



**Road Needs Study, Vehicle Traffic  
Count Program, Pavement Asset  
Management Program  
Town of New Tecumseth**

*Prepared By:*

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*Prepared for: Town of New Tecumseth*

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September 2012,  
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**Town of New Tecumseth**

Draft Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

**Record of Revisions**

<b>Revision</b>	<b>Date</b>	<b>Description</b>
0	September 2012	Initial Submission to Town of New Tecumseth
1	September 2013	75% Submission to Town of New Tecumseth
2	October 2013	90% Submission to Town of New Tecumseth
3	February 2014	Final Report

## Executive Summary

This Study provides an update to the Road Needs Study in the Town of New Tecumseth, the results of a comprehensive vehicles traffic counting program, and recommends a pavement asset management program for the Town. Previous Road Needs Studies in the Town have used a Needs Appraisal program developed by the Ministry of Transportation (MTO). The purpose of the Needs program was to determine short and medium term rehabilitation needs of the municipality. A Pavement Management System (PMS) builds on the data provided in the Needs Appraisal, but undertakes a more detailed review of the condition of the roads and takes into consideration life-cycle analysis in establishing a program that includes regular maintenance, preventive maintenance, rehabilitation and ultimately, reconstruction.

The contents of this report provide the findings from a detailed inventory of the municipal road system and identifies road condition deficiencies and improvement requirements, based on the establishment of pavement condition indices (PCI) for each road section.

A total of 344.986 km of roads were assessed in this study, as summarized in the following table:

**Table (i) - Summary by Surface Type**

Surface Type	Length (centerline km)	Length (lane km)	Surface Type By Lane Km (%)	Notes
Asphalt	213.563	436.830	62.44	Includes 14.806 km (centerline) of shared boundary roads. Includes 4.176 km (centerline) of MTO connecting link road and 1.125 km (centerline) of County connecting link road.
Asphalt Over Concrete	2.361	4.722	0.67	
Concrete	0.735	1.470	0.21	
Surface Treatment	43.988	87.976	12.57	Includes 3.145 km of shared boundary roads
Gravel	84.339	168.678	24.11	
Total	344.986	699.676	100	

**Table (ii) - Summary by Roadside Environment**

Roadside Environment	Length (km)	Notes
Rural	238.036	
Semi-Urban	27.938	Includes 0.873 km of connecting link road.
Urban	79.012	Includes 12.715 km of un-assumed roads. Includes 4.428 km of connecting link road.
Total	344.986	

Based on the road condition assessment methodology developed, the needs for the road network are summarized in the following table:

**Table (iii) – Summary of Road Needs**

Improvement Type	Now Needs	1 to 5 Year Needs	6 to 10 Year Needs	Total
Resurface R	22.982 km	4.815 km	38.919 km	66.716 km
	\$6,553,225	\$2,245,408	\$6,372,371	\$15,171,004
Pulverize and Resurface PR	14.483 km	20.752 km		35.235 km
	\$3,889,826	\$5,319,196		\$9,209,022
Base and Surface BS	12.862 km			12.862 km
	\$6,325,248			\$6,325,248
Reconstruction REC	8.892 km			8.892 km
	\$6,907,988			\$6,907,988
Total Length	59.309 km	25.567 km	38.919 km	123.795 km
Total Cost	\$23,676,287	\$7,564.604	\$6,372,371	\$37,613,262

Other road needs have also been considered in this study including:

- Geometrics;
- surface type;
- road section type;
- travel platform and shoulder needs;
- traffic capacity;
- drainage needs; and
- maintenance.

For the most part, it is recommended that these needs be addressed at the time of condition improvements to the various road sections.

Of the 344.986 km of road inventoried, the total system adequacy can be summarized as follows:

**Table (iv) - System Adequacy**

Time Period of Needs	Length of Needs (km)	Percentage of Network With Condition Needs	Percentage of Network With No Identified Condition Needs*
NOW	59.309	17.19%	
1 to 5 Years	25.567	7.41%	
6 to 10 Years	38.919	11.28%	
Total Needs	123.795	35.88%	64.12%

\*Percentage with no Needs = 100 – (% with Needs)

It is noted that the previous Road Study Update (2008) had identified 59.6% of the roads as being adequate (i.e., no NOW needs), whereas the present study has identified about 64.12% of the road system as not having needs (i.e., NOW, 1 to 5 year or 6 to 10 year needs). However, since the methodology in this present study has changed from earlier studies, it is recommended that the above information be tracked in future Road Study Updates, to provide an ongoing historical reference of the adequacy of the road system.

A complete pavement management system is recommended including the following:

- Preventive Maintenance – various maintenance treatments, generally applied when the pavements are in relatively good condition (PCI above 70).
- Maintenance and Rehabilitation – More extensive reactive maintenance or rehabilitation (overlays, base repairs), to protect the integrity of the pavement base, generally applied at mid-level PCI ranges.
- Reconstruction – full reconstruction of the road base and surface, applied to those road sections that have deteriorated below a minimum PCI trigger threshold value (typically PCI of 40 to 45, depending on the road maintenance class).

A five year capital program has been recommended as a guide for future capital expenditures on the road network. The capital program has been selected from those projects that have conditions that have deteriorated below the minimum condition value. A categorized listing of all of the projects has also been provided, identifying the time period when each road section is forecast to deteriorate below the minimum condition value. The projects are further prioritized within each category, using a Sensitivity Guide

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

Number (SGN), which takes into account the condition, maintenance class and priority category.

A Priority Guide Number (PGN) has also been calculated for each road section, taking into account its condition, traffic and improvement cost requirements. The PGN provides an indication of the cost effectiveness of the improvement proposed, considering life-cycle requirements. However, until the backlog of “minimum condition” roads are addressed, a pavement management program that uses this “effectiveness” principle to allocate priorities cannot be fully implemented. Once this backlog is removed, the Town’s pavement management system can focus on implementing a multi-cycle program of improvements, throughout the life-cycle of the road asset.

The average condition of the hard top road network is presently in good condition (PCI 80.69), but is forecast to deteriorate to fairly good condition (PCI 68.04) over the five year study period, taking into account the road improvements proposed in the five year capital program as well as planned Development Charge projects. It is recommended that capital budgets be increased to reduce the deterioration of the road network over time.

It is also recommended that an additional budget of \$335,000.00 per year be allocated for preventive maintenance of the hard top roads (i.e., crack sealing, slurry sealing/micro-surfacing, double chip sealing and implementation of a shoulder sealing program for hard top roads). The intent of the preventive maintenance program is to reduce the overall degradation of the pavements, so that fewer roads degrade to “minimum condition” status, allowing for capital improvement budgets to be re-allocated to the multi-cycle program identified above.

It is recommended that the impact of modifications to capital budgets or maintenance budgets be re-assessed at the time of the next major Road Study update (i.e., at the end of the five year plan).

Thirteen level railway crossings were also inventoried and assessed in this study. Various upgrades have been recommended to the existing protection at these crossings.

## Table of Contents

<b>Record of Revisions.....</b>	<b>2</b>
<b>Executive Summary .....</b>	<b>i</b>
<b>1.0 Purpose and Methodology .....</b>	<b>1</b>
<b>2.0 Previous Studies.....</b>	<b>3</b>
<b>3.0 Road Inventory and Data Collection.....</b>	<b>4</b>
3.1 Traffic Counts and Annual Average Daily Traffic.....	5
3.2 Maintenance Classifications and Maintenance Agreements.....	5
3.3 Functional Classification and Design Classification.....	7
3.4 Road Surface Assessment.....	8
3.5 Improvement Types and Bench Mark Costs.....	10
<b>4.0 Surface Condition Needs As A Method For Establishing Road Network Improvements .....</b>	<b>12</b>
4.1 Basis of Establishing a Pavement Management Program .....	12
4.2 Road Condition Assessment.....	13
<b>5.0 Consideration of Other Needs For Establishing Road Network Improvements .....</b>	<b>17</b>
5.1 Geometrics .....	18
5.2 Surface Type .....	18
5.3 Road Section Type .....	20
5.4 Travel Surface Width and Shoulder Width.....	21
5.4.1 Travel Surface Width .....	21
5.4.2 Shoulder Width .....	22
5.5 Traffic Capacity.....	25
5.6 Drainage .....	26
5.7 Maintenance Considerations.....	27
5.8 Coordination With Other Projects.....	27
5.9 Railway Level Crossings .....	28
<b>6.0 Road Improvement Program.....</b>	<b>31</b>
6.1 Pavement Management.....	31
6.2 Summary of Road Needs .....	32
6.3 Five Year Road Rehabilitation and Resurfacing Program .....	33
6.3.1 Alternate Funding Scenarios For Five Year Road Rehabilitation and Resurfacing Program.....	34
6.4 Preventive Maintenance Program .....	37

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

## Table of Contents (Continued)

### Tables

Table (i) - Summary by Surface Type .....	i
Table (ii) - Summary by Roadside Environment.....	ii
Table (iii) – Summary of Road Needs.....	ii
Table (iv) - System Adequacy.....	iii
Table 3.1 - Summary by Surface Type .....	4
Table 3.2 - Summary by Roadside Environment.....	4
Table 3.3 – Maintenance Classifications.....	6
Table 3.4 - Summary of Maintenance Classifications .....	6
Table 3.5 - Functional Classifications and Design Classifications .....	7
Table 3.6 - Surface Distresses .....	8
Table 3.7 - Ride Condition Rating (RCR) .....	9
Table 5.1 - Hard Top Road with Traffic Volumes of Less Than 400 vpd .....	20
Table 5.2 - Road Sections With Deficient Widths (Interim Minimum Tolerable Standards Pavement, Shoulder or Platform).....	23
Table 6.1 – Summary of Road Network Condition Needs .....	32
Table 6.2 – Average Road Network Condition Summary .....	36
Table 6.3 – Qualitative Description of Road Network For Various PCI Ranges* .....	36
Table 6.4 – Typical Costs For Preventive Maintenance Treatments .....	39
Table 6.5 - Existing Road Maintenance Program Budgets.....	40

### Appendices

- A      Road Inventory and Assessment Database (Select Data) Including Mapping
- B      Summary Reports For Traffic Counting Program
- C      Parameters For Road Surface Assessment
- D      Road Improvements – Types, Bench Mark Costs, Improvement Timelines
- E      Standard Pavement Degradation Curves
- F      Summary Database of Road Condition Needs Including Mapping
- G      Inventory and Appraisal For Railway Level Crossings
- H      H1 - Five Year Capital Improvement Plan and Map  
H2 - Improvements Sorted By Priority
- I      Typical Preventive Maintenance Techniques For Pavement Management
- J      Maintenance Classification Requirements

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

## 1.0 Purpose and Methodology

This Study provides an update to the Road Needs Study in the Town of New Tecumseth, the results of a comprehensive vehicles traffic counting program, and recommends a pavement asset management program for the Town. Previous Road Needs Studies in the Town have used a Needs Appraisal program developed by the Ministry of Transportation (MTO). The purpose of the Needs program was to determine short and medium term rehabilitation needs of the municipality. A Pavement Management System (PMS) builds on the data provided in the Needs Appraisal, but undertakes a more detailed review of the condition of the roads and takes into consideration life-cycle analysis in establishing a program that includes regular maintenance, preventive maintenance, rehabilitation and ultimately, reconstruction.

This Road Needs Study, Vehicle Traffic Count Program, Pavement Asset Management Program is intended to:

- Provide a clear definition and inventory of the roads of the Town of New Tecumseth, establishing such parameters as the surface condition, traffic, geometry, drainage, surface type, improvement history, maintenance classification, Annual Average Daily Traffic (AADT) and design classification etc. for each road section. The inventory includes the development of a geo-database (ArcView) for the Town's roads, as well as related GIS maps.
- Undertake an inventory and review of the railway level crossings within the Town.
- Establish or estimate the daily traffic volumes on all roads and forecast ten year traffic volumes on all roads within the Town's jurisdiction.
- Develop a Road Condition assessment methodology for reviewing the needs of the Town's roads and undertake a detailed field review of their condition.
- Identify needs in the road system and rehabilitation methods to address those needs, including an estimate of the priority associated with this rehabilitation.
- Provide an estimate of the cost of required maintenance, rehabilitation or reconstruction work to address the road needs.
- Develop Pavement Asset Management program, to provide the most effective cost/benefit approach to maintaining and rehabilitating the roads, through a combination of maintenance and rehabilitation, with emphasis on the resurfacing of roads to delay their deterioration into NOW needs.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- Develop an annualized Five Year Capital Road Works Program, with a yearly listing of recommended projects, based on the prioritization considerations identified and budget considerations.

Previous Road Studies have focused on prioritizing roads from worst to best, resulting in a road management plan that addressed the worst condition roads first. However, the overall purpose of this present Road Study is to establish an integrated program of capital expenditures, so that the greatest benefit can be derived from available budgets. A broader, life-cycle based approach, is recommended to ensure that the right improvement is made to the right road and the right time, incorporating preventive maintenance, resurfacing, rehabilitation or reconstruction.

This Study uses modifications of various procedures for the evaluation of the condition of the roads and development of an Asset Management Plan, including the following:

- Manual for Condition Rating of Flexible Pavements – Distress Manifestations, Ministry of Transportation, 1989;
- Manual for Condition Rating of Surface-Treated Pavements – Distress Manifestations, Ministry of Transportation, 1989;
- Manual for Condition Rating of Gravel Surface Roads, Ministry of Transportation, 1989;
- The Formulations to Calculate Pavement Condition Indices, Ministry of Transportation, 2007;
- Inventory Manual for Municipal Roads, Ministry of Transportation, 1991;
- Inventory Manual for Municipal Roads and Railway Level Crossings (railway crossing appraisals only), Ministry of Transportation, 1988; and
- A Guide for Road and Bridge Asset Management Plan Development, Ontario Good Roads Association, 2011.

We gratefully acknowledge the assistance and contributions of the staff of the Town of New Tecumseth in the preparation of this Study.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

## 2.0 Previous Studies

The following previous Studies were reviewed and used as a basis for establishing parts of the database for the present Study, where applicable:

- Road Needs Study Update; AECOM, December 2008;
- PSAB database, Town of New Tecumseth, updated to 2012; and
- Traffic count data, (select rural roads, 2008), Town of New Tecumseth.

In addition the following documents were reviewed as background information for the preparation of this Study:

- Development Charges Background Study; Hemson Consulting Ltd, September 2010;
- Municipal Structure Inventory and Inspection, 2010; AECOM, March 2011;
- Standard Road Sections, Town of New Tecumseth;
- Traffic Impact Studies, various developments within the Town;
- Official Plan and various planning studies within the Town; and
- Cost estimates from recent Road Work tenders within the Town.

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

### 3.0 Road Inventory and Data Collection

A total of 344.986 km (centerline) of roads were inventoried, as summarized in the following tables:

**Table 3.1 - Summary by Surface Type**

Surface Type	Length (centerline km)	Length (lane km)	Surface Type By Lane Km (%)	Notes
Asphalt	213.563	436.830	62.44	Includes 14.806 km (centerline) of shared boundary roads. Includes 4.176 km (centerline) of MTO connecting link road and 1.125 km (centerline) of County connecting link road.
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Total	344.986	699.676	100	

**Table 3.2 - Summary by Roadside Environment**

Roadside Environment	Length (km)	Notes
Rural	238.036	
Semi-Urban	27.938	Includes 0.873 km of connecting link road.
Urban	79.012	Includes 12.715 km of un-assumed roads. Includes 4.428 km of connecting link road.
Total	344.986	

The present Road Study Update includes about 17.6 km of roads that were not included in the previous Road Study Update (2008). These roads primarily include roads which have been constructed to serve new development.

Spreadsheets of road section inventory data are included in Appendix A. The full database inventory and assessment is included in the digital GIS geo-database that will

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

be provided to the municipality in digital format and on hard copy road inventory data sheets. GIS mapping of the road sections is included in Appendix A.

Data related to the road sections was obtained through a field review in the Spring of 2012 and/or through discussion with Town staff. Where work has been completed to road sections in 2012 or 2013, the inventory data has been updated accordingly to maintain a current database moving forward from the date of this report.

### **3.1 Traffic Counts and Annual Average Daily Traffic**

The Annual Average Daily Traffic (AADT) provides one of the factors in the establishment of improvement requirements and the formulation of bench mark costs.

Ontario Traffic Inc. completed the following traffic counts:

- Sixty Five (65) Automatic Traffic Recorder (ATR) Urban Counts – 72 hour weekday vehicle classification and speed counts, taken in November 2011.
- One Hundred and Twenty Five (125) ATR Rural Counts – 72 hour weekday vehicle classification and speed counts, taken primarily in May 2012, with a couple of counts taken in June 2012, and one re-count occurring in July/August of 2012.

The summary reports for the traffic counts are attached in Appendix B. The full traffic count database has been forwarded under separate cover.

Traffic Count Data and Annual Average Daily Traffic (AADT) ranges have been estimated for all road sections, based on the updated traffic count data and a general assessment of the road network. The AADT for the new subdivisions are forecasts at build-out.

Forecasts of ten year traffic volumes have been made for all road sections, through the establishment of a ten year growth factor. The ten year growth factor was established through a review of the estimates provided from previous road studies and traffic studies, planning studies, road network considerations and traffic generation estimates based on tributary development areas.

The updated traffic data is shown on the detailed inventory spreadsheets and digital geo-database.

### **3.2 Maintenance Classifications and Maintenance Agreements**

Maintenance classifications also provide one of the factors in the establishment of improvement requirements and the formulation of bench mark costs. The maintenance classifications have been established for each road section, based on its traffic volumes

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

and traffic speeds, in accordance with Ontario Regulation 239/02 of the Municipal Act, 2001, as shown in the following table:

**Table 3.3 – Maintenance Classifications**

Average Annual Daily Traffic	Posted or Statutory Speed Limit (km/h)						
	100	90	80	70	60	50	40
15,000 or more	1	1	1	2	2	2	2
12,000 - 14,999	1	1	1	2	2	3	3
10,000 - 11,999	1	1	2	2	3	3	3
8,000 - 9,999	1	1	2	3	3	3	3
6,000 - 7,999	1	2	2	3	3	3	3
5,000 - 5,999	1	2	2	3	3	3	3
4,000 - 4,999	1	2	3	3	3	3	4
3,000 - 3,999	1	2	3	3	3	4	4
2,000 - 2,999	1	2	3	3	4	4	4
1,000 - 1,999	1	3	3	3	4	4	5
500 - 999	1	3	4	4	4	4	5
200 - 499	1	3	4	4	5	5	5
50 - 199	1	3	4	5	5	5	5
0 - 49	1	3	6	6	6	6	6

Since maintenance classifications are based on traffic volumes and traffic speeds, the additional criteria provides a more detailed assessment of operational requirements. Consideration of these operational parameters also supports the identification of the inter-relationship of maintenance activities and rehabilitation activities, and generally supports moving forward towards a pavement management system within the municipality. The updated maintenance classifications are shown in the detailed inventory sheets and digital geo-database.

