Average Queue (m)	11.2
95th Queue (m)	24.6
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	15.0
Storage Blk Time (%)	4
Queuing Penalty (veh)	2

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	T
Maximum Queue (m)	67.2	25.7	25.2	48.6	84.9	161.9	160.1	101.0	106.4	108.2	126.3	61.8
Average Queue (m)	33.4	6.9	11.6	6.9	35.7	100.1	103.3	38.0	92.0	94.5	84.2	27.8
95th Queue (m)	58.4	18.6	23.2	32.2	88.3	171.4	176.7	116.0	115.8	119.6	147.0	47.8
Link Distance (m)		297.2	297.2			575.5	575.5				108.3	108.3
Upstream Blk Time (%)									2	6	11	
Queuing Penalty (veh)									0	0	96	
Storage Bay Dist (m)	100.0			140.0	35.0			80.0	100.0	100.0		
Storage Blk Time (%)					3	66	34		7	12	4	
Queuing Penalty (veh)					8	44	62		26	44	62	

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	NB	NB	B12	B12	B12	SB	SB	SB	SB	SB	SB	
Directions Served	T	R	T	T	T	L	L	T	T	T	R	
Maximum Queue (m)	52.9	25.7	158.8	66.2	13.2	130.5	164.9	346.8	357.9	356.5	80.0	
Average Queue (m)	30.2	7.6	47.8	3.4	1.1	106.1	135.2	210.8	205.0	214.5	79.2	
95th Queue (m)	46.2	19.5	182.9	43.3	20.0	158.7	201.2	381.6	366.4	360.9	85.5	
Link Distance (m)	108.3		277.4	277.4	277.4			394.3	394.3	394.3		
Upstream Blk Time (%)			0	0				2	0	0		
Queuing Penalty (veh)			1	0				15	1	2		
Storage Bay Dist (m)		150.0				100.0	100.0				15.0	
Storage Blk Time (%)						34	43	36		68	68	
Queuing Penalty (veh)						173	216	178		313	341	

Intersection: 31: Avenue two & Street Four

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	R	LT
Maximum Queue (m)	15.3	8.7	0.8	15.5	21.7
Average Queue (m)	6.6	3.1	0.0	4.0	5.6
95th Queue (m)	12.9	8.6	0.8	13.2	16.3
Link Distance (m)		150.9	129.6		241.3
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	15.0			15.0	
Storage Blk Time (%)	1	0		0	
Queuing Penalty (veh)	0	0		0	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	134.8	166.8	126.3	98.5	80.5	302.6	301.9	89.8	115.6	108.0	97.5	61.1
Average Queue (m)	100.2	110.4	38.7	43.0	43.5	32.0	28.0	3.0	65.2	56.7	54.3	19.3
95th Queue (m)	135.0	149.6	93.0	82.9	71.1	184.6	172.3	52.2	101.7	89.8	84.9	41.9
Link Distance (m)			285.2	285.2	285.2	298.0	298.0	298.0	401.7	401.7	401.7	
Upstream Blk Time (%)						0	0	0				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (m)	85.0	85.0										60.0
Storage Blk Time (%)	13	23	0								8	0
Queuing Penalty (veh)	100	168	0								14	0

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (m)	69.6	71.7	71.7
Average Queue (m)	41.6	43.7	19.6
95th Queue (m)	63.0	64.8	53.2
Link Distance (m)		250.2	250.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	70.0		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	1	1	

Intersection: 40: Dundas St W & Avenue two

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	LR	R
Maximum Queue (m)	40.1	43.6	47.1	53.8	33.0	38.2	48.2	32.0	17.5	22.0	13.2
Average Queue (m)	17.0	21.3	23.4	28.8	12.7	13.8	16.9	10.1	5.0	9.3	3.3
95th Queue (m)	31.8	39.3	42.8	50.2	29.1	32.7	39.2	23.1	13.3	19.1	8.9
Link Distance (m)		401.7	401.7	401.7	712.0	712.0	712.0				129.6
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	130.0							90.0	185.0	185.0	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	43.1	76.8	89.5	99.0	26.6	30.8	62.2	75.2	130.4	46.8	49.3	64.5
Average Queue (m)	19.2	36.3	43.7	53.0	10.7	10.8	34.7	43.9	52.7	21.0	20.6	13.0
95th Queue (m)	35.3	65.7	75.7	85.4	21.8	24.2	58.7	69.9	105.5	38.6	39.5	41.2
Link Distance (m)		712.0	712.0	712.0			505.6	505.6	505.6			315.2
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (m)	60.0				100.0	60.0				75.0	30.0	
Storage Blk Time (%)	0	1		0			1		2		6	1
Queuing Penalty (veh)	0	2		1			0		7		11	3

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	54.1	45.9	12.0	10.4
Average Queue (m)	23.5	18.5	1.2	2.4
95th Queue (m)	43.9	37.5	6.7	8.0
Link Distance (m)			450.1	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	20.0		20.0
Storage Blk Time (%)	7	20	0	
Queuing Penalty (veh)	8	5	0	

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	105.8	239.0	243.9	256.4	123.0	18.0	58.6	82.4	89.6	31.0	48.9	140.4
Average Queue (m)	41.0	95.5	93.7	97.8	15.2	5.4	30.7	39.8	48.8	14.4	22.0	35.8
95th Queue (m)	110.8	218.4	209.1	199.8	69.9	14.7	54.5	68.5	77.0	27.1	44.3	100.1
Link Distance (m)		505.6	505.6	505.6			215.3	215.3	215.3			325.1
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0				75.0	25.0				25.0	20.0	
Storage Blk Time (%)	0	36		14		0	14		25	1	22	32
Queuing Penalty (veh)	1	46		15		0	5		86	7	22	28

