# HALTON REGION

# 2017 DEVELOPMENT CHARGES TRANSPORTATION TECHNICAL REPORT

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# *Executive Summary*

# EXECUTIVE SUMMARY

In 2011, Halton Region completed the Halton Region Transportation Master Plan – The Road to Change (2011 TMP) to support the implementation of Regional Official Plan Amendment (ROPA) 38/39 based on the Region's Best Planning Estimates (June 2011). The 2011 TMP provides a sustainable and integrated plan that considers all modes of travel (automobile, transit, cycling and walking) to accommodate population and employment growth across Halton Region from 2017 to 2031 according to the 2011 Best Planning Estimates (BPEs). The 2016 and 2031 population and employment projections for Halton Region, based on the BPEs, are summarized in **Table ES1.**

**Table ES1: Growth Projections 2016-2031**

| Municipality | Population | | | Employment | | |
|---|---|---|---|---|---|---|
| | 2016 | 2031 | Growth (2016 - 2031) | 2016 | 2031 | Growth (2016 - 2031) |
| Burlington | 175,438 | 186,169 | 10,731 | 98,710 | 105,349 | 6,639 |
| Halton Hills | 57,922 | 91,885 | 33,963 | 20,744 | 41,962 | 21,218 |
| Milton | 124,645 | 228,084 | 103,439 | 62,553 | 114,330 | 51,777 |
| Oakville | 198,205 | 246,400 | 48,195 | 106,485 | 128,359 | 21,874 |
| Halton Region | 556,210 | 752,537 | 196,328 | 288,493 | 390,000 | 101,508 |

*Source: Halton Region Best Planning Estimates (BPE) as approved by Regional Council July 2011*

The development capital infrastructure requirements identified in the 2011 TMP served as one of several key inputs into the establishment of Halton Region's 2012 Development Charges By-law. As the 2012 Development Charges By-law expires in September 2017, a number of technical updates to the 2011 TMP and its associated Transportation Capital Implementation Plan have been undertaken and consolidated into this report entitled "2017 Development Charges Transportation Technical Report". The 2017 Technical Report will serve to support the establishment of the 2017 Development Charges By-law and follows the same overall approach as the previous 2012 Development Charges Transportation Technical Report.

### Transportation Technical Review

A technical review of the transportation network and capital projects identified in the 2011 TMP was undertaken which focused on the following key elements:

- updating the transportation demand forecasting model with current travel pattern characteristics (based on 2011 Transportation Tomorrow Survey);
- reviewing existing and future transportation network screenline capacities to 2031; and
- validating the long range Transportation Capital Implementation Plan to 2031 (i.e. project scope, timing, need and cost) as identified in the 2011 TMP, including potential timing shifts of previously identified infrastructure projects.

The outcomes of the technical review have been incorporated into this 2017 Development Charges Transportation Technical Report. The key outcomes are noted below:

**I. Updated Capital Project Cost Estimation**

Capital costing was updated from more detailed evaluations (Municipal Class Environmental Assessment Study, Detailed Design, Peel Region). Where a project costing was still derived from benchmarking, updated costing was done through an indexing of the cost estimate per the 2012 DC Program to January 1, 2017.

**II. Updated Transportation Capital Implementation Plans**

The Transportation Capital Implementation Plan was reviewed with regards to project scope, timing, need and costs. In addition, some changes since the 2011 TMP were also considered such as:

- Delays in Municipal Class Environmental Assessment process review and approval timelines;
- Property acquisition, development coordination, additional natural environment investigation and review agency approval requirements;
- Overall co-ordination of Municipal Class Environmental Assessment Studies with Local Municipal planning studies / initiatives; and
- Harmonization of road capital works with other Regional infrastructure works (i.e. water, wastewater, road and intersection improvements) within common road corridors.

**III. Inclusion of New Off-Road Active Transportation Infrastructure**

As part of the Active Transportation Master Plan, it was recommended that the Region assume responsibility for the financing of new off-road infrastructure through the Regional Development Charges By-law process as per Halton Region Council Report No. PW-17-15. Accordingly, capital costs for new Off-Road Active Transportation infrastructure within Halton Region right-of-way have been included in the Transportation Capital Implementation Plan.

**Summary of Capital Implementation Plan**

The Development and Non-Development Capital Implementation Plan for Halton's Transportation Network and Services to 2031 has been updated for the period 2017 to 2031 (refer to **Figure E1**).
Projects are classified as follows:

- Reconstruction (no widening)
- Road Widening without Reconstruction
- Road Widening with Reconstruction
- New Alignment
- Traffic Management
- Provincial Freeway Interchanges
- Railway Grade Separations
- Structures (bridges and culverts)
- Studies and Programs

**Appendix A** presents the Development and Non-Development Capital Implementation Plan for 2017 to 2031; inclusive of phasing and cost (in 2017 dollars). The total cost of the Transportation Capital Implementation Plan is approximately $2.19 Billion.

Significant transportation projects, which have been identified for implementation over the next 15 years, include:

- Trafalgar Road widening to six lanes (Leighland Avenue to 407 ETR)
- Trafalgar Road widening to four lanes (Steeles Avenue to Highway 7)
- Brant Street widening to six lanes (North Service Road to Dundas Street)
- Dundas Street widening to six lanes (Bronte Road to Kerns Road)
- Britannia Road widening to six lanes (Tremaine Road to 407 ETR)
- Ninth Line widening to four lanes (Steeles Avenue to 10 Side Road)
- Tremaine Road widening to four lanes (including Highway 401 Interchange)
- William Halton Parkway new four lane road (Third Line to Sixth Line)
- Trafalgar Road widening to six lanes (407 ETR to Steeles Avenue)
- Upper Middle Road widening to six lanes (Bronte Road to Winston Churchill Boulevard)
- James Snow Parkway widening to six lanes (407 ETR to Tremaine Road)
- Tremaine Road widening to six lanes (Derry Road to Highway 401)
- Derry Road widening to six lanes (Tremaine Road to 407 ETR)
- Steeles Avenue widening to six lanes (Regional Road 25 to Winston Churchill
- Boulevard)
- 10 Side Road widening to four lanes (Trafalgar Road to Winston Churchill Boulevard)
- Appleby Line widening to six lanes (Fairview Street to Taywood Drive)
- Regional Road 25 widening to six lanes (Speers Road to Derry Road)
- Additional North/South roadway capacity in the vicinity of Derry Green “5 ½ line” (Britannia Road to Steeles Avenue)

Costs for the Transportation Capital Implementation Plan have been apportioned to Growth/Non-growth and Residential/Non-residential uses in a manner consistent with the methodologies presented in the 2012 Development Charges Transportation Background Study as outlined in the following sections:

**I. Benefit to Existing Development**

The allocation of transportation project costs to Growth and Non-growth typically varies by project type, and further by component within a project. The cost allocation for the project types in the Region’s 2017 to 2031 Transportation Capital Implementation Plan is consistent with the methodology presented in the 2012 Development Charges Transportation Technical Report. The allocation of cost to Growth is summarized in **Table ES2**. **Appendix D** presents the cost allocation between Growth and Non-growth for the 2017-2031 Transportation Capital Implementation Plan.

**II. Residential and Non-Residential Splits**

Previously, growth-related DCs were allocated between Residential and Non-Residential land uses based on trips attributed to Population and Employment Growth. The updated methodology now reflects both the growing percentage of jobs in the Work–at-Home (WAH) and No-Fixed-Place-of-Work (NFPOW) categories. Table 11 summarizes the employment forecast excluding WAH and NFPOW employment, which is the basis for the transportation trip generation (presented in Table 12) and DC employment forecast.

**Table ES2: Allocation of Transportation Project Costs to Growth**

| Project Type | Growth Share (%) | Report Section |
|---|---|---|
| Road Reconstruction (no Widening) | 0% | 7.1 |
| Road Widening (no Reconstruction) | 100% with the following deductions:<br>• deduction for existing roadway based on the used value of the existing lanes and the benchmark cost of resurfacing<br>• 50% deduction for intersection modifications and additions<br>• 50% deduction for signal modifications<br>• 100% deduction for rehabilitation of bridges, grade separations and culverts<br>• if non-benchmark costing is used, a 13% deduction is assigned to construction costs | 7.2 |
| Road Widening with Reconstruction | 100% with the following deductions:<br>• deduction for existing roadway based on the used value of the existing lanes and the benchmark cost of reconstruction<br>• 50% deduction for engineering and contingency costs<br>• 50% deduction for intersection modifications and additions<br>• 50% deduction for signal modifications<br>• 100% deduction for rehabilitation of bridges, grade separations and culverts<br>• if non-benchmark costing is used, a 50% deduction is assigned for engineering and design, and a 25% deduction is assigned to construction costs | 7.3 |
| New Roads and Alignments | 100% | 7.4 |
| Traffic Management | 50% | 7.5 |
| Provincial Freeway Interchanges | 100% | 7.6 |
| Grade Separations – Widening | 100% less deduction for rehabilitation of the existing structure, based on used value of the structure and the benchmark cost of rehabilitation | 7.7.1 |
| Grade Separations – New | 100% less BTE based on exposure index | 7.7.2 |
| Structures – Widening | 100% less deduction for rehabilitation of the existing structure, based on used value of the structure and the benchmark cost of rehabilitation | 7.8.1 |
| Structures – New | 100% | 7.8.2 |
| Off-Road Active Transportation | 90% | 7.9 |
| Studies and Programs | BTE based on type of study or program | 7.10 |

Since the impact on transportation services from WAH employees is generated from the home and the population/unit forecast already includes these individuals, the calculations do not include employees associated with WAH.

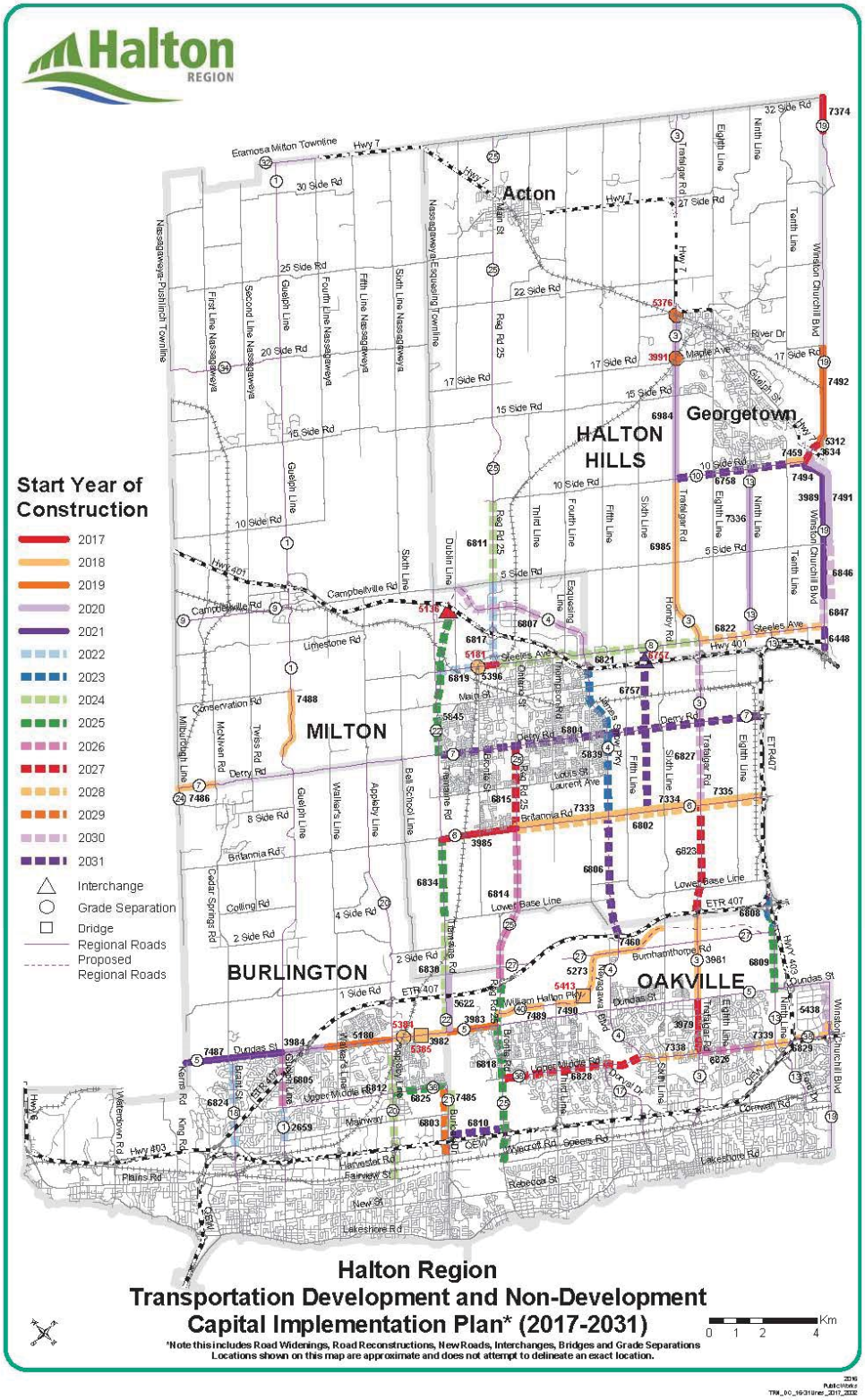
For NFPOW employees, the need for service related to these employees has largely been included in the employment forecast by usual place of work (i.e. employment and Gross Floor Area (GFA)) in the retail and accommodation sectors generated from NFPOW construction employment). Furthermore, since these employees have no fixed work address, they cannot be captured in the non-residential gross floor area calculation. Accordingly, NFPOW employees have been removed from the employment forecast and calculation.

Using the updated trip rates and the growth projections as modified, the Residential/Non-Residential split is estimated at 64% and 36%, respectively.

**III. Post-Planning Period Capacity**

A deduction for post planning period capacity has been made for major infrastructure improvements in the last five years (2026 to 2031) of the Transportation Capital Implementation Plan. This deduction is proportional to the degree to which the volume to capacity ratio (v/c) on the major improvement in 2031 is less than the average v/c on the associated screenline. Projects identified for the 2026 to 2031 timeframe where the PPP calculation applies are presented in **Appendix E**.

**Figure E1: Transportation Development and Non-Development Capital Implementation Plan (2017 to 2031)**



| RD # | ID | Regional Municipality of Halton<br>Capital Projects (2017-2031)<br>Project Descriptions | Start Year Construction |
|---|---|---|---|
| 1 | 7488 | Guelph Line Reconstruction, 1km North of Derry Road to Conservation Road (MIL) (Regional Road 1) | 2018 |
| 1 | 2659 | Guelph Line - Widening - 4 to 6 lanes from Mainway to Upper Middle Road (BUR) (Regional Road 1) | 2022 |
| 1 | 6805 | Guelph Line - Widening - 4 to 6 lanes from Upper Middle Road to Dundas Street (BUR) (Regional Road 1) | 2026 |
| 3 | 3979 | Trafalgar Road - Widening - 4 to 6 lanes from Upper Middle Road to Dundas Street (OAK) (Regional Road 3) | 2017 |
| 3 | 3981 | Trafalgar Road - Widening - 4 to 6 lanes from Dundas Street to Highway 407 (OAK) (Regional Road 3) | 2018 |
| 3 | 6823 | Trafalgar Road - Widening - 4 to 6 lanes from Highway 407 to Britannia Road (MIL) (Regional Road 3) | 2027 |
| 3 | 6827 | Trafalgar Road - Widening - 4 to 6 lanes from Britannia Road to Steeles Avenue (MIL/HHS) (Regional Road 3) | 2030 |
| 3 | 6985 | Trafalgar Road - Widening - 2 to 4 lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 3) | 2018 |
| 3 | 6984 | Trafalgar Road - Widening - 2 to 4 lanes from 10 Side Road to Highway 7 (HHS) (Regional Road 3) | 2020 |
| 3 | 3991 | Trafalgar Road - Grade Separation at CN Crossing North of Maple Avenue (HHS) (Regional Road 3) | 2019 |
| 3 | 5376 | Trafalgar Road - Grade Separation at Metrolinx Crossing South of Highway 7 (HHS) (Regional Road 3) | 2019 |
| 4 | 6806 | James Snow Parkway - New 6 lane road from Highway 407 to Britannia Road (MIL) (Regional Road 4) | 2031 |
| 4 | 5839 | James Snow Parkway - Widening - 4 to 6 lanes from Britannia Road to Highway 401 (MIL) (Regional Road 4) | 2023 |
| 4 | 6807 | James Snow Parkway - Widening - 4 to 6 lanes from Highway 401 to 5 Side Road (MIL) (Regional Road 4) | 2030 |
| 5 | 7487 | Dundas Street - Widening - 4 to 6 lanes from Kerns Road to Guelph Line, including improvements at Brant Street (BUR) (Regional Road 5) | 2021 |
| 5 | 3984 | Dundas Street - Widening - 4 to 6 lanes from Guelph Line to North Hampton Boulevard (BUR) (Regional Road 5) | 2020 |
| 5 | 5180 | Dundas Street - Widening - 4 to 6 lanes from Northampton Boulevard to Appleby Line (BUR) (Regional Road 5) | 2019 |
| 5 | 3982 | Dundas Street - Widening - 4 to 6 lanes (excluding CNR & Bronte Crk Bridges) from Appleby Line to Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 5384 | Dundas Street - Grade Separation at CNR Crossing between Appleby Line and Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 5385 | Dundas Street - Bronte Creek Bridge between Appleby Line and Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 3983 | Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Bronte Road (OAK) (Regional Road 5) | 2019 |
| 6 | 3985 | Britannia Road - Widening 2 to 6 lanes from Tremaine Road to Regional Road 25 (MIL) (Regional Road 6) | 2017 |
| 6 | 7333 | Britannia Road - Widening 2 to 4 lanes from Regional Road 25 to James Snow Parkway (MIL) (Regional Road 6) | 2018 |
| 6 | 7334 | Britannia Road - Widening - 2 to 4 lanes from James Snow Parkway to Trafalgar Road (MIL) (Regional Road 6) | 2018 |
| 6 | 7335 | Britannia Road - Widening - 2 to 4 lanes from Trafalgar Road to Highway 407 (MIL) (Regional Road 6) | 2018 |
| 6 | 6802 | Britannia Road - Widening - 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6) | 2028 |
| 7 | 7486 | Derry Road - Reconstruction from Milburough Line to McNiven Road (MIL) (Regional Road 7) | 2018 |
| 7 | 6804 | Derry Road - Widening - 4 to 6 lanes from Tremaine Road to Highway 407 (MIL) (Regional Road 7) | 2031 |
| 8 | 6819 | Steeles Avenue - Widening - 2 to 4 lanes from Tremaine Road to Industrial Drive (MIL) (Regional Road 8) | 2022 |
| 8 | 5181 | Steeles Avenue - Grade Separation at CN crossing west of Bronte Street (MIL) (Regional Road 8) | 2018 |
| 8 | 5396 | Steeles Avenue - Widening - 2 to 4 lanes from Industrial Drive to Martin Street (MIL) (Regional Road 8) | 2017 |
| 8 | 6821 | Steeles Avenue - Widening - 4 to 6 lanes from Regional Road 25 to Trafalgar (MIL/HHS) (Regional Road 8) | 2024 |
| 8 | 6822 | Steeles Avenue - Widening - 4 to 6 lanes (with RBL) from Trafalgar Road to Winston Churchill Boulevard (HHS) (Regional Road 8) | 2028 |
| 10 | 7459 | 10 Side Road - 2 Lane Reconstruction/Realignment to intersection at Winston Churchill Boulevard (HHS) (Regional Road 10) | 2018 |
| 10 | 6758 | 10 Side Road - Widening - 2 to 4 lanes from Trafalgar Road to Winston Churchill Boulevard (HHS) (Regional Road 10) | 2031 |
| 13 | 6809 | Ninth Line - Widening - 2 to 4 lanes from Dundas Street to Burnhamthorpe Road (OAK) (Regional Road 13) | 2025 |
| 13 | 6808 | Ninth Line - Widening - 2 to 4 lanes from Burnhamthorpe Road to Highway 407 (OAK) (Regional Road 13) | 2023 |
| 13 | 7336 | Ninth Line - Widening - 2 to 4 lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 13) | 2020 |
| 18 | 6824 | Brant Street - Widening - 4 to 6 lanes from North Service Road to Dundas Street (BUR) (Regional Road 18) | 2022 |
| 19 | 5438 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from Upper Middle Road / QEW to Dundas Street - (OAK) (Regional Road 19) | 2030 |
| 19 | 6448 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from Highway 401 to Steeles Avenue (HHS) (Regional Road 19) | 2021 |
| 19 | 6846 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from 2km south of 5 Side Road to 5 Side Road (HHS) (Regional Road 19) | 2030 |
| 19 | 6847 | Winston Churchill Boulevard - Widening - 5 to 7 lanes from Steeles Avenue to 2 km south of 5 Side Road (HHS) (Regional Road 19) | 2030 |
| 19 | 3989 | Winston Churchill Boulevard - Widening - 2 to 4 Lanes from 2km south of 5 Side Road to potential by-pass (HHS) (Regional Road 19) | 2021 |
| 19 | 7491 | Winston Churchill Boulevard - Reconstruction from 5 Side Road to 10 Side Road (HHS) (Regional Road 19) | 2020 |
| 19 | 3634 | Winston Churchill Boulevard - 2 lane Reconstruction from 10 Side Road to Credit River Bridge (HHS) (Regional Road 19) | 2017 |
| 19 | 5312 | Winston Churchill Boulevard - 2 lane Reconstruction from Credit River Bridge to Old Pine Road (HHS) (Regional Road 19) | 2019 |
| 19 | 7492 | Winston Churchill Boulevard - 2 lane Reconstruction from Old Pine Road to 17 Side Road (HHS) (Regional Road 19) | 2019 |
| 19 | 7374 | Winston Churchill Boulevard - Reconstruction from Terra Cotta to Ballinafad Rd/32 Side Road (HHS) (Regional Road 19) | 2017 |
| 20 | 6812 | Appleby Line - Widening - 4 to 6 lanes from Fairview Street to Taywood Drive (BUR) (Regional Road 20) | 2024 |
| 21 | 7485 | Burloak Drive - 4 lane urbanization from north of North Service Road to Upper Middle Road (BUR/OAK) (Regional Road 21) | 2024 |
| 21 | 6803 | Burloak Drive - Widening - 4 to 6 lanes from Harvester Road to Upper Middle Road (BUR/OAK) (Regional Road 21) | 2029 |
| 22 | 5622 | Tremaine Road - 2 lane Reconstruction from Dundas Street to 1 Side Road (BUR/OAK) (Regional Road 22) | 2020 |
| 22 | 6830 | Tremaine Road - Widening - 2 to 4 lanes from Dundas Street to Lower Base Line (BUR/OAK) (Regional Road 22) | 2024 |
| 22 | 6834 | Tremaine Road - Widening - 2 to 4 lanes from Lower Base Line to Britannia Road (BUR/OAK) (Regional Road 22) | 2025 |
| 22 | 5845 | Tremaine Road - Widening - 4 to 6 lanes from Derry Road to Highway 401 (MIL) (Regional Road 22) | 2025 |
| 22 | 5136 | Tremaine Road - New 4 lane roadway from Tremaine Road (IC)s to Tremaine Road (IC)n (MIL) (Regional Road 22) | 2017 |
| 25 | 6818 | Bronte Road - Widening - 4 to 6 lanes from Speers Road to Highway 407 (OAK) (Regional Road 25) | 2025 |
| 25 | 6814 | Regional Road 25 - Widening - 4 to 6 lanes from Highway 407 to Britannia Road (MIL) (Regional Road 25) | 2026 |
| 25 | 6815 | Regional Road 25 - Widening - 4 to 6 lanes from Britannia Road to Derry Road (MIL) (Regional Road 25) | 2027 |
| 25 | 6817 | Regional Road 25 - Widening - 4 to 6 lanes from Steeles Avenue to 5 Side Road (MIL) (Regional Road 25) | 2022 |
| 25 | 6811 | Regional Road 25 - Widening - 2 to 4 lanes from 5 Side Road to 10 Side Road (HHS) (Regional Road 25) | 2024 |
| 38 | 6825 | Upper Middle Road - Widening - 4 to 6 lanes from Appleby Line to Burloak Drive (BUR) (Regional Road 38) | 2025 |
| 38 | 6828 | Upper Middle Road - Widening - 4 to 6 lanes from Bronte Road to Neyagawa Boulevard (OAK) (Regional Road 38) | 2027 |
| 38 | 7338 | Upper Middle Road - Widening - 4 to 6 lanes from Neyagawa Boulevard to Trafalgar Road (OAK) (Regional Road 38) | 2028 |
| 38 | 6826 | Upper Middle Road - Widening - 4 to 6 lanes from Trafalgar Road to Grand Boulevard (OAK) (Regional Road 38) | 2026 |
| 38 | 7339 | Upper Middle Road - Widening - 4 to 6 lanes from Grand Boulevard to Ninth Line/Ford Drive(OAK) (Regional Road 38) | 2028 |
| 38 | 6829 | Upper Middle Road - Widening - 4 to 6 lanes from Ninth Line to Winston Churchill Boulevard (OAK) (Regional Road 38) | 2028 |
| 40 | 7489 | William Halton Parkway - Widening - 2 to 4 lanes from Old Bronte Road to Hospital Gate (OAK) (Regional Road 40) | 2018 |
| 40 | 7490 | William Halton Parkway - New 4 lane road from Third Line to Sixteen Mile Creek (OAK) (Regional Road 40) | 2018 |
| 40 | 5413 | William Halton Parkway - New 4 lane Bridge over Sixteen Mile Creek (OAK) (Regional Road 40) | 2018 |
| 40 | 5273 | William Halton Parkway - New 4 lane road from Sixteen Mile Creek to Neyagawa Boulevard (OAK) (Regional Road 40) | 2018 |
| 40 | 7460 | William Halton Parkway - New 4 lane road from Neyagawa Boulevard to Sixth Line (OAK) (Regional Road 40) | 2018 |
|  | 6757 | "5 1/2 Line" - New 6 lane road from Britannia Road to Steeles Avenue and Interchange at Highway 401 (MIL) | 2031 |
|  | 6810 | North Service Road - New 4 lane road from Burloak Drive to Bronte Road (OAK) | 2031 |
|  | 7494 | Norval Bypass (HHS) | 2021 |

# *Main Report*

# 1 INTRODUCTION

Development Charges (DC) are required to recover growth-related capital costs from development such that "growth pays for growth". In accordance with the Development Charges Act 1997 (the DC Act), development charges are imposed where the development of land increases the need for capital services. The legislation requires that the Background Study include an analysis for each service of the long term capital and operating costs for the Region.