The various maintenance classification requirements are summarized in Appendix J. The number of kilometres of the various maintenance classifications is summarized in the following table:

**Table 3.4 - Summary of Maintenance Classifications**

Maintenance Classification	Length of Road (centerline km)
1	0
2	4.813
3	71.244
4	188.902
5	74.371
6	5.656
Total	344.986

Boundary roads have been included in the roads inventoried as part of this study. A review of the agreements for these boundary roads indicates that capital cost

arrangements are not clearly delineated. However, it is understood that current practice is that maintenance and capital improvement for the Adjala-Tecumseth Townline boundary road to the north of County Road 1 is completed and funded by New Tecumseth, while maintenance and capital costs of the Adjala-Tecumseth Townline boundary road to the south of County Road 1 is completed and funded by Adjala-Tosorontio. For the 30<sup>th</sup> Sideroad of Adjala, the winter maintenance is completed by New Tecumseth and the summer maintenance by Adjala-Tosorontio, whereas capital improvements are assumed to be shared 50% between the two municipalities. It is recommended that the boundary road agreements be updated to reflect these arrangements and that boundary municipalities be advised of the results of this present Road Needs Study update.

### 3.3 Functional Classification and Design Classification

The Functional Classification and the Design Classification for the road sections is provided in the inventory database. The following classifications have been applied:

- Rural sections have been classified (Functional Class and Design Class) according to their Annual Average Daily Traffic (AADT).
- Urban sections have been classified (Functional Class and Design Class) according to their use (e.g., local, collector, arterial and residential or commercial/industrial).
- Semi-urban sections have a Functional Class based on their use and Design Class based on their AADT.

The descriptions of the Functional Classifications and Design Classifications are summarized in the following table.

**Table 3.5 - Functional Classifications and Design Classifications**

Roadside Environment	Classification	Code	Description
Urban	Functional Classification and Design Classification	L/R	Local Residential
		LCI	Local Commercial or Industrial
		C/R	Collector Residential
		CCI	Collector Commercial or Industrial
		ART	Arterial
		4ART	4-lane Arterial
		5ART	5-lane Arterial
Semi-Urban	Functional Classification	L/R	Local Residential
		LCI	Local Commercial or Industrial

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

Roadside Environment	Classification	Code	Description
		C/R	Collector Residential
		CCI	Collector Commercial or Industrial
		ART	Arterial
Semi-Urban	Design Classification	100	01-49 AADT
		200	50-199 AADT
		300	200-399 AADT
		400	400-999 AADT
		500	1000-1999 AADT
		600	2000-2999 AADT
		700	3000-3999 AADT
		800	4000 AADT and over
Rural	Functional Classification and Design Classification	100	01-49 AADT
		200	50-199 AADT
		300	200-399 AADT
		400	400-999 AADT
		500	1000-1999 AADT
		600	2000-2999 AADT
		700	3000-3999 AADT
		800	4000 AADT and over

The various classifications have been used to establish improvement types and costs as discussed in a subsequent section to this report.

### 3.4 Road Surface Assessment

All roads have been reviewed in April, 2012, according to various surface distress types, and the density and severity of these distresses have been identified. The types of surface distresses are summarized in the following table:

**Table 3.6 - Surface Distresses**

Asphalt Roads	Surface Treated Roads	Gravel Roads
Ravelling	Cover Aggregate Loss	Flat/reverse Crown
Flushing	Flushing	Loose Gravel
Rippling and Shoving	Rippling and Shoving	Dust
Wheel Track Rutting	Wheel Track Rutting	Break-up
Distortion	Distortion	Washboarding
Longitudinal Cracking – wheel track, single/multiple or alligator	Streaking	Rutting

Asphalt Roads	Surface Treated Roads	Gravel Roads
Centerline Cracking – single/multiple or alligator	Alligator Cracking	Distortion
Edge Cracking – single/multiple or alligator	Edge Cracking	Potholes
Transverse Cracking – single/multiple or alligator	Edge Break	
Longitudinal, Meander or Midlane Cracking	Transverse Cracking	
Random Cracking	Longitudinal Cracking	
	Potholing	

Weighting factors are assigned to the various distress types as a function of surface type (asphalt, surface treatment, gravel). Weighting reflects the importance of the distress type (i.e., causative factors).

Density factors (i.e., percentage of road section affected) and severity factors (i.e., range from very slight to very severe) have been assigned to the distress types for each road section, based on the visual assessment of the road surfaces in the field.

A listing of the various factors is included in Appendix C.

The cumulative impacts of the various surface distresses are established through an empirical formula to establish the overall Distress Manifestation Index (DMI). Ontario Good Roads has now adopted the formulae developed by the Ministry of Transportation for this purpose, which are as follows:

- Asphalt: DMI =  $10 \times (208 - \text{summation of } W \times (D+S)/208)$ ; and
- Surface Treatment, Gravel or Earth: DMI =  $10 \times (135 - \text{summation of } W \times (D+S))/135$ .

The higher the DMI number, the better the surface condition of the road.

A Ride Condition Rating has also been estimated for each road section. The Ride Condition Rating is a qualitative visual assessment, with a rating scale of 1 to 10, as shown in the following table:

**Table 3.7 - Ride Condition Rating (RCR)**

Ride Condition Rating	RCR Factor
Very Poor	1
Poor	2 to 3
Fair	4 to 6
Good	7 to 9
Very Good	10

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

As shown in the table, the higher the RCR factor the smoother the ride.

A Pavement Condition Index (PCI) has been established for each road section, based on the distresses and ride condition ratings, in accordance with empirical formulae developed by the MTO, as follows:

- Asphalt:  $PCI = 13.75 + (9 \times DMI) - (7.5 \times e^{(8.5-RCR)/3.02})$ ; and
  - Surface Treatment or Gravel or Earth:  $PCI = 12.75 + (9 \times DMI) - (5.5 \times e^{(9.94-RCR)/3.46})$ .
- Where DMI = Distress Manifestation Index and e = the natural exponential.

The PCI takes into account surface distresses and ride comfort, resulting in a rating of between 1 and 100. Higher PCI ratings reflect better road conditions. The PCI provides one of the factors in the establishment of improvement needs and bench mark costs, on a network level basis, while providing a tool for more detailed assessment of individual road sections in future preliminary design reviews or as part of a Pavement Management Program. The assessment is detailed to allow for future monitoring and reproducibility, as well as to provide an indication of causative factors (e.g., load impacts, weathering, materials, design etc.).

### **3.5 Improvement Types and Bench Mark Costs**

Bench mark unit costs (i.e., per metre of road) have been developed for the various road rehabilitation methods identified, based on the following:

- Review of standard road cross sections for the Town of New Tecumseth, taking into account cross section type, depending upon AADT or design classifications.
- Review of unit prices from recent construction contracts within the Town.
- Cost estimates based on estimated quantities for the types of rehabilitation methods defined in Appendix D.

A number of bench mark costs have been developed for each rehabilitation method, dependent upon the following road section parameters:

- Roadside Environment – urban, semi-urban, rural;
- Road Surface Type – gravel, surface treatment, asphalt;
- Maintenance Class - based on AADT and posted speed;
- Pavement Condition Index (PCI) Range – based on surface condition (distresses and ride comfort rating); and
- AADT or Design Classification of the road – traffic range categories for rural and semi-urban roads and arterial/collector/local designations for urban roads.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

Based on the above considerations, the bench mark costs are summarized in Appendix D, including definitions of the improvement types. The improvement types and costs generally reflect the life-cycle degradation curves for the roads, with more extensive rehabilitation being required as the pavement surface and base deteriorates due to traffic loading and weathering. These are default costs, for use in planning budgets on a network level basis. However, there are many different types of rehabilitation strategies that may be applied to any particular section. Therefore actual costs will vary on a section-by-section basis, depending on the conditions established at the time of detailed design. Where it is anticipated that the standard bench mark costs may not apply for any particular road segment, modified bench mark costs have been used to establish the cost estimates for improvements.

## **4.0 Surface Condition Needs As A Method For Establishing Road Network Improvements**

### **4.1 Basis of Establishing a Pavement Management Program**

The Town's current road rehabilitation methods include the following:

- Hard Top Road Rehabilitation
  - Urban - Grind and overlay;
  - Rural - Full depth surface replacement, (pulverizing), including 100 mm depth of Granular A; and
  - Partial or full reconstruction.
- Gravel Road Rehabilitation
  - Gravel overlay (75 to 150 mm depth of maintenance gravel – Granular A or Granular M), plus spot base improvement.

Cost-effective expenditures to address road condition needs require that the right rehabilitation be applied to the right road at the right time. Typical standard pavement degradation curves (see Appendix E) show that, to be the most cost-effective, timely expenditures should be made to preventive maintenance or minor corrective rehabilitation, rather than allowing further degradation requiring reconstruction or emergency maintenance. The typical curves are based on life-cycle activities, as a function of surface types and maintenance classifications. Consideration of maintenance classifications provides a sensitivity measure of degradation and rehabilitation requirements to traffic volumes and traffic speeds, while providing a link between capital maintenance needs and routine maintenance monitoring/repairs.

The typical degradation curves may be adjusted, within a Pavement Management System, to reflect the Town's requirements, including the effects of the following:

- Assumed life-cycle activities (type and timing). Typical life-cycle activities include crack sealing and spot base repairs for asphalt roads, double surface treatment for surface treatment roads and routine maintenance gravel for gravel roads.
- Pavement thickness or subgrade strength.
- Pavement Condition triggers for partial reconstruction, full reconstruction and minimum condition (i.e., end of useful life). These triggers are consistent with the decision matrix methodology (See Appendix D, which establishes life-cycle activities for various PCI ranges, based on surface type and maintenance class).
- Actual degradation based on ongoing future monitoring (i.e., PCI history and improvement history is tracked in the database and can be plotted on the curves).

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

The Town's Pavement Management Program should include a multi-cycle pavement condition rehabilitation strategy. Therefore it is recommended this program include the following:

- Identification of committed projects that may not be triggered directly by pavement condition – e.g., due to safety-related issues, grouping of projects (economies of scale), other planned or committed work (e.g., Development Charges projects, utility replacement etc.), Level of Service improvements, improvements required to meet tolerable standards etc.
- Consideration of PCI relative to partial reconstruction trigger or full reconstruction trigger, taking into account rehabilitation history and age of pavement. The most cost-effective rehabilitation will typically be applied prior to these more extensive interventions being required. Pavement performance prediction may be used to prioritize and select candidate sections for treatment. If two projects provide the same benefits as to extending pavement life, priority will typically be given to the section with higher traffic volumes or higher traffic speeds, as indicated by the maintenance class.
- Consideration of sections with full reconstruction needs – Sections with very low PCI or near the end of their useful lives, may create safety or maintenance concerns and therefore may be prioritized for improvement. These sections are typically given the highest priority improvement, due to the immediate issues that are addressed.
- Establish budgets for preventive maintenance, general maintenance and resurfacing, capital rehabilitation and reconstruction. Integrate budgets with budgets for structure improvements and other municipal projects.
- Analyze life-cycle priorities, based on asset management considerations (i.e. Priority Guide Numbers, PGN), which takes into account the condition of the road, its cost for improvement and the traffic it services.
- Consider the following funding scenarios (based on PCI ratings):
  - Optimum funding – to predetermined adequacy rating;
  - Minimum funding – maintain current adequacy rating;
  - Existing funding – forecast impacts on adequacy rating; and
  - Modified funding in response to Council input and direction.
- Undertake timely and detailed pavement condition evaluation (i.e., every two years for high traffic roads (> 4000 vpd) or every 3 years for lower traffic roads (<4000 vpd).

## 4.2 Road Condition Assessment

The road improvement needs and cost estimates, to address condition needs, have been established for the overall road network, as summarized in Appendix F. The improvement types are based on the logic tables shown in Appendix D, which take into

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

account the surface type, roadside environment, maintenance class, pavement condition index and AADT or design classification of the roads. The methodology applies different factors and equations to the different surface types – asphalt, surface treatment and gravel.

The PCI trigger values for improvement types have been based on typical industry values and on our experience, applicable to planning level network analysis. The Municipality may adjust these trigger values if they desire alternate triggers for rehabilitation or reconstruction, or if more detailed information becomes available as part of the development of a Pavement Management Program within the Town.

We note that the Town's current practice is not to reconstruct gravel roads based on their condition assessment, unless they are being upgraded to a hard top surface. Instead, regular maintenance gravel additions, together with spot base improvements, are the preferred strategy to address gravel road condition issues.

Accurate establishment of pavement age, together with ongoing monitoring of pavement deterioration, are required to confirm the PCI trigger values and proposed life-cycle improvements. Preliminary ages of the surface and base for each section have been included in the database, based on information provided by the Town (i.e. data summaries compiled for the Public Sector Accounting Board, PSAB).

The effectiveness of improvements may be analyzed, according to an empirical Priority Guide Number (PGN) formula developed by the MTO, as follows:

$$\text{PGN} = (100-\text{PCI})/(100 \times (\text{cost per km})) \times (\text{Traffic Count} + \text{Ten Year Traffic})/2 \times \text{LCF}$$

- where Life-cycle Factor (LCF) = 3650 for ten years or 7300 for twenty years.; and
- the ten year LCF is applied to resurfacing (R) projects and the twenty year LCF is applied to the following improvement projects:
  - Pulverize and Resurface (PR);
  - Base and Surface (BS);
  - Reconstruction (REC); and
  - Reconstruction Including Storm Sewer (RSS).

The Priority Guide Number (PGN) formulae take into account the condition assessment, the traffic counts, the improvement costs and the improvement types, providing life-cycle considerations for these parameters. The larger the PGN, the higher the priority of the road segment improvement relative to its condition, the traffic it is serving and the cost of improving the section, to provide the most service for the dollar expended. **While the PCI is a factor in the PGN, this methodology does not result in prioritization of the “worst-first” roads, but rather is based on life-cycle considerations.**

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

The identification of road improvement needs/costs takes into account the maintenance classification and design classification of the road, as well as its surface condition. It is recommended that the time of improvement identified be based on the following considerations:

- A simple resurfacing of a road, while it is still in good condition (i.e., PCI range of about 70 to 85), may be the most cost effective approach, when considered over its full life-cycle. However, considering budget limitations, these roads will be identified as 6 to 10 year needs, under the assumption that the roads will generally be allowed to deteriorate to a condition where more extensive surface rehabilitation will be required. Maintenance operations (e.g., crack sealing, dynapatch etc.) at this stage has been found to be the most effective (i.e., when the asphalt is still in good condition), in order to lengthen the time period before the road surface deteriorates to a point where the base is impacted.
- Once the road surface has deteriorated to the point where more extensive surface rehabilitation is required, there will initially be a period over which the surface may be allowed to deteriorate further before the base is impacted. These roads will be identified as 1 to 5 year needs. Maintenance operations (e.g., crack sealing, dynapatch etc.) may lengthen the time period before the road surface deteriorates to a point where the base is impacted, depending on the severity of the cracking.
- Eventually the road surface will deteriorate sufficiently to justify its rehabilitation, to reduce the potential for more extensive base rehabilitation work being required. These roads have been identified as NOW needs and will typically have the highest priority since they are at the transition to the period in the life-cycle where more extensive base improvements may be required.
- If allowed to deteriorate further, more extensive base improvements may be required (i.e., base and surface rehabilitation) or full reconstruction. While these are both considered to be NOW needs, their prioritization should be considered on a case-by-case basis, taking into consideration the potential for further base deterioration, traffic volumes, drive-ability, safety etc. The ongoing protection of the road base is important to protect against rapid deterioration of the road section. Where road sections have very poor surfaces, and where traffic volumes and/or speeds are high, a minimum threshold may be reached and these sections should be considered for improvement.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- The improvement history of any particular road section is also an important consideration in assessing its priority for improvement. While some data is available (e.g., PSAB data), this improvement database has not yet been sufficiently developed to allow it to be fully utilized in this regard. It is recommended that the Town continue to update this information, including previous upgrade work completed, to assist in making decisions for prioritizing road sections for improvement.
- Prioritization of roads for improvement should also consider their integration into other planning constraints/opportunities (e.g., major servicing upgrades, Development Charges projects etc.). These factors have been included in the notes in the database, for reference in establishing budgets and scheduling projects.

## 5.0 Consideration of Other Needs For Establishing Road Network Improvements

In addition to road condition (PCI), this study has considered a number of other needs that may trigger improvements being required to any particular road segment. The other needs considered include the following:

- Geometric Needs – including deficiencies in horizontal or vertical alignment or surface width.
- Surface Type Needs – based on traffic volumes, truck volumes or roadside environment (i.e., rural vs. urban/semi-urban).
- Road Section Type – based on the need to upgrade cross section type from a semi-urban cross section to an urban cross section.
- Travel Platform and Shoulder Needs – based on the need to widen the road platform or road shoulders to meet operational requirements.
- Traffic Capacity – based on traffic operations at intersections and mid-block.
- Drainage Needs – based on the frequency of flooding onto the roadway or the adequacy of the drainage system.
- Maintenance Considerations.

It is recommended that these Road Needs be considered independently, rather than collectively (i.e., as would be the case in the establishment of a single Road Needs Index). The benefits of this approach include the following:

- Allows for a better integration into a pavement management system, where road condition will form the primary trigger for improvements.
- Clarity in establishing the time of Needs, reason for improvement and appropriate response.

The standards (i.e., tolerable or design standards) associated with these Road Needs are based on the best practices as set out in the following document:

- Inventory Manual for Municipal Roads; prepared by the Ministry of Transportation (MTO), Municipal Transportation Division, Municipal Roads Branch; dated February 1991.