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	SB	SB	SB
Directions Served	L	L	TR
Maximum Queue (m)	20.2	24.2	12.2
Average Queue (m)	5.9	8.8	3.1
95th Queue (m)	17.1	19.7	8.9
Link Distance (m)			396.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	90.0	90.0	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 46: Bronte Rd & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (m)	165.0	220.6	222.7	196.7	128.1	174.8	768.5	772.9	774.6	90.0	87.4	260.0
Average Queue (m)	149.4	175.9	127.0	101.1	48.5	70.9	626.0	712.5	724.5	89.1	41.7	246.5
95th Queue (m)	196.0	270.5	223.8	163.1	94.1	157.8	953.9	929.5	917.0	100.1	73.4	330.8
Link Distance (m)		215.3	215.3	215.3			756.6	756.6	756.6			
Upstream Blk Time (%)		29	0	0			3	36	78			
Queuing Penalty (veh)		223	4	1			0	0	0			
Storage Bay Dist (m)	95.0				80.0	115.0				40.0	190.0	190.0
Storage Blk Time (%)	78	5		21	1	6	19		63	50		
Queuing Penalty (veh)	350	17		115	6	24	37		481	219		

Intersection: 46: Bronte Rd & Dundas St W

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB	B12	B12
Directions Served	T	T	T	R	L	L	T	T	T	R	T	T
Maximum Queue (m)	358.9	351.8	343.0	60.8	52.7	51.8	123.3	116.3	113.5	65.6	11.2	44.2
Average Queue (m)	350.4	321.9	201.8	23.8	26.1	26.1	88.0	87.9	86.8	17.9	0.7	1.5
95th Queue (m)	357.3	403.6	354.2	49.1	45.6	43.3	114.2	110.2	108.0	44.0	14.8	22.5
Link Distance (m)	341.6	341.6	341.6				277.4	277.4	277.4		108.3	108.3
Upstream Blk Time (%)	70	16	0								0	0
Queuing Penalty (veh)	0	0	0								0	0
Storage Bay Dist (m)				45.0	180.0	180.0				50.0		
Storage Blk Time (%)	83		11	2					23	0		
Queuing Penalty (veh)	512		36	10					39	1		

Intersection: 46: Bronte Rd & Dundas St W

Movement	B12
Directions Served	T
Maximum Queue (m)	30.2
Average Queue (m)	1.0
95th Queue (m)	17.7
Link Distance (m)	108.3
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 5183

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	12981	12642	12854	12907	13087	13136	12943
Vehs Exited	12238	11827	12000	12083	12228	12373	12062
Starting Vehs	1127	1010	1031	966	950	972	1003
Ending Vehs	1870	1825	1885	1790	1809	1735	1884
Travel Distance (km)	30093	29248	29646	29883	29995	30411	29978
Travel Time (hr)	1688.1	1776.6	1551.2	1519.3	1484.9	1598.7	1734.1
Total Delay (hr)	1152.9	1261.2	1025.3	986.5	952.0	1056.2	1202.9
Total Stops	41579	37751	37344	39451	37214	39918	39808
Fuel Used (l)	3362.9	3373.5	3220.3	3204.6	3171.9	3311.6	3393.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	12945	13038	13154	12963
Vehs Exited	12190	12105	12206	12134
Starting Vehs	1070	1078	1031	1022
Ending Vehs	1825	2011	1979	1856
Travel Distance (km)	30184	30094	30186	29972
Travel Time (hr)	1649.3	1716.5	1751.3	1647.0
Total Delay (hr)	1111.0	1181.6	1215.9	1114.6
Total Stops	41401	41423	41741	39761
Fuel Used (l)	3337.8	3385.9	3413.9	3317.6

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	12981	12642	12854	12907	13087	13136	12943
Vehs Exited	12238	11827	12000	12083	12228	12373	12062
Starting Vehs	1127	1010	1031	966	950	972	1003
Ending Vehs	1870	1825	1885	1790	1809	1735	1884
Travel Distance (km)	30093	29248	29646	29883	29995	30411	29978
Travel Time (hr)	1688.1	1776.6	1551.2	1519.3	1484.9	1598.7	1734.1
Total Delay (hr)	1152.9	1261.2	1025.3	986.5	952.0	1056.2	1202.9
Total Stops	41579	37751	37344	39451	37214	39918	39808
Fuel Used (l)	3362.9	3373.5	3220.3	3204.6	3171.9	3311.6	3393.1

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	12945	13038	13154	12963
Vehs Exited	12190	12105	12206	12134
Starting Vehs	1070	1078	1031	1022
Ending Vehs	1825	2011	1979	1856
Travel Distance (km)	30184	30094	30186	29972
Travel Time (hr)	1649.3	1716.5	1751.3	1647.0
Total Delay (hr)	1111.0	1181.6	1215.9	1114.6
Total Stops	41401	41423	41741	39761
Fuel Used (l)	3337.8	3385.9	3413.9	3317.6

Intersection: 1: Bronte Rd & 407 Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T	T
Maximum Queue (m)	38.7	37.8	18.7	36.3	43.1	43.9	29.1	24.8
Average Queue (m)	18.8	14.8	5.8	10.1	18.3	20.8	11.7	7.1
95th Queue (m)	33.1	28.9	14.4	26.6	37.2	39.8	25.5	19.0
Link Distance (m)	467.1	467.1		478.5	478.5	478.5	506.3	506.3
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			75.0					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Tremaine Rd & Avenue One

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	8.7	65.0	40.6	29.9	22.7	65.1	70.6	42.6	905.7	904.9
Average Queue (m)	0.9	22.8	14.4	10.6	9.3	37.1	43.7	3.4	422.5	423.9
95th Queue (m)	5.1	56.2	34.0	22.9	20.1	63.9	69.1	29.2	1000.3	992.4
Link Distance (m)		151.4		227.9		415.5	415.5		897.3	897.3
Upstream Blk Time (%)		0							17	16
Queuing Penalty (veh)		0							0	0
Storage Bay Dist (m)	15.0		100.0		15.0			15.0		
Storage Blk Time (%)	0	30			10	21			66	
Queuing Penalty (veh)	0	1			34	10			3	