The DC Act provides that a municipality must determine the following regarding the calculation of the development charge:

- the anticipated amount, type and location of development;
- the increase in need for service attributable to growth;
- the average quantity and quality of service level attained over the most recent prior 10-year period;
- the increase in capital costs (including oversized capacity);
- the portion of increased capital costs that will benefit growth; and
- the amount of any subsidies or other contributions regarding the capital costs.

Halton Region has updated its capital program for transportation services to 2031 based on changes since the publication of the 2012 Development Charges Transportation Background Report (September 2011). Changes since that time include:

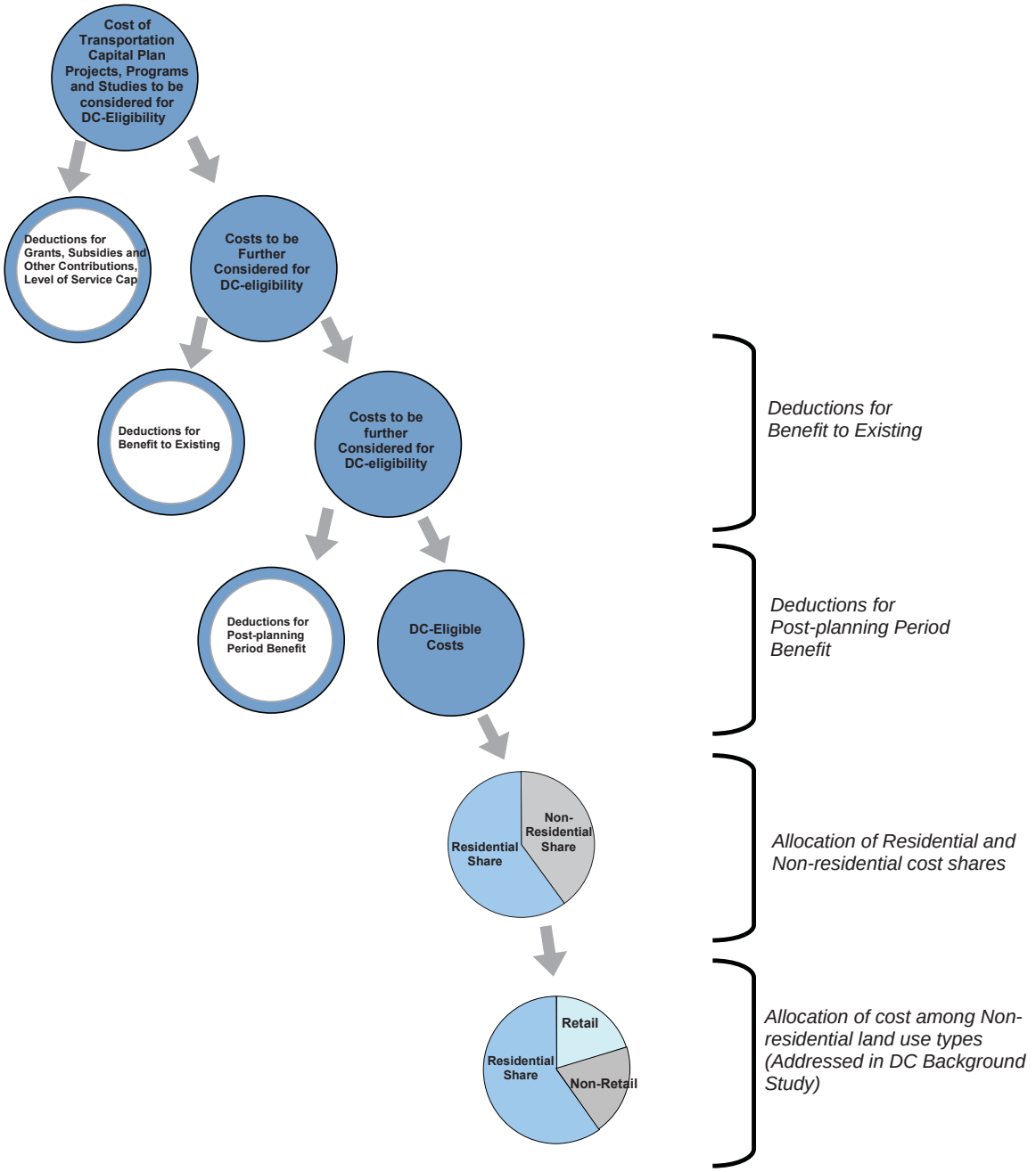
- Updated the transportation demand forecasting model with current travel pattern characteristics (based on 2011 Transportation Tomorrow Survey);
- Reviewed existing and future transportation network screenline capacities to 2031;
- Validation of the long range Transportation Capital Implementation Plan to 2031 (i.e. project scope, timing, need and cost) as identified in the 2011 TMP, including potential timing shifts of previously identified infrastructure projects;
- Updated costing from recently completed Municipal Class Environmental Assessment (MCEA) Studies;
- Updated Costing from on-going detailed design projects;
- Updated Costing for Benchmarked projects by indexing from 2012 Costs per the non-residential construction price index;
- Updates to costing for annual programs and studies, based on industry and regional experience;
- Inclusion of New Off-Road Active Transportation infrastructure capital costs within Halton Region right-of-way as outlined in staff repot PW17-15 (November 4, 2015); and
- Roads Rationalization Review recommendations per staff report PW 32-15 (November 4, 2015).

Costs have been apportioned to Growth/Non-growth and Residential/Non-residential uses in a manner consistent with the methodologies presented in the 2012 DC. Development charges have been and will remain a key source of funding for these projects under current legislation.

This report provides the background, assumptions and rationale on the cost and timing of transportation improvements to accommodate growth in Halton Region to 2031. The report includes the following sections, which follow the process flow identified in **Figure 1**:

1. Introduction
2. Overview
3. Capital Expenditure Plan
4. Previous 10 Year Service Level
5. Traffic Flow Through Analysis
6. Grants, Subsidies and Developer Contributions
7. Benefit to Existing Development
8. Post Planning Period Capacity
9. Residential/Non-Residential Splits

**Figure 1: Study Flow Process**



# 2 OVERVIEW

## 2.1 Population and Employment

Best Planning Estimates (BPEs), approved by Regional Council on July 13, 2011, were used as the basis for the forecasts of population and employment growth in Halton Region over the next 15 years (to 2031). **Table 1** reflects the population and employment from 2016 to 2031, per the BPEs.

**Table 1: Growth Projections 2016-2031**

| Municipality | Population | | | Employment | | |
|---|---|---|---|---|---|---|
| | 2016 | 2031 | Growth (2016 - 2031) | 2016 | 2031 | Growth (2016 - 2031) |
| Burlington | 175,438 | 186,169 | 10,731 | 98,710 | 105,349 | 6,639 |
| Halton Hills | 57,922 | 91,885 | 33,963 | 20,744 | 41,962 | 21,218 |
| Milton | 124,645 | 228,084 | 103,439 | 62,553 | 114,330 | 51,777 |
| Oakville | 198,205 | 246,400 | 48,195 | 106,485 | 128,359 | 21,874 |
| Halton Region | 556,210 | 752,537 | 196,328 | 288,493 | 390,000 | 101,508 |

*Source: Halton Region Best Planning Estimates (BPE) as approved by Regional Council July 2011*

## 2.2 Regional Demand Forecasting Model

Halton Region uses a demand forecasting model for its long term transportation planning. The Halton Region Model has been updated a number of times since it was originally developed. The first major update occurred in 2004, when the model calibration was updated to reflect the observed travel patterns in the 2001 Transportation Tomorrow Survey (TTS). Subsequent refinements and updates occurred during 2006/2007 as part of the Development Charges Update Study. With the release of the 2006 TTS data the model was updated to support Sustainable Halton, the Regional Official Plan Amendment (ROPA) 38, and the Halton Region Transportation Master Plan (2031) – The Road to Change.

The Halton Region Model has been updated once again to include the release of the 2011 TTS data. The updated model maintains the core functions, procedures and updated network.

Within the context of the 2017 Transportation Development Charges Technical Report, the model is used for network-wide analysis and overview including comparison of the network characteristics between 2016 and the 2031 planning horizon.

## 2.3 Halton Region Transportation Master Plan (2031) – The Road to Change

The Region undertook a Transportation Master Plan in 2011 - the Halton Region Transportation Master Plan (2031) – The Road to Change (2011 TMP). The 2011 TMP developed a sustainable and integrated plan that considered all modes of travel (automobile, transit, cycling and walking) to accommodate growth in Halton Region to the year 2031, as established through Regional Official Plan Amendment (ROPA) 38. The 2011 TMP provides strategies, policies and tools required to meet the Region's transportation needs in a safe and cost effective manner.

The 2011 TMP was developed in accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) Process (October 2000, as amended 2007). Through this process existing problems/opportunities were defined, alternative solutions evaluated, and an optimum transportation system was identified to the year 2031.

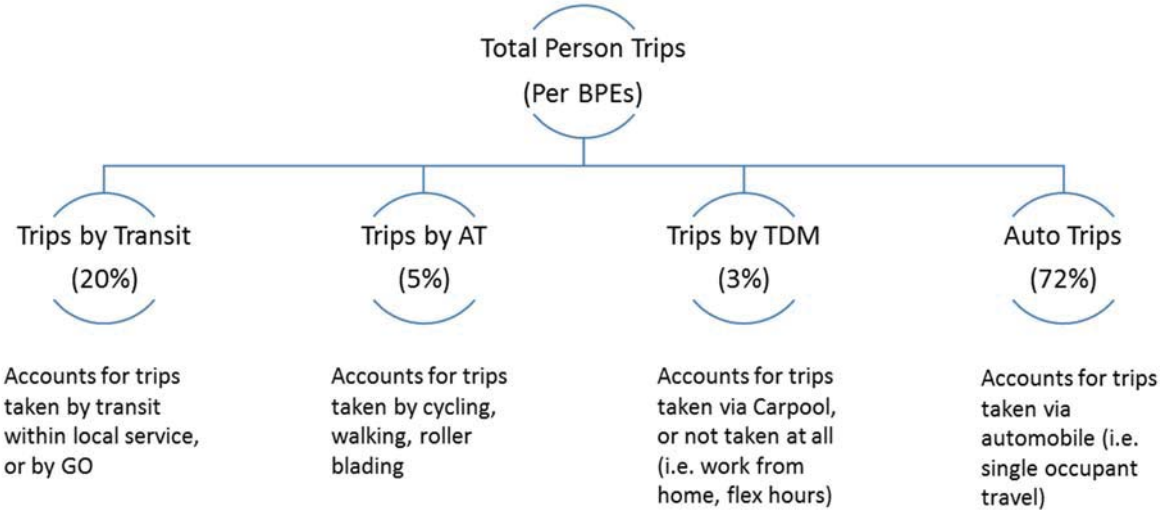
The 2011 TMP was initiated by developing a vision statement and a set of guiding principles. The guiding principles that provided the foundation for the development of the master plan are:

- Balanced Needs – provide choice for the travel needs of residents;
- Healthy Communities – support a healthy and active lifestyle;
- Economic Vitality – transportation will be a major contributor to the Region's prosperity;
- Sustainability – balance economic, social and environmental goals; and
- Well-Maintained Infrastructure – keep the Region's infrastructure in a good state of repair.

The transportation master plan process incorporated a comprehensive public consultation program involving the public at large, Local Municipal staff, technical agencies and other interested stakeholders.

A key objective of the 2011 TMP was to maximize the use of existing transportation infrastructure, transportation demand management (TDM) and active transportation (cycling and walking) (AT). **Figure 2** presents the trip mode split considerations in the 2011 TMP.

**Figure 2: Total Person-Trips, Reductions and Allocation (2031)**




The analysis determined that widening the existing Regional road network to six lanes (where practical and feasible) will not on its own provide sufficient capacity to maintain current levels of service. In order to accommodate 2031 travel demand, additional capacity must be provided by widening existing roadways and introducing new corridors, active transportation, travel demand management and enhanced municipal and inter-regional (GO) transit services.

By 2031, municipal and inter-regional (GO) transit services will need to accommodate 15% to 20% of the peak period travel demand in order to maintain current levels of service. The 15% to 20% "transit modal split" is consistent with provincial targets and the sustainability principles of ROPA 38. To achieve a transit modal split within this range local transit service would be required to accommodate, on average, approximately 11% of the internal peak period trips. Internal trips are those trips that start and end in Halton,

and would include trips to and from inter-Regional transit service stations (GO). Based on the 2011 Transportation Tomorrow Survey an average of 7% of the peak period trips are currently provided by municipal and inter-regional (GO) transit services. This represents an increase in transit mode split from 2006, when the average was 5%.

## 2.4 Active Transportation

Active Transportation (AT) is defined as travel by non-motorized (i.e. walking, cycling, rollerblading) or lightly-motorized (i.e. scooter) means. AT supports the transportation system by reducing the reliance on the automobile and the use of single occupant vehicles; and providing a variety of options for the general public to encourage an active lifestyle.

The 2011 TMP recommended that a detailed Region-wide Active Transportation Master Plan (ATMP) be developed to establish a strategy and infrastructure improvements (e.g. exclusive bicycle lanes) to promote increased non-motorized travel throughout the Region.

A mode share target for active transportation of five per cent of all PM peak hour trips by 2031 was established, as part of the 2011 TMP. Current levels are less than two per cent. This represents an almost seven-fold increase in PM peak hour trips made by cycling and walking to approximately 11,500 trips by 2031.

An ATMP was completed by Halton Region in accordance with the Municipal Class Environmental Assessment (EA) process (October 2000, as amended in 2007 and 2011), which is an approved process under the Ontario Environmental Assessment Act. The ATMP process incorporated a comprehensive public consultation program involving the public at large, local municipal staff, technical agencies and other interested stakeholders.

A key outcome of the study was a list of active transportation projects that the Region can incorporate in its Roads Capital Program as well as Resurfacing projects. These are reflected in the updated Roads Capital Projects presented in this report.

On November 4, 2015, Regional Council endorsed, in principle, the ATMP as the recommended strategy to support the implementation of Active Transportation facilities along Regional Roads (Staff Report PW17-15).

## 2.5 Transportation Demand Management

Transportation Demand Management (TDM) incorporates a variety of initiatives aimed at reducing travel by single occupant vehicles and achieving a more balanced mode split (i.e. transit, carpooling, walking, cycling and telecommuting, to name a few measures) in the transportation system, particularly in peak hours. For example, the Region launched the Smart Commute Initiative in 2006, which encourages employers across the Region to promote alternative travel modes among their employees. Smart Commute is continuing to expand across the Region in partnership with Metrolinx, local municipalities and local employers.

A mode share target for TDM of three per cent of all PM peak hour trips by 2031 was established, as part of the 2011 TMP.

## 2.6 Roads Rationalization Review

In 2014, Halton Region initiated its five-year review of the arterial road designations throughout Halton Region to ensure the classification of roads are current.

The Road Rationalization Review identified road sections which are considered for transfer to either the Region or the Local Municipality due to a change in their road classification.

The following roadway sections have been identified for transfer to Halton Region as a result of the Roads Rationalization recommendations:

- Walker's Line (Fairview Street to Dundas Street)
- Winston Churchill Blvd (17 Side Road to 32 Side Road)

The capital improvement costs associated with Walker's Line are to be borne by the local municipality before the transfer is made, hence there are no costs associated with this corridor in the Roads Capital Projects.

Winston Churchill Blvd is a boundary road between Halton Region and Peel Region. Peel Region operates and maintains the roadway with Halton Region contributing to costs per the Halton/Peel Boundary Road Agreement established by the two municipalities. The costs to upgrade Winston Churchill Blvd from 17 Side Road to 32 Side Road, have been prioritized and incorporated into the 2017 to 2031 Transportation Capital Implementation Plan. However, these costs deal with rehabilitation, which are not apportioned to "Growth" in Halton's Development Charge.

The following Regional roads are proposed to be transferred to the local municipalities:

- Upper Middle Road (Guelph Line to Appleby Line)
- Old Burloak Drive (Upper Middle Road/Burloak Drive to Limit of Old Burloak Drive – North Terminus)
- Regional Road 25 (cul-de-sac south of Henderson Road) to North Terminus
- Burnhamthorpe Road (Regional Road 25 to Terminus West of Highway 407 ETR)
- Burnhamthorpe Road (Terminus East of Highway 407 ETR to approximately 700m West of Neyagawa Boulevard)
- Burnhamthorpe Road (approximately 600m East of Neyagawa Blvd to 380m West of Ninth Line)

On November 4, 2015, Staff Report PW 32-15 presented this study to Regional Council and was subsequently approved.

## 2.7 2017 to 2031 Roads Capital Projects Costing Types

The Roads Capital Projects are costed in the following ways:

- MCEA Study costing – where a project has undergone a MCEA Study, the costing is provided by the detailed analysis conducted as part of this study.
- Detailed Engineering – provided where costing has been calculated through a detailed design process.
- Programming and Studies – costs are based on current industry and regional experience.
- Region of Peel – the Region of Peel operates, maintains and provides costing for works allocated to Winston Churchill Boulevard, per the boundary road agreement.

- Benchmarked costing – the project costing developed as part of previous Transportation Master Plan (2011) and 2012 Transportation DC Technical Background Study, were utilized and indexed from 2012 to 2017 (January 1, 2017) in accordance with the Statistics Canada Quarterly Construction Price Index.

## 2.8 Key Issues

Some key issues reviewed as part of this report are:

### *2.8.1 Capital Cost Updates*

As identified above, Capital costing updates were derived from more detailed evaluations (MCEA Study, Detailed Design, Peel Region). Where a project costing is still derived from benchmarking, updated costing was done through an indexing of the cost estimate per the 2012 DC Program to January 1, 2017.

### *2.8.2 Roads Capital Project Phasing*

The 2017 Roads Capital Projects was reviewed with regards to project scope, timing, need and costs. In addition, the 2017 Roads Capital Projects considered Local Municipality infrastructure planning and initiatives, on-going requirements from Conservation Authorities (Conservation Halton, Ministry of the Environment and Climate Change, Ministry of Natural Resources), ongoing property acquisition initiatives, as well as minimizing disruptions during construction.

The notable changes since the 2011 TMP are outlined as follows:

- Delays in Municipal Class Environmental Assessment process review and approval timelines (approximately 1.5 years) by the Ministry of the Environment and Climate Change has shifted the start of construction timing for Britannia Road widening (Tremaine Road to 407 ETR) from 2013-2015 to 2017-2018.
- Property acquisition, development activity coordination, additional natural environment investigation and review agency approval requirements, has altered the start of construction timing for Tremaine Road widening (north of Steeles Avenue) and the new associated interchange at Highway 401 from 2012-2013 to 2017.
- Overall co-ordination of Municipal Class Environmental Assessment Studies with Local Municipal planning studies / initiatives (i.e. Midtown Oakville) has shifted the start of construction for Trafalgar Road widening (Leighland Avenue to 407 ETR) from 2014-2016 to 2017-2018.
- Harmonization of road capital works with other Regional infrastructure works (i.e. water, wastewater, road and intersection improvements) within common road corridors has altered the start of construction for Ninth Line (Steeles Avenue to 10 Side Road) from 2016 to 2020, and William Halton Parkway (Third Line to Sixteen Mile Creek area and Neyagawa Boulevard to Sixth Line) from to 2014-2015 to 2018, in order to minimize community disruption and impacts.
- Inclusion of active transportation construction projects for new off-road capital infrastructure on Regional roadways consistent with Report No. PW-17-15. This new off-road infrastructure will complement the on-road active transportation infrastructure planned from 2017 to 2031.

### *2.8.3 Off-Road Active Transportation Infrastructure*

To ensure seamless delivery of New Off-Road AT infrastructure along Regional Roads, the ATMP recommended that the Region assume responsibility for the financing of this infrastructure through the Regional Development Charges By-law. The local municipalities would retain ownership and operating & maintenance responsibilities for off-road infrastructure (i.e. sidewalks & multi-use paths) within the Region's right-of-way.

There is a cost neutral condition for the "Growth" component when looking at the combined Regional and Local Municipality DC for this item. The New Off-Road AT cost is moving from the Local DC to the Regional DC for cost recovery; hence the increase in the Regional DC is off-set by the decrease in the Local DC. Off-Road Active Transportation Infrastructure is a new line item on the Roads Capital Projects listing.

### *2.8.4 Bill 73*

The Smart Growth for Our Communities Act, 2015 (Bill 73) was passed on December 3, 2015. This Act, in part, makes changes to the Development Charges Act. Bill 73 was reviewed in the context of any impacts to the Transportation Background Technical Study and it was concluded that there are no changes required to the background study as a result of Bill 73.

### *2.8.5 Work at home & No fixed place of work*

Work-at-Home (WAH) and No Fixed Place of Work (NFPOW) "jobs" are forecasted to make approximately 19% of employment by 2031. As these "jobs" would generate trips from a residential land use (i.e. home based trips) consideration was given to identify their allocation, from a Development Charges perspective, under the Residential category.

# 3 CAPITAL EXPENDITURE PLAN

The Capital Expenditure Plan for Halton's Transportation Network and services to 2031 has been updated to reflect Roads Capital Projects for the period 2017 to 2031.

This Plan presents the capital projects to be undertaken by the Region by 2031. Projects are classified as follows:

- Reconstruction (no widening)
- Road Widening without Reconstruction
- Road Widening with Reconstruction
- New Alignment
- Traffic Management
- Provincial Freeway Interchanges
- Railway Grade Separations
- Structures (bridges and culverts)
- Studies and Programs

The cost allocation methodology relating to these projects are detailed within Section 7. Within the Studies and Programs classification, the Roads Capital Projects also includes the various operational and planning studies the Region undertakes in order to maintain levels of services within the regional network. These studies include:

- Traffic data collection
- Long and short term planning studies
- Travel demand management initiatives
- Upgrades to street lighting
- Noise Barrier implementation
- New Off-Road Active Transportation

**Appendix A** presents the Development and Non-Development Capital Implementation Plan, including a project map for 2017 to 2031; inclusive of phasing and cost (in 2017 dollars). The total cost of the Roads Capital Projects is $2.19 Billion.

As presented in Section 2.7, projects are costed by MCEA Studies, Detailed Engineering, Programming costs, input from the Region of Peel or through Benchmarking. Project costing derived from benchmarking was updated from the 2012 Roads Capital Projects costs through an indexing to January 1, 2017, per **Table 2**. All other projects were indexed from 2015 dollars to 2017 dollars.

**Table 2: Cost Index**

| Actual Date | Index Used* | Index | % Diff (yr. over yr.) (Rounded) | % Diff. (Cumulative) (Rounded) |
|---|---|---|---|---|
| April 2011 | 4Q - 11 | 150.0 | - | - |
| April 2012 | 4Q - 12 | 152.0 | 1.3% | 1.3% |
| April 2013 | 4Q - 13 | 152.2 | 0.1% | 1.4% |
| April 2014 | 4Q - 14 | 155.1 | 1.9% | 3.3% |
| April 2015 | 4Q - 15 | 157.7 | 1.7% | 5.1% |
| April 2016 | 4Q - 16 | 160.4 | 1.7% | 6.9% |

*In accordance with the Statistics Canada Quarterly Construction Price Index.*

# 4 PREVIOUS 10-YEAR SERVICE LEVEL

The Development Charges Act requires that the future level of service created by the infrastructure capacity improvement program that generated development charges does not exceed the average level of service that has been provided in the previous ten-year period. The level of service is measured in terms of both Quantity (lane km per capita) and Quality (undepreciated replacement cost, as well as volume/capacity ratios or operating speed on regional roads).

Based on the Service Level analysis for Quantity and Quality, there is no increase in the 10-year service level, as discussed below. The 10 year Service Level review is consistent with the methodologies presented in the 2012 Development Charges Transportation Background Study.