## 5.1 Geometrics

The geometric needs for any particular road section is established by a review of the following:

- The number of substandard horizontal curves and/or substandard stopping sight distances, resulting from horizontal curves.
- The number of substandard vertical curves and/or substandard stopping sight distances, resulting from vertical curves.
- Whether substandard curves represent immediate safety issues, or whether upgrading can be considered at the time of future improvements to address other needs.

Geometric deficiencies are defined as curves which do not meet design speeds of 10 km/hr. over posted speeds. However, the MTO's *Inventory Manual For Municipal Roads* (MTO, 1991) defines curves as tolerable when they meet design speeds of 5 to 15 km/hr. below the posted speeds (depending on the posted speeds).

No horizontal or vertical deficiencies (i.e., curves and sight distances) were noted in the previous road study and none were noted in the current field reviews at the macro level considered in this study. Therefore all curves are considered to be adequate for resurfacing projects. However, for projects requiring reconstruction, it is recommended that curves be reviewed as part of any detailed design work, prior to implementation of such projects.

## 5.2 Surface Type

Surface type should be appropriately designed to accommodate the volume of traffic and type of traffic, according to the following MTO guidelines (*Inventory Manual for Municipal Roads*, Ministry of Transportation, 1991):

- Gravel roads are tolerable for traffic volumes of less than 400 vpd, however, upgrades to hard top may be considered if roadside environment is semi-urban.
- Surface treated roads are tolerable for traffic volumes of between 400 vpd and 999 vpd.
- Asphalt roads should be provided where traffic volumes exceed 1000 vpd.
- Upgrading of gravel roads or surface treated roads to asphalt may be considered for roads experiencing high truck volumes or high truck loading or where high maintenance is an issue. Truck volumes typically range from a low of 3% on low volume residential streets to a high of 15%, or more, on arterials and collector roadways. For low volume rural roads, this study suggests that surface upgrading may be economical to consider where the percentage of trucks exceed 10% of the AADT and is over 30 vpd. The only section that presently meets this criteria is 11<sup>th</sup>

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

Line, between the Adjala-Tecumseth Townline and Tottenham Road (ID 16707), which carries about 38 trucks/day (22% of AADT).

The above tolerable standards are used as a guide to identify needs based solely on surface type. The roads that have been identified with such needs are as follows:

Gravel Roads In Semi-Urban Areas and/or With AADT > 400 vpd

- ID 16128B – Parsons Road from 450 m east of Dufferin Street to Albert Street;
- ID 16237 – Train Street from 13<sup>th</sup> Line to North End;
- ID 16019 – Nelson Street East from East Avenue to 0.06 km east of East Avenue;
- ID 17232B – Dillane Street West from 75 m west of Queen Street to West End Turnaround;
- ID 16995A – Sideroad 18 from 5<sup>th</sup> Line to 0.85 km north of 5<sup>th</sup> Line; and
- ID 15918B – Church Street from 0.04 km north of Hussey Street to North End.

Surface Treated Roads With AADT > 1000 vpd

- ID 17017 – Sideroad 15 from 6<sup>th</sup> Line to 5<sup>th</sup> Line;
- A number of road sections on the Adjala-Tecumseth Townline were also identified as having needs under this category (e.g., ID 17113, 17081, 17023, 17045) however, these roads are considered to be under the jurisdiction of Adjala-Tecumseth.

Surface Treated Roads with Traffic > 2000 vpd

- ID 16001A – 14<sup>th</sup> Line from 748 m east of 10<sup>th</sup> Sideroad to 15<sup>th</sup> Sideroad;
- ID 16001B – 14<sup>th</sup> Line from 10<sup>th</sup> Sideroad to 748 m east of 10<sup>th</sup> Sideroad;
- ID 16649 – Sideroad 10 from 10<sup>th</sup> Line to 11<sup>th</sup> Line; and
- ID 16736B – Sideroad 10 from 0.35 km north of Lily Street to 10<sup>th</sup> Line.

The gravel roads in semi-urban areas are generally short, dead-end roads, serving a very small number of houses and therefore no immediate upgrading requirements are recommended. For the surface treated roads, once their condition triggers the need to upgrade these roads to asphalt, this surface type deficiency should be addressed.

Consideration may also be given to allowing surfaces to revert to gravel, where traffic volumes or roadside environment do not warrant a hard top surface, and therefore the added cost of improving these deteriorated surfaces may not be justified if budgets are limited, unless other considerations also apply. Where improvements are required to these rural, low traffic, hard top roads, reversion to a gravel surface may be considered, unless other factors (e.g. network hardtop connectivity, traffic growth forecasts, high maintenance requirements etc.) dictate that these roads should have a higher class surface. However, it should be noted that the provision of a gravel surface for roads with AADT between 200 and 400 vpd only provides a tolerable standard, whereas a desirable design standard for such roads is a hard top surface, subject to budget availability.

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

Hard top rural roads that have traffic volumes of less than 400 vpd include the following:

**Table 5.1 - Hard Top Road with Traffic Volumes of Less Than 400 vpd**

ID	Road	AADT (vpd)	Condition (PCI)
17080	6 <sup>th</sup> Line from Adjala-Tecumseth Townline to Tottenham Road	211	97.4
17287A*	2 <sup>nd</sup> Line from 10 <sup>th</sup> Sideroad to 1.88 km East	215	96.3
17246	3 <sup>rd</sup> Line from 10 <sup>th</sup> Sideroad to 15 <sup>th</sup> Sideroad	238	74.9
16582B**	12 <sup>th</sup> Line from 1.75 km east of Townline to Tottenham Road	240	62.9
16417A and 16417B	12 <sup>th</sup> Line from Tottenham Road to 10 <sup>th</sup> Sideroad	245	49.7 and 75.6
16252	30 <sup>th</sup> Sideroad from Industrial Parkway to Town Boundary	250	86.2
17329	2 <sup>nd</sup> Line from Townline to Tottenham Road	257	53.2
17298	3 <sup>rd</sup> Line from Townline to Tottenham Road	297	80.2
17031	6 <sup>th</sup> Line from Tecumseth Heights Dive to 10 <sup>th</sup> Sideroad	305	96.3
17281	3 <sup>rd</sup> Line from Tottenham Road to 10 <sup>th</sup> Sideroad	336	75.9
17306	2 <sup>nd</sup> Line from Tottenham Road to 10 <sup>th</sup> Sideroad	350	93.8

\* The 2nd Line (ID 17287A) services a manufacturing plant and therefore a hard top surface should be retained on this section.

\*\*The 12th Line (ID16582B) services the Canadian Pacific shunting yard and therefore a hard top surface should be retained on this section.

### 5.3 Road Section Type

The upgrading of local semi-urban roads to urban cross sections (i.e., RSS improvement) should be considered on a case-by-case basis, taking into account factors such as the following:

- Condition of the road. Where reconstruction of a semi-urban road is required, consideration has been made to upgrading to an urban cross section.
- Whether adjacent development (i.e. existing or planned) is residential or industrial/commercial, and whether it is front lotting or rear/side lotting.
- Location of the road – roads in the smaller urban centres may be more conducive to maintaining the ambiance associated with semi-urban cross sections.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- Maintenance considerations – erosion etc. associated with open ditches.
- Functional road classifications, traffic volumes and pedestrian/cyclist requirements.
- Future development considerations, increases in traffic volumes and inclusion in Development Charges.
- Public perception of the need for upgrading.

Due to budget constraints it is not practical to upgrade all semi-urban roads, nor is such upgrading necessary, and therefore each section will be considered on its own merits as these projects proceed. Approximately 3376 metres of road has been identified as semi-urban cross sections presently and which could be considered for upgrading in the next five years. Only those semi-urban roads which require reconstruction (i.e., very low PCI values), or those roads which are part of Development Charges projects, have been considered for upgrading to urban cross sections. Reference should be made to the summary of road condition needs (Appendix F) for identification of road sections proposed for upgrading (i.e., from semi-urban cross sections to urban cross sections).

## 5.4 Travel Surface Width and Shoulder Width

### 5.4.1 Travel Surface Width

Minimum tolerable travel surface widths have been reviewed according to the following guidelines:

- Class 2, 3 or Class 4 roads – 6.5 m width for > 2000 vpd or >15% trucks; otherwise 6.0 m width;
- Class 5 roads – 6.5 m width for >15% trucks; otherwise 6.0 m width; and
- Class 6 roads – 5.5 m width.

The Town's rural road design standard presently includes a 7.0 m travel width (6.5 metre paved road and 0.25 m partially paved shoulder each side), plus 1.2 metre gravel shoulders and 0.6 metre gravel rounding each side (i.e., total of 10.6 m platform width, including rounding).

There are no Class 2, 3, 4 or 5 roads that do not meet the minimum travel surface width guidelines. A number of Class 6 roads do not presently meet the minimum travel surface width guidelines and these are summarized as follows:

#### Class 6 Roads That Do Not Meet Minimum Travel Surface Width Guidelines of 5.5 m:

- ID 16237 – Train Street from 13<sup>th</sup> Line to North End (4.0 m);
- ID 16012 – Fletcher Lane from Fletcher Crescent to North End (3.8 m);
- ID 16150 – 12<sup>th</sup> Line from 20<sup>th</sup> Sideroad to East Town Boundary (5.0 m);
- ID 15827 – Kindlers Road from 0.3 km south of Highway 89 to East End Turnaround (4.4 m);

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- ID 15828- Kindlers Road from Highway 89 to 0.3 km south of Highway 89 (4.4 m);
- ID 15798A – Wesson Road from Highway 89 to 0.26 km South of Highway 89 (4.0 m) (this section is scheduled for an upgrade as a Development Charges project); and
- ID 15798B – Wesson Road from 0.26 km south of Highway 89 to East End Checkerboard (4.0 m).

While these Class 6 roads are considered to be NOW needs with respect to surface width, they carry low traffic volumes (i.e., < 50 vpd). Considering the low traffic volumes on the roads identified with NOW width deficiencies, it is expected that these roads will not be widened until upgrading work is proposed to address other issues (e.g., road condition).

#### 5.4.2 Shoulder Width

For rural hard top roads the provision of sufficient shoulder widths is necessary to ensure proper support for the pavement surface and to ensure a sufficient buffer between traffic and embankment slopes to maintain safety. For higher traffic volumes a wider shoulder also may be provided to allow for space for disabled vehicles. Where shoulders are partially paved sufficient shoulders should be provided for pavement edge support and sufficient platform width should be provided to meet traffic lane requirements. Edge marking is recommended for higher volume roadways to delineate partially paved or fully paved shoulders.

The Town's typical section for new hard top rural roads specifies an asphalt surface of 7.0 metres, plus 1.2 metres of gravel shoulder and 0.6 metres of rounding on each side (i.e., total platform width of 10.6 metres, including rounding). However, for resurfacing projects the Town's tolerable standard includes an asphalt surface of 7.0 metres and gravel shoulders of 0.8 metres on each side. MTO standards specify a minimum tolerable shoulder of 0.5 metres for rural roads, which essentially meets the pavement edge support requirements. However, MTO's desirable design standards for various traffic volumes are as follows:

MTO Desirable Shoulder Width:

- Traffic volumes < 1000 vpd – 1.5 m shoulders;
- Traffic volumes 1000 to 3000 vpd – 2.5 m shoulders; and
- Traffic volumes > 3000 vpd – 3.0 m shoulders.

Therefore, with respect to travel surface and shoulder widths, a number of roads do not meet the Town's present design standards or resurfacing standards. Where roads are rehabilitated or resurfaced it is recommended that these standards be met. However, in the interim, it is suggested that a minimum tolerable condition would include a pavement

width of 6.5 metres plus 0.5 metres of gravel shoulders on each side (i.e., total platform width of 7.5 metres).

Based on this criteria, the roads that have been identified to have deficient pavement widths and/or deficient shoulder width and/or deficient platform widths are summarized in the following table:

**Table 5.2 - Road Sections With Deficient Widths (Interim Minimum Tolerable Standards: Pavement, Shoulder or Platform)**

ID	Road	Current AADT (vpd)	AADT Traffic Range (vpd)	Pavement Width (metres) (min. 6.5m)	Gravel Shoulder Width (metres each side) (min. 0.5 m)	Platform Width (metres) (min. 7.5m)
16001 B	14 <sup>th</sup> Line East, from 1.8 km west of 15 <sup>th</sup> Sideroad to 10 <sup>th</sup> Sideroad	2950	2000-2999	<b>6.3</b>	0.5	<b>7.3</b>
16001 A	14 <sup>th</sup> Line, from 15 <sup>th</sup> Sideroad to 1.8 km. west of 15 <sup>th</sup> Sideroad	2933	2000-2999	<b>6.3</b>	0.5	<b>7.3</b>
16936 A	7 <sup>th</sup> Line, from 18 <sup>th</sup> Sideroad to 0.27 km west of 18 <sup>th</sup> Sideroad	1220	1000-1999	6.7	<b>0.4</b>	7.5
16846	7 <sup>th</sup> Line, from 20 <sup>th</sup> Sideroad to East Town Boundary	1509	1000-1999	<b>6.0</b>	0.8	7.6
17022	7 <sup>th</sup> Line, from Adjala-Tecumseth Townline to Tottenham Road	492	400-999	6.7	<b>0.3</b>	<b>7.3</b>
16988 B	7 <sup>th</sup> Line, from 0.9 km west of 10 <sup>th</sup> Sideroad to Tottenham Road	863	400-999	6.7	<b>0.4</b>	7.5
16988 A	7 <sup>th</sup> Line, from 10 <sup>th</sup> Sideroad to 0.9 km west of 10 <sup>th</sup> Sideroad	865	400-999	6.7	<b>0.4</b>	7.5

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

ID	Road	Current AADT (vpd)	AADT Traffic Range (vpd)	Pavement Width (metres) (min. 6.5m)	Gravel Shoulder Width (metres each side) (min. 0.5 m)	Platform Width (metres) (min. 7.5m)
16107	13 <sup>th</sup> Line, from 15 <sup>th</sup> Sideroad to 20 <sup>th</sup> Sideroad	484	400-999	6.7	0.4	7.5
17034	6 <sup>th</sup> Line, from Tottenham Road to Tecumseth Heights Drive	495	400-999	<b>6.0</b>	0.5	<b>7.0</b>
16945	9 <sup>th</sup> Line, from Adjala-Tecumseth Townline to Tottenham Road	845	400-999	<b>6.0</b>	0.5	<b>7.0</b>
16692	9 <sup>th</sup> Line, from 15 <sup>th</sup> Sideroad to 18 <sup>th</sup> Sideroad	729	400-999	<b>6.0</b>	0.8	7.6
16636	9 <sup>th</sup> Line, from 8 <sup>th</sup> Sideroad to 20 <sup>th</sup> Sideroad	730	400-999	<b>6.0</b>	0.8	7.6
16582 A	12 Line, from Tottenham Road to 1.2 km west of Tottenham Road	237	200-399	<b>6.0</b>	0.5	<b>7.0</b>
16337	11 <sup>th</sup> Line, from 15 <sup>th</sup> Sideroad to 20 <sup>th</sup> Sideroad	120	50-199	<b>6.0</b>	0.5	<b>7.0</b>
16297 B	12 <sup>th</sup> Line, from 1.3 km west of 15 <sup>th</sup> Sideroad to 10 <sup>th</sup> Sideroad	90	50-199	<b>6.0</b>	0.8	7.6

The roads in the above table have been ordered from highest traffic volumes to lowest traffic volumes. From a road width perspective, the highest priority for widening would be those roads that have the highest traffic and width deficiency, unless the lower traffic roads have insufficient widths for pavement edge support. Where road sections are scheduled for improvement to address other deficiencies, consideration should be given to widening the roads to meet acceptable standards.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

## 5.5 Traffic Capacity

Minimum traffic Level of Service (LOS) is reviewed according to the following guidelines:

- Mid-block capacity – minimum LOS E where Design Hour Volume (DHV) is 1200 vph, or greater, and traffic signal spacing is over 1 km; and
- Intersection capacity – minimum LOS E where traffic signal spacing is 1 km or less.

Urban roads, with low seasonal variation, typically have Design Hour Volumes (DHV) of between 8% and 12% of the Average Annual Daily Traffic (AADT). For the purposes of this study it has been assumed that a DHV of 1200 vph will equate to about 12000 vpd (two-way traffic). For DHV of less than 1200 vph, the MTO methodology does not consider the traffic volumes to be significant from a traffic capacity perspective.

Sections of the connecting link through Alliston (i.e., Victoria Street, King Street and Young Street) presently carry over 15000 vpd. For the purposes of this study, it has been estimated that traffic may grow by 30% along this corridor in the next ten years, which is accordance with traffic growth forecasts made in a previous traffic study (Traffic Study, Victoria Street (Alliston) From CPR Crossing to Sir Frederick Banting Road; Ainley Group; November 2004). The Town's Development Charges Background Study (2013) has identified the need to upgrade Victoria Street to 4 lanes as follows:

Road Sections Proposed For Upgrading To Four Lanes In The Ten Year Horizon:

- Horizon Period 2016-2020 – (Sections ID 16005, 15998, 15994, 15985, 15974, 15972, 15965, 15960, 15940) – Victoria Street East from Dufferin Street to Sir Frederick Banting Road.

The capacity of the connecting link corridor through Alliston is also controlled by the capacity at the intersections, due to the density of signalized intersections. A detailed review of these intersection capacities is beyond the scope of this study. However, interim intersection improvements have been considered by the previously noted Victoria Street traffic study (Ainley Group, 2004). Given the overall traffic volumes, and the potential for significant traffic growth, it is recommended that these intersections continue to be monitored as development occurs, and that detailed operational analysis be completed to confirm the signal timing, signal coordination and lane configuration to maintain the desirable LOS E.

Traffic on part of Industrial Parkway (ID16233B), between the Honda Entrance and Tottenham Road (Alliston) is presently about 10,000 vpd, with a forecast to grow to over 13,000 vpd in the ten year horizon. Traffic on Industrial Parkway (ID16233A), between Church Street and the Honda Entrance is presently about 6800 vpd, with forecast to grow to about 8800 vpd in the ten year horizon. These sections of road are already four

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

lanes and therefore capacity is not likely to be a concern. Industrial Parkway becomes a two-lane facility about 200 metres to the west of Church Street. This two-lane section is sufficient to carry the 6000 to 7000 vpd forecast traffic in this area.