Intersection: 4: Avenue Two & Avenue One

Movement	WB	NB	NB
Directions Served	LT	L	R
Maximum Queue (m)	11.6	10.5	14.3
Average Queue (m)	0.6	2.3	7.7
95th Queue (m)	5.7	9.0	13.5
Link Distance (m)	785.9		313.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		20.0	
Storage Blk Time (%)		0	0
Queuing Penalty (veh)		0	0

Intersection: 6: Avenue Three & Avenue One

Movement	EB	EB	NB
Directions Served	T	R	L
Maximum Queue (m)	415.0	75.0	54.2
Average Queue (m)	137.2	57.6	26.1
95th Queue (m)	420.4	90.9	44.0
Link Distance (m)	785.9		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		25.0	50.0
Storage Blk Time (%)		42	0
Queuing Penalty (veh)		0	0

Intersection: 8: Avenue Five & Avenue One

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (m)	39.1	66.3	15.2	9.2	20.2
Average Queue (m)	6.6	12.9	1.9	1.5	10.4
95th Queue (m)	56.0	74.5	29.1	7.0	16.3
Link Distance (m)		441.1	441.1		268.3
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)				15.0	
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				0	0

Intersection: 9: Bend

Movement	WB	WB
Directions Served	T	T
Maximum Queue (m)	30.7	30.9
Average Queue (m)	1.0	1.0
95th Queue (m)	30.2	30.4
Link Distance (m)	328.3	328.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bronte Road & Avenue One

Movement	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	T	R
Maximum Queue (m)	76.0	59.2	26.3	22.9	51.4	57.1	59.2	65.5	48.1	44.7	15.8
Average Queue (m)	41.5	24.0	10.0	8.2	23.4	32.3	33.3	33.2	22.0	19.7	3.5
95th Queue (m)	68.1	45.3	21.6	18.7	45.3	52.8	53.5	54.9	41.5	38.8	11.1
Link Distance (m)		441.1			394.3	394.3	394.3	478.5	478.5	478.5	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	230.0		205.0	205.0							230.0
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 20: Tremaine Rd & Burnhamthorpe Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (m)	9.1	35.1	406.4	353.1	32.6	94.9	100.0	73.4	431.2	428.8
Average Queue (m)	1.5	13.7	262.3	121.7	3.8	61.2	68.5	8.2	377.4	381.4
95th Queue (m)	6.8	27.8	465.2	349.3	18.6	85.9	92.5	39.9	532.4	524.2
Link Distance (m)		188.1	419.1	419.1		250.2	250.2		415.5	415.5
Upstream Blk Time (%)			5	1					43	52
Queuing Penalty (veh)			17	3					194	232
Storage Bay Dist (m)	15.0				15.0			15.0		
Storage Blk Time (%)	0	12			1	24		2	25	
Queuing Penalty (veh)	0	1			3	4		9	8	

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (m)	14.9	39.1	35.2	19.0	63.8	67.2	63.0	33.9	18.1	15.6	21.5	92.5
Average Queue (m)	4.6	20.2	18.3	6.8	27.7	33.1	27.1	12.2	6.2	3.5	7.5	53.9
95th Queue (m)	12.9	33.6	30.8	15.2	51.8	58.7	52.7	25.1	15.1	10.9	15.5	82.5
Link Distance (m)		419.1	419.1			637.6	637.6			241.3		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			15.0	80.0			60.0	50.0		25.0	50.0
Storage Blk Time (%)	1	15	12	0	0	0	0			0	0	15
Queuing Penalty (veh)	2	3	8	1	0	0	1			0	0	22

Intersection: 22: Avenue two & Burnhamthorpe Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	70.4	19.1
Average Queue (m)	15.0	6.7
95th Queue (m)	44.4	14.9
Link Distance (m)	313.3	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	L
Maximum Queue (m)	64.8	251.6	263.6	61.6	83.9	89.3	70.0	42.8	36.9	43.4	125.0	149.9
Average Queue (m)	14.2	129.5	136.6	29.6	45.9	49.5	16.2	17.5	6.0	16.1	99.4	113.3
95th Queue (m)	49.6	259.1	264.6	53.5	73.8	78.4	52.7	34.6	21.0	31.2	143.9	172.4
Link Distance (m)		637.6	637.6		569.3	569.3			450.1			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0			75.0			20.0	50.0		20.0	100.0	100.0
Storage Blk Time (%)	3	50		0	1	32	1	0	1	10	37	42
Queuing Penalty (veh)	19	22		0	2	50	2	0	2	9	90	102

Intersection: 24: Avenue Three & Burnhamthorpe Road

Movement	SB
Directions Served	TR
Maximum Queue (m)	195.6
Average Queue (m)	106.0
95th Queue (m)	234.2
Link Distance (m)	190.0
Upstream Blk Time (%)	20
Queuing Penalty (veh)	172
Storage Bay Dist (m)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	1

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (m)	74.8	578.3	578.1	49.4	78.7	81.3	64.8	27.2	32.9	37.9	84.9	227.2
Average Queue (m)	21.0	407.7	421.8	20.7	43.0	46.7	9.3	9.2	6.0	18.1	70.8	98.5
95th Queue (m)	61.9	707.8	698.7	41.8	67.8	71.8	38.2	21.4	22.5	34.2	100.6	238.1
Link Distance (m)		569.3	569.3		297.1	297.1			396.5			268.3
Upstream Blk Time (%)		5	6									6
Queuing Penalty (veh)		47	52									14
Storage Bay Dist (m)	25.0			40.0			20.0	30.0		30.0	35.0	
Storage Blk Time (%)	1	15		6	5	16	0	0	0	3	68	18
Queuing Penalty (veh)	11	16		20	4	9	0	0	0	2	239	100

Intersection: 26: Avenue Five & Burnhamthorpe Road

Movement	SB
Directions Served	R
Maximum Queue (m)	64.7
Average Queue (m)	31.6
95th Queue (m)	64.2
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	15.0
Storage Blk Time (%)	28
Queuing Penalty (veh)	88