## 4.1 Service Level - Quantity

The lane km per capita of DC eligible roads was calculated as 1.93 lane km per 1,000 population in 2007 and estimated at 1.97 lane km per 1,000 population for 2016 (with an estimated population of 556,210). The average for the 10-year period is 1.94 lane km per 1,000 population. **Table 3** presents the lane km and population for the past 10 years - from 2007 to 2016.

**Table 3: Historical Population and Regional Roadway Lane Kilometres**

| Year | Lane km's [1] | Population | Lane kms per 1,000 population |
|---|---|---|---|
| 2007 | 877.6 | 453,700 | 1.93 |
| 2008 | 881.8 | 467,200 | 1.89 |
| 2009 | 919.2 | 480,000 | 1.92 |
| 2010 | 943.0 | 492,100 | 1.92 |
| 2011[2] | 963.0 | 501,669 | 1.92 |
| 2012 | 980.4 | 509,929 | 1.92 |
| 2013 | 1013.6 | 519,144 | 1.95 |
| 2014 | 1047.6 | 527,866 | 1.98 |
| 2015 | 1080.2 | 536,287 | 2.01 |
| 2016 [3] | 1097.2 | 556,210 | 1.97 |
| | | Average = | 1.94 |

*[1] Lane Km are from Halton Region Roads Needs Study*

*[2] Population figure based on 2011 Census*

*[3] Lane km's are estimated for 2016*

The DC eligible roads calculation for 2031 is 1.89 lane kilometres per 1,000 population (2031 population of 752,537 and 1,428.4 lane kilometres). This value is lower than the average for 2007 to 2016 presented in Table 3 (1.94).

Therefore, there is no Quantity increase over the previous 10-year service level.

### 4.2 Service Level – Quality (Regional Roadway Network Replacement Value)

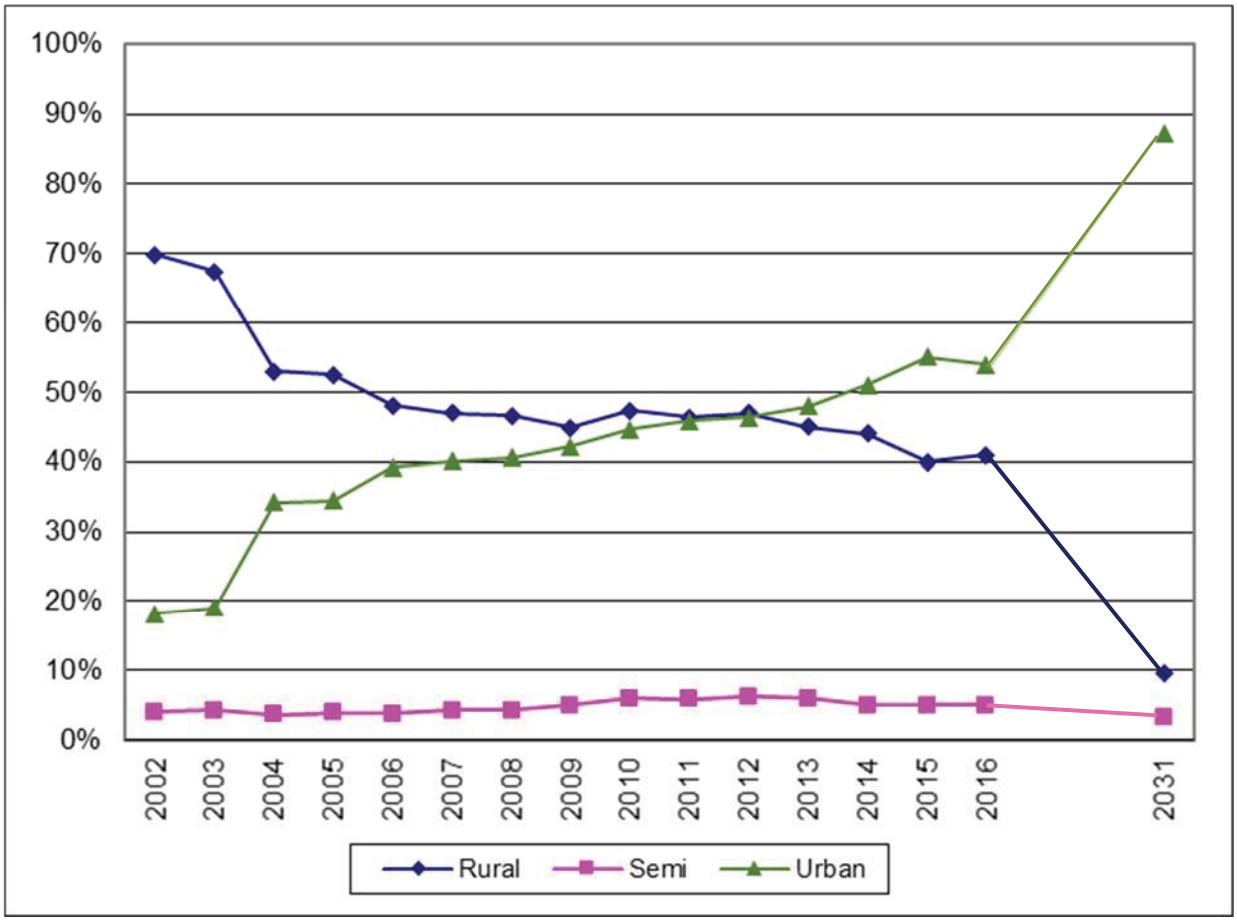
Ontario Regulation 82/98, an amendment to the Development Charges Act 1997 states in Section 4(1) under Level of Service that:

*4. (1) For the purposes of paragraph 4 of subsection 5 (1) of the Act, both the quantity and quality of a service shall be taken into account in determining the level of service and the average level of service. O. Reg. 82/98, s. 4 (1).*
*(1.1) In determining the quality of a service under subsection (1), the replacement cost of municipal capital works, exclusive of any allowance for depreciation, shall be the amount used. O. Reg. 206/04, s. 1.*

This regulation is to ensure the design standards and replacement cost of Regional roadways is not exceeded in the 10-year history analysed through the Development Charges process.

As reported in 2011, the Region is shifting to a more urban municipality where the rural lane kilometres represented about 70% of the network in 2002, to where there is an almost even split between the Region's rural and urban lane kilometres in 2011. By 2031, the urban lane kilometres will make up almost 90% of the region's lane-kilometres. **Figure 3** illustrates the Region's urban / rural lane-kilometre inventory from 2002 to 2016, as well as the forecasted lane-kilometres by 2031.

**Figure 3: Comparison of Regional Network Lane-kilometres (2002 to 2031)**



As there has been no change to the benchmark costing of the Roads Capital Projects, the conclusions from the previous study carry over to this study in that the future BM cost of 2-lane rural roadways is lower than the previous 10-year average, while the BM costs of 4-lane and 6-lane roadways (rural, semi-urban and urban) is slightly higher. Replacement value is only one measure of service level, and the apparent improvement in this category is outweighed by the decreases in the quantity, as well as network performance measures of service level as discussed in Section 4.3 of this report.

## 4.3 Service Level – Quality (Additional Measures)

The transportation network was also measured based on the volume/capacity (v/c) ratio and Mean Speed for Provincial, Regional, and Local roads, as well as, Network-wide.

### *4.3.1 Volume to Capacity Ratio*

If the v/c is increasing, it means that the roads are more congested, the operating speed is generally lower and a typical trip takes longer to accomplish. Hence the service level is lower if the v/c is increasing.

The base year (2011 TTS) performance measures result in a Regional Road Mean v/c of 0.72 and a Total Network (Provincial, Regional and Local) Mean v/c of 0.71, as shown in **Table 4.**

The 2031 road network, with all infrastructure capacity improvements in place, yields a projected Mean v/c of 0.70 and 0.71 for the Regional roads and Total Network, respectively. The level of service will essentially remain the same for both networks. Hence, the previous 10-year period service level has not been exceeded.

### *4.3.2 Mean Speed*

The base year (2011 TTS) performance measures result in a Regional Road Mean Speed of 52 km/h and a Total Network (Provincial, Regional and Local) Mean Speed of 52 km/h, as shown in **Table 4.**

The 2031 road network, with all infrastructure capacity improvements in place, yields a projected Mean Speed of 56 km/h and 54 km/h for the Regional roads and Total Network, respectively. The level of service will essentially remain the same for both networks. Hence, the previous 10-year period service level has not been exceeded.

## 4.4 Summary

The 2031 Service Level created by the DC eligible infrastructure improvements has been assessed on both a Quantity and Quality basis and compared to the average service levels in the previous 10-year period.

As discussed above, there are minor changes between 2011 and 2031 which, within the context of the model accuracy, are insignificant.

Overall, the planned capital projects do not result in a tangible increase in service level over the previous 10-year period; therefore, there is no basis for a level of service deduction.

**Table 4: Road Jurisdictions (Centroid Connectors Excluded)**

| | Provincial | Regional | Local | Total |
|---|---|---|---|---|
| **One-way links - 2011** | | | | |
| Total length (km) | 138 | 316 | 1,126 | 1,581 |
| Lane km | 400 | 434 | 1,246 | 2,080 |
| Mean v/c | 0.88 | 0.72 | 0.59 | 0.71 |
| Mean speed (km/h) | 56 | 52 | 47 | 52 |
| **One-way links – 2031** | | | | |
| Total length (km) | 148 | 362 | 1,172 | 1,682 |
| Lane km | 508 | 763 | 1,369 | 2,640 |
| Mean v/c | 0.84 | 0.70 | 0.63 | 0.71 |
| Mean speed (km/h) | 60 | 56 | 46 | 54 |
| **One-way links – Change (2011 vs 2031)** | | | | |
| Total length (km) | 10 | 46 | 46 | 101 |
| Lane km | 108 | 329 | 123 | 560 |
| Mean v/c | -0.04 | -0.02 | 0.04 | 0 |
| Mean speed (km/h) | 4 | 4 | -1 | 2 |
| **One-way links - % Change** | | | | |
| Total length (km) | 7.2% | 14.6% | 4.1% | 6.4% |
| Lane km | 27.0% | 75.8% | 9.9% | 26.9% |
| Mean v/c | -4.5% | -2.8% | 6.8% | 0.0% |
| Mean speed (km/h) | 7.1% | 7.7% | -2.1% | 3.8% |

# 5 TRAFFIC FLOW THROUGH ANALYSIS

Travel on the Regional road network includes trips that are Internal; Internal/External or Through. "Through" trips are defined as the trips, which travel through the Region without stopping (i.e. both trip origin and destination are outside the Region). Future "through" trips have been produced from the Travel Demand Forecasting Model based on the analysis of origin/destination patterns of the traffic zones that are external to the Region, including zones in the rest of the GTA, Hamilton, Guelph, Waterloo, and Wellington.

The current and future capacity potential of provincial highways in Halton Region relative to the existing and forecasted through trips has been assessed. In general, there is sufficient capacity on the provincial highway system in Halton Region to accommodate "through" trips now and in the future. People travelling between Hamilton and Peel Region, for instance, certainly have the capacity available on provincial highways to make this long distance trip. In fact, people making "through" trips in the P.M. peak may choose to use Halton Regional roads for part of their trip. Reasons might include incidents or congestion on the provincial highways.

To the extent that some "through" trips use Regional roads and hence add to the pressure to improve the Regional road network, this effect is more than offset by the larger number of internal or internal/external trips that use the provincial highways and hence reduce the pressure to improve the Regional road network.

The function of 407 ETR is considered the same as a provincial highway in accommodating longer distance (through) trips in that the province still owns the corridor and has built "expansion triggers" into the agreement with the private operator to ensure that additional capacity will be provided as growth in travel occurs.

In reviewing the total road network in Halton Region, it is clear that provincial facilities have or can be expanded to provide sufficient capacity for all "through" trips up to the 2031-planning horizon. The impact that some "through" trips cause by choosing to use Regional roads is more than offset by internal and internal/external trips that choose to use provincial facilities and hence reduce the pressure for Regional road improvements.

The Region creates the capacity in its road network to accommodate internal and internal/external trips. Some of these trips choose to use the provincial facilities, which create the opportunity for some through trips to use the Regional road system. To gauge these effects, a simulation of PM peak hour road use within Halton Region was conducted and the vehicle km for each trip pattern on provincial, regional and municipal roads is summarized in **Tables 5 through 7**.

**Table 5** presents the network statistics for the PM Peak Hour Road Use within Halton Region for the year 2011 Simulation.

**Table 6** presents the network statistics for the PM Peak Hour Road Use within Halton Region for the year 2031 Simulation.

On an absolute basis there are 59,159 vehicle.km of "through" trips on Regional roads vs. 122,249 vehicle.km of internal Halton trips on provincial roads and 590,715 vehicle.km of trips on Provincial roads where either the trip origin or destination is in Halton Region in 2031. These figures have been highlighted in **Table 6** for ease of reference.

**Table 7** presents the change in the network statistics between 2011 and 2031.

Based on the assessment in this section, it is recommended that there be no deduction in DC Charges for "through" trips.

**Table 5: PM Peak Hour Road Use within Halton Region – 2011 Simulation**

| | Trips | Provincial | Regional | Local | Total | Reg+Local |
|---|---|---|---|---|---|---|
| *Veh km by Jurisdiction (Excludes centroid connectors)* | | | | | | |
| Internal | 59,953 | 81,553 | 137,063 | 205,092 | 423,708 | 342,155 |
| Inbound | 29,183 | 233,445 | 125,309 | 100,153 | 458,907 | 225,461 |
| Outbound | 27,847 | 227,212 | 96,144 | 88,954 | 412,309 | 185,097 |
| Through | N/A | 474,570 | 48,668 | 33,761 | 556,999 | 82,430 |
| Total | **116,983** | **1,016,780** | **407,184** | **427,960** | **1,851,923** | **835,143** |
| *Distribution of veh-km* | | | | | | |
| Internal | 51% | 8% | 34% | 48% | 23% | 41% |
| Inbound | 25% | 23% | 31% | 23% | 25% | 27% |
| Outbound | 24% | 22% | 24% | 21% | 22% | 22% |
| Through | | 47% | 12% | 8% | 30% | 10% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Mean Travel distance per trip (km)* | | | | | | |
| Internal | | 1.4 | 2.3 | 3.4 | 7.1 | 5.7 |
| Inbound | | 8.0 | 4.3 | 3.4 | 15.7 | 7.7 |
| Outbound | | 8.2 | 3.5 | 3.2 | 14.8 | 6.6 |

**Table 6: PM Peak Hour Road Use within Halton Region – 2031 Simulation**

| | Trips | Provincial | Regional | Local | Total | Reg+Local |
|---|---|---|---|---|---|---|
| *Veh km by Jurisdiction (Excludes centroid connectors)* | | | | | | |
| Internal | 98,370 | 122,249 | 329,587 | 322,884 | 774,721 | 652,471 |
| Inbound | 30,734 | 257,767 | 151,440 | 99,152 | 508,359 | 250,592 |
| Outbound | 35,780 | 332,948 | 135,385 | 114,573 | 582,906 | 249,958 |
| Through | N/A | 607,078 | 59,159 | 39,689 | 705,926 | 98,848 |
| Total | **164,884** | **1,320,043** | **675,571** | **576,298** | **2,571,912** | **1,251,869** |
| *Distribution of veh-km* | | | | | | |
| Internal | 60% | 9% | 49% | 56% | 30% | 52% |
| Inbound | 19% | 20% | 22% | 17% | 20% | 20% |
| Outbound | 22% | 25% | 20% | 20% | 23% | 20% |
| Through | | 46% | 9% | 7% | 27% | 8% |
| Total | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |
| *Mean Travel distance per trip (km)* | | | | | | |
| Internal | | 1.2 | 3.4 | 3.3 | 7.9 | 6.6 |
| Inbound | | 8.4 | 4.9 | 3.2 | 16.5 | 8.2 |
| Outbound | | 9.3 | 3.8 | 3.2 | 16.3 | 7.0 |

**Table 7: PM Peak Hour Road Use Change (2031-2011)**

| | Trips | Provincial | Regional | Local | Total | Reg+Local |
|---|---|---|---|---|---|---|
| ***Veh km by Jurisdiction (Excludes centroid connectors)*** | | | | | | |
| Internal | 38,417 | 40,697 | 192,524 | 117,792 | 351,013 | 310,316 |
| Inbound | 1,551 | 24,322 | 26,131 | -1,000 | 49,453 | 25,131 |
| Outbound | 7,933 | 105,736 | 39,241 | 25,619 | 170,597 | 64,860 |
| Through | N/A | 132,509 | 10,491 | 5,927 | 148,927 | 16,418 |
| Total | 47,901 | 303,264 | 268,387 | 148,338 | 719,989 | 416,726 |
| ***Distribution of veh-km*** | | | | | | |
| Internal | 80% | 13% | 72% | 79% | 49% | 74% |
| Inbound | 3% | 8% | 10% | -1% | 7% | 6% |
| Outbound | 17% | 35% | 15% | 17% | 24% | 16% |
| Through | | 44% | 4% | 4% | 21% | 4% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| ***Mean Travel distance per trip (km)*** | | | | | | |
| Internal | | -0.1 | 1.1 | -0.1 | 0.8 | 0.9 |
| Inbound | | 0.4 | 0.6 | -0.2 | 0.8 | 0.4 |
| Outbound | | 1.1 | 0.3 | 0.0 | 1.5 | 0.3 |

# 6 GRANTS, SUBSIDIES AND DEVELOPER CONTRIBUTIONS

The transportation improvement costs must include deductions for any financial considerations through grants, subsidies or developer contributions. Where contributions have been provided, the cost was subtracted from the gross cost of the project.

Where projects in the Roads Capital Projects involve new or improved interchanges with the provincial freeway system, only costs to be borne by the Region are included in the DC calculation and the sharing of these costs between Existing Development and Growth is as set out in the benefit to existing methodology (Chapter 9).

**Appendix B** includes the Halton Region Procedures for Development Related Construction on Regional Roads, including both major and minor intersection works.

# 7 BENEFIT TO EXISTING DEVELOPMENT

The allocation of transportation project costs to Growth and Non-growth typically varies by project type, and further by component within a project and is consistent with the methodologies presented in the 2012 Development Charges Transportation Background Study.

The following sections describe the methodology to define the Growth and Non-growth (Benefit to existing – BTE) cost allocation for the project types in the Region's 2017 to 2031 Roads Capital Program.

As presented in Chapter 3, projects are classified as follows:

- Reconstruction (no widening)
- Road Widening without Reconstruction
- Road Widening with Reconstruction
- New Alignment
- Traffic Management
- Provincial Freeway Interchanges
- Railway Grade Separations
- Structures (bridges and culverts)
- Studies and Programs
- New Off-Road Active Transportation

## 7.1 Road Reconstruction (No Widening)

Costs of road reconstruction without widening have been allocated as Benefit to Existing, and therefore 100% of the cost has been removed from the DC calculation, as these projects are not considered to involve significant capacity-related improvements.

## 7.2 Road Widening without Reconstruction

Road widening projects are undertaken to accommodate increased traffic volumes associated with new growth; however, existing lanes are typically resurfaced as part of the widening. As a result, existing residents (Non-Growth) benefit from the renewal of the road surface, as well as improved intersections, signals and other assets that exist in the corridor.

The following sub-sections present the calculation of BTE for existing pavement replacement and other cost components from which there would be a benefit to non-growth.

### *7.2.1 Value of Resurfacing Existing Pavement*

The Benefit to Existing of the resurfacing is considered to be the Used Value of the pavement, which is to be resurfaced to its original (unused) condition. The corresponding benefit to Growth is the cost associated with new lanes, plus any Residual Value remaining in existing roads.

First, the value of resurfacing the existing lanes was calculated as shown in Equation (1).

$$\text{Value of Resurfacing Existing Lanes} = \text{BM cost for resurfacing (\$/km)} \times \text{length of project (km)} \quad (1)$$

To allocate this value between Growth and Non-Growth, the Residual Value of the existing lanes was calculated based on the net book value remaining in the asset as calculated in accordance with the Public Sector Accounting Board's (PSAB) guideline PS 3150 for accounting and reporting of Tangible Capital Assets (TCA). More specifically, the current condition of the road surface was determined based on the Region's road asset inventory, and the cumulative depreciation to the proposed year of construction was estimated based on a linear rate of depreciation. The asset's proportions of Residual Value and Used Value were then calculated using Equations (2) and (3).

$$\%\ \text{Residual Value} = \frac{\text{Original book value} - \text{Cumulative Depreciation}}{\text{Original book value}} \times 100\% \quad (2)$$

$$\%\ \text{Used Value} = 100\% - \%\ \text{Residual Value} \quad (3)$$

The BTE of resurfacing the existing lanes was then calculated using Equation *(4)*.

$$BTE_{\text{Resurfacing Existing Lanes}} = \%\ \text{Used Value} \times \text{Value of Resurfacing Existing Lanes} \quad (4)$$

### 7.2.2 Additional Cost Components

Since roads are widened primarily to accommodate Growth, the Engineering and Contingency costs were allocated entirely to Growth. However, modifications to intersections and signals associated with the widening benefit both Growth and Non-Growth, and were allocated 50% BTE.

Where widening work includes rehabilitation of existing bridges, grade separations and culverts, the BTE credit would typically reflect the existing asset value, with TCA-based calculations similar to those done for pavement. However, because the amounts were small relative to the total project cost, BTE of 100% was allocated for simplicity.

For projects where costs were available from more detailed studies (i.e. Environmental Assessment studies), these values were used in place of the benchmark cost estimates The costs were broken down into Engineering and Design, Property, Utility Relocates and Construction. Engineering and Design, Property and Utility Relocates were assigned 0% BTE. These factors are consistent with the factors applied where benchmark cost breakdowns were used. Further, Construction costs were assigned 13% BTE, based on the average BTE calculated for widening projects where the benchmark cost breakdowns were used.

### 7.2.3 Overall BTE

The resulting BTE for each project was obtained by summing the BTE credit for existing pavement value with the credits for each additional cost component, as described in Equation (5).

$$BTE = BTE_{Resurfacing\ Existing\ Lanes} + BTE_{Intersection\ Modifications} + BTE_{New\ Signals\ and\ Signal\ Modifications} + BTE_{Bridge\ Rehabilitation} + BTE_{Grade\ Sepration\ Rehabilitation} + BTE_{Culvert\ Rehabilitation} \quad (5)$$

where

$BTE_{Resurfacing\ Existing\ Lanes}$ = % Used Value x Value of Resurfacing Existing Lanes (see Eq. 4)
$BTE_{Intersection\ Modifications}$ = 50% x Cost of Intersection Modifications
$BTE_{New\ Signals\ and\ Signal\ Modifications}$ = 50% x Cost of New Signals and Signal Modifications
$BTE_{Bridge\ Rehabilitation}$ = 100% x Cost of Bridge Rehabilitation
$BTE_{Grade\ Sepration\ Rehabilitation}$ = 100% x Cost of Grade Separation Rehabilitation
$BTE_{Culvert\ Rehabilitation}$ = 100% x Cost of Culvert Rehabilitation

## 7.3 Road Widening with Reconstruction

Road widening projects are primarily undertaken to accommodate increased traffic volumes associated with new growth. In some cases the increased development changes the character of the corridor from rural to urban, so road widening projects may be accompanied by reconstruction of the roadway to an urban cross-section. When widening projects include reconstruction of existing lanes, existing residents (Non-Growth) benefit from the renewal of the roadway, intersection improvements, signals and other assets, as well as the engineering and design associated with reconstruction.

The following sub-sections present the calculation of BTE for existing pavement replacement and other cost components from which there would be a benefit to non-growth from a road widening with reconstruction of the existing lanes.

### 7.3.1 Value of Reconstructing Existing Pavement and Sub-Base

The Benefit to Existing of the reconstruction of existing lanes is calculated using the methodology previously explained for road widenings in Equation (1). Then, the proportions of Residual and Used Values of the existing lanes were calculated using Equations (2) and (3). The BTE of reconstructing the existing lanes was then calculated using Equation (6).

$$BTE_{Reconstructing\ Existing\ Lanes} = \%\ Used\ Value \times Value\ of\ Reconstructing\ Existing\ Lane \quad (6)$$

### 7.3.2 Additional Cost Components

Since projects involving widening with reconstruction benefit both Growth and Non-Growth, the following cost components have been assigned 50% BTE:

- Engineering and Design
- Contingency
- Intersection and Signal Modifications

Where widening work includes rehabilitation of existing bridges, grade separations and culverts, the BTE credit would typically reflect the existing asset value, with TCA-based calculations similar to those done for pavement. However, because the amounts were small relative to the total project cost, BTE credits of 100% were assigned for simplicity.

For projects where costs were available from more detailed studies (i.e. Environmental Assessment studies), these values were used in place of the benchmark cost estimates. Engineering and Design were assigned 50% BTE, and costs for Property and Utility Relocates were assigned 0% BTE. These factors are consistent with the factors applied where benchmark costing was used. Further, Construction costs were assigned 25% BTE, based on the average BTE calculated for this project type for projects where the detailed cost breakdown was used.