Traffic on Queen Street (i.e., north-south County Road link through Tottenham) is presently in the range of 10,000 vpd, with a forecast to grow to about 13,000 vpd in the ten year horizon. The Queen Street cross section has been widened to four lanes in the area of the signalized intersections and traffic operations are presently acceptable along this corridor. It is understood that the County is presently completing a Class Environmental Assessment study to confirm truck bypass requirements for Tottenham. In addition there has been preliminary planning associated with a land development project that may consider traffic signals at the intersection of County Road 10 and 3<sup>rd</sup> Line to the south of Tottenham. Traffic estimates in this present study should be updated and coordinated with these other studies once they become available.

The Town's Development Charges Background Study has identified the need to widen 14<sup>th</sup> Line, between County Road 10 and Sideroad 10, to four lanes in the 2021 to 2025 time horizon. These sections (ID 16182 and ID16114) presently have traffic volumes of about 2800 vpd, but these volumes are forecasted to increase substantially due to ongoing development in this area, as well as increases in traffic from the Industrial Development Area (OPA 29).

## 5.6 Drainage

In the field review completed for this study, drainage issues (i.e., flooding potential or ponding water) were noted for some road segments. The previous road study work (2008) identified a number of road sections that had drainage needs in the 1 to 5 year or 6 to 10 year time period, although no drainage needs were identified in the NOW timeframe. While the drainage issues identified in this present study could be considered to be NOW needs, insufficient information is available to confirm the costs or priority for such improvements. Notes have been included in the database to identify areas of drainage concerns. Where road works are proposed in these areas, it is recommended that additional investigations be completed to confirm the requirements for drainage improvements. However, it is also recognized that the practicality of achieving sufficient drainage outlets may constrain the opportunities to improve roads in areas which flood periodically. Depending on traffic requirements in those areas, it may be more cost-effective to continue to undertake additional Spring maintenance, on a yearly basis, to address such drainage issues.

Of particular note is the significant flooding that occurs seasonally in the area of 12<sup>th</sup> Line and Sideroad 15 (sections 16242, 16338B, 16297B). Further study is recommended to determine the preferred option of addressing this flooding issue, before proceeding with any improvements.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

There are a number of road sections in the Town that would benefit from improved ditching in order to minimize drainage impacts on the roads in those areas (e.g., Beech Street in Alliston, section 16126).

## 5.7 Maintenance Considerations

Maintenance demand (i.e., low, average, high) can be considered in the prioritization of road sections for improvements. The previous road study work (2008) identified a number of road sections where road maintenance was high. This information has been carried forward in this present study, modified to reflect areas where improvements have been made since the previous study. Town staff has also identified the locations of high maintenance and the database has been updated to reflect these current assessments. The road sections that have been identified to have high maintenance requirements are identified in Appendix A.

## 5.8 Coordination With Other Projects

Road and servicing projects that have been proposed in the Town's Development Charges Background Study (Hemson Consulting Ltd, September 2010) are identified in the notes of the database. It is expected that the timing of these projects will respond to ongoing development. For the purposes of this present study, the Development Charge projects that have been identified by Town staff for potential completion in the short term, have been included in the Five Year Improvement Plan and designated as funded by Development Charges. In addition the Development Charge projects anticipated in the 6 to 10 year timeframe have also been identified, to ensure coordination with rehabilitation or preventive maintenance activities on the affected road sections. The Development Charge Projects anticipated in the five and ten year horizons are delineated in Appendix H1 for reference.

The Town's Municipal Structure Inventory and Inspection, (AECOM, March 2011) has identified the bridge and culvert needs in the municipality. The following bridges and culverts were identified for replacement in the 10 year horizon period:

Bridges and Culverts Identified For Replacement In The Structure Study:

- Dufferin Street Culver 11004 (\$400,000) – At Parsons Road;
- Bridge 12001 (\$3,400,000.00) – Road ID 16114, 14<sup>th</sup> Line between C. W. Leach Road and Sideroad 10 (Development Charge project);
- Bridge 12034 (\$4,936,000.00) – Road ID 16853, 9<sup>th</sup> Line between Tottenham Road and the west limit of Beeton (Development Charge project);
- Bridge 12036 (\$195,000.00) – Road ID 16988B, 10<sup>th</sup> Line between Tottenham Road and 0.9 km east of Tottenham Road;

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- Culvert 11004 (\$507,000.00) – Road IDs 17409A and 17409B, Church Street South between Alderson Court and Beech Street East.

The following bridges were identified as requiring widening:

#### Bridges Identified For Widening In The Structure Study:

- Bridge 12039 (\$274,000) – Road ID 17031, 6<sup>th</sup> Line between Tecumseth Heights Drive and Sideroad 10.

In addition, 45 bridges and 9 culverts were identified in the Structure study as requiring rehabilitation.

The road sections that have been identified to require bridge or culvert replacement, widening or rehabilitation, have been identified in the notes of the database in Appendix A of this present study. While rehabilitation work on these structures will have varying degrees of impact on the roads, the replacement or widening projects will have a direct impact. It is recommended that projects to replace or widen bridges or culverts be coordinated, where possible, with any road improvements that may be required, assuming their timing is reasonably compatible.

### 5.9 Railway Level Crossings

Thirteen railway level crossings were inventoried and appraised, as listed in the table in Appendix G. The updated crossing information is based on observations made during the field review, on the current traffic count work, the estimated ten year traffic counts and on discussions with Canadian Pacific Railway (CPR).

The trigger values, to warrant automatic gates at the level crossings, was previously based on MTO criteria, which set an exposure index of 100,000 (i.e., number of trains per day x daily vehicular crossing volume). However, the exposure index set by Transport Canada is lower, requiring an exposure index of only 50,000 to warrant gates. In addition Transport Canada recommends gates for all level crossings where train speeds may exceed 50 mph, as per Section 12.1 (b) of Transport Canada Grade Crossing Standards. Since the maximum permissible train speed for the CPR line at all crossings within the Town is set at 55 mph, a minimum protection of flashing lights, bells and gates is recommended at all grade crossings.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

Based on Transport Canada's requirements the improvements warranted to the protection at the railway level crossings within the Town are delineated in Appendix G and summarized as follows:

- Upgrade to seven (7) level crossings by the addition of gates to the existing flashing lights and bells - \$2,800,000.00.
- Upgrade to one (1) level crossing (13<sup>th</sup> Line) by the addition of flashing lights, bells and gates to the existing railway crossing sign control - \$400,000.00.
- ID 16016B – Victoria Street, Alliston, west of Dufferin Street – Construction of a grade separation structure, as also identified in the Town's Municipal Structure Inventory and Inspection Study (\$6,707,000.00). A Class EA is required to confirm this requirement.
- ID 16083 – Albert Street, Alliston, west of Dufferin Street – Construction of a grade separation structure in the 6 to 10 year timeframe. This warrant is only marginally met and no estimate is available on costs. It is recommended that monitoring continue at this crossing to determine if an upgrade is required.

For the purposes of this study it is assumed that the costs for upgrading railway crossings will be borne by the Town. However, where upgrades are made to address safety issues, some cost sharing with CPR may be possible. It is recommended that applications for cost sharing be made to CPR for any upgrading of crossings.

Upgrade to the grade crossing on 13<sup>th</sup> Line, West of Tottenham Road (ID16348) is recommended to have the highest priority, due to the low level of protection presently provided (i.e., railway signage).

For the crossings where upgrades to gates are warranted, it is recommended that the priorities be based on the exposure index, as shown in Appendix G. Two of these crossings are forecast to have exposure indices of over 50,000 in the ten year horizon (i.e., Mill Street Crossing, Tottenham and Nolan Road Crossing, Tottenham), and these crossing are recommended as high priorities. The remainder of the crossings warranting gates should be upgraded as budgets become available.

Two crossings have been identified for possibly warranting grade separation, based on their high exposure index (Victoria Street, Alliston and Albert Street, Alliston). Further review, through the Class Environment Assessment process, is recommended to confirm the necessity and priority for such major upgrades.

It is recommended that projects to upgrade crossing protection be coordinated, where possible, with any road improvements that may be required, assuming their timing is reasonably compatible.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

Six of the thirteen level crossings reviewed were noted to have poor crossing surface condition (i.e., results in a feeling that the car is taking undue punishment if the legal speed limit is maintained). It is recommended that these deficiencies be addressed through ongoing regular maintenance, in consultation with CPR.

In addition to the CPR rail line, the South Simcoe Railway also has four level crossings on Town roads, as shown on the inventory mapping and delineated in Appendix G. This tourist railway runs between Tottenham and Beeton, primarily on Sundays and holidays in the Summer and Fall seasons (i.e., four trains up and back). The railway cars cross the roads at very low speeds, controlled by flagmen, and there are railway crossing signs at each crossing. No improvements to crossing protection have been identified at the level crossings for this rail line.

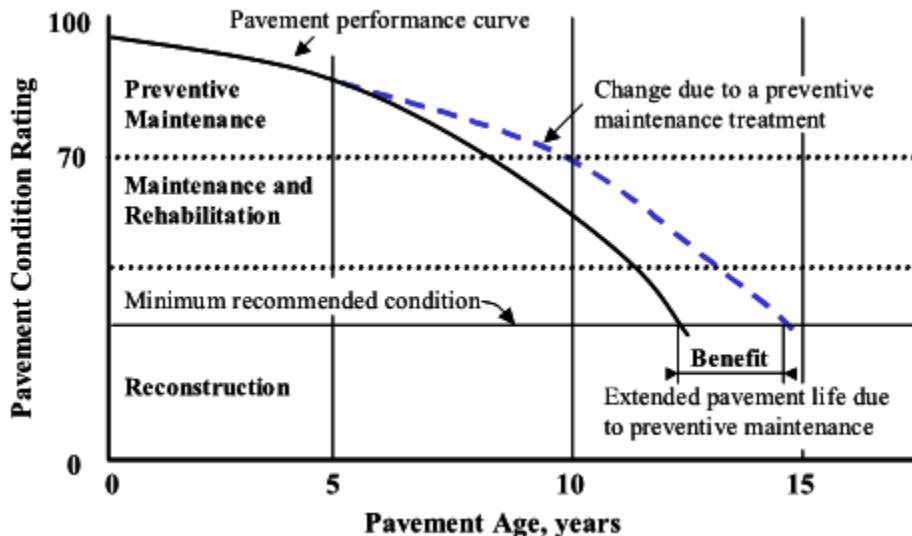
## 6.0 Road Improvement Program

### 6.1 Pavement Management

A complete pavement management system will include the application of the right treatment to the right pavement at the right time, including the following:

- Preventive maintenance – various maintenance treatments applied to the pavements, typically when they are in good condition (i.e., PCI above 70), to delay the need for more major rehabilitation or reconstruction. The following Figure shows graphically how preventive maintenance serves to modify the degradation curve of pavements, thereby extending their useful life.

Figure 6.1 – Impact of Preventive Maintenance (from *Timely Preventive Maintenance For Municipal Roads – A Primer, A Best Practice By the National Guide To Sustainable Municipal Infrastructure; September 2002; National Research Council*)



- Maintenance and Rehabilitation – More extensive reactive maintenance or rehabilitation is applied to pavements that have deteriorated to a point where overlays or spot base repairs are required, to protect the integrity of the pavement base and to delay more extensive reconstruction being required.
- Reconstruction – Once a minimum PCI level is reached, the pavement and road base may require full reconstruction in order to re-establish the proper base support for the pavement surface. Applying a lesser degree of rehabilitation may result in premature failure of any newly applied pavement surface. Once the pavement

degrades below a minimum recommended condition, ongoing maintenance (e.g. filling of potholes) will typically increase significantly and/or safety or user complaints may become a concern.

The following sections review the pavement management requirements that have been identified to address the road needs, based on the PCI established for each road section and on the life-cycle considerations noted above.

## 6.2 Summary of Road Needs

The database of Road Improvement Needs, along with relevant mapping, is included in Appendix F. The improvement needs are listed according to various improvement types and improvement time periods (i.e. NOW, 1 to 5 years and 6 to 10 years).

The cost estimating methodology is included in Appendix D, including the following:

- Improvement Definitions;
- Road Design Criteria;
- Unit costs based on construction benchmark rates; and
- Triggers for various improvement types and costs, based on surface type, maintenance class and pavement condition index.

Based on the criteria established in this study, the rehabilitation needs and cost estimates for the overall road network, based on surface condition, are summarized in the following table:

**Table 6.1 – Summary of Road Network Condition Needs**

Improvement Type	Now Needs	1 to 5 Year Needs	6 to 10 Year Needs	Total
Resurface R	22.982 km	4.815 km	38.919 km	66.716 km
	\$6,553,225	\$2,245,408	\$6,372,371	\$15,171,004
Pulverize and Resurface PR	14.483 km	20.752 km		35.235 km
	\$3,889,826	\$5,319,196		\$9,209,022
Base and Surface BS	12.862 km			12.862 km
	\$6,325,248			\$6,325,248
Reconstruction REC	8.892 km			8.892 km
	\$6,907,988			\$6,907,988
<b>Total Length</b>	59.309 km	25.567 km	38.919 km	123.795 km
<b>Total Cost</b>	\$23,676,287	\$7,564,604	\$6,372,371	\$37,613,262

Other road needs (i.e., geometrics, surface type, surface width, road section type, traffic capacity, drainage and maintenance) are considered to be needs in the NOW time period. While these needs would be expected to be addressed as part of any road rehabilitations that are completed to address condition deficiencies, their priority may be advanced depending upon the magnitude of the deficiencies, available budgets, safety concerns etc.

### **6.3 Five Year Road Rehabilitation and Resurfacing Program**

A recommended annualized five year road rehabilitation and resurfacing plan is included in Appendix H1, together with relevant mapping. For the purposes of establishing this rehabilitation program the following considerations are noted:

- It is assumed that Development Charge projects will proceed, as required to facilitate growth, and are not directly subject to overall budget limitations.
- It is assumed that a road rehabilitation budget of approximately \$1.1M per year is available for road improvements in the five year capital plan, excluding Development Charge projects.
- Roads with very poor condition (i.e., low PCI numbers) have been prioritized for improvement to address the potential for maintenance issues, taking into consideration traffic volumes and traffic speeds, surface type and roadside environment. The present budget allocation results in the forecast PCI, for a number of roads, falling below these critical levels in the five year capital planning period. For the purposes of this Study a prioritized listing of all road projects is provided in Appendix H2. The prioritization order (i.e. from highest to lowest priority) includes the following methodology:
  - Identification of roads that are presently below the critical PCI thresholds (i.e., PCI 45 for Class 2 or 3 roads and PCI 40 for Class 4, 5 or 6 roads);
  - Identification of roads that are forecast to fall below the critical PCI thresholds within the five year study period, on a yearly basis, in order to establish Priority Categories (i.e. Priority Category 1 through 7, depending on when the road is forecast to degrade below the critical PCI threshold);
  - Prioritization of improvement projects, within each Priority Category, based on a Priority Sensitivity Guide Number (SGN), using the following empirical formula that Burnside has developed for the Town:
    - $$\text{SGN} = (100-\text{PCI}) * (1/\text{Class})^{0.75} * (1/\text{Priority Category}).$$
- Priority Guide Numbers (PGN) have also been provided, which take into account traffic volumes, project costs and the anticipated useful life of the improvement. The implementation of projects with high PGN numbers is considered to provide the most

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

cost effective results, from a life-cycle perspective. The improvements are completed “higher” on the degradation curve, thereby reducing the cost of these interventions.

Providing additional capital budgets, to address the current backlog of needs to address roads with poor condition, will allow the Town to provide a greater emphasis on PGN, rather than solely on low PCI, which will allow for more efficient intervention earlier in the asset’s life-cycle (see typical degradation curves in Appendix E).

This information is provided to assist the Town in support of their Capital Improvement Plan. The proposed improvements are the preferred priorities, based on the technical observations. It is expected that final capital improvement plans may be adjusted by Town staff, and approved by Council, as part of the normal budgetary process.

### **6.3.1 Alternate Funding Scenarios For Five Year Road Rehabilitation and Resurfacing Program**

A sensitivity analysis has been completed to assess the impact of various rehabilitation and resurfacing funding scenarios on the average condition (PCI) of the hard top roads. For analysis purposes, idealized deterioration curves have been applied, which include the following assumptions:

- Forecast PCI for hard top road sections only, based on typical average surface deterioration curves.
- Re-establishment of PCI to 95 for resurfacing (R) projects and to 100 for more extensive rehabilitation (PR, BS, REC, RSS), for projects completed within the five year program (i.e. capital improvements and Development Charge projects).
- For forecasting purposes, minimum tolerable PCIs are assumed for hard top roads as follows:
  - Class 2 or 3 hard top road – minimum PCI 45; and
  - Class 4, 5 or 6 hard top roads – minimum PCI 40.

These minimum PCI thresholds are considered to be representative of these road classifications and are generally comparable with minimum acceptable PCI levels recommended by MTO. For example, MTO suggests a minimum acceptable PCI level of 45 to 50 for their minor secondary highways in their publication *Adaptation and Verifications of AASHTO Pavement Design Guide For Ontario Conditions, Final Report, March 2008; Ministry of Transportation, Pavements and Foundation Section*). Once roads have deteriorated to this minimum condition trigger, the forecasting methodology assumes that increased maintenance (i.e., patching etc.) will maintain the PCI at this minimum level. In other words, these road sections become “high maintenance” roads.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- Gravel roads have not been included in the overall assessment, but have been assumed to be maintained through normal maintenance practices, unless upgrading is proposed to a hard top surface.