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	T
Maximum Queue (m)	143.7	269.9	301.9	190.0	72.7	86.7	90.5	117.2	59.0	65.6	94.0	105.0
Average Queue (m)	89.2	66.1	261.0	181.7	37.8	32.5	28.0	66.1	35.1	37.4	54.5	62.1
95th Queue (m)	140.4	183.1	373.0	233.6	68.7	88.4	80.5	103.8	54.7	57.1	93.9	99.9
Link Distance (m)		297.1	297.1			575.5	575.5				153.3	153.3
Upstream Blk Time (%)		0	5									
Queuing Penalty (veh)		2	55									
Storage Bay Dist (m)	100.0			140.0	35.0			80.0	100.0	100.0		
Storage Blk Time (%)	9	0	0	51	21	3	0	6			0	
Queuing Penalty (veh)	22	0	2	126	19	6	0	6			0	

Intersection: 28: Bronte Rd/Bronte Road & Burnhamthorpe Road/William Halton Parkway

Movement	NB	NB	B12	SB	SB	SB	SB	SB	SB
Directions Served	T	R	T	L	L	T	T	T	R
Maximum Queue (m)	108.5	11.5	24.3	46.1	49.8	84.1	74.8	71.8	41.7
Average Queue (m)	65.9	2.4	0.8	24.2	29.2	47.5	38.2	38.0	8.8
95th Queue (m)	105.6	7.5	23.9	41.1	45.7	74.0	61.6	59.1	25.2
Link Distance (m)	153.3		232.5			394.3	394.3	394.3	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)		150.0		100.0	100.0				15.0
Storage Blk Time (%)						0		41	2
Queuing Penalty (veh)						0		76	6

Intersection: 31: Avenue two & Street Four

Movement	WB	WB	NB	SB
Directions Served	L	R	R	LT
Maximum Queue (m)	18.9	48.7	14.1	21.7
Average Queue (m)	14.0	14.6	2.6	3.0
95th Queue (m)	19.6	35.2	10.8	12.8
Link Distance (m)		150.9		241.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0		15.0	
Storage Blk Time (%)	13	2	0	
Queuing Penalty (veh)	10	4	0	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (m)	92.6	97.5	43.6	30.7	23.0	131.2	159.9	140.6	110.0	49.9	258.9	260.7
Average Queue (m)	54.7	61.7	11.6	9.8	6.1	86.3	93.3	93.1	39.8	14.4	133.0	253.9
95th Queue (m)	80.4	87.4	28.5	24.0	18.0	125.0	137.0	128.6	97.2	36.2	312.5	258.8
Link Distance (m)			328.3	328.3	328.3	401.7	401.7	401.7			250.2	250.2
Upstream Blk Time (%)											2	29
Queuing Penalty (veh)											12	202
Storage Bay Dist (m)	85.0	85.0							60.0	70.0		
Storage Blk Time (%)	0	1						27	0			
Queuing Penalty (veh)	1	4						73	3			

Intersection: 40: Dundas St W & Avenue two

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB	
Directions Served	L	T	T	T	T	T	T	R	L	LR	R	
Maximum Queue (m)	46.9	32.1	38.6	46.1	92.0	103.6	164.2	26.4	62.9	70.2	56.0	
Average Queue (m)	19.1	13.1	16.5	18.1	54.2	59.7	68.1	9.9	35.0	42.8	29.3	
95th Queue (m)	37.2	27.1	31.4	36.7	83.4	90.6	135.5	20.6	54.3	62.0	49.9	
Link Distance (m)		401.7	401.7	401.7	712.0	712.0	712.0				129.6	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	130.0							90.0	185.0	185.0		
Storage Blk Time (%)							2					
Queuing Penalty (veh)							3					

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	24.5	47.4	53.4	58.0	16.8	31.3	118.3	127.9	137.4	38.3	59.8	108.8
Average Queue (m)	8.8	24.6	26.7	31.5	5.1	15.4	71.7	77.8	83.2	12.1	46.3	29.2
95th Queue (m)	19.7	42.4	45.5	53.2	12.7	27.8	103.2	108.6	115.0	28.3	67.5	94.4
Link Distance (m)		712.0	712.0	712.0			505.6	505.6	505.6			315.2
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	60.0				100.0	60.0				75.0	30.0	
Storage Blk Time (%)		0					15		14		37	0
Queuing Penalty (veh)		0					15		26		26	0

Intersection: 42: Colonel William Pkwy/Avenue Three & Dundas St W

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	32.9	69.9	221.9	52.6
Average Queue (m)	8.3	63.7	101.3	18.0
95th Queue (m)	21.4	80.9	244.0	39.2
Link Distance (m)			450.1	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	20.0		20.0
Storage Blk Time (%)	0	64	1	14
Queuing Penalty (veh)	0	101	6	55

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (m)	23.8	62.4	76.2	99.6	15.6	22.9	75.2	98.9	90.3	45.8	33.2	23.2
Average Queue (m)	7.8	27.8	34.1	53.4	4.4	7.7	52.2	61.8	67.5	8.7	13.4	7.7
95th Queue (m)	17.5	53.1	61.3	85.3	12.1	17.3	73.7	86.9	88.4	26.3	26.3	18.5
Link Distance (m)		505.6	505.6	505.6			215.3	215.3	215.3			325.1
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0				75.0	25.0				25.0	20.0	
Storage Blk Time (%)		0		2		0	17		22	0	10	1
Queuing Penalty (veh)		0		1		1	8		27	0	3	1

Intersection: 44: Valleyridge Dr/Avenue Five & Dundas St W

Movement	SB	SB	SB
Directions Served	L	L	TR
Maximum Queue (m)	64.6	76.0	57.8
Average Queue (m)	30.3	43.5	20.9
95th Queue (m)	53.7	65.8	42.3
Link Distance (m)			396.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	90.0	90.0	
Storage Blk Time (%)		0	0
Queuing Penalty (veh)		0	0