### 7.3.3 Overall BTE

The resulting BTE for each project was obtained by summing the BTE credit for existing pavement value with the credits for each additional cost component, as shown in Equation (7).

$$\begin{aligned} BTE = {} & BTE_{\text{Reconstructing Existing Lanes}} \\ & + BTE_{\text{Intersection Modifications}} \\ & + BTE_{\text{New Signals and Signal Modifications}} \\ & + BTE_{\text{Bridge Rehabilitation}} \\ & + BTE_{\text{Grade Sepration Rehabilitation}} \\ & + BTE_{\text{Culvert Rehabilitation}} \\ & + BTE_{\text{Engineering Design and Contingency}} \end{aligned} \qquad (7)$$

*where*

| | |
|---|---|
| $BTE_{\text{Reconstructing Existing Lanes}}$ | = % Used Value x Value Reconstructing Existing Lanes (see Eq. 6) |
| $BTE_{\text{Intersection Modifications}}$ | = 50% x Cost of Intersection Modifications |
| $BTE_{\text{New Signals and Signal Modifications}}$ | = 50% x Cost of New Signals and Signal Modifications |
| $BTE_{\text{Bridge Rehabilitation}}$ | = 100% x Cost of Bridge Rehabilitation |
| $BTE_{\text{Grade Sepration Rehabilitation}}$ | = 100% x Cost of Grade Separation Rehabilitation |
| $BTE_{\text{Culvert Rehabilitation}}$ | = 100% x Cost of Culvert Rehabilitation |
| $BTE_{\text{Engineering Design and Contingency}}$ | = 50% x Cost of Engineering Design and Contingency |

## 7.4 New Alignments

New alignments are constructed to accommodate the increased capacity needs associated with Growth. As such, the costs of new alignment projects were allocated 0% BTE (100% to Growth).

## 7.5 Traffic Management

The Roads Capital Program 2017-2031 includes several projects in the Traffic Management category, for example:

- Traffic signal (new, modifications)
- Auxiliary lanes (new turning lanes (or lengthening of existing turning lanes))
- New intersections
- At-Grade Railroad crossings

These projects are required to accommodate the additional traffic created by growth and for existing development. As such, traffic management projects were allocated 50% to Growth and 50% to Existing.

## 7.6 Provincial Freeway Interchanges

Some projects in the Roads Capital Program may involve the Region's share of costs for new or improved interchanges on the provincial freeway system. These improvements create new access points and reduce congestion at upstream and downstream interchanges. The projects are implemented to provide additional capacity in the road network to serve Growth. An existing road user might benefit from these interchanges (if the trip length is reduced) but the benefit is offset in most cases by the increased traffic congestion created by growth. For new or improved freeway interchanges, the provincial share is typically to accommodate long distance travel and to improve operational issues at existing interchanges, with the Region's share of costs to accommodate transportation pressures due to growth only. The Region attributes the Regional share of provincial freeway interchange project costs 100% to Growth.

## 7.7 Railway Grade Separations

There are 17 existing and planned railway crossings in Halton Region. One of these crossings is of an abandoned line (Steeles Avenue between Regional Road 25 and Ontario Street), eight are grade separated and seven are warranted for grade separation by 2031under the current Regional Roads Capital Projects. The remaining crossing (Guelph Line between McLaren Rd and Campbell Ave) does not meet the grade separation warrant by 2031.

**Appendix C** presents a figure depicting the current inventory of railway crossings in Halton Region.

### *7.7.1 Widening of Existing Railway Grade Separations*

Railway grade separations are widened to accommodate increased capacity needs associated with Growth; however, Non-Growth benefits from a renewal of the existing deck of the grade separation structure. The Benefit to Existing of the rehabilitation of the existing grade separation deck structure is calculated using the same methodology as explained for road widenings. For grade separations, the value of the existing deck replacement has been calculated using the BM cost of reconstruction of the deck, as shown in Equation (8).

$$\text{Value of Existing Deck} = \text{BM cost for deck reconstruction } (\$/m^2) \times \text{existing surface area } (m^2) \quad (8)$$

Then, the proportions of Residual and Used Values were calculated using Equations *(9)* and *(10)*.

$$\%\ \text{Residual Value} = \frac{\text{Original book value} - \text{Cumulative Depreciation}}{\text{Original book value}} \times 100\% \quad (9)$$

$$\%\ \text{Used Value} = 100\% - \%\ \text{Residual Value} \quad (10)$$

The BTE of reconstructing the existing deck was then calculated using Equation *(11)*.

$$\text{BTE Reconstruction of Existing Deck} = \%\ \text{Used Value} \times \text{Value of Rehabilitating Existing Deck} \quad (11)$$

Since railway grade separations are primarily widened to accommodate Growth, no BTE deductions are allocated for other cost components, such as engineering, design, and construction.

### *7.7.2 Construction of New Grade Separations*

Where there is currently a level crossing in place, construction of a grade-separation benefits Growth by increasing the capacity of the roadway, but also benefits Existing development in terms of safety improvement and the elimination for existing road users of the possibility of delays due to train movements. The Exposure Index at the crossing is a standard measure of safety, and is calculated as the product of the number of train movements per day times the average annual daily traffic. The higher the index, the greater the need for a grade separation, hence the greater the safety benefit to existing users.

For new railway grade separations, the Region allocates a BTE credit to the full project cost according to **Table 8**. The allocation applied at each level rail crossing is based on the actual exposure index and a prorating between the ranges.

**Appendix C** details the calculation of the safety benefit for proposed grade separations.

**Table 8: Grade Separation Benefit to Existing Development – Safety**

| Exposure Index | Benefit to Existing |
|---|---|
| 200,000 | 5% |
| 400,000 | 10% |
| 600,000 | 15% |
| 800,000 | 20% |
| 1,000,000 | 25% |

## 7.8 Structures (Bridges and Culverts)

### *7.8.1 Widening of Existing Structures*

The capital roads plan may include rehabilitation and replacement of road-related structures, such as bridges. In cases where the structures are being replaced or installed to allow for roadway capacity increases, such as new roads or road widening, the residual value method has been applied to determine benefit to existing.

### *7.8.2 Construction of New Structures*

New structures are constructed when roads are widened or realigned to accommodate growth. As such, costs of new structures are allocated 100% to Growth.

## 7.9 Off-Road Active Transportation

The new Off-Road AT cost is moving from the Local DC to the Regional DC for cost recovery. The Region assumed responsibility for the financing of New Off-Road AT infrastructure (i.e. sidewalks, multi-use paths) within the Region's right-of-way. The local municipalities retain ownership, operating & maintenance responsibilities. There is a cost neutral condition for the "Growth" component when looking at the combined Regional and Local Municipality DC for this item.

The AT infrastructure needs have been incorporated in the 2017 Development and Non-Development Capital Implementation Plan.

New Off-Road AT facilities to be implemented by Halton Region by 2031 fall mainly in the growth areas, as the existing areas are well served by these facilities. Therefore, the majority of the costs associated with these facilities should be borne by Growth. It is recognized that there is some minor benefit to existing development within the areas of implementation, hence, a split of 90% / 10% is assigned to Growth and Non-Growth, respectively, consistent with the split applied when this cost was under local municipality jurisdiction.

## 7.10 Studies and Programs

The Region allocates costs for studies and programs as presented in **Table 9** below.

**Table 9: Cost Allocating for Studies and Programs**

| Studies and Programs | Growth | BTE |
|---|---|---|
| Transportation Master Plan | 100% | 0% |
| Active Transportation Master Plan | 100% | 0% |
| Data Management Group | 100% | 0% |
| Transportation Tomorrow Survey | 100% | 0% |
| Cordon Counts (TTS) | 100% | 0% |
| Traffic and Screenline Counts | 50% | 50% |
| Urban Design Guidelines | 100% | 0% |
| Development Charges Transportation Background Study | 100% | 0% |
| Smart Commute Travel Demand | 50% | 50% |
| Active Transportation Initiatives | 50% | 50% |
| Other Growth Related Studies | 100% | 0% |
| Operational Improvement and Studies | 0% | 100% |

## 7.11 Summary of Cost Allocation

Halton Region's allocation of cost to Growth as presented in this chapter is summarised in **Table 10**. **Appendix D** presents the cost allocation between Growth and Non-growth for the 2017-2031 Roads Capital Projects, per the methodology presented in this chapter.

**Table 10: Allocation of Transportation Project Costs to Growth**

| Project Type | Growth Share (%) | Report Section |
|---|---|---|
| Road Reconstruction (no Widening) | 0% | 7.1 |
| Road Widening (no Reconstruction) | 100% with the following deductions:<br>• deduction for existing roadway based on the used value of the existing lanes and the benchmark cost of resurfacing<br>• 50% deduction for intersection modifications and additions<br>• 50% deduction for signal modifications<br>• 100% deduction for rehabilitation of bridges, grade separations and culverts<br>• if non-benchmark costing is used, a 13% deduction is assigned to construction costs | 7.2 |
| Road Widening with Reconstruction | 100% with the following deductions:<br>• deduction for existing roadway based on the used value of the existing lanes and the benchmark cost of reconstruction<br>• 50% deduction for engineering and contingency costs<br>• 50% deduction for intersection modifications and additions<br>• 50% deduction for signal modifications<br>• 100% deduction for rehabilitation of bridges, grade separations and culverts<br>• if non-benchmark costing is used, a 50% deduction is assigned for engineering and design, and a 25% deduction is assigned to construction costs | 7.3 |
| New Roads and Alignments | 100% | 7.4 |
| Traffic Management | 50% | 7.5 |
| Provincial Freeway Interchanges | 100% | 7.6 |
| Grade Separations – Widening | 100% less deduction for rehabilitation of the existing structure, based on used value of the structure and the benchmark cost of rehabilitation | 7.7.1 |
| Grade Separations – New | 100% less BTE based on exposure index | 7.7.2 |
| Structures – Widening | 100% less deduction for rehabilitation of the existing structure, based on used value of the structure and the benchmark cost of rehabilitation | 7.8.1 |
| Structures – New | 100% | 7.8.2 |
| Off-Road Active Transportation | 90% | 7.9 |
| Studies and Programs | BTE based on type of study or program | 7.10 |

# 8 POST-PLANNING PERIOD CAPACITY

Post-planning period (PPP) capacity is not explicitly referenced in The Development Charges Act, but has been applied where clear upsizing for future benefit is involved. PPP deductions allowed during the current DC update will be recovered in DC updates for the post-2031 period. Correspondingly, the current DC update will recover PPP deductions allowed in earlier DC updates.

## 8.1 Calculation of Post Period Planning Capacity Deductions

The PPP benefit was determined by consideration of the recommended timing of the project relative to the planning period for the DC Background Study and is consistent with the methodologies presented in the 2012 Development Charges Transportation Background Study.

A deduction for post planning period capacity has been made for major infrastructure improvements in the last five years (2026 to 2031) of the capital improvement plan. This deduction is proportional to the degree to which the v/c on the major improvement in 2031 is less than the average v/c on the associated screenline.

As an example, if a road widening scheduled for 2029 results in a v/c of 0.75 in 2031 and the v/c on the associated screenline in 2031 is 0.85, then a deduction for excess capacity is appropriate. The deduction applied to the project's DC chargeable component would be as shown in Equation (12).

$$\frac{0.85 - 0.75}{0.85} \times 100 = 12\% \qquad (12)$$

Projects identified for the 2026 to 2031 timeframe where the PPP Calculation applies are presented in **Appendix E.**

# 9 RESIDENTIAL AND NON-RESIDENTIAL SPLITS

## 9.1 Calculation of Split Based on Number of Trips Associated with New Residents and Employment

In past DCs, Growth-Related DCs were allocated between Residential and Non-Residential land uses based on trips attributed to Population and Employment Growth. This methodology now reflects both the growing percentage of jobs in the Work–at-Home (WAH) and No-Fixed-Place-of-Work (NFPOW) categories and that these jobs generate trips from a "residential" unit as opposed to a non-residential facility, as discussed in Section 2.8.5.

**Table 11** summarizes the employment forecast excluding WAH and NFPOW employment, which is the basis for the transportation trip generation and DC employment forecast.

Since the impact on transportation services from WAH employees is generated from the home and the population/unit forecast already includes these individuals, the calculations do not include employees associated with WAH.

For NFPOW employees, the need for service related to these employees has largely been included in the employment forecast by usual place of work (i.e. employment and Gross Floor Area (GFA)) in the retail and accommodation sectors generated from NFPOW construction employment). Furthermore, since these employees have no fixed work address, they cannot be captured in the non-residential gross floor area calculation. Accordingly, NFPOW employees have been removed from the employment forecast and calculation.

**Table 11: Calculation of Residential and Non-Residential Growth**

| Year | Pop. / Empl. | WAH | NFPOW | Total |
|---|---|---|---|---|
| **Residential** | | | | |
| 2016 | 556,210 | - | - | 556,210 |
| 2031 | 752,537 | - | - | 752,537 |
| **Non Residential** | | | | |
| 2016 | 288,493 | (25,474) | (28,504) | 234,515 |
| 2031 | 390,000 | (35,429) | (39,289) | 315,282 |

*Source: Table A-10a, Halton DC Growth BPE Employment Revised WAH NFPOW, Watson & Associates Economists Ltd*

For the period 2016 to 2031, the anticipated levels of growth in Residential and Non-Residential categories are as shown by Equations (13) and (14).

*Residential Growth: 752,537-556,210 = 196,327* *(13)*
*Non-Residential Growth: 315,282 – 234,515 = 80,767* *(14)*

**Table 12** contains the trip rates derived from the 2011 Transportation Tomorrow Survey (TTS) to represent a mean trip rate for Halton Region for Residential and Non-Residential trips. These trip rates include WAH and NFPOW as generating trips from "Residential". The previous total trip rates from the 2012 DC Study, where WAH and NFPOW were considered under the "Non-Residential" column, are also presented in the table.

Although WAH and NFPOW trip rates have been shifted from Non-Residential to Residential, the Residential to Non-Residential split has not changed significantly.

**Table 12: Mean Trip Rates**

| Trip type | Trip Rate - Residential | | Trip Rate - Non-Res | |
|---|---|---|---|---|
| **Origins in Halton Region** | (2017) | (2012) | (2017) | (2012) |
| Work | 0.000 | 0.000 | 0.470 | 0.389 |
| Home | 0.098 | 0.079 | 0.000 | 0.000 |
| Other | 0.088 | 0.085 | 0.167 | 0.121 |
| **Destinations in Halton Region** | | | | |
| Home | 0.277 | 0.286 | 0.000 | 0.000 |
| Non-Home | 0.0869 | 0.084 | 0.202 | 0.150 |
| **Total Origins + Destinations** | **0.549** | **0.534** | **0.839** | **0.660** |

Using the updated trip rates and the growth projections above, as modified, the Residential/Non-Residential split can be calculated as shown in Equation (15). The equation shows that the employment trip rate was adjusted by 10% to better balance trip characteristics between these trip types in the AM and PM conditions.

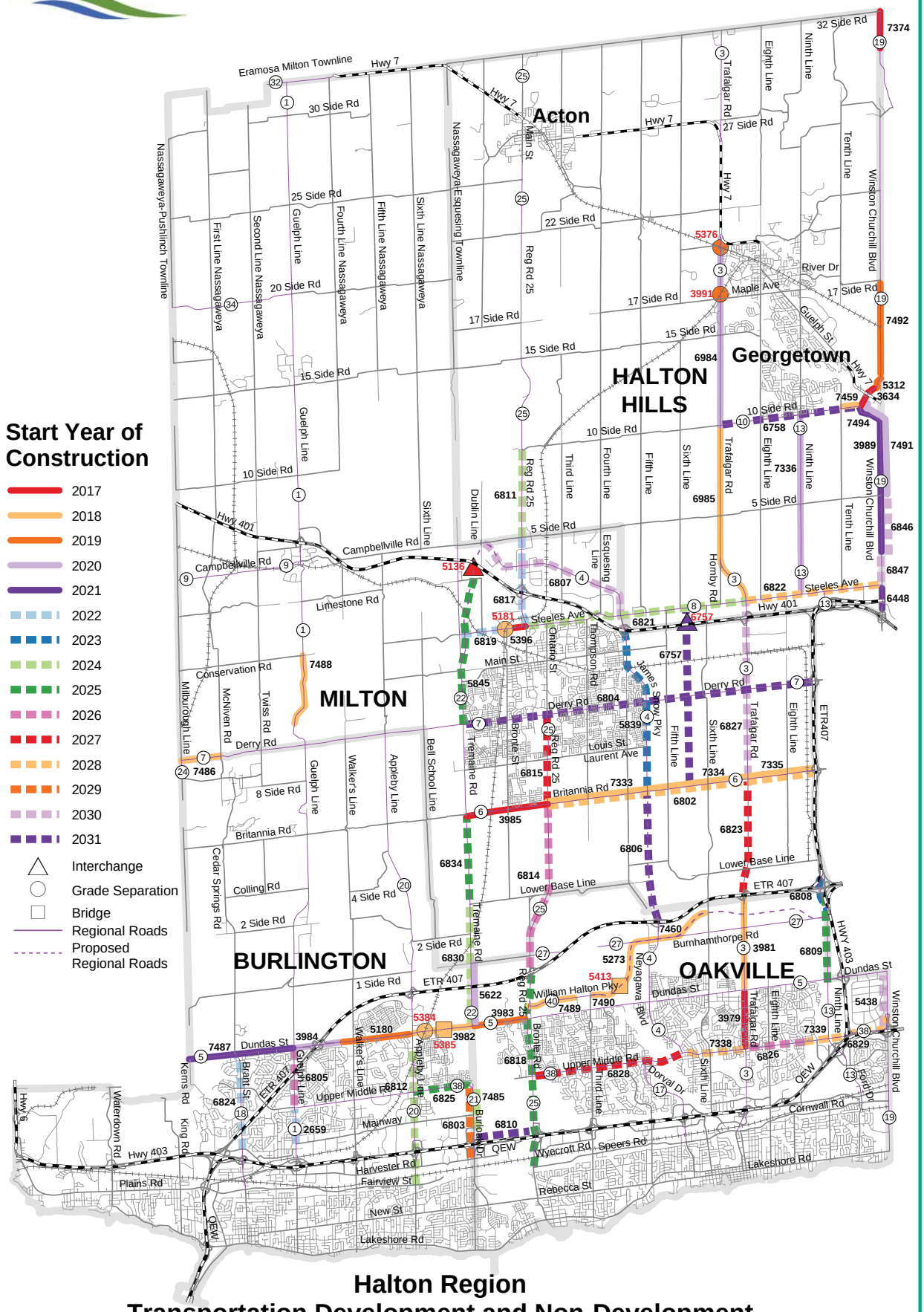
$$\text{Residential Share} = \frac{(196{,}327 \times 0.549) \times 100}{(196{,}327 \times 0.549) + (80{,}767 \times 0.839 \,/\, 1.1 \text{ AM Peak Factor})} = 63.6\% \qquad (15)$$

Based on the above calculation, the Residential/Non-Residential split is estimated at 64% and 36%, respectively.

# *APPENDICES*

# *Appendix A*

Transportation Development & Non-Development
Capital Implementation Plan (2017 to 2031)


Start Year of Construction
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
Interchange
Grade Separation
Bridge
Regional Roads
Proposed Regional Roads
Acton
Georgetown
HALTON HILLS
MILTON
BURLINGTON
OAKVILLE
Eramosa Milton Townline
Hwy 7
30 Side Rd
25 Side Rd
22 Side Rd
20 Side Rd
17 Side Rd
15 Side Rd
10 Side Rd
5 Side Rd
32 Side Rd
27 Side Rd
Nassagaweya-Puslinch Townline
First Line Nassagaweya
Second Line Nassagaweya
Guelph Line
Fourth Line Nassagaweya
Fifth Line Nassagaweya
Sixth Line Nassagaweya
Nassagaweya-Esquesing Townline
Main St
Reg Rd 25
Trafalgar Rd
Eighth Line
Ninth Line
Tenth Line
Winston Churchill Blvd
River Dr
Maple Ave
Guelph St
Hwy 401
Campbellville Rd
Limestone Rd
Sixth Line
Dublin Line
Third Line
Fourth Line
Fifth Line
Esquesing Line
Hornby Rd
Steeles Ave
Ontario St
Thompson Rd
James Snow Pky
Milburough Line
Conservation Rd
McNiven Rd
Twiss Rd
Derry Rd
Bronte St
Louis St Laurent Ave
Tremaine Rd
Bell School Line
Appleby Line
Walker's Line
8 Side Rd
Britannia Rd
Cedar Springs Rd
Colling Rd
4 Side Rd
2 Side Rd
1 Side Rd
Lower Base Line
ETR 407
ETR407
Burnhamthorpe Rd
HWY 403
Dundas St
William Halton Pky
Neyagawa Blvd
Upper Middle Rd
Third Line
Dorval Dr
Ford Dr
QEW
Cornwall Rd
Wyecroft Rd
Speers Rd
Lakeshore Rd
Rebecca St
Harvester Rd
Fairview St
New St
Mainway
Burloak Dr
Plains Rd
Hwy 403
Waterdown Rd
King Rd
Kerns Rd
Brant St
Guelph Line
Hwy 6
5376
3991
5136
5181
6757
5384
5385
2659
7374
7492
5312
3634
7459
7494
6758
7491
3989
7336
6846
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6822
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6811
6807
6817
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6821
7488
5845
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6806
6834
6814
6808
7460
3981
6809
5273
5413
5438
7489
7490
3979
7339
6829
7338
6826
6828
6818
5622
3983
3982
5180
3984
7487
6805
6812
6825
7485
6824
6803
6810
7486
7488
Halton Region
Transportation Development and Non-Development
Capital Implementation Plan* (2017-2031)
*Note this includes Road Widenings, Road Reconstructions, New Roads, Interchanges, Bridges and Grade Separations
Locations shown on this map are approximate and does not attempt to delineate an exact location.
Km
0 1 2 4
2016
Public Works
TRN_DC_16-31Lines_2017_2032