The average existing PCI for the hard top road network has been calculated, in addition to the forecasted PCI at the end of the five year horizon period, for the following scenarios:

- “Do Nothing” Scenario – No rehabilitation, resurfacing or preventive maintenance is undertaken, allowing for the normal deterioration of the roads to occur. This scenario is considered for comparative purposes only, as an indicator of the overall rate of deterioration in the existing hard top road network, without interventions.
- “Existing Budget” Scenario – Roads are improved according to the five year rehabilitation and resurfacing plan described above, including the implementation of the identified Development Charges projects.
- “Maintain Existing PCI” Scenario – Sufficient roads are improved in the five year program to maintain the existing PCI level (i.e. the impact of road improvements offsets the ongoing deterioration in the condition of the overall road network).
- “Improved PCI” Scenario – Sufficient roads are improved in the five year program to result in an improvement to the overall condition of the road network. For the purposes of this study an average PCI of 85.00 has been chosen for analysis. An improved average PCI level will assist in addressing the backlog of needs for the roads in poor condition, so that budgets can be applied to roads with high priority guide numbers (PGNs), thereby reducing overall life-cycle costs for road improvements and reducing ongoing maintenance costs for the road network.

The additional projects assumed in the various scenarios have been selected according to the order of the prioritized listing provided in Appendix H2.

The average network PCIs forecast for these scenarios are considered to be “worst case”, since they do not consider the additions of new subdivision roads, which will have the impact of raising the average network condition, nor do they take into account the impact of any preventive maintenance programs, that will reduce the theoretical deterioration rate for these roads.

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

The results of the scenario analysis are summarized in the following table:

**Table 6.2 – Average Road Network Condition Summary**

Scenario	Time Period	Average Hard Top Road Condition (PCI)	Forecast Reduction In Road Condition (PCI)	Required Funding Level (Per Year)
Existing	Existing	80.69		
“Do Nothing” Scenario (i.e., No Capital Projects or Development Charge Projects)	Five Year	68.04	-12.65	
“Existing Budget” Scenario	Five Year	69.90	-10.79	\$1.1M
Maintain Existing PCI	Five Year	80.21	-0.48	\$2.9M
Improved PCI Level	Five Year	84.82	+4.31	\$3.9M

For comparative purposes, the PCI ranges for the average condition of the hard top road network are described qualitatively in the following table, along with the lengths of road within the Town’s road network that currently falls within these ranges:

**Table 6.3 – Qualitative Description of Road Network For Various PCI Ranges\***

PCI Range	Condition	Length of Road In PCI Range (centreline km)	%
90 to 100	Excellent	104.063	30.2
75 to 90	Good	119.068	34.5
65 to 75	Fairly Good	60.454	17.5
50 to 65	Fair	42.664	12.4
Below 50	Poor	18.737	5.4
Total		344.986	100%

\* Based on SP-04, Manual for Condition Rating of Flexible Pavements, Ministry of Transportation, Research and Development Branch, August 1989.

Based on the above analysis the following observations are made:

- On average, the existing hard top road system is in good condition. However, it should be noted that the addition of new subdivision roads in recent years will have had the impact of raising the average network condition rating, potentially masking the magnitude of the ongoing deterioration in the older areas of the Town.

Road Needs Study, Vehicle Traffic Count Program  
Pavement Asset Management Program  
September 2012, Revised October 2013, Final February 2014

- It is forecast that the ongoing deterioration of the roads will result in a reduction of about 12.65 PCI points for the average road network condition over the five year horizon period, without interventions. The resulting average condition of the network would remain in the “fairly good” range.
- With the planned five year improvement program (i.e. capital projects and Development Charge projects) the forecast reduction is reduced to about 10.79 PCI points. The resulting average condition of the network would remain in the “fairly good” range. The present funding allocation for capital improvements is forecast to result in an overall deterioration of the road network condition over time, with resulting increased maintenance requirements.
- Maintaining an average network condition rating in the good range is considered to be a reasonable Level of Service objective, subject to budget availability. In this respect, it is recommended that Council consider increasing capital budgets and preventive maintenance budgets to reduce the deterioration of the road network over time. Further it is recommended that the condition impact of any budget modifications should be re-assessed at the time of the next major Road Study update (i.e., at the end of the five year plan, as a minimum). The five year plan presented in this draft study should be updated to reflect any proposed budget modifications.

#### **6.4 Preventive Maintenance Program**

Pavement preventive maintenance (pavement preservation) involves minimizing the destructive impact of climate and traffic by the regular or intermittent timely application of remedial treatments to the pavement. Minor deficiencies are addressed properly and systematically early enough before serious, irreversible underlying structural damage occurs. This way, the life of the roadway is substantially extended at comparatively low costs.

Preventive treatment of asphalt pavements used in Ontario include: crack sealing or crack filling, small area patching, thin hot mix overlays (<40 mm), cold-in-place recycling, hot-in-place recycling, micro-surfacing, slurry seal (<6 mm), surface treatment, surface seals, surface abrasion, rejuvenators, infrared patching, drainage maintenance, shoulder dressing and grading and ultrathin whitetopping. These preventive maintenance techniques are described in Appendix I, along with their benefits and constraints.

For surface treated roads there are a limited number of preventive maintenance activities available, including the following:

- surface treatment overlay;
- small area patching, manually or via machine, using hot or cold mix;
- drainage maintenance; and
- shouldering maintenance.

It should be noted that no model has been developed to predict the performance of preventive treatment techniques and the resulting life extensions of the existing pavement. It is reasonable to assume that the cost savings from preventive maintenance will depend upon the treatment type, the existing pavement condition, the environment and the traffic conditions. Considering these factors, recommendations for current preventive maintenance treatments are based on experienced engineering judgement, empirical evidence and historical agency practices. Recommendations for preventive maintenance are provided for network level programming purposes, to facilitate the choice of the right preventive maintenance treatment on the right pavement at the right time. Such preventive maintenance will be an integral part of any pavement management system that may be implemented by the Town, providing cost-effective techniques to preserve pavements over their life-cycle. Ongoing review of any preventive maintenance program should be included in any pavement management system that is implemented by the Town.

It is our understanding that the Town presently provides reactive maintenance (e.g., patching, filling potholes, dynapatch etc.), followed by more extensive rehabilitation, once poor pavement conditions warrant. However, as shown in the pavement degradation curves (Appendix E), preventive maintenance activities are required through the life-cycle of roads in order for this infrastructure to achieve its design service life. It is generally accepted that a preventive maintenance program will reduce life-cycle costs for road infrastructure and therefore we recommend that the Town consider such a program.

Based on our review of the available preventive maintenance options it is recommended that the following maintenance be completed on a network level basis:

- Asphalt Roads
  - crack sealing/filling and spot base repairs (small area patching); and
  - slurry seal coat (mixture of sand and asphalt emulsion) or micro-surfacing (slurry mixture of polymer-modified asphalt emulsion, frictional aggregate, mineral filler and water).
- Surface Treatment Roads – small area patching or drainage improvements;
- Gravel Roads – Periodic replacement of surface gravel and seasonal grading; and
- Shouldering Program.

It is generally accepted that crack sealing or slurry sealing / micro-surfacing can extend the life of asphalt pavements by 5 years or more, making them cost-effective maintenance treatments. Typical unit costs for various preventive maintenance treatments are shown in the following table:

**Table 6.4 – Typical Costs For Preventive Maintenance Treatments**

<b>Preventive Maintenance</b>	<b>Typical Cost</b>
Routing, Cleaning and Sealing Cracks	\$3.00 per metre of crack
Slurry Sealing or Micro-Surfacing	\$3.00 to \$5.00 per square metre
Small Area Patching	\$150 to \$200 per square metre
Gravel Shouldering	\$3.50 per square metre

For crack sealing, it is recommended that candidate road sections for preventive maintenance include those that have condition needs in the 6 to 10 year timeframe (highest priority), those that are beyond the ten year timeframe but that have high traffic loadings (medium priority, e.g., Industrial Parkway) and those that have condition needs in the 1 to 5 year timeframe (lowest priority if crack progression or density has progressed too far for crack sealing to be effective). However, a more detailed assessment of the type, amount and severity of cracks or of other distresses should be undertaken for each section to confirm preventive maintenance requirements. Roads with higher traffic loading should be given priority where budgets are limited.

Slurry sealing or micro-surfacing are generally applied on sound, fairly smooth oxidized pavements or pavements with surface deficiencies (e.g., raveling, segregation). Therefore consideration should be given to older pavements that are still in good condition for this type of treatment.

For the purposes of establishing a budget for crack sealing/filling, slurry sealing/micro-surfacing, small area patching or drainage improvements, the candidate road sections with 1 to 10 year needs amount to the following:

- 38,919 metres of asphalt road with 6 to 10 year needs; and
- 25,567 metres of asphalt road with 1 to 5 year needs.

It is suggested that the asphalt roads with 6 to 10 year needs be maintained through a program of crack sealing/filling or slurry sealing/micro-surfacing over the five year plan being considered in this study. Assuming that 50% of these roads are slurry sealed / micro-surfaced and that 50% of these roads have crack sealing (at an assumed 4 metres of crack per metre of road), the following budgets are recommended for preventive maintenance:

- Crack sealing - \$50,000 per year; and
- Slurry sealing or micro-surfacing - \$85,000 per year.

For gravel roads, routine annual grading maintenance and dust control is recommended, along with the replenishment of 75 mm to 150 mm of Granular surface every 3 years as a preventive maintenance strategy. The criteria used in determining where gravel is

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

placed include increases in maintenance frequencies, aggregate loss, particle size and distribution and profile/drainage requirements. Drainage maintenance should also be completed, as required. Spot base improvements, for areas of Spring breakup, potholing or rutting may also be required to facilitate acceptable operations and safety throughout the life-cycle for gravel pavements. Regular seasonal grading of all gravel roads, to ensure proper crowns for drainage, is also recommended. Liquid calcium is also spread after the Spring grading work, to control dust. In addition the Town presently has a program to perform disc rehabilitation on the gravel road shoulders in rural areas, to remove vegetation and to re-establish the shoulders. This program ensures that proper drainage continues, avoiding premature deterioration of the roads, and is recommended as a Best Practice to be continued. In addition it is recommended that the Town implement a shouldering program for hard top roads, including the grading of these shoulders and the addition of shoulder gravel to maintain pavement edge support in those areas. It is suggested that the Town budget an additional \$100,000 per year for such a shouldering program.

It is noted that the Town has not had a maintenance program that effectively completes minor repairs to surface treatment roads, with the result that some of these roads have not held up well for their overall life-cycles. To address this issue, some of these roads have been upgraded to asphalt, even though traffic volumes may not have warranted this higher class surface. Consideration should be given to increasing maintenance on surface treatment roads, to reduce capital rehabilitation costs for such lower traffic roads. It is estimated that the Town has about 44 km of surface treatment roads and 34 km of are not scheduled for improvement in the five year horizon considered in this study. Considering the need to complete regular preventive maintenance on this type of road surface (i.e., regular double surface treatment overlays), it is suggested that the Town budget an additional \$100,000.00 per year for such treatments of these low class bituminous pavements.

The Town's existing budgets for Road Maintenance are summarized in the following table, along with suggested modifications to the budget:

**Table 6.5 - Existing Road Maintenance Program Budgets**

Maintenance Program	Existing Yearly Budget	Suggested Budget Additions	Suggested Total Budget
Asphalt Removal and Replacement, including both small utility cuts and large scale cuts	\$130,000.00		\$130,000.00
Chip Seal (localized distress)	\$90,000.00		\$90,000.00

Road Needs Study, Vehicle Traffic Count Program  
 Pavement Asset Management Program  
 September 2012, Revised October 2013, Final February 2014

Maintenance Program	Existing Yearly Budget	Suggested Budget Additions	Suggested Total Budget
Gravel Maintenance and Shoulder Repairs on Gravel Roads	\$215,000.00		\$215,000.00
Dust Suppression	\$137,000.00		\$137,000.00
Crack Sealing		\$ 50,000.00	\$50,000.00
Slurry Sealing / Micro-Surfacing		\$ 85,000.00	\$85,000.00
Double Chip Seal (Surface Treated Roads)		\$100,000.00	\$100,000.00
Shouldering Program for Hard Top Roads		\$100,000.00	\$100,000.00
Total	\$572,000.00	\$335,000.00	\$907,000.00

The decision to undertake preventive maintenance on any particular road section should also take into consideration the age of the surface asphalt, which may be indicative of the remaining useful life of the surface and whether maintenance work should be delayed, to be coordinated with more extensive rehabilitation work.

This Study suggests budget amounts and criteria for an overall Pavement Maintenance Program within the Town. It is expected that final maintenance plans may be adjusted by Town staff, and approved by Council, as part of the normal budgetary process.

Report Prepared By:

**R. J. Burnside & Associates Limited**

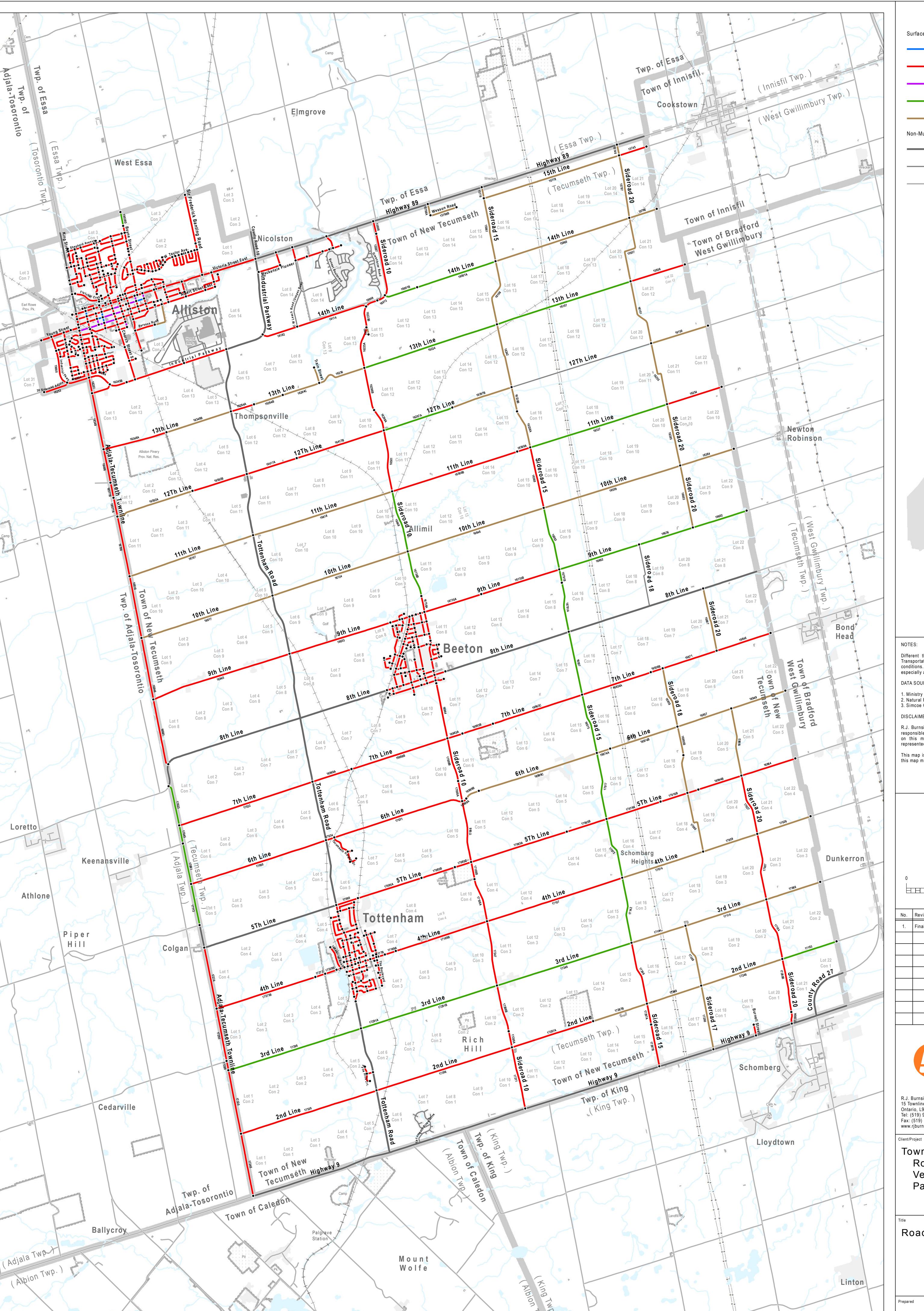
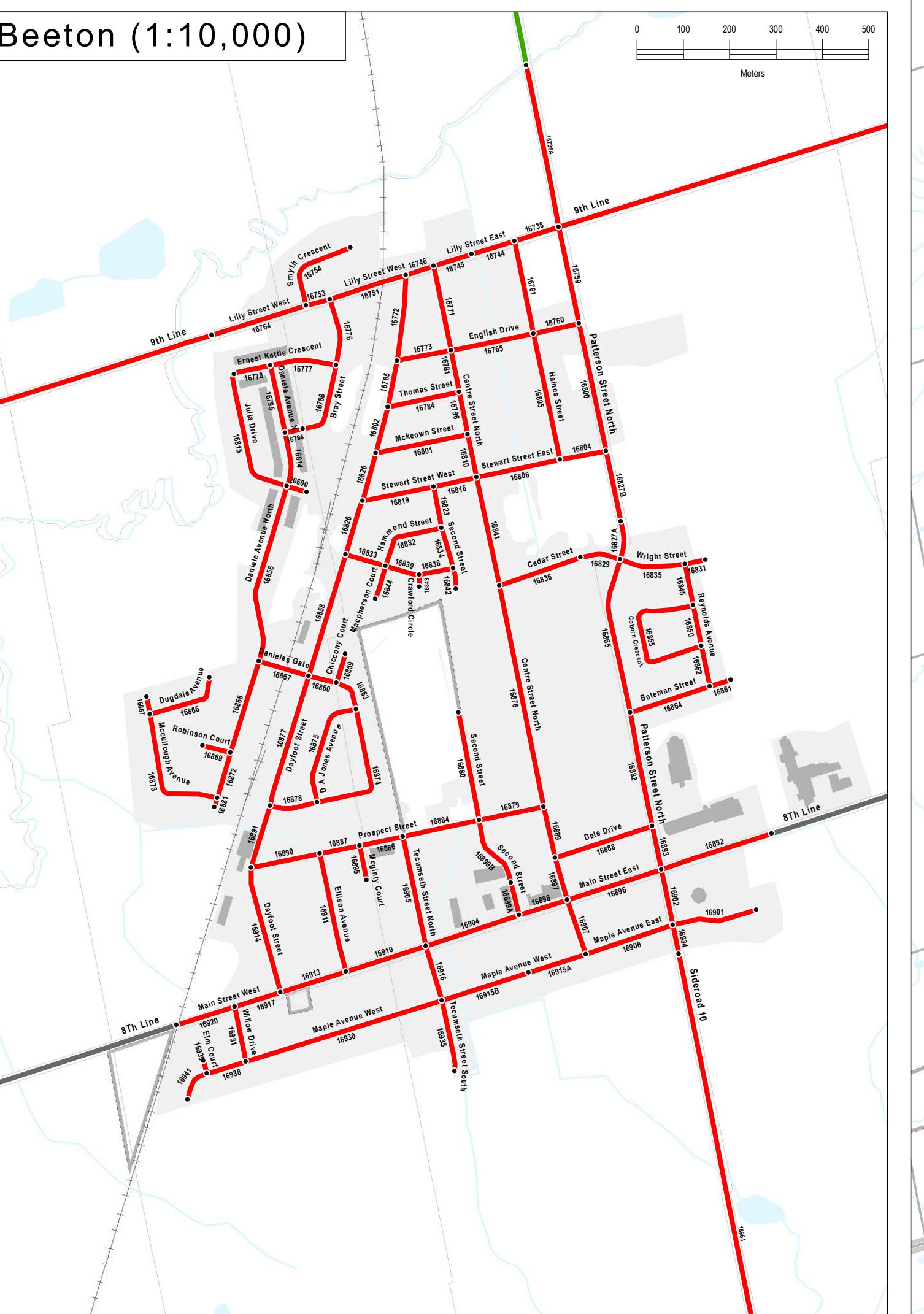
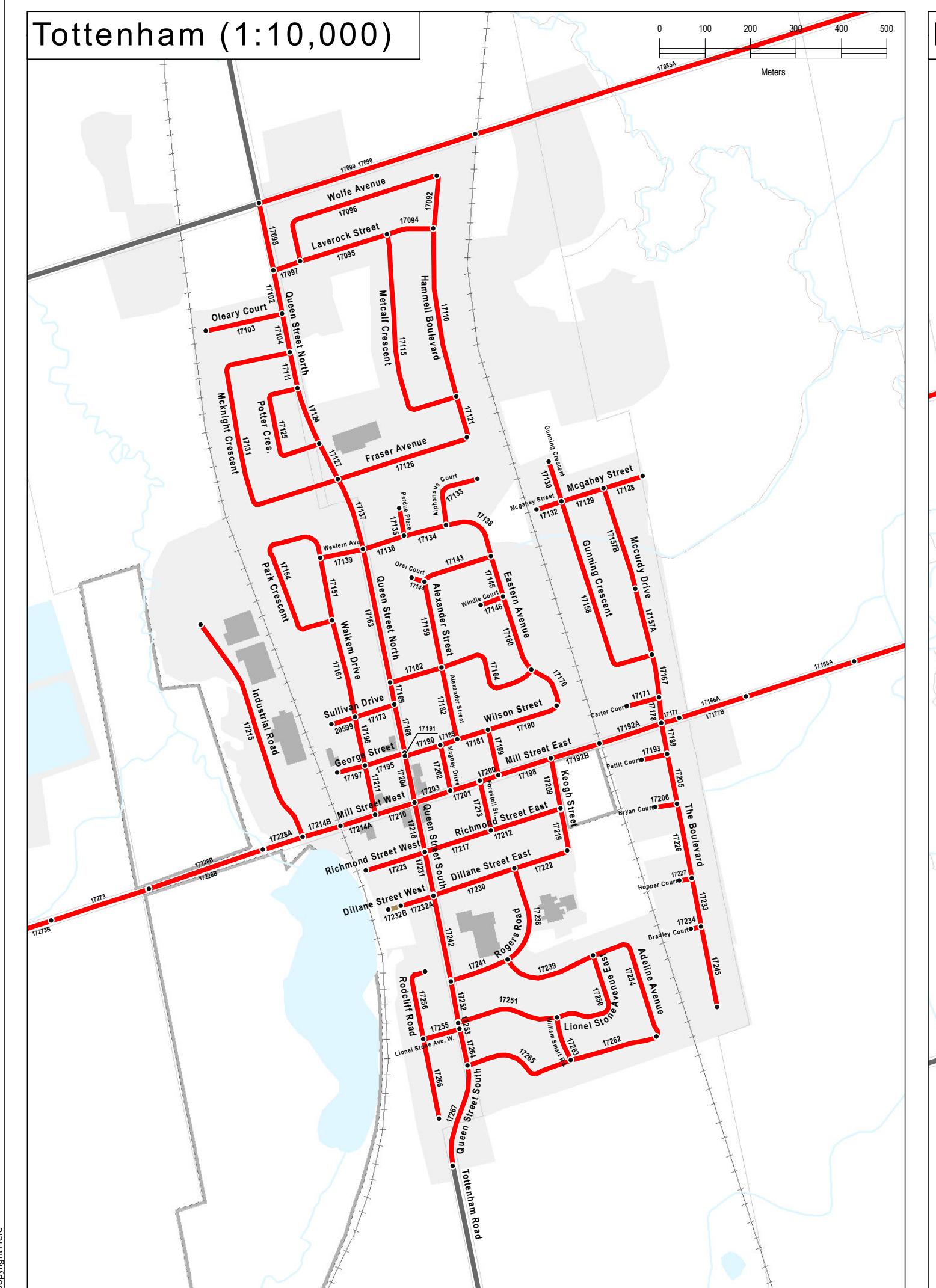
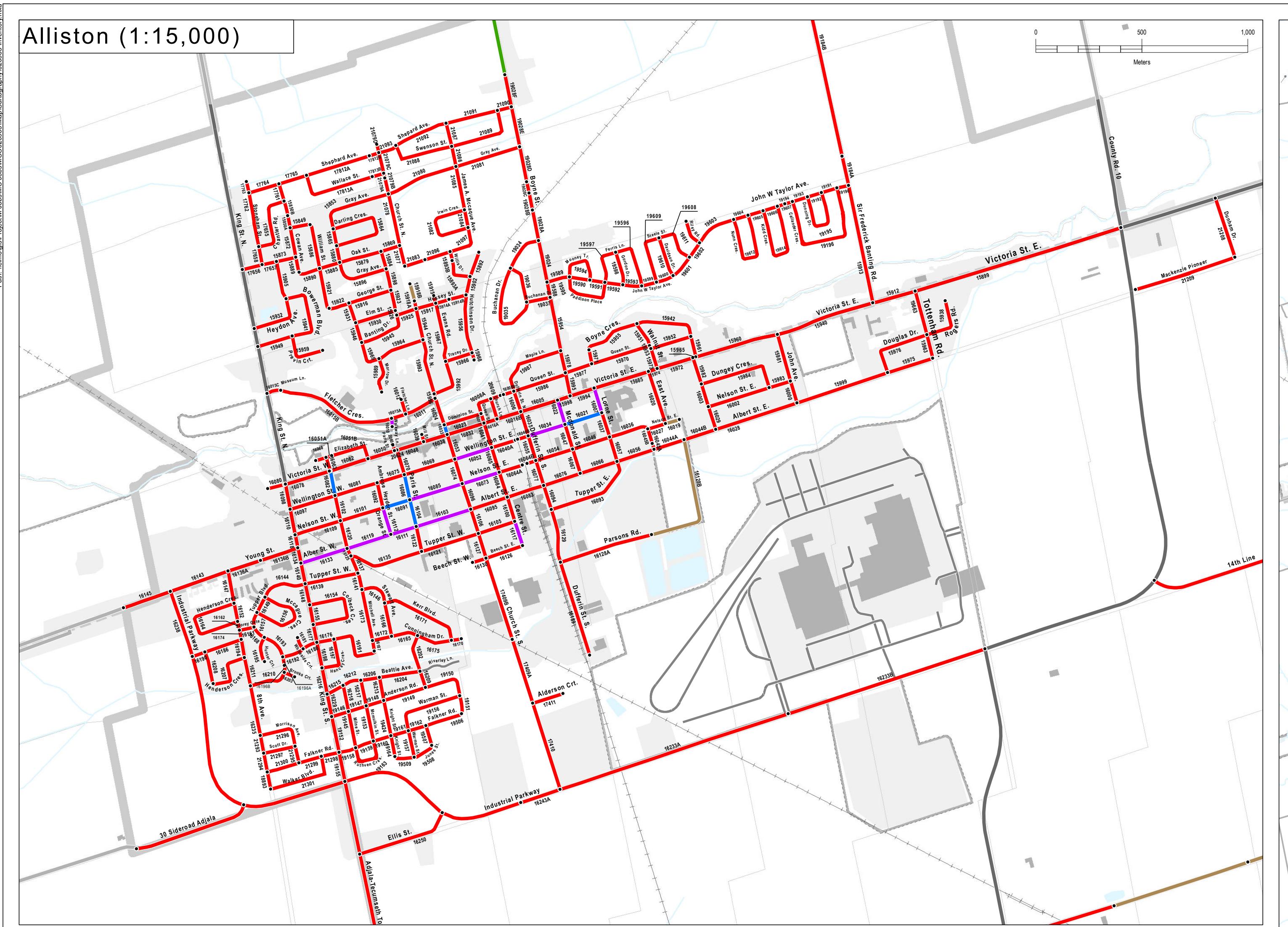
Henry B. Centen, P. Eng.  
 Senior Transportation Engineer  
 HC:ls





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**Appendix A**  
**Road Inventory and Assessment Database**  
**(Select Data) Including Mapping**



**Road Inventory & Surface Type**

Prepared P. Stuber Checked H. Centen Appendix A  
Scale 1:50,000 Project MC0020965  
Network User: psstuber Network Time: 12/20/2013 3:42:55 PM

**Road Section Division Point**

- Surface Material
  - Concrete
  - Asphalt
  - Asphalt Over Concrete
  - Surface Treatment
  - Gravel
- Non-Municipal Roads
  - Provincial / County / Regional Road
  - Private Road
  - Road: Unspecified: Outside of New Tecumseth

**NOTES:**  
Different themes represented on this map reflect different levels of temporal accuracy. Transportation, hydrographic, and cadastral features are more likely to reflect current ground conditions than land use, and cultural landmarks (e.g. buildings and other structures), especially around urban areas are will be less temporally accurate.

**DATA SOURCES:**

- Ministry of Natural Resources, © Queen's Printer for Ontario
- Natural Resources Canada © Her Majesty the Queen in Right of Canada
- Simcoe County

**DISCLAIMER:**  
R.J. Burnside & Associates Limited and the above-mentioned sources and agencies are not responsible for the accuracy of the original temporal or observational aspects of the information presented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). The data represented on this map may be subject to updates and future reproductions may not be identical.

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**Closed Project**

**Town of New Tecumseth Road Needs Study, Vehicle Traffic Count Program, & Pavement Asset Management Program**

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

Line Number	Municipal ID	Priority Rank	Name	From	To	Boundary Road	Environment	Surface	Speed (km/h)	Numbr of Lanes	Length (m)	Surface Width	Shoulder Width	Function Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Need	RCR	DMI	Condition Index (PCI)	Condition Improvement	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition Improvement Priority Guide Number (PGN)
1	16384	442	10th Line	20th Sideroad	East Town Boundary		Rural	Gravel	80	2	1236	6.0	0.5	200	200	4	50-199	86	95	1940			High	8	9.3	87.1					
2	16559	449	10th Line	15th Sideroad	20th Sideroad		Rural	Gravel	80	2	3139	5.5	0.5	200	200	4	50-199	67	74	1940			High	8	9.4	87.8					
3	16648	391	10th Line	10th Sideroad	15th Sideroad		Rural	Gravel	80	2	3136	6.0	1.0	200	200	4	50-199	146	161	1940			7	9.4	84.6						
4	16724	297	10th Line	Tottenham Road	10th Sideroad		Rural	Gravel	80	2	3127	5.5	0.5	200	200	4	50-199	130	143	1940			High	7	8.7	78.6					
5	16817	348	10th Line	Adjala-Tecumseth Townline	Tottenham Road		Rural	Gravel	80	2	3025	4.5	0.5	200	200	4	50-199	70	77	1940			High	8	8.7	81.8					
6	16254	821	11th Line	20th Sideroad	East Town Boundary		Rural	Asphalt	80	2	1259	7.0	0.9	300	300	4	200-399	279	363	1955	2013		10	10	99.2						
7	16337	498	11th Line	15th Sideroad	20th Sideroad		Rural	Surface Treatment	80	2	3151	6.0	0.5	200	200	4	50-199	120	156	1955	2004		8	9.8	91.1						
8	16500A	819	11th Line	15th Sideroad	0.3 Km West of 15th Sideroad		Rural	Asphalt	80	2	300	7.0	1.0	400	400	4	400-999	550	715	1955	2011		10	10	99.2						
9	16500	818	11th Line	0.3 Km West of 15th Sideroad	15th Sideroad		Rural	Asphalt	80	2	2886	7.0	1.0	400	400	4	400-999	537	698	1955	2011		10	10	99.2						
10	16618	261	11th Line	Tottenham Road	10th Sideroad		Rural	Gravel	80	2	3204	6.0	0.8	200	200	4	50-199	89	98	1940			High	7	8.4	75.9					
11	16707	349	11th Line	Adjala-Tecumseth Townline	Tottenham Road		Rural	Gravel	80	2	2859	5.5	0.5	200	200	4	50-199	171	188	1940			High	7	9.1	81.9					
12	16150	430	12th Line	20th Sideroad	East Town Boundary		Rural	Gravel	80	2	1307	5.0	0.5	100	100	6	0-49	35	38	1940			High	7	9.1	81.9					
13	16297A	334	12th Line	1.3 Km West of 15th Sideroad	10th Sideroad		Rural	Surface Treatment	70	2	1589	6.0	0.8	200	200	5	50-199	87	113	1955	2007		7	8.6	76.9	R	\$119	\$189,091	6 to 10 Years	0.7	
14	16297B	284	12th Line	15th Sideroad	1.3 Km West of 15th Sideroad		Rural	Gravel	70	2	1376	4.0	0.5	200	200	4	50-199	90	99	1940			Deficient	6	9.1	77.6					
15	16417A	254	12th Line	2.0 Km West of 10th Sideroad	Tottenham Road		Rural	Asphalt	80	2	1151	6.3	1.0	300	300	4	200-399	245	318	1965	1965		6	8.8	75.6	R	\$119	\$136,969	6 to 10 Years	2.1	
16	16417B	51	12th Line	10th Sideroad	2.0 Km West of 10th Sideroad		Rural	Asphalt	80	2	2008	6.5	0.9	300	300	4	200-399	244	317	1965	1965		4	7.7	49.7	BS	\$365	\$732,920	NOW	2.8	
17	16582A	177	12th Line	1.2 Km West of Tottenham Road	Adjala-Tecumseth Townline		Rural	Gravel	80	2	1751	6.0	0.5	300	300	4	200-399	237	261	1940			Deficient	6	7.5	62.9	R	\$239	\$418,489	NOW	1.4
18	16582B	564	12th Line	Tottenham Road	1.2 Km West of Tottenham Road		Rural	Asphalt	80	2	1250	6.0	0.5	300	300	4	200-399	240	312	1999	1999		9	9.6	93.5						
19	15936	460	13th Line	20th Sideroad	East Town Boundary		Rural	Asphalt	80	2	1251	6.7	1.0	400	400	4	400-999	431	560	1955	2008		7	9.7	88.5						
20	16107	337	13th Line	15th Sideroad	20th Sideroad		Rural	Surface Treatment	80	2	3083	6.7	0.4	400	400	4	400-999	484	629	1955	2006		6	9.4	80.6						
21	16224	355	13th Line	10th Sideroad	15th Sideroad		Rural	Surface Treatment	80	2	3067	6.7	1.0	400	400	4	400-999	493	641	1955	2006		6	9.6	82.2						
22	16236	184	13th Line	Train Street	10th Sideroad		Rural	Gravel	50	2	1115	6.0	0.5	300	300	5	200-399	250	275	2007			High	6	7	58.9	R	\$239	\$266,485	NOW	1.6
23	16264A	568	13th Line	1.2 Km West of Train Street	Tottenham Road		Rural	Asphalt	80	2	532	6.5	0.5	200	200	4	50-199	180	234	1955	2003		8	9.9	93.6						
24	16264B	192	13th Line	0.8 Km West of Train Street	1.2 Km West of Train Street		Rural	Gravel	80	2	664	6.0	0.5	200	200	4	50-199	180	198	2007			High	7	7.6	67.9	R	\$239	\$158,696	NOW	0.9
25	16264C	195	13th Line	Train Street	0.8 Km West of Train Street		Rural	Gravel	50	2	842	6.0	0.5	200	200	5	50-199	178	196	2007			High	6	7.5	62.9					
26	16348A	820	13th Line	1.4 Km West of Tottenham Road	Adjala-Tecumseth Townline		Rural	Asphalt	80	2	1433	7.0	2.0	300	300	4	200-399	220	242	1940	2012		10	10	99.2						
27	16348B	114	13th Line	Tottenham Road	1.4 Km West of Tottenham Road		Rural	Gravel	80	2	1486	5.5	0.5	300	300	4	200-399	222	244	1940			4	6.7	42.4	BS	\$372	\$552,792	NOW	2.6	
28	15796	268	14th Line	20th Sideroad	East Town Boundary		Rural	Gravel	60	2	634	6.0	0.5	200	200	5	50-199	123	135	1940	2002		High	7	8	71.9					
29	15860	404	14th Line	15th Sideroad	20th Sideroad		Rural	Gravel	80	2	3089	5.5	0.5	200	200	4	50-199	146	161	1940			High	8	9.1	85.1					
30	16114	549	14th Line	C W Leach Road	10th Sideroad		Rural	Asphalt	60	2	1593	7.0	1.0	600	600	3	2000-2999	2744	3567	1955	2007		8	9.9	94.4						