Intersection: 46: Bronte Rd & Dundas St W

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (m)	133.7	166.6	162.5	158.9	133.5	174.9	342.8	339.4	332.6	90.0	187.1	260.0
Average Queue (m)	82.7	103.1	102.3	96.7	75.7	125.2	214.7	216.9	221.0	80.8	137.3	224.3
95th Queue (m)	157.6	174.9	168.3	147.8	127.0	211.2	381.1	377.7	378.4	116.7	237.1	325.3
Link Distance (m)		215.3	215.3	215.3			756.8	756.8	756.8			
Upstream Blk Time (%)		2	0	0								
Queuing Penalty (veh)		14	1	1								
Storage Bay Dist (m)	95.0				80.0	115.0				40.0	190.0	190.0
Storage Blk Time (%)	25	9		22	7	11	40		67	9	13	19
Queuing Penalty (veh)	92	21		138	25	54	118		199	46	60	85

Intersection: 46: Bronte Rd & Dundas St W

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB	B12	B12
Directions Served	T	T	T	R	L	L	T	T	T	R	T	T
Maximum Queue (m)	354.3	348.9	352.0	130.0	217.4	232.3	249.2	210.1	155.4	110.0	135.1	149.4
Average Queue (m)	303.5	288.2	266.3	107.5	181.7	189.0	174.4	112.0	108.3	50.0	50.6	44.7
95th Queue (m)	412.6	403.9	394.7	179.6	257.8	272.8	292.7	168.6	149.7	117.6	157.0	149.5
Link Distance (m)	341.6	341.6	341.6				232.5	232.5	232.5		153.3	153.3
Upstream Blk Time (%)	32	9	8			19	24	0			4	1
Queuing Penalty (veh)	0	0	0			0	181	0			24	3
Storage Bay Dist (m)				45.0	180.0	180.0				50.0		
Storage Blk Time (%)	60		76	4	45	51	0		48	2		
Queuing Penalty (veh)	375		157	18	197	219	3		126	7		

Intersection: 46: Bronte Rd & Dundas St W

Movement	B12	B12
Directions Served	T	
Maximum Queue (m)	154.8	170.3
Average Queue (m)	43.0	30.2
95th Queue (m)	150.4	136.7
Link Distance (m)	153.3	153.3
Upstream Blk Time (%)	1	3
Queuing Penalty (veh)	8	19
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 4723

APPENDIX

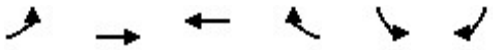
J DUNDAS STREET W AT TREMAINE ROAD SENSITIVITY ANALYSIS

APPENDIX

APPENDIX

J-1 HCM 2000 (REMOVED CHANNELIZED SBR)

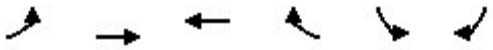
APPENDIX



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1182	2177	1057	184	375	584
Future Volume (vph)	1182	2177	1057	184	375	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	7.0
Lane Util. Factor	0.97	*0.80	*0.80	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3506	4476	4117	1570	3541	1611
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3506	4476	4117	1570	3541	1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1182	2177	1057	184	375	584
RTOR Reduction (vph)	0	0	0	86	0	498
Lane Group Flow (vph)	1182	2177	1057	98	375	86
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	3%	12%	4%	0%	0%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)	53.1	105.4	48.3	48.3	20.6	20.6
Effective Green, g (s)	54.1	109.4	52.3	52.3	24.6	20.6
Actuated g/C Ratio	0.39	0.78	0.37	0.37	0.18	0.15
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	5.5	5.5	5.5	2.5	2.5
Lane Grp Cap (vph)	1354	3497	1537	586	622	237
v/s Ratio Prot	c0.34	0.49	c0.26		c0.11	
v/s Ratio Perm				0.06		0.05
v/c Ratio	0.87	0.62	0.69	0.17	0.60	0.36
Uniform Delay, d1	39.8	6.5	37.0	29.3	53.2	53.8
Progression Factor	1.00	1.00	0.96	1.28	1.05	3.00
Incremental Delay, d2	6.5	0.8	2.4	0.6	1.3	0.7
Delay (s)	46.3	7.4	38.0	38.1	57.0	162.2
Level of Service	D	A	D	D	E	F
Approach Delay (s)		21.0	38.0		121.1	
Approach LOS		C	D		F	

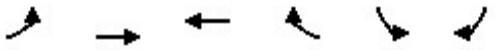
Intersection Summary			
HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	525	967	2467	271	181	1202
Future Volume (vph)	525	967	2467	271	181	1202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	7.0
Lane Util. Factor	0.97	*0.80	*0.80	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3506	4476	4476	1601	3541	1570
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3506	4476	4476	1601	3541	1570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	525	967	2467	271	181	1202
RTOR Reduction (vph)	0	0	0	60	0	180
Lane Group Flow (vph)	525	967	2467	211	181	1022
Heavy Vehicles (%)	1%	3%	3%	2%	0%	4%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)	19.0	90.0	67.0	67.0	36.0	36.0
Effective Green, g (s)	20.0	94.0	71.0	71.0	40.0	36.0
Actuated g/C Ratio	0.14	0.67	0.51	0.51	0.29	0.26
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	5.5	5.5	5.5	2.5	2.5
Lane Grp Cap (vph)	500	3005	2269	811	1011	403
v/s Ratio Prot	c0.15	0.22	c0.55		0.05	
v/s Ratio Perm				0.13		c0.65
v/c Ratio	1.05	0.32	1.09	0.26	0.18	2.54
Uniform Delay, d1	60.0	9.6	34.5	19.6	37.6	52.0
Progression Factor	1.00	1.00	0.79	1.00	0.93	0.90
Incremental Delay, d2	54.0	0.3	44.3	0.4	0.1	697.4
Delay (s)	114.0	9.9	71.5	20.0	35.0	744.2
Level of Service	F	A	E	B	C	F
Approach Delay (s)		46.5	66.4		651.4	
Approach LOS		D	E		F	