| RD # | ID | Regional Municipality of Halton<br>Capital Projects (2017-2031)<br>Project Descriptions | Start Year Construction |
|---|---|---|---|
| 1 | 7488 | Guelph Line Reconstruction, 1km North of Derry Road to Conservation Road (MIL) (Regional Road 1) | 2018 |
| 1 | 2659 | Guelph Line - Widening - 4 to 6 lanes from Mainway to Upper Middle Road (BUR) (Regional Road 1) | 2022 |
| 1 | 6805 | Guelph Line - Widening - 4 to 6 lanes from Upper Middle Road to Dundas Street (BUR) (Regional Road 1) | 2026 |
| 3 | 3979 | Trafalgar Road - Widening - 4 to 6 lanes from Upper Middle Road to Dundas Street (OAK) (Regional Road 3) | 2017 |
| 3 | 3981 | Trafalgar Road - Widening - 4 to 6 lanes from Dundas Street to Highway 407 (OAK) (Regional Road 3) | 2018 |
| 3 | 6823 | Trafalgar Road - Widening - 4 to 6 lanes from Highway 407 to Britannia Road (MIL) (Regional Road 3) | 2027 |
| 3 | 6827 | Trafalgar Road - Widening - 4 to 6 lanes from Britannia Road to Steeles Avenue (MIL/HHS) (Regional Road 3) | 2030 |
| 3 | 6985 | Trafalgar Road - Widening - 2 to 4 lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 3) | 2018 |
| 3 | 6984 | Trafalgar Road - Widening - 2 to 4 lanes from 10 Side Road to Highway 7 (HHS) (Regional Road 3) | 2020 |
| 3 | 3991 | Trafalgar Road - Grade Separation at CN Crossing North of Maple Avenue (HHS) (Regional Road 3) | 2019 |
| 3 | 5376 | Trafalgar Road - Grade Separation at Metrolinx Crossing South of Highway 7 (HHS) (Regional Road 3) | 2019 |
| 4 | 6806 | James Snow Parkway - New 6 lane road from Highway 407 to Britannia Road (MIL) (Regional Road 4) | 2031 |
| 4 | 5839 | James Snow Parkway - Widening - 4 to 6 lanes from Britannia Road to Highway 401 (MIL) (Regional Road 4) | 2023 |
| 4 | 6807 | James Snow Parkway - Widening - 4 to 6 lanes from Highway 401 to 5 Side Road (MIL) (Regional Road 4) | 2030 |
| 5 | 7487 | Dundas Street - Widening - 4 to 6 lanes from Kerns Road to Guelph Line, including improvements at Brant Street (BUR) (Regional Road 5) | 2021 |
| 5 | 3984 | Dundas Street - Widening - 4 to 6 lanes from Guelph Line to North Hampton Boulevard (BUR) (Regional Road 5) | 2020 |
| 5 | 5180 | Dundas Street - Widening - 4 to 6 lanes from Northampton Boulevard to Appleby Line (BUR) (Regional Road 5) | 2019 |
| 5 | 3982 | Dundas Street - Widening - 4 to 6 lanes (excluding CNR & Bronte Crk Bridges) from Appleby Line to Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 5384 | Dundas Street - Grade Separation at CNR Crossing between Appleby Line and Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 5385 | Dundas Street - Bronte Creek Bridge between Appleby Line and Tremaine Road (BUR) (Regional Road 5) | 2018 |
| 5 | 3983 | Dundas Street Widening - 4 to 6 lanes from Tremaine Road to Bronte Road (OAK) (Regional Road 5) | 2019 |
| 6 | 3985 | Britannia Road - Widening 2 to 6 lanes from Tremaine Road to Regional Road 25 (MIL) (Regional Road 6) | 2017 |
| 6 | 7333 | Britannia Road - Widening 2 to 4 lanes from Regional Road 25 to James Snow Parkway (MIL) (Regional Road 6) | 2018 |
| 6 | 7334 | Britannia Road - Widening - 2 to 4 lanes from James Snow Parkway to Trafalgar Road (MIL) (Regional Road 6) | 2018 |
| 6 | 7335 | Britannia Road - Widening - 2 to 4 lanes from Trafalgar Road to Highway 407 (MIL) (Regional Road 6) | 2018 |
| 6 | 6802 | Britannia Road - Widening - 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6) | 2028 |
| 7 | 7486 | Derry Road - Reconstruction from Milburough Line to McNiven Road (MIL) (Regional Road 7) | 2018 |
| 7 | 6804 | Derry Road - Widening - 4 to 6 lanes from Tremaine Road to Highway 407 (MIL) (Regional Road 7) | 2031 |
| 8 | 6819 | Steeles Avenue - Widening - 2 to 4 lanes from Tremaine Road to Industrial Drive (MIL) (Regional Road 8) | 2022 |
| 8 | 5181 | Steeles Avenue - Grade Separation at CN crossing west of Bronte Street (MIL) (Regional Road 8) | 2018 |
| 8 | 5396 | Steeles Avenue - Widening - 2 to 4 lanes from Industrial Drive to Martin Street (MIL) (Regional Road 8) | 2017 |
| 8 | 6821 | Steeles Avenue - Widening - 4 to 6 lanes from Regional Road 25 to Trafalgar (MIL/HHS) (Regional Road 8) | 2024 |
| 8 | 6822 | Steeles Avenue - Widening - 4 to 6 lanes (with RBL) from Trafalgar Road to Winston Churchill Boulevard (HHS) (Regional Road 8) | 2028 |
| 10 | 7459 | 10 Side Road - 2 Lane Reconstruction/Realignment to intersection at Winston Churchill Boulevard (HHS) (Regional Road 10) | 2018 |
| 10 | 6758 | 10 Side Road - Widening - 2 to 4 lanes from Trafalgar Road to Winston Churchill Boulevard (HHS) (Regional Road 10) | 2031 |
| 13 | 6809 | Ninth Line - Widening - 2 to 4 lanes from Dundas Street to Burnhamthorpe Road (OAK) (Regional Road 13) | 2025 |
| 13 | 6808 | Ninth Line - Widening - 2 to 4 lanes from Burnhamthorpe Road to Highway 407 (OAK) (Regional Road 13) | 2023 |
| 13 | 7336 | Ninth Line - Widening - 2 to 4 lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 13) | 2020 |
| 18 | 6824 | Brant Street - Widening - 4 to 6 lanes from North Service Road to Dundas Street (BUR) (Regional Road 18) | 2022 |
| 19 | 5438 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from Upper Middle Road / QEW to Dundas Street - (OAK) (Regional Road 19) | 2030 |
| 19 | 6448 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from Highway 401 to Steeles Avenue (HHS) (Regional Road 19) | 2021 |
| 19 | 6846 | Winston Churchill Boulevard - Widening - 4 to 6 lanes from 2km south of 5 Side Road to 5 Side Road (HHS) (Regional Road 19) | 2030 |
| 19 | 6847 | Winston Churchill Boulevard - Widening - 5 to 7 lanes from Steeles Avenue to 2 km south of 5 Side Road (HHS) (Regional Road 19) | 2030 |
| 19 | 3989 | Winston Churchill Boulevard - Widening - 2 to 4 Lanes from 2km south of 5 Side Road to potential by-pass (HHS) (Regional Road 19) | 2021 |
| 19 | 7491 | Winston Churchill Boulevard - Reconstruction from 5 Side Road to 10 Side Road (HHS) (Regional Road 19) | 2020 |
| 19 | 3634 | Winston Churchill Boulevard - 2 lane Reconstruction from 10 Side Road to Credit River Bridge (HHS) (Regional Road 19) | 2017 |
| 19 | 5312 | Winston Churchill Boulevard - 2 lane Reconstruction from Credit River Bridge to Old Pine Road (HHS) (Regional Road 19) | 2019 |
| 19 | 7492 | Winston Churchill Boulevard - 2 lane Reconstruction from Old Pine Road to 17 Side Road (HHS) (Regional Road 19) | 2019 |
| 19 | 7374 | Winston Churchill Boulevard - Reconstruction from Terra Cotta to Ballinafad Rd/32 Side Road (HHS) (Regional Road 19) | 2017 |
| 20 | 6812 | Appleby Line - Widening - 4 to 6 lanes from Fairview Street to Taywood Drive (BUR) (Regional Road 20) | 2024 |
| 21 | 7485 | Burloak Drive - 4 lane urbanization from north of North Service Road to Upper Middle Road (BUR/OAK) (Regional Road 21) | 2024 |
| 21 | 6803 | Burloak Drive - Widening - 4 to 6 lanes from Harvester Road to Upper Middle Road (BUR/OAK) (Regional Road 21) | 2029 |
| 22 | 5622 | Tremaine Road - 2 lane Reconstruction from Dundas Street to 1 Side Road (BUR/OAK) (Regional Road 22) | 2020 |
| 22 | 6830 | Tremaine Road - Widening - 2 to 4 lanes from Dundas Street to Lower Base Line (BUR/OAK) (Regional Road 22) | 2024 |
| 22 | 6834 | Tremaine Road - Widening - 2 to 4 lanes from Lower Base Line to Britannia Road (BUR/OAK) (Regional Road 22) | 2025 |
| 22 | 5845 | Tremaine Road - Widening - 4 to 6 lanes from Derry Road to Highway 401 (MIL) (Regional Road 22) | 2025 |
| 22 | 5136 | Tremaine Road - New 4 lane roadway from Tremaine Road (IC)s to Tremaine Road (IC)n (MIL) (Regional Road 22) | 2017 |
| 25 | 6818 | Bronte Road - Widening - 4 to 6 lanes from Speers Road to Highway 407 (OAK) (Regional Road 25) | 2025 |
| 25 | 6814 | Regional Road 25 - Widening - 4 to 6 lanes from Highway 407 to Britannia Road (MIL) (Regional Road 25) | 2026 |
| 25 | 6815 | Regional Road 25 - Widening - 4 to 6 lanes from Britannia Road to Derry Road (MIL) (Regional Road 25) | 2027 |
| 25 | 6817 | Regional Road 25 - Widening - 4 to 6 lanes from Steeles Avenue to 5 Side Road (MIL) (Regional Road 25) | 2022 |
| 25 | 6811 | Regional Road 25 - Widening - 2 to 4 lanes from 5 Side Road to 10 Side Road (HHS) (Regional Road 25) | 2024 |
| 38 | 6825 | Upper Middle Road - Widening - 4 to 6 lanes from Appleby Line to Burloak Drive (BUR) (Regional Road 38) | 2025 |
| 38 | 6828 | Upper Middle Road - Widening - 4 to 6 lanes from Bronte Road to Neyagawa Boulevard (OAK) (Regional Road 38) | 2027 |
| 38 | 7338 | Upper Middle Road - Widening - 4 to 6 lanes from Neyagawa Boulevard to Trafalgar Road (OAK) (Regional Road 38) | 2028 |
| 38 | 6826 | Upper Middle Road - Widening - 4 to 6 lanes from Trafalgar Road to Grand Boulevard (OAK) (Regional Road 38) | 2026 |
| 38 | 7339 | Upper Middle Road - Widening - 4 to 6 lanes from Grand Boulevard to Ninth Line/Ford Drive(OAK) (Regional Road 38) | 2028 |
| 38 | 6829 | Upper Middle Road - Widening - 4 to 6 lanes from Ninth Line to Winston Churchill Boulevard (OAK) (Regional Road 38) | 2028 |
| 40 | 7489 | William Halton Parkway - Widening - 2 to 4 lanes from Old Bronte Road to Hospital Gate (OAK) (Regional Road 40) | 2018 |
| 40 | 7490 | William Halton Parkway - New 4 lane road from Third Line to Sixteen Mile Creek (OAK) (Regional Road 40) | 2018 |
| 40 | 5413 | William Halton Parkway - New 4 lane Bridge over Sixteen Mile Creek (OAK) (Regional Road 40) | 2018 |
| 40 | 5273 | William Halton Parkway - New 4 lane road from Sixteen Mile Creek to Neyagawa Boulevard (OAK) (Regional Road 40) | 2018 |
| 40 | 7460 | William Halton Parkway - New 4 lane road from Neyagawa Boulevard to Sixth Line (OAK) (Regional Road 40) | 2018 |
|  | 6757 | "5 1/2 Line" - New 6 lane road from Britannia Road to Steeles Avenue and Interchange at Highway 401 (MIL) | 2031 |
|  | 6810 | North Service Road - New 4 lane road from Burloak Drive to Bronte Road (OAK) | 2031 |
|  | 7494 | Norval Bypass (HHS) | 2021 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7488 | Guelph Line Reconstruction (CONSTRUCTION ONLY), 1km North of Derry Road to Conservation Road (MIL) (Regional Road 1) | 0 | 6.824 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.824 |
| 6445 | Guelph Line at Harvester Road - Intersection Improvements (BUR) (Regional Road 1) | 0 | 5.212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.212 |
| 2659 | Guelph Line - Widening - 4 to 6 lanes from Mainway to Upper Middle Road (BUR) (Regional Road 1) | 0 | 0 | 0 | 1.217 | 1.550 | 7.883 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10.649 |
| 6805 | Guelph Line - Widening from 4 to 6 lanes from Upper Middle Rd. to Dundas St. (BUR) (Regional Road 1) | 0 | 0 | 0 | 0 | 0 | 0.825 | 1.744 | 2.096 | 0.314 | 12.358 | 0 | 0 | 0 | 0 | 0 | 17.337 |
| 7438 | Guelph Line & 1 Side Road - Intersection Improvements (BUR) (Regional Road 1) | 0.535 | 0.374 | 2.138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.047 |
| 3979 | Trafalgar Road - Widening - 4 to 6 Lanes from Upper Middle Road to Dundas Street (OAK) (Regional Road 3) | 14.651 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.651 |
| 3981 | Trafalgar Road - Widening - 4 to 6 Lanes from Dundas St to Hwy 407 (OAK) (Regional Road 3) | 0 | 28.464 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28.464 |
| 3991 | Trafalgar Road - Grade Separation at CN Crossing North of Maple Ave (HHS) (Regional Road 3) | 3.122 | 0.305 | 26.824 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30.252 |
| 5376 | Trafalgar Road - Grade Separation at Metrolinx Crossing South of Hwy 7 (HHS) (Regional Road 3) | 0 | 0.305 | 17.086 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.391 |
| 6985 | Trafalgar Road - Widening - 2 to 4 Lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 3) | 0 | 27.557 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27.557 |
| 6984 | Trafalgar Road - Widening - 2 to 4 Lanes from 10 Side Road to Hwy 7 (HHS) (Regional Road 3) | 2.034 | 0 | 1.017 | 49.121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52.172 |
| 6823 | Trafalgar Road - Widening from 4 to 6 lanes from Highway 407 to Britannia Rd. (MIL) (Regional Road 3) | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 3.733 | 2.603 | 0.618 | 25.337 | 0 | 0 | 0 | 0 | 33.116 |
| 6827 | Trafalgar Road - Widening from 4 to 6 lanes from Britannia Rd. to Steeles Avenue (MIL/HHS) (Regional Road 3) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 7.029 | 11.766 | 0 | 0.947 | 49.050 | 0 | 69.617 |
| 5839 | James Snow Parkway - Widening from 2 to 6 Lanes from Britannia Road to Hwy 401 (MIL) (Regional Road 4) | 0 | 0.825 | 0 | 4.330 | 3.604 | 0.887 | 28.877 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38.523 |
| 6807 | James Snow Parkway - Widening from 4 to 6 lanes from Highway 401 to Tremaine Road (MIL) (Regional Road 4) | 0 | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 6.784 | 3.688 | 1.124 | 0 | 0 | 47.029 | 0 | 59.450 |
| 6806 | James Snow Parkway - New 6-lane road from Highway 407 to Britannia Road (MIL) (Regional Road 4) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.100 | 0 | 0 | 3.538 | 15.719 | 0.710 | 0 | 25.078 | 46.145 |
| 3942 | Dundas Street - Widening - 4 to 6 lanes from Bronte Road to Proudfoot Trail (OAK) (Regional Road 5) | 1.322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.322 |
| 5436 | Dundas Street - Widening - 4 to 6 lanes from Neyagawa Blvd. to Oak Park Blvd. (OAK) (Regional Road 5) | 2.770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.770 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5180 | Dundas Street - Widening 4 to 6 lane from North Hampton to Appleby Line (BUR) (Regional Road 5) | 0 | 0 | 15.458 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.458 |
| 5384 | Dundas Street - Grade Separation at CNR Crossing between Appleby Line and Tremaine Rd (BUR) (Regional Road 5) | 0 | 17.268 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.268 |
| 3983 | Dundas Street Widening from 4 to 6-Lanes from Tremaine Rd to Bronte Rd (OAK) (Regional Road 5) | 0 | 0 | 13.929 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13.929 |
| 5385 | Dundas Street - Bronte Creek Bridge between Appleby Line and Tremaine Rd (BUR) (Regional Road 5) | 0 | 43.953 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43.953 |
| 3982 | Dundas Street - Widening from 4 to 6-Lanes (excluding CNR & Bronte Crk Bridges) from Appleby Line to Tremaine Rd (BUR) (Regional Road 5) | 0 | 12.157 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12.157 |
| 3984 | Dundas Street - Widening 4 to 6-Lanes from Guelph Line to North Hampton (BUR) (Regional Road 5) | 0 | 2.412 | 0.681 | 18.166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21.259 |
| 7487 | Dundas Street - Widening 4 to 6-Lanes from Guelph Line to Halton/Hamilton Boundary including improvements at Brant Street (BUR) (Regional Road 5) | 0 | 0.988 | 3.884 | 0.834 | 23.141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28.847 |
| 3985 | Britannia Road - Widening - 2 to 6 Lanes from Tremaine Rd to Regional Road 25 (MIL) (Regional Road 6) | 17.289 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17.289 |
| 7333 | Britannia Road (CONSTRUCTION ONLY) - Widening 2 to 4 lanes from Regional Road. 25 to James Snow Parkway (MIL) (Regional Road 6) | 0 | 31.566 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31.566 |
| 7334 | Britannia Road (CONSTRUCTION ONLY) - Widening - 2 to 4 lanes from James Snow Parkway to Trafalgar Rd (MIL) (Regional Road 6) | 0 | 28.493 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28.493 |
| 7335 | Britannia Road - Widening - 2 to 4 lanes from Trafalgar Road to Highway 407 (MIL) (Regional Road 6) | 0 | 11.402 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11.402 |
| 6802 | Britannia Road - Widening from 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6) | 0 | 0 | 0 | 0 | 0 | 0 | 7.221 | 3.209 | 0.915 | 0 | 0 | 46.135 | 0 | 0 | 0 | 57.480 |
| 7486 | Derry Road (CONSTRUCTION ONLY) - Reconstruction from Milburough Line to McNiven Road (MIL) (Regional Road 7) | 0 | 3.051 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.051 |
| 6804 | Derry Road - Widening from 4 to 6 lanes from Tremaine Rd. to Highway 407 (MIL) (Regional Road 7) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 10.490 | 2.935 | 1.876 | 74.290 | 90.416 |
| 6819 | Steeles Avenue - Widening from 2 to 4 lanes from Tremaine Road to Industrial Drive (MIL) (Regional Road 8) | 0.825 | 0 | 1.498 | 3.325 | 0.226 | 10.515 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16.390 |
| 5396 | Steeles Avenue - Widening 2 to 4 lanes from Industrial Drive to Martin Street (MIL) (Regional Road 8) | 2.543 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.543 |
| 5181 | Steeles Avenue Grade Separation at CN crossing west of Bronte Street (MIL) (Regional Road 8) | 0 | 11.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11.273 |
| 6821 | Steeles Avenue - Widening from 4 to 6 lanes from Regional Road 25 to Trafalgar (MIL/HHS) (Regional Road 8) | 0 | 0 | 0 | 0.825 | 0 | 6.561 | 8.476 | 46.416 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62.278 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6822 | Steeles Avenue - Widening from 4 to 6 lanes (with RBL) from Trafalgar to Winston Churchill Boulevard (HHS) (Regional Road 8) | 0 | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 4.128 | 11.743 | 0.727 | 28.628 | 0 | 0 | 0 | 46.051 |
| 5428 | Campbellville Gateway Feature (MIL) (Regional Road 9) | 0.025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.025 |
| 7459 | 10 Side Road (CONSTRUCTION ONLY) - 2 Lane Reconstruction/Realignment to intersection at Winston Churchill Blvd. (HHS) (Regional Road 10) | 0 | 4.068 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.068 |
| 6758 | 10 Side Road - Widening from 2 to 4 lanes from Trafalgar Rd to Winston Churchill Blvd. (HHS) (Regional Road 10) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.550 | 0 | 3.370 | 0 | 7.865 | 0.750 | 23.651 | 36.185 |
| 7336 | Ninth Line - Widening 2 to 4-lanes from Steeles Ave to 10 Side Rd (HHS) (Regional Road 13) | 0 | 3.400 | 4.302 | 25.189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32.892 |
| 6808 | Ninth Line - Widening from 2 to 4 lanes from Burnhamthorpe Rd. to Highway 407 (OAK) (Regional Road 13) | 0 | 0 | 0 | 1.550 | 2.038 | 0.160 | 10.769 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14.517 |
| 6809 | Ninth Line - Widening from 2 to 4 lanes from Dundas St. to Burnhamthorpe Rd. (OAK) (Regional Road 13) | 0 | 0 | 0 | 0 | 1.528 | 4.243 | 0 | 0.331 | 10.710 | 0 | 0 | 0 | 0 | 0 | 0 | 16.813 |
| 6824 | Brant Street - Widening from 4 to 6 lanes from North Service Road to Dundas Street (BUR) (Regional Road 18) | 0 | 0.825 | 0 | 2.348 | 7.534 | 16.974 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27.681 |
| 7491 | Winston Churchill Blvd. - 2 lane Reconstruction from 5 Side Road to 10 Side Road (HHS) (Regional Road 19) | 0 | 0 | 7.628 | 8.244 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.871 |
| 7492 | Winston Churchill Blvd. (CONSTRUCTION ONLY) - 2 lane Reconstruction from Old Pine Road to 17 Side Road (HHS) (Regional Road 19) | 0 | 0 | 2.438 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.438 |
| 3634 | Winston Churchill Blvd. - 2 lane Reconstruction from 10 Side Road to Credit River Bridge (HHS) (Regional Road 19) | 2.732 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.732 |
| 5312 | Winston Churchill Blvd. - 2 lane Reconstruction from Credit River Bridge to Old Pine Road (HHS) (Regional Road 19) | 1.768 | 0.812 | 4.810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.390 |
| 3989 | Winston Churchill Blvd. - Widening - 2 to 4 Lanes from 2km south of 5 Side Road to potential by-pass - Halton's share (HHS) (Regional Road 19) | 0 | 0.806 | 0 | 1.208 | 7.317 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.332 |
| 6448 | Winston Churchill Blvd. - Widening 4-6 Lanes from Hwy 401 to Steeles Avenue (Halton's Share) (HHS) (Regional Road 19) | 0 | 0 | 0.501 | 0 | 2.305 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.806 |
| 6846 | Winston Churchill Blvd - Widening from 4 to 6 lanes from 2km south of 5 Side Road to 5 Side Road (Halton's share) (HHS) (Regional Road 19) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.770 | 0 | 0 | 0 | 0.788 | 4.378 | 0 | 5.936 |
| 6847 | Winston Churchill Boulevard Widening 5-7 Lanes from Steeles Ave to 2 km south of 5 Side Road (Halton's Share) (HHS) (Regional Road 19) | 0 | 0 | 0 | 0 | 0 | 0.249 | 0 | 0 | 0.437 | 0 | 0 | 0 | 0.396 | 2.530 | 0 | 3.612 |
| 5438 | Winston Churchill Blvd. - Widening from 4 to 6 Lanes from Dundas St to Upper Middle Rd / QEW (Halton's Share) (OAK) (Regional Road 19) | 0 | 0 | 0 | 0 | 0 | 0.304 | 0 | 0 | 1.223 | 0 | 2.071 | 0 | 0.549 | 5.509 | 0 | 9.656 |
| 7374 | Winston Churchill Boulevard - Reconstruction from Terra Cotta to Ballinafad Rd/32 Side Road (Regional Road 19) | 0.283 | 1.550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.833 |
| 6449 | Appleby Line at Harvester Road - Intersection Improvements (BUR) (Regional Road 20) | 0 | 3.775 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.775 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6812 | Appleby Line - Widening from 4 to 6 lanes from Fairview Street to Taywood Drive (BUR) (Regional Road 20) | 0 | 0 | 0 | 5.576 | 0 | 3.125 | 0.724 | 38.937 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48.361 |
| 6803 | Burloak Drive - Widening from 4 to 6 lanes from Harvester Rd. to Upper Middle Rd. (BUR/OAK) (Regional Road 21) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.550 | 3.264 | 3.373 | 0.394 | 22.585 | 0 | 0 | 30.166 |
| 7485 | Burloak Drive (CONSTRUCTION ONLY) – 4 lane urbanization from north of QEW to Upper Middle Road (BUR/OAK) (Regional Road 21) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.384 |
| 5408 | Tremaine Road Grade Separation at CN (MIL) (Regional Road 22) | 0.203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.203 |
| 5409 | Tremaine Road - New Bridge over 16 Mile Creek north of Steeles Avenue (MIL) (Regional Road 22) | 0.254 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.254 |
| 5138 | Tremaine Road - new 4-lane Roadway from Tremaine Road (IC)n to JSP (MIL) (Regional Road 22) | 1.017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.017 |
| 5135 | Tremaine Road - New 4-lane roadway from 16 Mile Creek to Tremaine Road (MIL) (Regional Road 22) | 0.864 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.864 |
| 5134 | Tremaine Road - New 4-lane roadway from Steeles Avenue to 16 Mile Creek (MIL) (Regional Road 22) | 0.712 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.712 |
| 5136 | Tremaine Road - New 4-lane roadway from Tremaine Road (IC)s to Tremaine Road (IC)n (MIL) (Regional Road 22) | 6.847 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.847 |
| 5622 | Tremaine Road - Reconstruction from Dundas Street to No. 1 Side Road (BUR/OAK) (Regional Road 22) | 0 | 0.793 | 0.095 | 4.495 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.382 |
| 5845 | Tremaine Road - Widening 4 to 6 lanes from Derry Road to Hwy 401 (MIL) (Regional Road 22) | 0 | 0 | 0 | 0.825 | 0 | 23.589 | 0 | 1.248 | 50.365 | 0 | 0 | 0 | 0 | 0 | 0 | 76.026 |
| 6830 | Tremaine Road - Widening from 2 to 4 lanes from Dundas St. to Lower Base Line (BUR/OAK) (Regional Road 22) | 0 | 0 | 0.550 | 0 | 10.353 | 0 | 0.647 | 29.718 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41.268 |
| 6834 | Tremaine Road - Widening from 2 to 4 lanes from Lower Base Line to Britannia Rd. (MIL) (Regional Road 22) | 0 | 0 | 0 | 0.550 | 0 | 3.059 | 2.794 | 0.477 | 20.745 | 0 | 0 | 0 | 0 | 0 | 0 | 27.625 |
| 6817 | Regional Road 25 - Widening from 4 to 6 lanes from Steeles Avenue to 5 Side Rd. (MIL) (Regional Road 25) | 0.825 | 0 | 3.643 | 1.785 | 0.431 | 25.347 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32.031 |
| 6811 | Regional Road 25 - Widening from 2 to 4 lanes from 5 Side Rd. to 10 Side Rd. (HHS) (Regional Road 25) | 0 | 0 | 0.550 | 0 | 1.057 | 3.955 | 0.462 | 7.288 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13.313 |
| 6818 | Regional Road 25 - Widening from 4 to 6 lanes from Speers Rd. to Highway 407 (OAK) (Regional Road 25) | 0 | 0 | 0.825 | 0 | 7.166 | 0 | 6.945 | 1.035 | 50.172 | 0 | 0 | 0 | 0 | 0 | 0 | 66.143 |
| 6814 | Regional Road 25 - Widening from 4 to 6 lanes from Highway 407 to Britannia Rd. (MIL) (Regional Road 25) | 0 | 0 | 0 | 0.825 | 0 | 5.980 | 4.838 | 0 | 0.919 | 41.910 | 0 | 0 | 0 | 0 | 0 | 54.473 |
| 6815 | Regional Road 25 - Widening from 4 to 6 lanes from Britannia Rd to Derry Rd. (MIL) (Regional Road 25) | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 2.430 | 2.978 | 0.474 | 17.304 | 0 | 0 | 0 | 0 | 24.011 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7343 | Regional Road 25 - Realignment at Lower Base Line Intersection (OAK/MIL) | 2.776 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.776 |
| 7489 | William Halton Parkway (CONSTRUCTION ONLY) - 2 to 4 Lanes from Old Bronte Road to Hospital Gate (OAK) (Regional Road 40) | 0 | 2.543 | 7.156 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.698 |
| 7490 | William Halton Parkway (CONSTRUCTION ONLY) - New 4-lane road from Third Line to Sixteen Mile Creek. (OAK) (Regional Road 40) | 0 | 2.245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.245 |
| 7460 | William Halton Parkway (CONSTRUCTION ONLY) - New 4-lane road from Sixth Line to Neyagawa Boulevard (OAK) (Regional Road 40) | 0 | 12.204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12.204 |
| 5413 | William Halton Parkway - New 4-lane Bridge over 16 Mile Creek (OAK) (Regional Road 40) | 0 | 43.412 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43.412 |
| 5273 | William Halton Parkway - New 4-lane road from Sixteen Mile Creek to Neyagawa Blvd. (OAK) (Regional Road 40) | 0 | 13.318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13.318 |
| 7337 | Upper Middle Road - Intersection Operational Improvements (OAK) (Regional Road 38) | 0 | 5.345 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.345 |
| 6825 | Upper Middle Road - Widening from 4 to 6 lanes from Appleby Line to Burloak Drive (BUR) (Regional Road 38) | 0 | 0 | 0 | 0.825 | 0 | 1.739 | 2.109 | 0.317 | 12.391 | 0 | 0 | 0 | 0 | 0 | 0 | 17.381 |
| 7338 | Upper Middle Road - Widening from 4 to 6 lanes from Neyagawa Blvd. to Trafalgar Rd. (OAK) (Regional Road 38) | 0 | 0 | 0 | 0 | 0 | 0.321 | 0 | 1.837 | 0 | 2.194 | 0.336 | 10.865 | 0 | 0 | 0 | 15.552 |
| 7339 | Upper Middle Road - Widening from 4 to 6 lanes from Grand Blvd to Ninth Line (OAK) (Regional Road 38) | 0 | 0 | 0 | 0 | 0 | 0.321 | 0 | 0.428 | 0 | 0.428 | 0.139 | 6.490 | 0 | 0 | 0 | 7.805 |
| 6826 | Upper Middle Road - Widening from 4 to 6 lanes from Trafalgar Road to Grand Blvd. (OAK) (Regional Road 38) | 0 | 0 | 0 | 0 | 0 | 0.535 | 2.065 | 2.477 | 0.311 | 14.553 | 0 | 0 | 0 | 0 | 0 | 19.941 |
| 6828 | Upper Middle Road - Widening from 4 to 6 lanes from Bronte Rd. to Neyagawa Blvd. (OAK) (Regional Road 38) | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 4.416 | 6.045 | 0.810 | 31.320 | 0 | 0 | 0 | 0 | 43.416 |
| 6829 | Upper Middle Road - Widening from 4 to 6 lanes from Ninth Line to Winston Churchill Blvd. (OAK) (Regional Road 38) | 0 | 0 | 0 | 0 | 0 | 0 | 0.825 | 0 | 2.579 | 1.359 | 0.394 | 17.869 | 0 | 0 | 0 | 23.027 |
| 6757 | "5 1/2 Line" - New 6-lane road from Britannia Road. to Steeles Avenue and Interchange at Highway 401 (MIL) | 0 | 0 | 0 | 0 | 0 | 0 | 0.566 | 0 | 9.082 | 0 | 38.835 | 0 | 0 | 0.855 | 62.677 | 112.014 |
| 6810 | North Service Road New 4-lane road from Burloak Drive to Bronte Road (BUR/OAK) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.100 | 0 | 1.622 | 10.574 | 0.314 | 11.695 | 25.305 |
| 7494 | Norval Bypass (HHS) | 0 | 1.523 | 0 | 4.258 | 17.739 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23.519 |
| 6853 | Centre-median landscaping Improvements (Region-wide) | 0 | 0 | 0.156 | 0 | 0.104 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.778 |
| 6854 | New Traffic Signals - Development (Region-wide) | 0 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 1.719 | 24.062 |
| 6855 | New Signalized Intersections (Region-wide) | 0.500 | 0.628 | 1.256 | 0.628 | 1.256 | 0.628 | 1.256 | 0.628 | 1.256 | 0.628 | 1.256 | 0.628 | 1.256 | 0.628 | 1.256 | 13.686 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5641 | Traffic Signal Controller, timer and signing upgrades various intersections (Region-wide) | 0.480 | 0.780 | 0.780 | 0.780 | 0.780 | 0.780 | 0.780 | 0.780 | 0.780 | 0.780 | 0.627 | 0.627 | 0.627 | 0.627 | 0.627 | 10.638 |
| 6856 | Traffic Signal Interconnect (Region-wide) | 0 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 2.193 |
| 6857 | Operational Improvements (Region-wide) | 0 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 7.325 |
| 5746 | LED Street Light Replacement Program (Region-wide) | 0.651 | 0.651 | 0.651 | 0.651 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 4.045 |
| 6106 | Retaining Wall Repairs (Region-wide) | 0 | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.078 | 0.078 | 0.078 | 0.078 | 0.078 | 0.078 | 0.877 |
| 5642 | Bridge Inspections & Evaluation Studies (Region-wide) | 0.041 | 0.127 | 0.041 | 0.132 | 0.041 | 0.142 | 0.041 | 0.147 | 0.041 | 0.153 | 0 | 0.056 | 0 | 0.056 | 0 | 1.017 |
| 4743 | Retrofit & Replacement Noise Attenuation Barriers - Various Locations (Region-wide) | 0 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 13.967 |
| 5173 | Misc. Bridges & Culverts Rehabilitation & Replacement Program (Region-wide) | 1.723 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 0.837 | 13.441 |
| 4370 | Emergency Diversion Route Signing for Road Closure Action Plan (Region-wide) | 0 | 0 | 0.261 | 0.157 | 0 | 0 | 0 | 0 | 0 | 0 | 0.157 | 0 | 0 | 0.157 | 0 | 0.731 |
| 7142 | Miscellaneous Works Related to Road Resurfacing (Region-wide) | 1.129 | 0.970 | 0.766 | 0.465 | 1.078 | 1.037 | 0.770 | 0.787 | 0.567 | 0.923 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 10.781 |
| 7567 | Misc. R.O.W. Purchases and Road Dedication Engineering & Surveys (Region-wide) | 0 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 2.930 |
| 5017 | Transportation Infrastructure Management System (Region-wide) | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 1.571 |
| 7568 | MTO Highway Studies (Region-wide) | 0 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 0.131 | 1.837 |
| 5196 | Smart Commute Travel Demand Management Initiative (Region-wide) | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 5.339 |
| 5425 | Speed Reduction Education & Enforcement Campaign (Region-wide) | 0 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.052 | 0.726 |
| 7375 | Active Transportation Infill Projects (Region-wide) | 0 | 3.230 | 1.374 | 0.442 | 0 | 0.877 | 0.223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.146 |
| 7493 | Active Transportation New Off Road Capital Projects (Region-wide) | 0 | 4.729 | 0.513 | 2.879 | 0.242 | 2.049 | 1.729 | 4.256 | 4.487 | 1.137 | 1.919 | 2.255 | 0.412 | 3.097 | 6.817 | 36.519 |
| 5426 | Active Transportation Initiatives (Region-wide) | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 1.302 |