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

Line Number	Municipal ID	Priority Rank	Name	From	To	Boundary Road	Environment	Surface	Speed (km/h)	Numbr of Lanes	Length (m)	Surface Width	Shoulder Width	Function Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Need	RCR	DMI	Condition Index (PCI)	Condition Improvement	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition Improvement Priority Guide Number (PGN)
90	16162	561	8th Avenue	Storey Gate	Henderson Crescent		Urban	Asphalt	50	2	43	8.5		L/R	L/R	4	400-999	750	825	1997	1997			9	9.6	93.5					
91	16174	602	8th Avenue	Preston Avenue	Storey Gate		Urban	Asphalt	40	2	44	8.5		L/R	L/R	5	400-999	750	825	1997	1997			9	9.6	93.5					
92	16194	684	8th Avenue	Smith Street	Preston Avenue		Urban	Asphalt	40	2	87	8.5		L/R	L/R	5	400-999	600	660	1997	1997			9	9.9	96.7					
93	16211	681	8th Avenue	Tupper Boulevard	Smith Street		Urban	Asphalt	40	2	137	8.5		L/R	L/R	5	400-999	600	660	1997	1997			9	9.9	96.7					
94	16235	751	8th Avenue	0.72 Km South of Young St	Tupper Boulevard		Urban	Asphalt	40	2	238	8.5		L/R	L/R	5	400-999	600	660	1997	2000			9	10	97.4					
95	18893	761	8th Avenue	South End	0.72 Km South of Young St		Urban	Asphalt	40	2	82	8.5		L/R	L/R	5	200-399	250	275	2011	2011	High		9	10	97.4					
96	21293	796	8th Avenue	Morrison Avenue	Scott Drive		Urban	Asphalt	40	2	84	8.5		L/R	L/R	5	400-999	500	550	1997	2000			9	10	97.4					
97	21294	772	8th Avenue	Scott Drive	Falkner Road		Urban	Asphalt	40	2	91	8.5		L/R	L/R	5	400-999	500	550	1997	2000			9	10	97.4					
98	16602	419	9th Line	20th Sideroad	East Town Boundary	Rural	Surface Treatment	80	2	1239	6.0	1.3	400	400	4	400-999	740	962	1955	2004			8	9.2	85.9						
99	16636	260	9th Line	18th Sideroad	20th Sideroad	Rural	Surface Treatment	80	2	1239	6.0	0.8	400	400	4	400-999	730	949	1955	2004			6	8.9	75.9	R	\$149	\$184,611	6 to 10 Years	5.0	
100	16692	384	9th Line	15th Sideroad	18th Sideroad	Rural	Surface Treatment	80	2	1837	6.0	0.8	400	400	4	400-999	729	948	1955	2004			7	9.4	84.2						
101	16735A	663	9th Line	15th Sideroad	1.3 Km East of 10th Sideroad	Rural	Asphalt	80	2	1306	7.0	0.5	400	400	4	400-999	410	533	1955	2008			9	9.9	96.7						
102	16735B	812	9th Line	1.3 Km East of 10th Sideroad	10th Sideroad	Rural	Gravel	80	2	1800	5.5	0.5	400	400	4	400-999	408	449	1940	2013			10	10	97.3						
103	16853	816	9th Line	Tottenham Road	West Limit of Beeton	Rural	Asphalt	60	2	2320	7.0	0.7	500	500	4	1000-1999	1048	1362	1955	2012			10	10	99.2						
104	16945	158	9th Line	Adjala-Tecumseth Townline	Tottenham Road	Rural	Asphalt	70	2	3160	6.0	0.5	400	400	4	400-999	846	1100	1955	2000			5	8.4	65.6	R	\$223	\$704,680	1 to 5 Years	11.0	
105	16226	393	Adjala Lane	Sideroad 1	End	Rural	Gravel	50	2	162	5.7	0.5	100	100	6	0-49	20	22	1940					7	8.8	79.2					
106	17239	126	Adeline Avenue	Lionel Stone Avenue East	Rogers Road	Urban	Asphalt	50	2	213	7.4		L/R	L/R	4	400-999	820	902	1975	1975	High		4	9.1	62.0	R	\$364	\$77,532	NOW	3.3	
107	17254	150	Adeline Avenue	Brown Street	Lionel Stone Avenue East	Urban	Asphalt	50	2	294	7.4		L/R	L/R	5	400-999	450	495	1975	1975	High		4	9.2	62.9	R	\$364	\$107,016	1 to 5 Years	1.8	
108	16251	262	Adjala-Tecumseth Townline	Ellis Street	Industrial Parkway	yes	Rural	Asphalt	60	2	350	7.2	0.9	700	700	3	3000-3999	3130	4069	1955	1997			7	8.8	80.6	R	\$149	\$52,150	6 to 10 Years	17.1
109	16349	210	Adjala-Tecumseth Townline	13th Line	Ellis Street	yes	Rural	Asphalt	60	2	1257	6.9	0.8	700	700	3	3000-3999	3546	4610	1965	1965			7	8.3	76.5	R	\$149	\$187,293	6 to 10 Years	23.5
110	16466	214	Adjala-Tecumseth Townline	Tally Downs Road	13th Line	yes	Rural	Asphalt	80	2	749	7.0	0.8	700	700	3	3000-3999	3376	4389	1955	1999			6	8.9	76.9	R	\$149	\$111,601	6 to 10 Years	22.0
111	16577A	342	Adjala-Tecumseth Townline	12th Line	Nottawasaga River Bridge	yes	Rural	Asphalt	80	2	422	6.7	0.5	700	700	3	3000-3999	3420	4446	1955	2003			7	9.3	84.9	R	\$149	\$62,878	6 to 10 Years	14.5
112	16577B	180	Adjala-Tecumseth Townline	Nottawasaga River Bridge	Tally Downs Road	yes	Rural	Asphalt	80	2	336	7.0	0.8	700	700	3	3000-3999	3420	4446	1955	2003			6	8.8	75.3	R	\$149	\$50,064	6 to 10 Years	23.8
113	16708	387	Adjala-Tecumseth Townline	11th Line	12th Line	yes	Rural	Asphalt	80	2	1341	6.7	0.5	700	700	3	3000-3999	3164	4113	1955	2003			7	9.6	87.5					
114	16818	23	Adjala-Tecumseth Townline	10th Line	11th Line	yes	Rural	Asphalt	80	2	1378	7.0	0.8	700	700	3	3000-3999	3093	4021	1965	2000			4	7.3	46.2	REC	\$814	\$1,121,692	NOW	17.2
115	16946	24	Adjala-Tecumseth Townline	9th Line	10th Line	yes	Rural	Asphalt	80	2	1377	7.0	0.8	700	700	3	3000-3999	3094	4022	1965	2000			4	7.7	50.1	BS	\$516	\$710,532	NOW	25.1
116	16981	132	Adjala-Tecumseth Townline	Simcoe Road 1	9th Line	yes	Rural	Asphalt	80	2	1474	7.0	0.8	600	600	3	2000-2999	2824	3671	1965	1965			5	8.9	70.1	PR	\$331	\$487,894	1 to 5 Years	21.4
117	17023	80	Adjala-Tecumseth Townline	7th Line	County Road 1	yes	Rural	Surface Treatment	60	2	911	6.7	1.2	500	500	4	1000-1999	1860	2418	1955	1975			6	6.6	54.9	PR	\$223	\$203,153	NOW	31.6
118	17045	81	Adjala-Tecumseth Townline	Keenansville Road	7th Line	yes	Rural	Surface Treatment	60	2	404	6.7	0.9	500	500	4	1000-1999	1692	2200	1955	1975			6	6.6	54.9	PR	\$223	\$90,092	NOW	28.7

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

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179	19028E	654	Boyne Street	Gray Avenue	Shephard Avenue		Urban	Asphalt	60	2	192	7.9		C/R	C/R	4	1000-1999	1909	2482	1955	1965			9	9.9	96.3						
180	19028F	693	Boyne Street	Shephard Avenue	0.16 Km North of Shephard Avenue		Urban	Asphalt	60	2	155	8.5		C/R	C/R	4	1000-1999	1230	1599	1955	1965			9	10	97.4						
181	19028G	689	Boyne Street	0.16 Km North of Shephard Avenue	0.46 Km North of Shephard Avenue	Rural	Surface Treatment	60	2	309	6.3	0.9	500	500	4	1000-1999	1230	1599	2012	2012			10	10	97.3							
182	19588	665	Boyne Street	Arthur Street	John W Taylor Avenue		Urban	Asphalt	50	2	74	13.5	0.9	C/R	ART	3	5000-5999	5500	7150	2009	2010			9	10	97.4						
183	17234	319	Bradley Court	The Boulevard	West End Cul-De-Sac		Urban	Asphalt	50	2	23	10.0		L/R	L/R	5	50-199	50	55	1975	1975			5	9.5	75.5	R	\$228	\$5,244	6 to 10 Years	0.2	
184	16776	538	Bray Street	Lilly Street West	Ernest Kettle Crescent		Urban	Asphalt	50	2	146	8.5		L/R	L/R	4	400-999	580	754	1975	1975			8	9.8	92.7						
185	16788	462	Bray Street	Ernest Kettle Crescent	131 M South of Ernest Kettle Crescent		Urban	Asphalt	50	2	173	8.5		L/R	L/R	4	400-999	500	650	1975	1975			7	9.7	88.6						
186	16794	485	Bray Street	131 M South of Ernest Kettle Crescent	Danielle Avenue		Urban	Asphalt	50	2	39	8.5		L/R	L/R	4	400-999	500	650	1975	1975			7	9.9	90.3						
187	16203	758	Brooks Court	Tupper Boulevard	East End Cul-De-Sac		Urban	Asphalt	50	2	53	8.5		L/R	L/R	5	50-199	100	110	1997	1997			9	10	97.4						
188	17262	152	Brown Street	Wm Smart Road	Adeline Avenue		Urban	Asphalt	50	2	195	7.4		L/R	L/R	5	400-999	450	495	1975	1975			High	4	9.3	63.8	R	\$364	\$70,980	1 to 5 Years	1.7
189	17265	129	Brown Street	Queen Street South	Wm Smart Road		Urban	Asphalt	50	2	251	7.4		L/R	L/R	4	400-999	600	660	1975	1975			High	4	9.1	62.2	R	\$364	\$91,364	NOW	2.4
190	17206	99	Bryan Court	The Boulevard	West End Cul-De-Sac		Urban	Asphalt	50	2	48	9.2		L/R	L/R	5	50-199	80	88	1975	1975			High	4	8.4	56.2	R	\$364	\$17,472	NOW	0.4
191	19034	749	Buchanan Drive	Boyne Street	Buchanan Drive		Urban	Asphalt	50	2	198	8.5		L/R	L/R	5	400-999	450	495	2005	2005			9	10	97.4						
192	19035	793	Buchanan Drive	Buchanan Drive	Arthur Street		Urban	Asphalt	50	2	440	8.5		L/R	L/R	5	200-399	300	330	2005	2005			9	10	97.4						
193	19036	792	Buchanan Drive	Arthur Street	Buchanan Drive		Urban	Asphalt	50	2	189	8.5		L/R	L/R	5	50-199	150	165	2005	2005			9	10	97.4						
194	17284	507	Burnell Street	Hwy #9	North End Turnaround		Semi-Urban	Asphalt	50	2	242	6.9	0.7	L/R	200	5	50-199	140	154	1985	1985			7	9.8	89.9						
195	21083	713	Burt Avenue	124m West of Willis Drive	Church Street North		Urban	Asphalt	50	2	100	8.5		L/R	L/R	4	400-999	500	550	2010	2010			9	10	97.4						
196	21096	703	Burt Avenue	Willis Drive	124m West of Willis Drive		Urban	Asphalt	50	2	124	8.5		L/R	L/R	4	400-999	500	550	2010	2010			9	10	97.4						
197	15856	523	C W Leach Road	Mackenzie Pioneer Road	Hwy #89		Urban	Asphalt	50	2	295	10.8		L/R	L/R	4	3000-3999	3633	3996	1998	1998			8	9.7	92.3						
198	19196	754	Callander Crescent	John W Taylor Avenue	John W Taylor Avenue		Urban	Asphalt	50	2	634	8.5		L/R	L/R	5	400-999	400	440	2006	2006			9	10	97.4						
199	17171	780	Carter Court	McCurdy Drive	West End Cul-De-Sac		Urban	Asphalt	50	2	73	8.5		L/R	L/R	5	50-199	100	110	1997	1997			9	10	97.4						
200	16829	411	Cedar Street	Haines Street	Patterson Street		Semi-Urban	Asphalt	50	2	88	6.4	0.5	L/R	200	5	50-199	50	60	1985	1985			6	9.6	83.1						
201	16836	94	Cedar Street	Hendrie Street	Haines Street		Semi-Urban	Asphalt	50	2	185	6.4	0.5	L/R	200	5	50-199	50	60	1985	1985			4	8.3	55.5	PR	\$191	\$35,335	NOW	0.9	
202	16041	253	Centre Street	Wellington Street East	Victoria Street East		Urban	Asphalt	50	2	120	8.8		LCI	LCI	4	2000-2999	2000	2200	1965	1965			5	9.5	75.5	R	\$296	\$35,520	6 to 10 Years	6.3	
203	16065	734	Centre Street	Nelson Street West	Wellington Street West		Urban	Asphalt	50	2	122	8.5		L/R	L/R	4	1000-1999	1528	1681	2009	2009			9	10	97.4						
204	16084	646	Centre Street	Albert Street East	Nelson Street West		Urban	Asphalt	50	2	124	8.5		L/R	L/R	4	1000-1999	1525	1678	2009	2010			9	9.9	96.1						
205	16100	506	Centre Street	Tupper Boulevard	Albert Street East		Urban	Asphalt	50	2	119	11.8		LCI	ART	5	200-399	300	330	1965	1965			8	9.4	89.9						
206	16117	69	Centre Street	Beech Street	Tupper Street East		Urban	Asphalt Over Concrete	50	2	120	11.8		LCI	ART	5	50-199	150	165	1965	1965			High	4	8.1	53.6	R	\$632	\$75,840	NOW	0.4
207	16771	558	Centre Street North	Beeton	Lilly Street		Semi-Urban	Asphalt	50	2	186	6.2	1.2	L/R	400	4	400-999	550	660	1975	2006			8	9.8	93.4						
208	16781	604	Centre Street North	Beeton	Thomas Street		Semi-Urban	Asphalt	50	2	91	6.2	1.2	L/R	400	4	400-999	930	1116	1975	2006			8	10	94.6						
209	16796	599	Centre Street North	Beeton	McKeeown Street		Semi-Urban	Asphalt	50	2	93	6.2	1.2	L/R	400	4	400-999	930	1116	1975	2006			8	10	94.5						
210	16810	595	Centre Street North	Beeton	Stewart Street		Semi-Urban																									