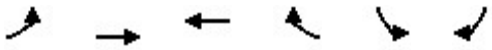
Intersection Summary			
HCM 2000 Control Delay	205.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1182	2227	1057	184	375	583
Future Volume (vph)	1182	2227	1057	184	375	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	0.97	*0.80	*0.80	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3506	4476	4117	1570	3541	1611
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3506	4476	4117	1570	3541	1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1182	2227	1057	184	375	583
RTOR Reduction (vph)	0	0	0	87	0	497
Lane Group Flow (vph)	1182	2227	1057	97	375	86
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	3%	12%	4%	0%	0%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)	53.9	105.4	47.5	47.5	20.6	20.6
Effective Green, g (s)	53.9	105.4	47.5	47.5	20.6	20.6
Actuated g/C Ratio	0.38	0.75	0.34	0.34	0.15	0.15
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	5.5	5.5	5.5	2.5	2.5
Lane Grp Cap (vph)	1349	3369	1396	532	521	237
v/s Ratio Prot	c0.34	0.50	c0.26		c0.11	
v/s Ratio Perm				0.06		0.05
v/c Ratio	0.88	0.66	0.76	0.18	0.72	0.36
Uniform Delay, d1	40.0	8.5	41.1	32.6	56.9	53.8
Progression Factor	1.00	1.00	0.85	1.11	1.16	3.25
Incremental Delay, d2	6.7	1.0	3.7	0.7	4.3	0.7
Delay (s)	46.6	9.5	38.6	36.8	70.5	175.7
Level of Service	D	A	D	D	E	F
Approach Delay (s)		22.4	38.4		134.5	
Approach LOS		C	D		F	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	525	913	2365	271	181	1201
Future Volume (vph)	525	913	2365	271	181	1201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	*0.80	*0.80	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3506	4476	4476	1601	3541	1570
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3506	4476	4476	1601	3541	1570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	525	913	2365	271	181	1201
RTOR Reduction (vph)	0	0	0	63	0	182
Lane Group Flow (vph)	525	913	2365	208	181	1019
Heavy Vehicles (%)	1%	3%	3%	2%	0%	4%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)	20.0	90.0	66.0	66.0	36.0	36.0
Effective Green, g (s)	21.0	94.0	70.0	70.0	40.0	40.0
Actuated g/C Ratio	0.15	0.67	0.50	0.50	0.29	0.29
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	5.5	5.5	5.5	2.5	2.5
Lane Grp Cap (vph)	525	3005	2238	800	1011	448
v/s Ratio Prot	c0.15	0.20	c0.53		0.05	
v/s Ratio Perm				0.13		c0.65
v/c Ratio	1.00	0.30	1.06	0.26	0.18	2.27
Uniform Delay, d1	59.5	9.5	35.0	20.1	37.6	50.0
Progression Factor	1.00	1.00	0.77	0.92	0.93	0.98
Incremental Delay, d2	39.3	0.3	32.6	0.5	0.0	578.9
Delay (s)	98.8	9.8	59.5	19.1	35.1	627.8
Level of Service	F	A	E	B	D	F
Approach Delay (s)		42.3	55.3		550.2	
Approach LOS		D	E		F	

Intersection Summary			
HCM 2000 Control Delay	177.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	126.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX

J-2 SIMTRAFFIC (REMOVED CHANNELIZED SBR)

APPENDIX

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	13262	13087	13108	13039	13047	13142	13243
Vehs Exited	13011	12984	12891	12734	12932	12937	13092
Starting Vehs	974	1051	961	912	1012	985	1024
Ending Vehs	1225	1154	1178	1217	1127	1190	1175
Travel Distance (km)	29847	29781	29432	29400	29798	29690	29579
Travel Time (hr)	1889.2	2001.6	1805.6	1877.3	1742.3	1879.4	1853.5
Total Delay (hr)	1372.8	1489.1	1297.3	1368.2	1226.4	1365.6	1341.5
Total Stops	32180	34138	30721	31428	29891	31574	30865
Fuel Used (l)	3551.0	3644.2	3459.4	3508.4	3407.0	3533.6	3492.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	13103	13306	13255	13154
Vehs Exited	12956	13117	12913	12958
Starting Vehs	1010	1021	1003	984
Ending Vehs	1157	1210	1345	1184
Travel Distance (km)	29625	29825	29996	29697
Travel Time (hr)	1975.3	1880.8	2029.9	1893.5
Total Delay (hr)	1461.9	1365.6	1512.5	1380.1
Total Stops	30363	31762	35750	31867
Fuel Used (l)	3596.1	3550.8	3660.8	3540.4

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	13262	13087	13108	13039	13047	13142	13243
Vehs Exited	13011	12984	12891	12734	12932	12937	13092
Starting Vehs	974	1051	961	912	1012	985	1024
Ending Vehs	1225	1154	1178	1217	1127	1190	1175
Travel Distance (km)	29847	29781	29432	29400	29798	29690	29579
Travel Time (hr)	1889.2	2001.6	1805.6	1877.3	1742.3	1879.4	1853.5
Total Delay (hr)	1372.8	1489.1	1297.3	1368.2	1226.4	1365.6	1341.5
Total Stops	32180	34138	30721	31428	29891	31574	30865
Fuel Used (l)	3551.0	3644.2	3459.4	3508.4	3407.0	3533.6	3492.3

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	13103	13306	13255	13154
Vehs Exited	12956	13117	12913	12958
Starting Vehs	1010	1021	1003	984
Ending Vehs	1157	1210	1345	1184
Travel Distance (km)	29625	29825	29996	29697
Travel Time (hr)	1975.3	1880.8	2029.9	1893.5
Total Delay (hr)	1461.9	1365.6	1512.5	1380.1
Total Stops	30363	31762	35750	31867
Fuel Used (l)	3596.1	3550.8	3660.8	3540.4