| UNIQUE ID# | PROJECT DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | Total (2017-2031) ($million) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5431 | Traffic and Screen Line Counts & Studies (Region-wide) | 0.187 | 0.157 | 0.157 | 0.157 | 0.261 | 0.157 | 0.157 | 0.157 | 0.157 | 0.261 | 0.157 | 0.157 | 0.157 | 0.157 | 0.261 | 2.694 |
| 5432 | Road Needs Study Update (Region-wide) | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.056 | 0.839 |
| 5643 | Traffic Operations & Safety Related Studies (Region-wide) | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 0.168 | 2.517 |
| 5644 | Region-wide Traffic Operations Study Update | 0.323 | 0 | 0 | 0 | 0 | 0.523 | 0 | 0 | 0 | 0 | 0.523 | 0 | 0 | 0 | 0 | 1.370 |
| 5444 | Transportation Master Plan Study (Region-wide) | 0 | 1.046 | 0 | 0 | 0 | 0 | 1.046 | 0 | 0 | 0 | 0 | 1.046 | 0 | 0 | 0 | 3.139 |
| 6832 | Data Management Group (Region-wide) | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 0.157 | 2.355 |
| 6833 | Transportation Tomorrow Survey (Region-wide) | 0 | 0 | 0 | 0 | 0.105 | 0 | 0 | 0 | 0 | 0.105 | 0 | 0 | 0 | 0 | 0.105 | 0.314 |
| 7569 | Urban Design Guidelines (Region-wide) | 0 | 0.157 | 0 | 0 | 0 | 0 | 0.157 | 0 | 0 | 0 | 0 | 0 | 0.157 | 0 | 0 | 0.471 |
| 6831 | Active Transportation Master Plan (Region-wide) | 0 | 0.203 | 0 | 0 | 0 | 0 | 0.372 | 0 | 0 | 0 | 0 | 0.372 | 0 | 0 | 0 | 0.948 |
| 6836 | Regional Road 25/Third Line Alignment Options (MIL) | 0 | 0 | 0 | 0.523 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.523 |
| 6837 | DC Background Study (Region-wide) | 0 | 0 | 0 | 0 | 0.471 | 0 | 0 | 0 | 0 | 0.471 | 0 | 0 | 0 | 0 | 0.471 | 1.413 |
| 6858 | Cordon Count Data (Region-wide) | 0.052 | 0.052 | 0.052 | 0.052 | 0.105 | 0.052 | 0.052 | 0.052 | 0.052 | 0.105 | 0.052 | 0.052 | 0.052 | 0.052 | 0.105 | 0.937 |
| 6838 | Growth Management Studies (Region-wide) | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 0.523 | 7.849 |
| 6885 | Vehicle Replacements - Transportation (Region-wide) | 0.040 | 0.080 | 0 | 0.027 | 0 | 0.035 | 0.035 | 0 | 0.027 | 0.040 | 0 | 0.040 | 0 | 0.040 | 0.040 | 0.403 |
| 7398 | New Vehicle - Road Operations (Region-wide) | 0.080 | 0 | 0 | 0 | 0 | 0 | 0 | 0.080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.160 |
| 7376 | Appleby Line Drainage Issues (BUR) | 0.183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.183 |
| 7377 | Intelligent Transportation System Implementation (Region-wide) | 0.509 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.509 |
| 7378 | Landscape Guidelines (Region-wide) | 0.203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.203 |
| | TOTAL | 70.913 | 347.948 | 127.111 | 148.480 | 96.654 | 131.656 | 93.657 | 165.917 | 198.268 | 113.312 | 151.138 | 150.260 | 56.823 | 123.918 | 213.886 | 2189.939 |

# *Appendix B*

Halton Region Procedures for Development Related Construction on Regional Roads

**THE REGIONAL MUNICIPALITY OF HALTON**

| | |
|---|---|
| Report To: | Chairman and Members of the Planning and Public Works Committee |
| From: | Patrick Murphy, Commissioner of Planning and Public Works |
| Date: | December 2, 2003 |
| Re: | Procedures for Development Related Construction on Regional Roads |
| Report No.: | PPW110-03 |

RECOMMENDATION

1. THAT the proposed Policy, as outlined in Report PPW110-03, and the Procedures for Development Related Construction on Regional Roads – Major Intersection Works (Attachment #1) and Minor Intersection Works (Attachment #2) be endorsed; and

2. THAT the Policy for the Design and Construction of Development Charges Projects by the Development Industry, as identified in Report PPW89-99, be amended to exclude development related construction on Regional Roads – Major Intersections;

3. THAT the Regional Clerk forward a copy of Report PPW110-03 to Area Municipalities, the Halton Development Charges Liaison Committee, and the Halton Developers' Liaison Committee for their information;

4. THAT Regional staff be directed to review the proposed Policy in consultation with the Halton Developers' Liaison Committee, on an annual basis for the next two years, as set out in Report PPW110-03.

REPORT

Purpose

The purpose of Report PPW110-03 is to outline a revised policy for all new major and minor road works within the Regional right-of-way. Currently, the construction of new intersections, upgrades to existing intersections, and new access connections to Regional Roads are generally undertaken by the development industry as a condition of their planning approval. As a result of new obligations for Regional notice under the Municipal Act, increased complaints from drivers and residents, and reoccurring engineering/construction deficiencies and safety concerns, Regional staff is recommending changes to the current policy. Major road works are proposed to be designed and

constructed by the Region of Halton as they may represent a significant disruption to the travelling public, and minor road works are to be constructed by Developers within an approved program. Procedures for minor and major road works have been developed for the development industry to follow for development related construction on Regional roads as defined in Table 1.

Current Situation

The current practice allows developers to undertake the design and construction of Development Charges road works on Regional roads as outlined in report PPW89-99. Through the development process, the developer's consultant is required to submit design drawings to the Region of Halton for approval. Once the drawings are approved, the developer is responsible for the construction of the road works and certification of inspection. Report PPW89-99 was initiated at that time to allow the development industry to become directly involved in the design and construction of certain Development Charges projects, thereby, freeing up Regional staff resources for other projects.

In the last few years, issues have arisen regarding the design, construction, and inspection of road works on Regional roads completed by developers. During the design phase, Regional staff spends considerable time reviewing many iterations of submissions due to lack of adherence to Regional standards, understanding of procedures, and quality of submissions.

An important issue during the design phase is property acquisition (road widening, daylight triangles). Developers do not have the authority to purchase property that is required to facilitate appropriate designs, which leads to substandard designs and additional future work and expense by the Region. These substandard designs have a significant impact on the capacity and operation of Regional roads and intersections. For instance, shorter turn lanes due to insufficient property may result in the queuing of vehicles beyond the turn lane storage and into the through lanes, impeding the ability of vehicles to clear the intersection on the traffic signal green time. Also, the required relocation of utilities has been problematic and has led to unsafe roadway clear zone situations where utility poles or other features have been installed with substandard offsets from the travelled edge of road. Substandard daylight triangles lead to insufficient sight distance for motorists to react to potential conflicts and carry out any necessary actions to negotiate the intersection safely. Each of these issues has led to additional costs incurred by the Region to correct these problems afterwards.

Issues during construction include the timing and completion of works, adherence to permitted work hours, improper pavement markings, work zone safety, improper road closures and signage, and lack of certified inspection. These issues have led to increased roadway congestion and delay, adjacent property owner and driver complaints, and additional remediation work.

The current practice needs to be modified to address these issues during design and construction while still allowing the development industry to complete the most common road works required by new developments, such as new access driveways and right-turn lanes.

Region of Halton is one of the few Upper-tier Municipalities to allow developers to design and construct road works on Regional roads. For instance, both Durham Region and York Region include funding in their capital budgets for new development related intersections so that the design and construction of these new road connections can be completed in accordance with Regional Standards, and the Region's interests are represented by consultants and contractors retained by the Region without any potential conflict of interest with any developments.

New Municipal Act Requirements

On January 1, 2003, the new Municipal Act, 2001, came into force and effect. Under Section 34, a municipality is required to give notice when altering a highway.

The following is an excerpt from the new Municipal Act:

> "**Alteration of highways**
> 34 (2) Before passing a by-law for permanently altering a highway, if the alteration is likely to deprive any person of the sole means of motor vehicle access to and from the person's land over any highway, a municipality shall give public notice of its intention to pass the by-law. 2001, c.25, s.34(2)"

The current processes and practices through, which Region of Halton consults the public, are well grounded. Public notification is used to advise the public and/or to obtain public input, and Region of Halton has always embraced the philosophy of full disclosure to the public. Consistent with the Guiding Principles for Public Consultation adopted by Regional Council in November 2002 and with the form and manner of notification outlined in report CS-41-03 approved by Regional Council on May 28, 2003, any alterations undertaken by the Region on Regional roads is subject to a requirement for a notice. The manner of giving notice is as follows:

- Notice of proposed by-law is published in newspapers for a minimum of 2 consecutive weeks, not less than 14 days prior to consideration of the By-law.
- Written notice to abutting landowners by registered mail not less than 14 days prior to consideration of the By-law.
- Post on Website not less than 14 days prior to consideration of the By-law.

The current practice of allowing developers to design and construct road works does not allow for public input and does not meet the requirements under the Municipal Act, 2001.

Proposed Policy

Regional staff is proposing to have any new major road connections to the Regional road system designed, constructed, and inspected by Region of Halton. The policy for the Design and Construction of Development Charges Projects by the Development Industry, as identified in Report PPW89-99, shall be amended to exclude development related construction on Regional Roads – Major Intersection works, and shall be superseded by this Report PPW110-03. In this regard, Region of Halton can maintain control over design, construction, and inspection of its roads related to new developments to improve the quality of work on Regional roads, enable more control over contractors to ensure safe and proper traffic control is maintained at all times, minimize future problems and additional costs associated with substandard construction, enable property acquisition and utility relocation as necessary to improve road side safety and increase traffic capacity and operations at intersections, and meet the requirements of the Municipal Act, 2001, including notice provisions. Regional staff has developed procedures for development related construction on Regional roads for major road works (see Attachment #1).

Minor road connections to the Regional road system shall be completed by the development industry. Regional staff has developed procedures for development related construction on Regional roads for minor road works (see Attachment #2).

Major and Minor road works are defined in Table 1.

**Table 1 – Major and Minor Road Works**

| No. of Lanes on Reg. Road | * Minor Road Works | Major Road Works |
|---|---|---|
| 2 | Unsignalized T-intersections, left turn lanes and right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | Channelized right turn lanes; signalized T-intersections & all full intersections |
| 4 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |
| 6 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |
| * Any unsignalized intersection requiring the addition of both left and right-turn lanes will be considered as major road works with the exception of a 2-lane roadway.<br><br>Region of Halton will undertake improvements to existing signalized area intersections identified through the development review process; however, these improvements will be the financial responsibility of the developer. | | |

Timing of Development Work

Developers will be required to give Region of Halton at least one (1) year notice prior to their anticipated opening date for the new road connection. This year is required to complete both the Municipal Class EA, if applicable (the majority of intersections would not be subject to this requirement), and detailed design of the project, and for inclusion in the Roads Capital Budget if not already included. For inclusion in the Roads Capital Budget, the Developer must notify Region of Halton by the end of June in the preceding year before construction (i.e. June 2003 for construction in 2004). In the instance where a new intersection has not been included in the current year Roads Capital Budget, a report to Council is required for budget approval of the project and receipt of letter of credit from the Developer. The procedure would be as follows:

1. The developer will provide Region of Halton with financial securities that are satisfactory to the Commissioner of Corporate Services in the amount of 100% of the estimated project cost identified in a financial agreement for the design and construction of the major development charges project.

2. The estimated cost shall be based on the design estimate prior to tender of the project.

3. Region of Halton will repay the developer for the design and construction of the development charges project once the total project funding is approved in Region of Halton's current Capital Budget for the total amount of the letter of credit received.

Regional staff is proposing that this policy be reviewed annually with the development industry for the next two years.

Procedures for Minor Road Work

Minor road works may still be undertaken by the development industry. The focus of the Procedures for Development Related Construction on Regional Roads is to enable Region of Halton to maintain better control over the design, construction, and inspection of new road connections on Regional roads. Funding requirements for the developer – constructed minor road works will continue to be in accordance with the Region's policy for the Design and Construction of Development Charge Projects by the Development Industry as approved in Report PPW89-99.

These procedures would apply to the minor road works and identify the need for public notification on the design and project details. Advertising a minimum of two (2) consecutive weeks prior to the passing of a by-law is a requirement outlined in these procedures to be performed by Region of Halton. The passing of a by-law by Regional Council providing authorization for the development related project to take place is required for most road works as per the new Municipal Act, 2001 and as per the Regional Council approved directions outlined in report CS-41-03. Advertising for the passing of a by-law by Regional Council notifies the public and gives them an opportunity to provide comments related to design and construction. Decisions related to the intersection requirements (need and location) would have already been made through the planning process.

The new procedures also further define the requirements to monitor and co-ordinate the design, construction, and inspection of minor development related work to be performed by the developer's contractor. Requirements contained in these procedures include design guidelines, traffic management plan requirements, timing for road improvements, inspection, notification of residents, and maintenance & warranty of the works.

Following these procedures will ensure that Region of Halton's roads are being constructed to Region of Halton standards and that the public is notified and given the opportunity to provide comments on the design and construction prior to passing of a by-law by Regional Council.

Concerns from the Development Industry

Beginning in mid-July 2003, Regional staff has been in consultation with the Halton Developers' Liaison Committee (HDLC). A series of meetings have been held with HDLC including UDI and NOMI to understand and address concerns from the development industry regarding a change in procedure. The primary concerns of the development industry relate to major road works including:

The ability of the Region to meet the developer's construction schedule and opening date.
The timing of major road works to meet scheduling requirements of the developer.
Advanced notice requirements to be given to the Region.
Provisions for new intersections that have not been included in the Roads Capital Budget.

In addition, HDLC suggested the Region proceed with the new policy as a pilot project for one year.

Regional staff has addressed the concerns from the development industry as follows:

Regional staff will be closely monitoring the design and construction of intersections completed by the Region and will make any necessary adjustments in staff including the hiring of consultants if necessary to maintain the construction schedule of the developer.
A procedure for the planning and engineering processes of major road works has been developed to address any concerns for timing of major works to meet scheduling requirements of the developer.
The advance notice requirement has been changed from two years to one year prior to construction for inclusion in the Roads Capital Budget.
Procedures for a letter of credit from the developer have been added for those new intersections that have not been included in the Roads Capital Budget.

Regional staff is confident that the new procedure will address both the current issues during design and construction and the concerns of the development industry; however, Regional staff is proposing that this policy be reviewed yearly with the development industry for the next two years. Regional staff has not included any major intersections for construction next year in 2004, only engineering work will be completed in 2004 for those intersections to be constructed in 2005. Therefore, a two-year timeframe for review will allow us to monitor both the engineering work as well as construction.

The proposed policy will continue to allow developers to complete new access driveways and right-turn lanes, which are the most common requirements for development related construction on Regional roads.

FINANCIAL/PROGRAM IMPLICATIONS

Currently, under Region of Halton development charge policies, the financing and construction of new intersections is a developer responsibility in addition to the payment of development charges. Developer financial responsibilities are set up in Report PPW89-99. The cost of all anticipated new intersections to 2021 will need to be incorporated into the next development charge by-law to be updated in 2004. Also, new development related construction on Regional roads completed by Region of Halton will need to be included in Region of Halton's Roads Capital Budget. During the budget process, allowing intersections to proceed in the current budget will be predicated on available

development charges and other Regional finances and will be prioritized with other road requirements in the current budget year. A letter of credit will be required from the Developer where a new intersection has not been included in the Roads Capital Budget or if the Developer wishes to have the intersection completed earlier than that contained in the budget.

This policy will ensure that Developers bare the additional costs (through the payment of development charges) associated with substandard design and construction, currently paid for by the Region. Also, by including new intersections in the next development charge, the first developer to request a road connection on one side of a Regional road will not have to pay for the entire intersection, which has been the case in the past. The second developer on the other side of a Regional road will now pay for their portion of the intersection through development charges.

Based on new development applications received to date, engineering work is required for only one (1) new major t-intersection in 2004 at a cost of $150,000. A total of twenty-six (26) new major and partial intersections are proposed for inclusion in the 2004-2013 Roads Capital Budget for a total cost of $22,050,000. These new intersections are additional to other existing intersection improvements included in new road widening and reconstruction projects.

RELATIONSHIP TO THE STRATEGIC PLAN

This is an operational/program matter that does not have a direct relationship to the Strategic Plan.

Respectfully submitted,

Patrick Murphy
Commissioner of Planning and Public Works

Approved by

for
A. Brent Marshall
Chief Administrative Officer

| | | |
|---|---|---|
| If you have any questions on the content of this report, please contact: | Jane Clohecy | Tel. # 7966 |
| | Edward Soldo | Tel. # 7475 |
| | Chris Duyvestyn | Tel. # 7623 |

Attachment #1
to PPW110-03

PROCEDURES

# Procedures for Development Related Construction on Regional Roads – Major Intersection Works

Halton
*a World Class Place To Be*

December 2003

Transportation Services
Planning and Public Works Department
Regional Municipality of Halton

## 1.0 INTRODUCTION

### 1.1 Overview

Development in Halton Region is an integral part of the present and future economic growth within and outside of the Region. As development progresses, so does the need for new connections to the Regional road network. The driving force behind the new road connections is a direct result of new development.

There is also a growing need to provide more public awareness of these new intersection connections to area residents and the general motoring public. The type of road improvement, reasoning for such improvements and the impacts to the area residents & road users must be clearly identified prior to the start of these projects.

### 1.2 Purpose

The purpose of these procedures is to provide the Developer with the necessary steps required for the planning, design, construction and inspection of major intersections works to be performed by Halton Region. Major and minor intersection works are defined in the Table 1:

**Table 1 – Major and Minor Road Works**

| No. of Lanes on Reg. Road | * Minor Road Works | Major Road Works |
|---|---|---|
| 2 | Unsignalized T-intersections, left turn lanes and right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | Channelized right turn lanes; signalized T-intersections & all full intersections |
| 4 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |
| 6 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |

* Any unsignalized intersection requiring the addition of both left and right turn lanes will be considered as major road works with the exception of a 2-lane roadway.

Halton will undertake improvements to existing signalized area intersections identified through the development review process; however, these improvements will be the financial responsibility of the developer.

## 2.0 PROCEDURES FOR MAJOR INTERSECTION WORKS

- The general location and tentative timeframe of major intersections will be identified through the approval of secondary plans and can on this basis be included within Halton's 10-Year Roads Capital Budget.

- At the time of submission of development applications, the Developer shall submit a Traffic Impact Study, which shall be completed by a qualified Transportation consultant for the proposed development as per Halton's Traffic Impact Study Guidelines. The consultant must meet with Halton Transportation Services staff prior to the start of the traffic impact study to review the scope of work.

- A submission of the development application (subdivision plan/zoning) is made to the Region that identified the location of the intersection in relationship to the lot layout/site plan on the draft plan.

- Developer to provide Halton with at least one year's notice prior to their anticipated opening date for the new road connection. The Developer must submit the advance notice in the form of a letter requesting Halton to initiate the preliminary design process for any major intersection work.

- After initial comments on the Traffic Impact Study and Plan of Subdivision that identify the intersection location from Regional staff have been received, Developer to contact Halton Region to arrange for a project initiation meeting to discuss intersection requirements, comments on the traffic impact study and development application, impacts on potentially affected adjacent properties, establish a preliminary schedule for design and construction, etc. At this time, Halton will begin preliminary design of the intersection.

- Halton to circulate base plans to utility companies for mark-ups of existing and future plant.

- During the review of the Draft Plan, consideration will be given to ensuring that the conditions related to the timing of development/phase and the major intersection are appropriately defined.

- Following draft approval of the application and completion of the preliminary design, Halton will initiate the final design process.

- Upon confirmation of property requirements through preliminary design, Halton to begin property acquisition process if required. Property required from the applicant that is part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and road improvements. The lands 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 & Corporate Counsel or his designate. The property dedication will be required prior to the commencement of construction.

- Halton to submit detailed design drawings to utility companies identifying impacts to utilities for their review and comments. Utility companies to prepare utility relocation design and cost estimate.

- Halton will arrange a meeting with the developers at the 90% detailed design stage to review details and timing of property acquisition, utility relocations and coordination of internal works. Developer to forward latest detailed design drawings as it relates to coordination with Regional Road work including plan & profile of roadway intersecting with Regional Road, drainage and grading plans, etc. Halton will provide an updated schedule to the Developer.

- Halton to prepare two (2) consecutive weeks of advertising for the passing of the by-law.

- Regional staff will prepare a memo to members of Regional Council for passing of the by-law to advise of the upcoming project.

- Contract documents including drawings and specifications to be finalized including any changes based on comments received as part of the advertisement. Cost estimate will also be finalized.

- The confirmation by the Developer and Halton of no claims of any prejudicially affected lands.

- Subdivision Agreement must be signed by owner and returned to Halton prior to tender call.

- Halton to advertise for tender call.

- Upon closure of tenders, Halton to evaluate tenders and recommend tender award.

- If tender amount is within approved Regional Roads Capital Budget, CAO approval required prior to tender award. If tender amount exceeds the approved Regional Roads Capital Budget, Regional Council approval required.

- Construction of intersection to commence.

- Full-time inspection and contract administration of Regional Road works to be provided by Halton or Halton's consultant.

- Contractor to submit a construction schedule outlining the specific timing of the start and completion of the various road improvements/works. Construction schedule to be updated by the Contractor on a weekly basis.

- Prior to the start of any works, the Contractor shall obtain and pay for all necessary permits, licenses and certificates (i.e. road cut permit, entrance permit, culvert permit, etc.) required to complete the works and arrange for all necessary inspections required by the approvals and permits.

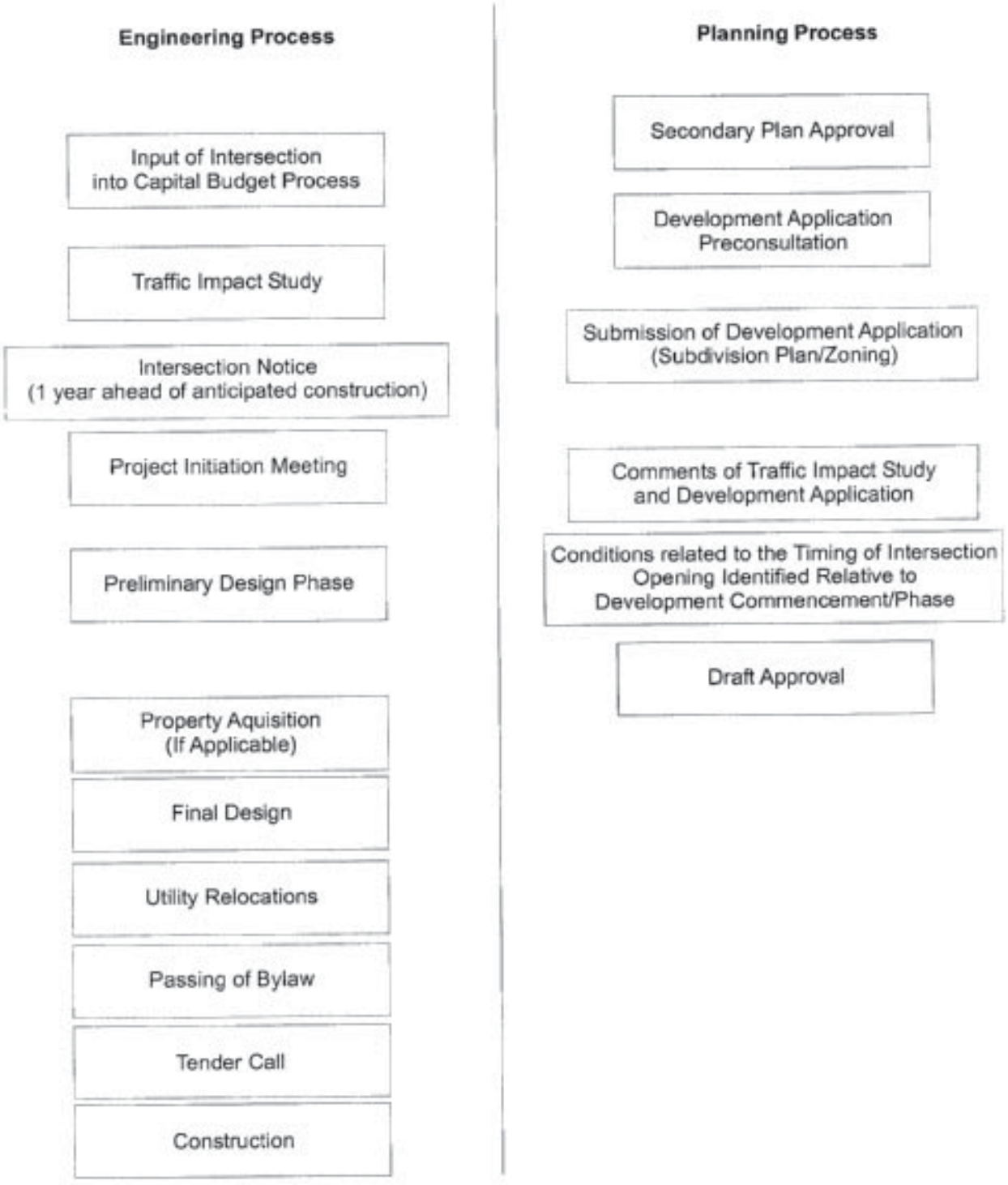
- All works to be constructed in accordance with contract drawings, specifications and traffic management plan.

- Bi-weekly site meetings including a pre-construction meeting shall be arranged by Halton during construction of Regional Road works and shall include participation by the Developer, Utility companies, Contractor and Halton.

- Halton to complete record drawings (as constructed) within 2 months of completion of construction works.

A flowchart summary of the Engineering and Planning Process for the construction of major intersections is as follows:

## Procedures For Development
## Related Construction on Regional Roads
## Major Intersection Works



## 3.0 FINANCING FOR MAJOR INTERSECTION WORKS

New development related construction for major intersection works shall be undertaken by Region of Halton and will be included in Region of Halton's Roads Capital Budget. For inclusion in the Roads Capital Budget, the Developer must notify Region of Halton by the end of June in the preceding year before construction (i.e. June 2003 for construction in 2004).

In the instance where a new intersection has not been included in the current year Roads Capital Budget, a report to Council is required for budget approval of the project and receipt of letter of credit from the Developer. The procedure would be as follows:

1. The developer will provide Region of Halton with financial securities that are satisfactory to the Commissioner of Corporate Services in the amount of 100% of the estimated project cost identified in a financial agreement for the design and construction of the major development charges project.

2. The estimated cost shall be based on the design estimate prior to tender of the project.

3. Region of Halton will repay the developer for the design and construction of the development charges project once the total project funding is approved in Region of Halton's current Capital Budget for the total amount of the letter of credit received.

## 4.0 REVISIONS

Revisions to this policy will be made from time to time and presented to Council for approval.

Attachment #2
to PPW110-03

PROCEDURES

# Procedures for Development Related Construction on Regional Roads - Minor Intersection Works

Halton
*a World Class Place To Be*

December 2003

Transportation Services
Planning and Public Works Department
Regional Municipality of Halton

## 1.0 INTRODUCTION

### 1.1 Overview

Development in Halton Region is an integral part of the present and future economic growth within and outside of the Region. As development progresses, so does the need for new connections to the Regional road network. The driving force behind the new road connections is a direct result of new development.

There is also a growing need to provide more public awareness of these new intersection connections to area residents and the general motoring public. The type of road improvement, reasoning for such improvements and the impacts to the area residents & road users must be clearly identified prior to the start of these projects.

### 1.2 Purpose

The purpose of these procedures is to provide Halton with increased control over the design, construction and inspection of new road connections on Regional roads and to provide the development industry with the necessary steps required for the planning, design, construction and inspection of minor intersections works to be performed by developer. Halton shall undertake all new major intersection work, while minor road works, as defined in Table 1, or as determined by Regional staff would be the responsibility of the developer.

**Table 1 – Major and Minor Road Works**

| No. of Lanes on Reg. Road | * Minor Road Works | Major Road Works |
|---|---|---|
| 2 | Unsignalized T-intersections, left turn lanes and right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | Channelized right turn lanes; signalized T-intersections & all full intersections |
| 4 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |
| 6 | Unsignalized right turn lanes; addition of fourth leg of signalized T-intersection if no major signal work required; median extensions & new access driveways | All left turn lanes; channelized right turn lanes; all T-intersections & all full intersections |

* Any unsignalized intersection requiring the addition of both left and right turn lanes will be considered as major road works with the exception of a 2-lane roadway.

Halton will undertake improvements to existing signalized area intersections identified through the development review process; however, these improvements will be the financial responsibility of the developer.

An important objective of these procedures is to ensure that the public, road users, area residents, municipal and Regional officials are advised of the status and impacts of the development related projects prior to their commencement.

These procedures will be placed in the Servicing Agreement with Developers to ensure the process is accurately followed and adhered to.

### 1.3 Advertising

Advertising is required to advise the public of development related projects including the passing of a construction by-law.

The requirement of the passing of a **by-law** by Regional Council provides authorization for the development related project to take place. A minimum of two (2) consecutive weeks of **advertising,** not less than 14 days prior to passing of the by-law is a requirement of Halton Region. The advertising is notification of the proposed road works and allows any person whose lands are prejudicially affected by the works to notify Halton Region and/or the Developer of his/her claim. Advertising for the passing of a by-law by Regional Council gives the public an opportunity to provide comments if their properties are affected by a development related project and does not reverse any decisions made under the municipal site plan process.

Appendix "A" shows an example of the advertising.

### 1.2 Design Guidelines

In the preparation of the detailed design drawings for the road improvements, the Consultant for the Developer must confirm the design requirements with Halton Transportation Services Section and Engineering Services Division. The design of the road improvements must be based on the TAC Geometric Design Guide for Canadian Roads. Halton may also specify some of the design features to be based on the Ministry of Transportation Geometric Design Standards for Ontario Highways Manual. The design of any roads, traffic signals and street signage must be in accordance with Halton's Uniform Traffic Signal Specifications and Halton's Design Guideline for Proposed Road and Signal Work.

### 1.3 Traffic Management Plan

The Contractor shall submit a traffic management plan to Halton for review and approval. The traffic management plan shall be in accordance with MTO Ontario Traffic Manual (Book 7) Temporary Conditions. The traffic management plan shall consider the movement of both vehicular and pedestrian traffic and the impacts on abutting properties and businesses. Deliveries of materials to, from or within the job site that may affect the operation of Regional roads shall be made during non-peak traffic hours to minimize interference or interruption to traffic within Halton's right-of-way.

### 1.4 Timing of Road Improvements

The completion of the road improvements must not take place during the winter season (i.e. construction must be in compliance with Ontario Provincial Standards). Therefore, every effort must be made to finalize all steps in the process of the development approvals in order to start the construction schedule in the construction season. The timing of the road improvements (construction schedule) will be reviewed and **approved** by Halton Transportation Services Section and Engineering Services Division with the submission of the Contractor's work schedule (as outlined in the procedural requirements). Depending on the extent of the road improvements, the Contractor should ideally be in a position to start the works in the summer.

## 1.5 Inspection of Project

It is the full responsibility of the developer to provide full-time inspection for the duration of the project. This responsibility will be outlined in the Servicing Agreement.

Following the completion of the development related project, the Consultant for the Developer must submit signed/stamped record drawings (as-constructed) to Halton within **2 months** of completion of the construction works in accordance with Halton's drawing standards including both hard copy and electronic copy.

## 1.6 Notification of Residents

It is the responsibility of the Developer to notify all property owners along the section of roadway in which the development project is taking place. The letter must be draft approved by Regional staff with a final copy of the letter sent to Halton. Halton will mail the final copy of the letter to all property owners affected by the development project.

## 1.7 Maintenance and Warranty of Works

The Developer's Contractor shall perform all work in accordance with Halton standards. A letter of credit for the full cost of the improvements will be required from the Developer, which will be reimbursed after completion of construction, submission of the record drawings and the end of the warranty period.

The Contractor shall be responsible for the immediate removal and cleanup of all dirt and mud tracked onto Regional roads from vehicle ingress and egress to the job site to the satisfaction of Halton, as well as taking all necessary steps to prevent dust nuisance resulting from the Contractor's operations either within the right-of-way or elsewhere.

All work shall have a warranty period of one (1) year after the date of total performance of all development related work within Halton's right-of-way or after the date the works are in use, whichever date occurs last. All deficiencies due to materials used in the construction thereof or workmanship shall be corrected promptly to the satisfaction of Halton. Any repairs shall be further warranted for one (1) year from the date of repair. The decision of Halton as to the nature, extent and cause of such deficiencies and the necessity for remedying the same shall be final.

If Halton notifies the Developer in writing of deficiencies prior to the termination of the warranty period, the Developer's Contractor shall make good the deficiencies as specified above notwithstanding that the work of making good may commence after or extend beyond the end of the one (1) year period of warranty.

## 2.0 PROCEDURAL REQUIREMENTS

In order to fulfil the requirements of the Municipal Act and these procedures, the following are the requirements of the Developer, in conjunction/co-operation with Halton (and the area municipality when necessary).

- Confirmation and approval by Halton of the design criteria to be used for the project.
- The submission of the detailed description of works and detailed design drawings to be completed in order for Halton to prepare two (2) consecutive weeks of advertising for the passing of the by-law. Detailed design drawings must be at a stage with sufficient detail to allow for public review.
- As a result of the comments received as part of the advertisement, changes to the design may be warranted. The Developer is responsible for the alteration of the design drawings. Issues that cannot be resolved during this stage will be dealt with by Regional staff and the Developer.
- A memo to members of Regional Council for passing of the by-law will be required to advise of the upcoming project, to be completed by Regional staff.
- Submission of proposed traffic management plan for approval by Halton.
- The submission and approval from Halton of the proposed cost estimate for the proposed road improvements/works.
- The completion of signed and stamped Detailed Design Drawings for the proposed road improvements/works approved by Halton.
- The confirmation by the Developer and Halton of no claims of any prejudicially affected lands.
- All works to conform to all local provincial legislation including but not limited to the Ontario Health & Safety Act, Ontario Traffic Manuals, etc., as well as local noise by-laws.
- Full-time inspection by Developer's Consultant. Inspector to be approved by Halton.
- The submission of a works schedule outlining the specific timing of the start and completion of the various road improvements/works.
- Confirmation (in writing) of the Contractor (and Sub-contractors) to undertake the proposed road improvements/works.
- Approval from Halton (in writing) of the use of the Contractor and Sub-contractors.
- The Contractor shall submit the names of all suppliers along with material mix designs, gradation samples, etc. prior to the start of construction. The Contractor shall complete all sampling, testing and retesting of materials as directed by Halton.

Copies of all materials testing and compact results shall be available for Halton's review.

- Prior to the start of any works, the Developer shall obtain and pay for all necessary permits, licenses and certificates (i.e. road cut permit, entrance permit, culvert permit, etc.) required to complete the works and arrange for all necessary inspections required by the approvals and permits.

- All works to be constructed in accordance with approved plans, specifications and traffic management plan.

- All utility relocations will be the responsibility of the developer and the location of all utilities must meet applicable standards to the satisfaction of the utility companies and Halton.

- Work within the road right-of-way shall include the restoration of all disturbed areas to a condition equivalent to that which existed prior to commencement of construction or better to the satisfaction of Halton.

- Developer's Consultant to submit signed and stamped record drawings (as constructed) within **2 months** of completion of construction works in accordance with Halton's drawing standards including both hard copy and electronic copy.

## 3.0 REVISIONS

Revisions to this policy will be made from time to time and presented to Council for approval.

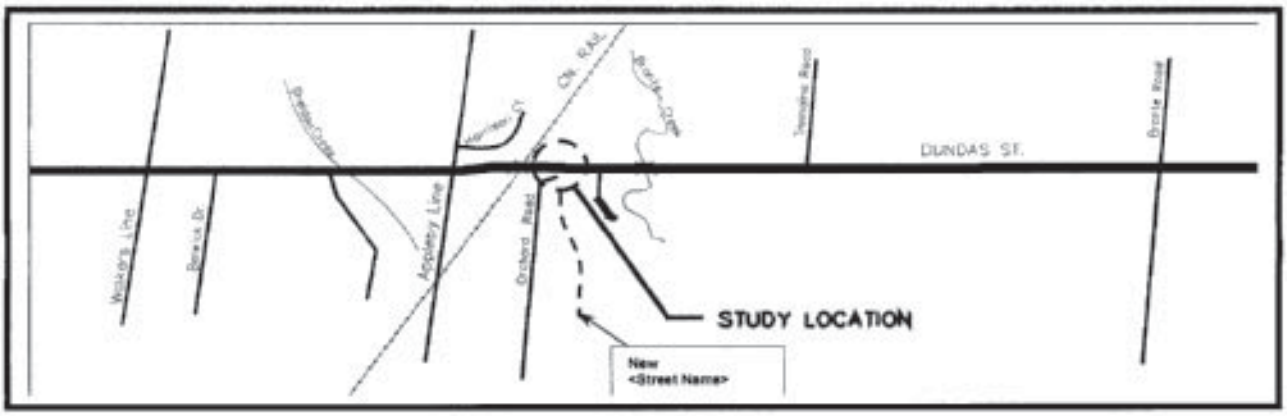
# APPENDIX A

# PUBLIC NOTICE
## (SAMPLE)
## (Staff report to PPWC also required)

# HALTON REGION

## *PUBLIC NOTICE*

## <CONSTRUCTION OF NEW INTERSECTION INCLUDING SEPARATE TURNING LANES & TRAFFIC SIGNAL INSTALLATION DUNDAS STREET (REGIONAL ROAD #5) & <STREET NAME> CITY OF BURLINGTON, PR-1234>




Notice is hereby given pursuant to Halton Region Staff Report CA-40-02 adopted by Regional Council No. 13-02 that the Council for the Regional Municipality of Halton proposes at its Planning and Public Works Committee meeting on **<Month Day, 2003>** at 9:30 a.m. and Council meeting on **<Month Day, 2003>** at 9:30 a.m. to pass a by-law for the construction of <a new intersection including separate turning lanes and the installation of traffic signals at Dundas Street (Regional Road #5) and <Street Name>, City of Burlington.>

Plans showing the proposed work may be inspected at the Planning & Public Works Department, Halton Regional Centre, 1151 Bronte Road, Oakville.

**For further information, please contact Mr. Edward Soldo, P.Eng., Manager, Transportation Services at extension 7475.**

Tel: **(905) 825-6000**
Toll Free: **1-866-4HALTON (1-866-442-5866)**

**PATRICK MURPHY**
**COMMISSIONER OF PLANNING AND PUBLIC WORKS**

Halton
*a World Class Place To Be*

**www.region.halton.on.ca**

# DESIGN GUIDELINES

May be obtained from Design Services

# *Appendix C*

Railway Crossings & Exposure Index Calculation


Halton REGION

**Legend**

- OSR
- CN
- CN CP
- METROLINX
- CP
- GRADE SEPARATION CROSSING (AS AT 2016)
- PROPOSED GRADE SEPARATION (2016-2031)
- PROPOSED ROAD

**RAILWAY CROSSINGS**

September 2016

**BTE based on Rail Crossing Exposure Index**

| RR # | Regional Road | From | To | Rail Owner | Description | Project ID | Construction Start Year | Rail Movements per Day (1) | Peak Hour Volumes (1) | Daily Traffic Volume (1) | Exp. Index | BTE (Safety) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Guelph Line | McLaren Road (north) | Campbell Avenue | CP | At-grade | none | 2031 | 20 | 768 | 5,120 | 102,400 | 0.0% |
| 3 | Trafalgar Road | Maple Avenue | Princess Anne Drive | Metrolinx | To be Grade Separated | 3991 | 2021 | 12 | 1743 | 11,620 | 139,440 | 0.0% |
| 3 | Trafalgar Road | No 20 Side Road | Lindsay Court | CN | To be Grade Separated | 5376 | 2021 | 25 | 1743 | 11,620 | 290,500 | 7.5% |
| 3 | Trafalgar Road | Derry Road | South of Highway 401 | CP | Grade-separated | | | | | | | |
| 4 | James Snow Pkwy | Waldie Avenue | Main Street | CP | Grade-separated | | | | | | | |
| 4 | James Snow Pkwy | Regional Road 25 | Third Line | CN | Grade-separated | | | | | | | |
| 5 | Dundas Street | Appleby Line | Tremaine Road | CN | Grade-separated | | | | | | | |
| 6 | Britannia Road | Tremaine Road | First Line | CN | To be Grade Separated | 3985 | 2017 | 29 | 2198 | 14,653 | 424,947 | 10.0% |
| 7 | Derry Road | Tremaine Road | Bronte Street | CN | Grade-separated | 5183 | | | | | | |
| 8 | Steeles Avenue | Industrial Dr | Bronte Street | CN | Grade-separated | | | | | | | |
| 8 | Steeles Avenue | Tremaine Road | Industrial Dr | CP | To be Grade Separated | 6819 | 2031 | 20 | 1711 | 11,407 | 228,133 | 5.0% |
| *8* | *Steeles Avenue* | *Regional Road 25* | *Ontario Street* | | *Abandoned rail line* | | | | | | | |
| 20 | Appleby Line | CN Crossing | South of Dundas Street | CN | Grade-separated | | | | | | | |
| 22 | Tremaine Road | Steeles Avenue | 16 Mile Creek | CP | Grade separation realignment | 5408 | 2016 | 20 | new alignment* | | | 0.0% |
| 22 | Tremaine Road | Burnhamthorpe Road | No 2 Side Road | CN | To be Grade Separated | 6830 | 2031 | 29 | 1307 | 8,713 | 252,687 | 5.0% |
| 38 | Upper Middle Road | Appleby Line | Country Club Rd | CN | Grade-separated | | | | | | | |
| N/A | 5 1/2 Line | Derry Road | Steeles Ave | CP | New roadway | 6757 | 2031 | 20 | new alignment | | | 0.0% |

* Tremaine Road is being realigned to accommodate growth, and the realignment requires a new grade separation structure.
A BTE of 0% has been allocated, since the need for the realignment and new structure are due to growth.