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	134.9	184.9	297.4	267.2	206.5	307.0	303.6	168.6	112.8	101.7	92.5	53.3
Average Queue (m)	129.8	168.8	207.2	127.9	74.4	114.0	89.9	20.0	70.9	63.2	57.8	20.8
95th Queue (m)	150.0	214.7	385.7	289.6	148.9	336.9	300.3	126.0	103.1	92.9	85.0	39.6
Link Distance (m)			281.0	281.0	281.0	298.0	298.0	298.0	401.7	401.7	401.7	
Upstream Blk Time (%)			12	0	0	6	2	0				
Queuing Penalty (veh)			0	0	0	0	0	0				
Storage Bay Dist (m)	85.0	85.0										60.0
Storage Blk Time (%)	39	48	1								10	0
Queuing Penalty (veh)	285	348	6								18	0

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (m)	72.4	72.3	136.2
Average Queue (m)	41.7	41.5	72.6
95th Queue (m)	63.4	63.7	124.5
Link Distance (m)		250.2	250.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	70.0		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	1	

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	12941	12962	13117	12910	12982	13019	13241
Vehs Exited	11919	11820	11730	11811	11847	11725	12041
Starting Vehs	1132	1123	1086	1059	1059	1048	1037
Ending Vehs	2154	2265	2473	2158	2194	2342	2237
Travel Distance (km)	29385	29096	29317	28871	29304	29042	29686
Travel Time (hr)	1824.4	1918.2	1967.2	1864.3	1827.1	1926.9	1959.6
Total Delay (hr)	1303.3	1404.0	1447.5	1351.3	1307.5	1411.5	1433.1
Total Stops	39136	39425	41567	38328	38723	39183	41287
Fuel Used (l)	3431.9	3492.6	3546.2	3437.9	3442.5	3515.2	3563.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	12919	13194	13013	13028
Vehs Exited	11796	11796	11809	11830
Starting Vehs	1051	1079	1094	1070
Ending Vehs	2174	2477	2298	2265
Travel Distance (km)	29148	29323	29333	29251
Travel Time (hr)	1901.9	1991.5	1959.7	1914.1
Total Delay (hr)	1385.6	1470.9	1439.2	1395.4
Total Stops	38638	41520	41117	39887
Fuel Used (l)	3478.3	3579.9	3538.0	3502.6

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	12941	12962	13117	12910	12982	13019	13241
Vehs Exited	11919	11820	11730	11811	11847	11725	12041
Starting Vehs	1132	1123	1086	1059	1059	1048	1037
Ending Vehs	2154	2265	2473	2158	2194	2342	2237
Travel Distance (km)	29385	29096	29317	28871	29304	29042	29686
Travel Time (hr)	1824.4	1918.2	1967.2	1864.3	1827.1	1926.9	1959.6
Total Delay (hr)	1303.3	1404.0	1447.5	1351.3	1307.5	1411.5	1433.1
Total Stops	39136	39425	41567	38328	38723	39183	41287
Fuel Used (l)	3431.9	3492.6	3546.2	3437.9	3442.5	3515.2	3563.5

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	12919	13194	13013	13028
Vehs Exited	11796	11796	11809	11830
Starting Vehs	1051	1079	1094	1070
Ending Vehs	2174	2477	2298	2265
Travel Distance (km)	29148	29323	29333	29251
Travel Time (hr)	1901.9	1991.5	1959.7	1914.1
Total Delay (hr)	1385.6	1470.9	1439.2	1395.4
Total Stops	38638	41520	41117	39887
Fuel Used (l)	3478.3	3579.9	3538.0	3502.6

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	134.9	184.9	341.7	325.8	211.4	139.4	122.6	66.7	200.8	212.4	217.7	110.0
Average Queue (m)	124.2	161.5	217.2	163.2	53.1	56.0	49.6	14.8	128.1	134.1	138.1	62.5
95th Queue (m)	158.7	222.6	434.2	383.5	183.5	200.5	189.5	97.8	200.9	207.9	216.9	138.3
Link Distance (m)			324.1	324.1	324.1	254.9	254.9	254.9	401.7	401.7	401.7	
Upstream Blk Time (%)			25	1		7	2	0				
Queuing Penalty (veh)			0	0		0	0	0				
Storage Bay Dist (m)	85.0	85.0										60.0
Storage Blk Time (%)	72	79	0								43	
Queuing Penalty (veh)	231	255	0								116	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (m)	97.9	259.1	258.8
Average Queue (m)	11.4	171.2	253.9
95th Queue (m)	47.4	341.1	256.9
Link Distance (m)		250.2	250.2
Upstream Blk Time (%)		9	56
Queuing Penalty (veh)		59	388
Storage Bay Dist (m)	70.0		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	12824	12900	13014	13023	12777	12778	13185
Vehs Exited	12552	12594	12732	12729	12531	12531	12731
Starting Vehs	1046	987	953	1029	1025	986	952
Ending Vehs	1318	1293	1235	1323	1271	1233	1406
Travel Distance (km)	29447	29470	29586	29814	29165	29130	30035
Travel Time (hr)	2247.9	2109.0	1992.3	1989.2	2146.8	2156.5	2185.4
Total Delay (hr)	1731.0	1592.8	1473.8	1465.8	1634.7	1645.6	1658.4
Total Stops	33131	32933	34005	33380	33964	33352	36611
Fuel Used (l)	3809.0	3684.1	3591.8	3626.9	3716.0	3713.3	3800.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	12743	12945	13046	12925
Vehs Exited	12543	12831	12792	12655
Starting Vehs	1087	996	1008	999
Ending Vehs	1287	1110	1262	1269
Travel Distance (km)	29135	29757	29752	29529
Travel Time (hr)	2219.0	2093.6	2175.8	2131.6
Total Delay (hr)	1706.1	1570.8	1656.5	1613.5
Total Stops	34888	34530	34798	34157
Fuel Used (l)	3765.8	3703.7	3764.9	3717.6