(1) As at Construction Year
Crossing already grade separated
Abandoned line

General Warrants:

Grade Crossing Warning Systems (Flashing Lights and Bells) - a grade crossing warning system may be installed if the forecast cross-product (train movements x vehicle ADT) is 1,000 or more
Gates may be installed if there is a Grade Crossing Warning System and the forecast cross-product (train movements x vehcile ADT) is 50,000 or more
Grade Separation may be installed if the forecast cross-product (trains x vehicle ADT) is 200,000 or more

Sample Calculation (Project ID 6830 -Tremaine Road)

Exposure Index (EI) = PM Peak Hour volume (per model) / 15% (PM Peak percentage of daily volume) x rail movements
= 1307 / 0.15 x 29
= 252,687

Benefit to Existing allocation based on Exposure Index

| Exposure Index | Benefit to Existing Development |
|---|---|
| 200,000 | 5% |
| 400,000 | 10% |
| 600,000 | 15% |
| 800,000 | 20% |
| 1,000,000 | 25% |

# *Appendix D*

Cost Allocation between growth and non-growth for the
2017-2031 Transportation Development &
Non-Development Capital Implementation Plan

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 7488 | Guelph Line Reconstruction (CONSTRUCTION ONLY) - 1km North of Derry Road to Conservation Road (MIL) (Regional Road 1) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6445 | Guelph Line at Harvester Road - Intersection Improvements (BUR) (Regional Road 1) | 50% | 0% | 50% | 50% | 64% | 36% |
| 2659 | Guelph Line - Widening - 4 to 6 lanes from Mainway to Upper Middle Road (BUR) (Regional Road 1) | 13% | 0% | 13% | 87% | 64% | 36% |
| 6805 | Guelph Line - Widening from 4 to 6 lanes from Upper Middle Rd. to Dundas Street (BUR) (Regional Road 1) | 11% | 0% | 11% | 89% | 64% | 36% |
| 7438 | Guelph Line & 1 Side Road - Intersection Improvements (BUR) (Regional Road 1) | 50% | 0% | 50% | 50% | 64% | 36% |
| 3979 | Trafalgar Road - Widening - 4 to 6 Lanes from Upper Middle Road to Dundas Street (OAK) (Regional Road 3) | 15% | 0% | 15% | 85% | 64% | 36% |
| 3981 | Trafalgar Road - Widening - 4 to 6 Lanes from Dundas St to Hwy 407 (OAK) (Regional Road 3) | 20% | 0% | 20% | 80% | 64% | 36% |
| 3991 | Trafalgar Road - Grade Separation at CN Crossing North of Maple Ave (HHS) (Regional Road 3) | 8% | 0% | 8% | 92% | 64% | 36% |
| 5376 | Trafalgar Road - Grade Separation at Metrolinx Crossing South of Hwy 7 (HHS) (Regional Road 3) | 15% | 0% | 15% | 85% | 64% | 36% |
| 6985 | Trafalgar Road - Widening - 2 to 4 Lanes from Steeles Avenue to 10 Side Road (HHS) (Regional Road 3) | 23% | 0% | 23% | 77% | 64% | 36% |
| 6984 | Trafalgar Road - Widening - 2 to 4 Lanes from 10 Side Road to Hwy 7 (HHS) (Regional Road 3) | 22% | 0% | 22% | 78% | 64% | 36% |
| 6823 | Trafalgar Road - Widening from 4 to 6 lanes from Highway 407 to Britannia Rd. (MIL) (Regional Road 3) | 8% | 0% | 8% | 92% | 64% | 36% |
| 6827 | Trafalgar Road - Widening from 4 to 6 lanes from Britannia Rd. to Steeles Avenue (MIL/HHS) (Regional Road 3) | 8% | 0% | 8% | 92% | 64% | 36% |
| 5839 | James Snow Parkway - Widening from 2 to 6 Lanes from Britannia Road to Hwy 401 (MIL) (Regional Road 4) | 5% | 0% | 5% | 95% | 64% | 36% |
| 6807 | James Snow Parkway - Widening from 4 to 6 lanes from Highway 401 to Tremaine Road (MIL) (Regional Road 4) | 4% | 0% | 4% | 96% | 64% | 36% |
| 6806 | James Snow Parkway - New 6-lane road from Highway 407 to Britannia Road (MIL) (Regional Road 4) | 0% | 0% | 0% | 100% | 64% | 36% |
| 3942 | Dundas Street - Widening - 4 to 6 lanes from Bronte Road to Proudfoot Trail (OAK) (Regional Road 5) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5436 | Dundas Street - Widening - 4 to 6 lanes from Neyagawa Blvd. to Oak Park Blvd. (OAK) (Regional Road 5) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5180 | Dundas Street - Widening 4 to 6 lane from North Hampton to Appleby Line (BUR) (Regional Road 5) | 24% | 0% | 24% | 76% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 5384 | Dundas Street - Grade Separation at CNR Crossing between Appleby Line and Tremaine Rd (BUR) (Regional Road 5) | 0% | 0% | 0% | 100% | 64% | 36% |
| 3983 | Dundas Street Widening from 4 to 6-Lanes from Tremaine Rd to Bronte Rd (OAK) (Regional Road 5) | 21% | 0% | 21% | 79% | 64% | 36% |
| 5385 | Dundas Street - Bronte Creek Bridge between Appleby Line and Tremaine Rd (BUR) (Regional Road 5) | 4% | 0% | 4% | 96% | 64% | 36% |
| 3982 | Dundas Street - Widening from 4 to 6-Lanes (excluding CNR & Bronte Crk Bridges) from Appleby Line to Tremaine Rd (BUR) (Regional Road | 14% | 0% | 14% | 86% | 64% | 36% |
| 3984 | Dundas Street - Widening 4 to 6-Lanes from Guelph Line to North Hampton (BUR) (Regional Road 5) | 21% | 0% | 21% | 79% | 64% | 36% |
| 7487 | Dundas Street - Widening 4 to 6-Lanes from Guelph Line to Halton/Hamilton Boundary including improvements at Brant Street (BUR) (Regional Road 5) | 39% | 0% | 39% | 61% | 64% | 36% |
| 3985 | Britannia Road - Widening - 2 to 6 Lanes from Tremaine Rd to Regional Road 25 (MIL) (Regional Road 6) | 17% | 0% | 17% | 83% | 64% | 36% |
| 7333 | Britannia Road (CONSTRUCTION ONLY) - Widening 2 to 4 lanes from Regional Road. 25 to James Snow Parkway (MIL) (Regional Road 6) | 16% | 0% | 16% | 84% | 64% | 36% |
| 7334 | Britannia Road (CONSTRUCTION ONLY) - Widening - 2 to 4 lanes from James Snow Parkway to Trafalgar Rd (MIL) (Regional Road 6) | 16% | 0% | 16% | 84% | 64% | 36% |
| 7335 | Britannia Road - Widening - 2 to 4 lanes from Trafalgar Road to Highway 407 (MIL) (Regional Road 6) | 23% | 0% | 23% | 77% | 64% | 36% |
| 6802 | Britannia Road - Widening from 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6) | 23% | 0% | 23% | 77% | 64% | 36% |
| 7486 | Derry Road (CONSTRUCTION ONLY) - Reconstruction from Milburough Line to McNiven Road (MIL) (Regional Road 7) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6804 | Derry Road - Widening from 4 to 6 lanes from Tremaine Rd. to Highway 407 (MIL) (Regional Road 7) | 7% | 2% | 9% | 91% | 64% | 36% |
| 6819 | Steeles Avenue - Widening from 2 to 4 lanes from Tremaine Road to Industrial Drive (MIL) (Regional Road 8) | 21% | 0% | 21% | 79% | 64% | 36% |
| 5396 | Steeles Avenue - Widening 2 to 4 lanes from Industrial Drive to Martin Street (MIL) (Regional Road 8) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5181 | Steeles Avenue Grade Separation at CN crossing west of Bronte Street (MIL) (Regional Road 8) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6821 | Steeles Avenue - Widening from 4 to 6 lanes from Regional Road 25 to Trafalgar (MIL/HHS) (Regional Road 8) | 9% | 0% | 9% | 91% | 64% | 36% |
| 6822 | Steeles Avenue - Widening from 4 to 6 lanes (with RBL) from Trafalgar Road to Winston Churchill Boulevard (HHS) (Regional Road 8) | 5% | 33% | 38% | 62% | 64% | 36% |
| 5428 | Campbellville Gateway Feature (MIL) (Regional Road 9) | 50% | 0% | 50% | 50% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 7459 | 10 Side Road (CONSTRUCTION ONLY) - 2 Lane Reconstruction/Realignment to intersection at Winston Churchill Blvd. (HHS) (Regional Road 10) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6758 | 10 Side Road - Widening from 2 to 4 lanes from Trafalgar Rd to Winston Churchill Blvd. (HHS) (Regional Road 10) | 21% | 17% | 38% | 62% | 64% | 36% |
| 7336 | Ninth Line - Widening 2 to 4-lanes from Steeles Ave to 10 Side Rd (HHS) (Regional Road 13) | 33% | 0% | 33% | 67% | 64% | 36% |
| 6808 | Ninth Line - Widening from 2 to 4 lanes from Burnhamthorpe Rd. to Highway 407 (OAK) (Regional Road 13) | 25% | 0% | 25% | 75% | 64% | 36% |
| 6809 | Ninth Line - Widening from 2 to 4 lanes from Dundas St. to Burnhamthorpe Rd. (OAK) (Regional Road 13) | 20% | 0% | 20% | 80% | 64% | 36% |
| 6824 | Brant Street - Widening from 4 to 6 lanes from North Service Road to Dundas Street (BUR) (Regional Road 18) | 9% | 0% | 9% | 91% | 64% | 36% |
| 7491 | Winston Churchill Blvd. - 2 lane Reconstruction from 5 Side Road to 10 Side Road (Halton's Share) (HHS) (Regional Road 19) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7492 | Winston Churchill Blvd. (CONSTRUCTION ONLY) - 2 lane Reconstruction from Old Pine Road to 17 Side Road (Halton's Share) (HHS) (Regional Road 19) | 100% | 0% | 100% | 0% | 64% | 36% |
| 3634 | Winston Churchill Blvd. - 2 lane Reconstruction from 10 Side Road to Credit River Bridge (Halton's Share) (HHS) (Regional Road 19) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5312 | Winston Churchill Blvd. - 2 lane Reconstruction from Credit River Bridge to Old Pine Road (Halton's Share) (HHS) (Regional Road 19) | 100% | 0% | 100% | 0% | 64% | 36% |
| 3989 | Winston Churchill Blvd. - Widening - 2 to 4 Lanes from 2km south of 5 Side Road to potential by-pass (Halton's Share) (HHS) (Regional Road 19) | 41% | 0% | 41% | 59% | 64% | 36% |
| 6448 | Winston Churchill Blvd. - Widening 4-6 Lanes from Hwy 401 to Steeles Avenue (Halton's Share) (HHS) (Regional Road 19) | 16% | 0% | 16% | 84% | 64% | 36% |
| 6846 | Winston Churchill Blvd - Widening from 4 to 6 lanes from 2km south of 5 Side Road to 5 Side Road (Halton's Share) (HHS) (Regional Road 19) | 26% | 49% | 75% | 25% | 64% | 36% |
| 6847 | Winston Churchill Boulevard - Widening 5-7 Lanes from Steeles Ave to 2 km south of 5 Side Road (Halton's Share) (HHS) (Regional Road 19) | 33% | 49% | 82% | 18% | 64% | 36% |
| 5438 | Winston Churchill Blvd. - Widening from 4 to 6 Lanes from Dundas St to Upper Middle Rd / QEW (Halton's Share) (OAK) (Regional Road 19) | 24% | 8% | 32% | 68% | 64% | 36% |
| 7374 | Winston Churchill Boulevard - Reconstruction from Terra Cotta to Ballinafad Rd/32 Side Road (Halton's Share) (HHS) (Regional Road 19) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6449 | Appleby Line at Harvester Road - Intersection Improvements (BUR) (Regional Road 20) | 50% | 0% | 50% | 50% | 64% | 36% |
| 6812 | Appleby Line - Widening from 4 to 6 lanes from Fairview Street to Taywood Drive (BUR) (Regional Road 20) | 17% | 0% | 17% | 83% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 6803 | Burloak Drive - Widening from 4 to 6 lanes from Harvester Rd. to Upper Middle Rd. (BUR/OAK) (Regional Road 21) | 50% | 33% | 83% | 17% | 64% | 36% |
| 7485 | Burloak Drive (CONSTRUCTION ONLY) – 4 lane urbanization from north of QEW to Upper Middle Road (BUR/OAK) (Regional Road 21) | 10% | 0% | 10% | 90% | 64% | 36% |
| 5408 | Tremaine Road Grade Separation at CN (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5409 | Tremaine Road - New Bridge over 16 Mile Creek north of Steeles Avenue (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5138 | Tremaine Road - New 4-lane roadway from Tremaine Road to IC to JSP (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5135 | Tremaine Road - New 4-lane roadway from 16 Mile Creek to Tremaine Road (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5134 | Tremaine Road - New 4-lane roadway from Steeles Avenue to 16 Mile Creek (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5136 | Tremaine Road - New 4-lane roadway from Tremaine Road (IC)s to Tremaine Road (IC)n (MIL) (Regional Road 22) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5622 | Tremaine Road - Reconstruction from Dundas Street to No. 1 Side Road (BUR/OAK) (Regional Road 22) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5845 | Tremaine Road - Widening 4 to 6 lanes from Derry Road to Hwy 401 (MIL) (Regional Road 22) | 27% | 0% | 27% | 73% | 64% | 36% |
| 6830 | Tremaine Road - Widening from 2 to 4 lanes from Dundas St. to Lower Base Line (BUR/OAK) (Regional Road 22) | 30% | 0% | 30% | 70% | 64% | 36% |
| 6834 | Tremaine Road - Widening from 2 to 4 lanes from Lower Base Line to Britannia Rd. (MIL) (Regional Road 22) | 21% | 0% | 21% | 79% | 64% | 36% |
| 6817 | Regional Road 25 - Widening from 4 to 6 lanes from Steeles Avenue to 5 Side Rd. (MIL) (Regional Road 25) | 14% | 0% | 14% | 86% | 64% | 36% |
| 6811 | Regional Road 25 - Widening from 2 to 4 lanes from 5 Side Rd. to 10 Side Rd. (HHS) (Regional Road 25) | 20% | 0% | 20% | 80% | 64% | 36% |
| 6818 | Regional Road 25 - Widening from 4 to 6 lanes from Speers Rd. to Highway 407 (OAK) (Regional Road 25) | 10% | 0% | 10% | 90% | 64% | 36% |
| 6814 | Regional Road 25 - Widening from 4 to 6 lanes from Highway 407 to Britannia Rd. (MIL) (Regional Road 25) | 10% | 0% | 10% | 90% | 64% | 36% |
| 6815 | Regional Road 25 - Widening from 4 to 6 lanes from Britannia Rd to Derry Rd. (MIL) (Regional Road 25) | 5% | 12% | 17% | 83% | 64% | 36% |
| 7343 | Regional Road 25 - Realignment at Lower Base Line Intersection (OAK/MIL) | 93% | 0% | 93% | 7% | 64% | 36% |
| 7489 | William Halton Parkway (CONSTRUCTION ONLY) - 2 to 4 Lanes from Old Bronte Road to Hospital Gate (OAK) (Regional Road 40) | 0% | 0% | 0% | 100% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 7490 | William Halton Parkway (CONSTRUCTION ONLY) - New 4-lane road from Third Line to Sixteen Mile Creek. (OAK) (Regional Road 40) | 0% | 0% | 0% | 100% | 64% | 36% |
| 7460 | William Halton Parkway (CONSTRUCTION ONLY) - New 4-lane road from Sixth Line to Neyagawa Boulevard (OAK) (Regional Road 40) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5413 | William Halton Parkway - New 4-lane Bridge over 16 Mile Creek (OAK) (Regional Road 40) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5273 | William Halton Parkway - New 4-lane road from Sixteen Mile Creek to Neyagawa Blvd. (OAK) (Regional Road 40) | 0% | 0% | 0% | 100% | 64% | 36% |
| 7337 | Upper Middle Road - Intersection Operational Improvements (OAK) (Regional Road 38) | 50% | 0% | 50% | 50% | 64% | 36% |
| 6825 | Upper Middle Road - Widening from 4 to 6 lanes from Appleby Line to Burloak Drive (BUR) (Regional Road 38) | 6% | 0% | 6% | 94% | 64% | 36% |
| 7338 | Upper Middle Road - Widening from 4 to 6 lanes from Neyagawa Blvd. to Trafalgar Rd. (OAK) (Regional Road 38) | 17% | 26% | 43% | 57% | 64% | 36% |
| 7339 | Upper Middle Road - Widening from 4 to 6 lanes from Grand Blvd to Ninth Line (OAK) (Regional Road 38) | 14% | 15% | 29% | 71% | 64% | 36% |
| 6826 | Upper Middle Road - Widening from 4 to 6 lanes from Trafalgar Road to Grand Blvd. (OAK) (Regional Road 38) | 13% | 0% | 13% | 87% | 64% | 36% |
| 6828 | Upper Middle Road - Widening from 4 to 6 lanes from Bronte Rd. to Neyagawa Blvd. (OAK) (Regional Road 38) | 5% | 36% | 41% | 59% | 64% | 36% |
| 6829 | Upper Middle Road - Widening from 4 to 6 lanes from Ninth Line to Winston Churchill Blvd. (OAK) (Regional Road 38) | 12% | 77% | 89% | 11% | 64% | 36% |
| 6757 | "5 1/2 Line" - New 6-lane road from Britannia Road. to Steeles Avenue and Interchange at Highway 401 (MIL) | 0% | 6% | 6% | 94% | 64% | 36% |
| 6810 | North Service Road - New 4-lane road from Burloak Drive to Bronte Road (BUR/OAK) | 0% | 75% | 75% | 25% | 64% | 36% |
| 7494 | Norval Bypass (HHS) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6853 | Centre-median landscaping Improvements (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6854 | New Traffic Signals - Development (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6855 | New Signalized Intersections (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 5641 | Traffic Signal Controller, timer and signing upgrades various intersections (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 6856 | Traffic Signal Interconnect (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 6857 | Operational Improvements (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5746 | LED Street Light Replacement Program (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 6106 | Retaining Wall Repairs (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5642 | Bridge Inspections & Evaluation Studies (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 4743 | Retrofit & Replacement Noise Attenuation Barriers - Various Locations (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5173 | Misc. Bridges & Culverts Rehabilitation & Replacement Program (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 4370 | Emergency Diversion Route Signing for Road Closure Action Plan (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7142 | Miscellaneous Works Related to Road Resurfacing (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7567 | Miscellaneous. R.O.W. Purchases and Road Dedication Engineering & Surveys (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5017 | Transportation Infrastructure Management System (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7568 | MTO Highway Studies (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 5196 | Smart Commute Travel Demand Management Initiative (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 5425 | Speed Reduction Education & Enforcement Campaign (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7375 | Active Transportation Infill Projects (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 7493 | Active Transportation New Off-Road Capital Projects (Region-wide) | 10% | 0% | 10% | 90% | 64% | 36% |
| 5426 | Active Transportation Initiatives (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 5431 | Traffic and Screen Line Counts & Studies (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 5432 | Road Needs Study Update (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 5643 | Traffic Operations & Safety Related Studies (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |

| UNIQUE ID# | PROJECT DESCRIPTION | BTE | Post-Planning Period Capacity | Non-Growth | Growth | Res | Non-Res |
|---|---|---|---|---|---|---|---|
| 5644 | Regionwide Traffic Operations Study Update | 100% | 0% | 100% | 0% | 64% | 36% |
| 5444 | Transportation Master Plan Study (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6832 | Data Management Group (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6833 | Transportation Tomorrow Survey (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 7569 | Urban Design Guidelines (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6831 | Active Transportation Master Plan (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6836 | Regional Road 25/Third Line Alignment Options (MIL) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6837 | DC Background Study (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6858 | Cordon Count Data (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6838 | Growth Management Studies (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |
| 6885 | Vehicle Replacements - Transportation (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7398 | New Vehicles - Road Operations (Region-wide) | 100% | 0% | 100% | 0% | 64% | 36% |
| 7376 | Appleby Line Drainage Issues (BUR) | 50% | 0% | 50% | 50% | 64% | 36% |
| 7377 | Intelligent Transportation System Implementation (Region-wide) | 50% | 0% | 50% | 50% | 64% | 36% |
| 7378 | Landscape Guidelines (Region-wide) | 0% | 0% | 0% | 100% | 64% | 36% |

# *Appendix E*

Post Planning Period Capacity Calculation

| ID | Roadway | Const. Yr | SL | Link v/c Peak dir. | SL v/c Peak dir. | PPP Calc. | PPP Credit* (2017) |
|---|---|---|---|---|---|---|---|
| 6757 | "5 1/2 Line" New 6-lane road & Interchange from Britannia Road. to Steeles Avenue (MIL) | 2031 | 73 | 0.72 | 0.82 | 12.20% | 6.10% |
| | | | 57 | 0.83 | 0.65 | 0.00% | |
| 6758 | 10 Side Road - Widening from 2 to 4 lanes from Trafalgar Rd to Winston Churchill Blvd. (HHS) (Regional Road 10) | 2031 | 20 | 0.7 | 0.54 | 0.00% | 16.67% |
| | | | 74 | 0.3 | 0.45 | 33.33% | |
| 6802 | Britannia Road - Widening from 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6) | 2028 | 17 | 0.79 | 0.65 | 0.00% | 0.00% |
| | | | 16 | 0.73 | 0.68 | 0.00% | |
| | | | 14 | 0.79 | 0.69 | 0.00% | |
| 6803 | Burloak Drive - Widening from 4 to 6 lanes from Harvester Rd. to Upper Middle Rd. (BUR) (Regional | 2029 | 33 | 0.38 | 0.57 | 33.33% | 33.33% |
| 6804 | Derry Road - Widening from 4 to 6 lanes from Tremaine Rd. to Highway 407 (MIL) (Regional Road 7) | 2031 | 16 | 0.63 | 0.68 | 7.35% | 2.45% |
| | | | 17 | 0.78 | 0.65 | 0.00% | |
| | | | 18 | 0.73 | 0.59 | 0.00% | |
| 6806 | James Snow Parkway - New 6-lane road from Highway 407 to Britannia Road (MIL) (Regional Road 4) | 2031 | 71 | 0.8 | 0.78 | 0.00% | 0.00% |
| | | | 50 | 0.8 | 0.74 | 0.00% | |
| 6807 | James Snow Parkway - Widening from 4 to 6 lanes from Highway 401 to Highway 401 (MIL) (Regional Road 4) | 2030 | 54 | 0.5 | 0.43 | 0.00% | 0.00% |
| 6810 | North Service Road New 4-lane road from Burloak Drive to Bronte Road (BUR/OAK) | 2031 | 6 | 0.24 | 0.96 | 75.00% | 75.00% |
| 6815 | Regional Road 25 - Widening from 4 to 6 lanes from Britannia Rd to Derry Rd. (MIL) (Regional Road 25) | 2027 | 73 | 0.57 | 0.65 | 12.31% | 12.31% |
| 6822 | Steeles Avenue - Widening from 4 to 6 lanes (with RBL) from Trafalgar to Winston Churchill Boulevard (HHS) (Regional Road 8) | 2028 | 16 | 0.28 | 0.68 | 58.82% | 33.33% |
| | | | 15 | 0.63 | | 7.35% | |
| | | | 74 | 0.45 | | 33.82% | |
| 6823 | Trafalgar Road - Widening from 4 to 6 lanes from Highway 407 to Britannia Rd. (MIL) (Regional Road 3) | 2027 | 71 | 0.95 | 0.78 | 0.00% | 0.00% |
| | | | 50 | 0.96 | 0.74 | 0.00% | |
| 6827 | Trafalgar Road - Widening from 4 to 6 lanes from Britannia Rd. to Steeles Avenue (MIL/HHS) (Regional | 2030 | 55 | 0.93 | 0.88 | 0.00% | 0.00% |
| 6829 | Upper Middle Road - Widening from 4 to 6 lanes from Ninth Line to Winston Churchill Blvd. (OAK) (Regional | 2028 | 10 | 0.07 | 0.31 | 77.42% | 77.42% |

| ID | Roadway | Const. Yr | SL | Link v/c Peak dir. | SL v/c Peak dir. | PPP Calc. | PPP Credit* (2017) |
|---|---|---|---|---|---|---|---|
| 7339 | Upper Middle Road - Widening from 4 to 6 lanes from Grand Blvd to Ninth Line (OAK) (Regional Road 38) | 2028 | 72 | 0.6 | 0.71 | 15.49% | 15.49% |
| 6828 | Upper Middle Road - Widening from 4 to 6 lanes from Bronte Rd. to Neyagawa Blvd. (OAK) (Regional Road 38) | 2027 | 8<br>75 | 0.53<br>0.42 | 0.72<br>0.78 | 26.39%<br>46.15% | 36.27% |
| 7338 | Upper Middle Road - Widening from 4 to 6 lanes from Neyagawa Blvd. to Trafalgar Rd. (OAK) (Regional Road | 2028 | 8 | 0.53 | 0.72 | 26.39% | 26.39% |
| 6846 | Winston Churchill Boulevard Widening 4-6 Lanes from Steeles Ave to 2 km south of Embleton Rd (Halton's Share) (HHS) (Regional Road 19) | 2030 | 58 | 0.35 | 0.68 | 48.53% | 48.53% |
| 6847 | Winston Churchill Boulevard Widening 5-7 Lanes from Steeles Ave to 2 km south of Embleton Rd (Halton's Share) (HHS) (Regional Road 19) | 2030 | 58 | 0.35 | 0.68 | 48.53% | 48.53% |
| 5438 | Winston Churchill Blvd - Widening from 4 to 6 Lanes from Dundas St to UMR/QEW - Halton's share (OAK) (Regional Road 19) | 2030 | 48 | 0.58 | 0.63 | 7.94% | 7.94% |

** When the link crosses more than one screnline the average governs the calculation*