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	12824	12900	13014	13023	12777	12778	13185
Vehs Exited	12552	12594	12732	12729	12531	12531	12731
Starting Vehs	1046	987	953	1029	1025	986	952
Ending Vehs	1318	1293	1235	1323	1271	1233	1406
Travel Distance (km)	29447	29470	29586	29814	29165	29130	30035
Travel Time (hr)	2247.9	2109.0	1992.3	1989.2	2146.8	2156.5	2185.4
Total Delay (hr)	1731.0	1592.8	1473.8	1465.8	1634.7	1645.6	1658.4
Total Stops	33131	32933	34005	33380	33964	33352	36611
Fuel Used (l)	3809.0	3684.1	3591.8	3626.9	3716.0	3713.3	3800.7

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	12743	12945	13046	12925
Vehs Exited	12543	12831	12792	12655
Starting Vehs	1087	996	1008	999
Ending Vehs	1287	1110	1262	1269
Travel Distance (km)	29135	29757	29752	29529
Travel Time (hr)	2219.0	2093.6	2175.8	2131.6
Total Delay (hr)	1706.1	1570.8	1656.5	1613.5
Total Stops	34888	34530	34798	34157
Fuel Used (l)	3765.8	3703.7	3764.9	3717.6

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	135.0	184.9	298.6	287.4	223.8	306.8	304.2	177.7	111.6	98.6	93.4	59.1
Average Queue (m)	129.7	169.1	208.8	113.0	79.6	144.5	122.7	18.7	68.8	59.7	53.9	19.6
95th Queue (m)	150.9	214.3	390.2	261.5	163.6	377.4	348.9	121.2	102.1	89.5	82.3	41.2
Link Distance (m)			281.0	281.0	281.0	298.0	298.0	298.0	401.7	401.7	401.7	
Upstream Blk Time (%)			14	0	0	10	3	0				
Queuing Penalty (veh)			0	0	0	0	0	0				
Storage Bay Dist (m)	85.0	85.0										60.0
Storage Blk Time (%)	39	48	1								7	0
Queuing Penalty (veh)	293	356	6								13	0

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (m)	69.7	72.7	130.9
Average Queue (m)	40.7	43.0	72.9
95th Queue (m)	62.2	63.4	120.7
Link Distance (m)		250.2	250.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	70.0		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	1	

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	12723	12989	12908	12810	12619	12711	12756
Vehs Exited	11647	11678	11967	11722	11463	11473	11616
Starting Vehs	1139	992	1071	1042	1043	1055	1092
Ending Vehs	2215	2303	2012	2130	2199	2293	2232
Travel Distance (km)	28634	29193	29497	28872	28427	28422	28665
Travel Time (hr)	1779.8	1855.5	1799.4	1847.7	1921.9	1987.7	1986.8
Total Delay (hr)	1271.6	1336.6	1274.8	1332.6	1418.3	1483.0	1477.8
Total Stops	37212	39744	39482	39607	38601	39134	40815
Fuel Used (l)	3338.7	3443.1	3417.7	3419.2	3453.3	3504.6	3518.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	12831	12615	12965	12835
Vehs Exited	11702	11425	11692	11682
Starting Vehs	1084	1069	1030	1024
Ending Vehs	2213	2259	2303	2177
Travel Distance (km)	29102	28543	28943	29010
Travel Time (hr)	1869.1	2015.8	1980.6	1841.4
Total Delay (hr)	1352.6	1509.3	1468.0	1325.9
Total Stops	38682	38199	40579	39485
Fuel Used (l)	3441.1	3539.1	3539.2	3416.9

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	12723	12989	12908	12810	12619	12711	12756
Vehs Exited	11647	11678	11967	11722	11463	11473	11616
Starting Vehs	1139	992	1071	1042	1043	1055	1092
Ending Vehs	2215	2303	2012	2130	2199	2293	2232
Travel Distance (km)	28634	29193	29497	28872	28427	28422	28665
Travel Time (hr)	1779.8	1855.5	1799.4	1847.7	1921.9	1987.7	1986.8
Total Delay (hr)	1271.6	1336.6	1274.8	1332.6	1418.3	1483.0	1477.8
Total Stops	37212	39744	39482	39607	38601	39134	40815
Fuel Used (l)	3338.7	3443.1	3417.7	3419.2	3453.3	3504.6	3518.1

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	12831	12615	12965	12835
Vehs Exited	11702	11425	11692	11682
Starting Vehs	1084	1069	1030	1024
Ending Vehs	2213	2259	2303	2177
Travel Distance (km)	29102	28543	28943	29010
Travel Time (hr)	1869.1	2015.8	1980.6	1841.4
Total Delay (hr)	1352.6	1509.3	1468.0	1325.9
Total Stops	38682	38199	40579	39485
Fuel Used (l)	3441.1	3539.1	3539.2	3416.9

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	SB
Directions Served	L	L	T	T	T	T	T	T	T	T	R	L
Maximum Queue (m)	134.9	184.9	339.3	324.1	51.1	105.7	86.6	203.5	210.3	242.9	110.0	20.8
Average Queue (m)	110.8	139.3	134.9	124.6	21.4	9.9	7.2	130.6	137.5	144.3	73.7	6.7
95th Queue (m)	154.3	214.8	339.3	318.4	43.3	55.1	43.5	189.2	199.1	219.3	147.0	16.1
Link Distance (m)			324.1	324.1	324.1	254.9	254.9	401.7	401.7	401.7		
Upstream Blk Time (%)			7	0								
Queuing Penalty (veh)			0	0								
Storage Bay Dist (m)	85.0	85.0									60.0	70.0
Storage Blk Time (%)	50	57								46	0	
Queuing Penalty (veh)	151	172								126	2	

Intersection: 38: Dundas Street West/Dundas St W & Tremaine Rd

Movement	SB	SB
Directions Served	L	R
Maximum Queue (m)	260.9	262.4
Average Queue (m)	145.0	254.1
95th Queue (m)	337.5	257.7
Link Distance (m)	250.2	250.2
Upstream Blk Time (%)	12	56
Queuing Penalty (veh)	82	388
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		