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

Line Number	Municipal ID	Priority Rank	Name	From	To	Boundary Road	Environment	Surface	Speed (km/h)	Numbr of Lanes	Length (m)	Surface Width	Shoulder Width	Function Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Need	RCR	DMI	Condition Index (PCI)	Condition Improvement	Condition Improvement Cost	Condition Improvement Time	Condition Improvement Bench Mark Cost/m	Condition Improvement Priority Guide Number (PGN)
268	16877	48	Dayfoot Street	Kate Aitken Crescent	Kate Aitken Crescent		Semi-Urban	Asphalt	50	2	292	6.5	0.9	L/R	500	4	1000-1999	1300	1690	1985		High	4	7.5	48.4	BS	\$407	\$118,844	NOW	13.8	
269	16891	701	Dayfoot Street	Prospect Street	Kate Aitken Crescent		Semi-Urban	Asphalt	50	2	140	7.0	0.5	L/R	500	4	1000-1999	1500	1950	2009		High	9	10	97.4						
270	16914	53	Dayfoot Street	Main Street West	Prospect Street		Semi-Urban	Asphalt	50	2	277	6.5	0.7	L/R	500	4	1000-1999	1839	2391	1985			4	7.8	51.0	PR	\$223	\$61,771	NOW	33.9	
271	17199	61	Dickerson Street	Mill Street East	Wilson Street		Semi-Urban	Asphalt	50	2	102	6.0	1.3	L/R	400	4	400-999	960	1056	1975	1975	Deficient	High	4	8.1	53.6	PR	\$223	\$22,746	NOW	15.3
272	17222	153	Dillane Street East	Rogers Road	Keogh Street		Urban	Asphalt	50	2	123	7.4		L/R	L/R	5	400-999	450	495	1975	1975		High	4	9.3	64.0	R	\$364	\$44,772	1 to 5 Years	1.7
273	17230	127	Dillane Street East	Queen Street South	Rogers Road		Urban	Asphalt	50	2	188	7.4		L/R	L/R	4	400-999	750	825	1975	1975		High	4	9.1	62.0	R	\$364	\$68,432	NOW	3.0
274	17232A	145	Dillane Street West	Queen Street South	0.07 Km West of Queen Street South		Urban	Asphalt	50	2	75	9.1		L/R	L/R	5	50-199	190	209	1995	1995			4	9.1	62.0	R	\$364	\$27,300	1 to 5 Years	0.8
275	17232	325	Dillane Street West	0.07 Km West of Queen Street South	West End Turnaround		Semi-Urban	Gravel	50	2	29	8.0	0.5	L/R	100	6	03-49	20	22	1940				6	8.5	72.2					
276	16023	118	Dominion Street	Church Street North	Queen Street		Semi-Urban	Asphalt	50	2	182	6.5	0.9	LCI	500	4	1000-1999	1000	1100	1975	1975		High	4	8.9	60.3	PR	\$223	\$40,586	1 to 5 Years	13.6
277	15931	548	Doner Street	Elm Street	George Street		Semi-Urban	Asphalt	50	2	98	7.0	1.0	L/R	500	4	1000-1999	1200	1320	1955	2007		8	9.8	93.0						
278	15946	711	Doner Street	Banting Drive	Elm Street		Semi-Urban	Asphalt	50	2	97	7.0	1.0	L/R	500	4	1000-1999	1200	1320	1955	2007		9	10	97.4						
279	15964	615	Doner Street	Church Street North	Morrow Drive		Semi-Urban	Asphalt	50	2	227	7.0	1.0	L/R	500	4	1000-1999	1200	1320	1955	2007		9	9.7	94.8						
280	15969	679	Doner Street	Morrow Drive	Banting Drive		Semi-Urban	Asphalt	50	2	150	7.0	1.0	L/R	500	4	1000-1999	1200	1320	1955	2007		9	10	97.1						
281	15976	238	Douglas Drive	Albert Street East	Tottenham Road		Semi-Urban	Asphalt	50	2	340	6.2	0.5	L/R	200	5	50-199	160	176	1995	1995		5	8.9	70.1	R	\$119	\$40,460	6 to 10 Years	1.5	
282	15982	768	Downey Avenue	Dungey Crescent	Victoria Street East		Semi-Urban	Asphalt	50	2	130	6.7	0.5	L/R	300	5	200-399	280	308	1955	2010		9	10	97.4						
283	16003	765	Downey Avenue	Nelson Street East	Dungey Crescent		Semi-Urban	Asphalt	50	2	112	6.7	0.5	L/R	300	5	200-399	280	308	1955	2010		9	10	97.4						
284	16029	798	Downey Avenue	Albert Street East	Nelson Street East		Semi-Urban	Asphalt	50	2	112	7.0	0.5	L/R	300	5	200-399	280	308	1955	2010		9	10	97.4						
285	16006	497	Dufferin Street North	Victoria Street East	Queen Street		Urban	Asphalt	50	2	101	9.1		L/R	L/R	5	400-999	400	440	1975	1975		7	9.8	89.4						
286	16035	450	Dufferin Street South	Wellington Street East	Victoria Street East		Urban	Asphalt	50	2	120	8.3		L/R	L/R	4	1000-1999	1492	1641	2001	2001		8	9.2	87.8						
287	16055	340	Dufferin Street South	Nelson Street West	Wellington Street West		Urban	Asphalt	50	2	122	8.3		L/R	L/R	4	1000-1999	1490	1639	2001	2001		7	8.8	81.0						
288	16077	311	Dufferin Street South	Albert Street East	Nelson Street West		Urban	Asphalt	50	2	123	8.3		L/R	L/R	4	1000-1999	1490	1639	2001	2001		7	8.6	79.1	R	\$228	\$28,044	6 to 10 Years	5.2	
289	16094	360	Dufferin Street South	Tupper Street East	Albert Street East		Urban	Asphalt	50	2	119	9.3		LCI	LCI	3	4000-4999	4380	4818	2002	2002		8	9	85.8						
290	16129	533	Dufferin Street South	Parsons Road	Tupper Street East		Urban	Asphalt	50	2	255	9.3		LCI	LCI	3	4000-4999	4000	4400	2002	2008		9	9.6	94.1						
291	16189	473	Dufferin Street South	South End	Parsons Road		Semi-Urban	Asphalt	50	2	459	7.3	1.2	LCI	700	4	3000-3999	3000	3300	1975	2008		7	9.8	89.4						
292	16866	492	Dugdale Avenue	McCullough Avenue	North End Barricade		Urban	Asphalt	50	2	170	8.5		L/R	L/R	5	50-199	160	208	1995	1995		7	9.7	89.0						
293	15984	403	Dungey Crescent	Nelson Street East	Downey Avenue		Urban	Asphalt	50	2	407	8.5		L/R	L/R	5	50-199	120	132	1995	1995		6	9.5	82.3						
294	21208	592	Dunham Drive	Highway 89	MacKenzie Pioneer		Urban	Asphalt	50	2	293	12.0		CCI	CCI	4	3000-3999	3000	4800	2010	2010		9	9.6	94.1						
295	19195	760	Dunning Drive	John W Taylor Avenue	John W Taylor Avenue		Urban	Asphalt	50	2	348	8.5		L/R	L/R	5	200-399	300	330	2006	2006		9	10	97.4						
296	16020	108	East Avenue	Nelson Street East	Victoria Street East		Semi-Urban	Asphalt	40	2	259	6.2	0.9	L/R	400	5	400-999	900	990	1975	1975	Deficient	4	8.6	57.9	PR	\$223	\$57,757	NOW	13.0	
297	17134	28	Eastern Avenue	Perdue Place	Alphonsus Court		Semi-Urban	Asphalt	50	2	96	7.0	1.4	L/R	400	4	400-999	580	638	1985	1985		3	8.1	40.5	REC	\$648	\$62,208	NOW	4.1	

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

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357	16761	611	Haines Street	English Drive	Lilly Street East		Urban	Asphalt	50	2	204	9.1		L/R	L/R	5	50-199	150	180	1995	1995			8	9.9	93.8					
358	16805	454	Haines Street	Stewart Street	English Drive		Urban	Asphalt	50	2	278	9.1		L/R	L/R	5	200-399	200	240	1995	1995			7	9.4	85.8					
359	17092	478	Hammell Boulevard	Lavrock Street	Wolfe Avenue		Urban	Asphalt	50	2	118	8.6		L/R	L/R	5	200-399	380	418	1985	1985			7	9.6	87.9					
360	17110	270	Hammell Boulevard	Metcalf Crescent	Lavrock Street		Urban	Asphalt	50	2	375	8.6		L/R	L/R	5	200-399	380	418	1985	1985			5	9.1	72.1	R	\$228	\$85,500	6 to 10 Years	1.8
361	17121	500	Hammell Boulevard	Fraser Avenue	Metcalf Crescent		Urban	Asphalt	50	2	93	8.6		L/R	L/R	5	200-399	380	418	1985	1985			7	9.8	89.5					
362	16832	92	Hammond Street	Highland Road	Second Street		Urban	Asphalt	50	2	166	8.5		L/R	L/R	5	50-199	170	204	1975	1975			4	8.3	54.9	R	\$364	\$60,424	NOW	0.8
363	16197	358	Hancey Crescent	King Street	Mackenzie Street		Urban	Asphalt	50	2	203	10.3		L/R	L/R	5	200-399	200	220	1975	1975			6	9.2	79.1	R	\$228	\$46,284	6 to 10 Years	0.7
364	16164	585	Henderson Crescent	Eighth Avenue	Eighth Avenue		Urban	Asphalt	50	2	465	8.5		L/R	L/R	5	200-399	300	330	1995	1995			9	9.5	92.9					
365	15905	540	Heydon Avenue	Essa Road	Bowerman Boulevard		Urban	Asphalt	50	2	182	9.1		L/R	L/R	4	400-999	500	550	1995	1995			8	9.8	92.7					
366	15932	463	Heydon Avenue	Bowerman Boulevard	King Street North		Urban	Asphalt	50	2	264	9.1		L/R	L/R	4	400-999	500	550	1995	1995			7	9.7	88.8					
367	16833	426	Highland Road	Dayfoot Street	Macpherson Court		Urban	Asphalt	50	2	90	8.5		L/R	L/R	5	400-999	400	480	1985	1985			6	9.7	83.8					
368	16838	291	Highland Road	Crawford Circle	Second Street		Urban	Asphalt	50	2	74	8.5		L/R	L/R	5	400-999	400	480	1975	1975			5	9.4	74.4	R	\$228	\$16,872	6 to 10 Years	1.8
369	16839	318	Highland Road	Macpherson Court	Crawford Circle		Urban	Asphalt	50	2	75	8.5		L/R	L/R	5	400-999	400	480	1975	1975			5	9.5	75.5	R	\$228	\$17,100	6 to 10 Years	1.7
370	17227	294	Hopper Court	The Boulevard	West End Cul-De-Sac		Urban	Asphalt	50	2	28	9.2		L/R	L/R	5	50-199	60	66	1975	1975			5	9.4	74.7	R	\$228	\$6,384	6 to 10 Years	0.3
371	16195	149	Hunter Court	Tupper Boulevard	South End Cul-De-Sac		Urban	Asphalt	50	2	122	10.3		L/R	L/R	5	50-199	100	110	1975	1975			5	8.1	62.8	R	\$364	\$44,408	1 to 5 Years	0.4
372	15914A	83	Hussey Street	Evans Road	0.06 Km East of Evans Road		Semi-Urban	Asphalt	50	2	66	6.7	1.2	L/R	400	4	400-999	500	550	1965	1965	High		4	8.4	56.2	PR	\$223	\$14,718	NOW	7.5
373	15914B	345	Hussey Street	0.06 Km East of Evans Road	Hutchinson Drive		Urban	Asphalt	50	2	83	8.5		L/R	L/R	4	400-999	500	550	1985	1985			6	9.4	81.6					
374	15917	88	Hussey Street	Church Street North	Evans Road		Semi-Urban	Asphalt	50	2	96	6.7	1.2	L/R	400	4	400-999	500	550	1965	1965			4	8.7	58.8	PR	\$223	\$21,408	NOW	7.1
375	15925	84	Hussey Street	Banting Drive	Church Street North		Semi-Urban	Asphalt	50	2	96	6.7	1.2	L/R	400	4	400-999	700	770	1965	1965			4	8.5	56.8	PR	\$223	\$21,408	NOW	10.4
376	15892	505	Hutchinson Drive	Willis Drive	North End		Urban	Asphalt	50	2	122	8.9		L/R	L/R	5	50-199	150	165	1985	1985			7	9.8	89.9					
377	15902	486	Hutchinson Drive	Hussey Street	Willis Drive		Urban	Asphalt	50	2	89	8.9		L/R	L/R	4	400-999	500	550	1985	1985			7	9.9	90.3					
378	15956	374	Hutchinson Drive	Tracey Drive	Hussey Street		Urban	Asphalt	50	2	277	8.9		L/R	L/R	4	400-999	500	550	1985	1985			6	9.7	83.6					
379	15968	526	Hutchinson Drive	Tracey Drive	South End		Semi-Urban	Asphalt	50	2	35	6.7	1.2	L/R	200	5	50-199	60	66	1985	1985			8	9.6	91.0					
380	16233A	472	Industrial Parkway	977m West of Tottenham Road	Church Street South		Urban	Asphalt	60	2	1134	14.5		ART	4ART	3	6000-7999	6795	8834	1997	1997			7	10	91.4					
381	16233B	504	Industrial Parkway	Tottenham Road	977m West of Tottenham Road		Urban	Asphalt	60	4	977	14.5		ART	4ART	4	10000-1199	10195	13254	1997	1997			7	10	91.4					
382	16234	415	Industrial Parkway	King Street	30 Sideroad Adjala		Rural	Asphalt	50	2	495	7.0	2.0	800	800	3	5000-5999	5746	7470	1997	1997			8	9.3	88.6					
383	16238	465	Industrial Parkway	Preston Avenue	Young Street		Urban	Asphalt	50	5	324	19.0		ART	5ART	3	5000-5999	5557	7224	1997	1997			8	9.6	91.0					
384	16243A	641	Industrial Parkway	Church Street South	0.2 Km West of Church Street South		Urban	Asphalt	60	2	196	14.5		ART	4ART	3	6000-7999	6990	9087	1997	1997			9	9.9	96.5					
385	16243B	414	Industrial Parkway	0.2 Km West of Church Street	Ellis Street		Rural	Asphalt	50	2	387	7.0	2.0	800	800	3	6000-7999	6991	9088	2008	2008			8	9.3	88.6					
386	16244	621	Industrial Parkway	Ellis Street	King Street		Rural	Asphalt	50	2	532	7.0	2.0	800	800	3	6000-7999	6425	8352	1997	1997			9	9.8	95.9					
387	19660	573	Industrial Parkway	30 Sideroad Adjala	Preston Avenue		Rural	Asphalt	50	2	781	7.0	2.0	800	800	3	5000-5999	5650	7345	1997	1997			8	10	94.9					

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446	19424	750	Knight Street	Falkner Road	Anderson Road		Urban	Asphalt	40	2	170	8.5		L/R	L/R	5	50-199	170	187	2005	2005			9	10	97.4						
447	17094	346	Laverock Street	Metcalf Crescent	Hammell Boulevard		Urban	Asphalt	50	2	103	8.6		L/R	L/R	4	400-999	600	660	1985	1985			6	9.5	81.7						
448	17095	413	Laverock Street	Wolfe Avenue	Metcalf Crescent		Urban	Asphalt	50	2	200	8.6		L/R	L/R	4	400-999	730	803	1985	1985			7	9.4	85.8						
449	17097	296	Laverock Street	Queen Street North	Wolfe Avenue		Urban	Asphalt	50	2	62	8.6		L/R	L/R	4	400-999	730	803	1985	1985			5	9.9	78.6	R	\$228	\$14,136	6 to 10 Years	2.6	
450	16738	26	Lilly Street East	Patterson Street	Haines Street		Semi-Urban	Asphalt	50	2	100	6.7	0.8	C/R	C/R	4	1000-1999	1279	2046	1985	1985			3	8.1	40.1	REC	\$648	\$75,942	NOW	11.2	
451	16744	154	Lilly Street East	Haines Street	Hendrie Street		Semi-Urban	Asphalt	50	2	97	6.7	0.8	C/R	C/R	500	4	1000-1999	1300	2080	1985	1985			4	9.3	64.2	PR	\$223	\$21,631	1 to 5 Years	19.8
452	16745	721	Lilly Street East	Hendrie Street	Centre Street North		Semi-Urban	Asphalt	50	2	86	7.0	0.5	C/R	C/R	500	4	1000-1999	1300	2080	1985	2010			9	10	97.4					
453	16746	736	Lilly Street West	Centre Street North	Dayfoot Street		Semi-Urban	Asphalt	50	2	63	7.0	0.5	C/R	C/R	500	4	1000-1999	1300	2080	1975	2010			9	10	97.4					
454	16751	620	Lilly Street West	Dayfoot Street	Bray Street		Urban	Asphalt	50	2	172	7.0		C/R	C/R	4	1000-1999	1300	1820	2010			8	10	94.9							
455	16753	619	Lilly Street West	Bray Street	Smyth Crescent		Urban	Asphalt	50	2	53	7.0		C/R	C/R	4	1000-1999	1200	1560	1975	2010			8	10	94.9						
456	16764	539	Lilly Street West	Smyth Crescent	West End of Beeton		Urban	Asphalt	50	2	213	7.0		C/R	C/R	4	1000-1999	1006	1308	1975	2010			8	9.8	92.7						
457	17250	250	Lionel Stone Avenue East	Wm Smart Road	Adeline Avenue		Urban	Asphalt	50	2	242	7.4		L/R	L/R	4	400-999	600	660	1975	1975			5	9.5	75.3	R	\$228	\$55,176	6 to 10 Years	2.5	
458	17251	241	Lionel Stone Avenue East	Queen Street South	Wm Smart Road		Urban	Asphalt	50	2	225	7.4		L/R	L/R	4	400-999	600	660	1975	1975			5	9.4	74.9	R	\$228	\$51,300	6 to 10 Years	2.5	
459	17255	20	Lionel Stone Avenue West	Rodcliff Road	Queen Street South		Semi-Urban	Asphalt	50	2	83	6.0	1.0	L/R	L/R	5	400-999	450	495	1975	1975	High		3	7.8	39.9	REC	\$648	\$53,784	NOW	3.3	
460	16007	1	Lorne Street	Wellington Street East	Victoria Street East		Urban	Asphalt Over Concrete	40	2	122	10.7		LCI	LCI	5	400-999	770	847	1955	1975			2	6.3	39.9	REC	\$1,316	\$160,552	NOW	4.2	
461	16037	341	Lorne Street	Nelson Street East	Wellington Street East		Urban	Asphalt	40	2	120	9.2		LCI	LCI	5	400-999	770	847	1975	1975			6	9	77.7	R	\$296	\$35,520	6 to 10 Years	2.2	
462	16057	67	Lorne Street	Albert Street East	Nelson Street East		Semi-Urban	Asphalt	50	2	121	6.8	0.7	L/R	300	5	200-399	240	264	1975	1975	High		4	8	52.5	PR	\$191	\$23,111	NOW	4.6	
463	21209	625	Mackenzie Pioneer	Dunam Drive	Industrial Parkway		Semi-Urban	Asphalt	50	2	497	7.0	1.5	CCI	500	4	1000-1999	1000	1600	2011	2011			9	9.7	95.1						
464	19100	605	Mackenzie Pioneer Road	50 East of Sunset Boulevard (End)	Sunset Boulevard		Urban	Asphalt	50	2	50	8.5		L/R	L/R	6	0-49	40	44	1995	1995			8	9.8	92.7						
465	19101	542	Mackenzie Pioneer Road	Sunset	Tuscany Grande		Urban	Asphalt	50	2	156	8.5		L/R	L/R	4	3000-3999	3500	3850	1995	1995			8	9.8	92.7						
466	19102A	544	Mackenzie Pioneer Road	0.36 Km West of Tuscany Grande	C W Leach Road		Semi-Urban	Asphalt	50	2	262	6.8	0.5	L/R	700	4	3000-3999	3500	3850	1995	1995			8	9.8	92.7						
467	19102B	543	Mackenzie Pioneer Road	Tuscany Grande	0.36 Km West of Tuscany Grande		Urban	Asphalt	50	2	364	6.7		L/R	L/R	4	3000-3999	3500	3850	1995	1995			8	9.8	92.7						
468	16176	307	Mackenzie Street	King Street	Hancey Crescent		Urban	Asphalt	50	2	81	10.4		L/R	L/R	4	400-999	500	550	1975	1975			6	9.1	78.8	R	\$228	\$18,468	6 to 10 Years	1.8	
469	16180	200	Mackenzie Street	Whiteside Court	King Street		Urban	Asphalt	50	2	73	10.3		L/R	L/R	4	400-999	800	880	1975	1975	High		5	8.8	69.2	R	\$364	\$26,572	NOW	2.6	
470	16191	225	Mackenzie Street	Hancey Crescent	Mitchell Avenue		Urban	Asphalt	50	2	271	10.4		L/R	L/R	4	400-999	500	550	1975	1975			5	9.2	72.9	R	\$228	\$61,788	6 to 10 Years	2.3	
471	16192	86	Mackenzie Street	Tupper Boulevard	Whiteside Court		Urban	Asphalt	50	2	104	10.3		L/R	L/R	4	400-999	800	880	1975	1975	High		4	8.5	57.3	R	\$364	\$37,856	NOW	3.6	
472	16844	383	Macpherson Court	Highland Road	South End Cul-De-Sac		Urban	Asphalt	50	2	74	8.5		L/R	L/R	5	50-199	80	96	1975	1975			6	9.4	81.1						
473	16892	57	Main Street East	Patterson Street	East Limit of Beeton		Semi-Urban	Asphalt	50	2	250	6.7	2.5	ART	700	4	3000-3999	3982	5575	1995	1995	High		4	8	52.5	PR	\$331	\$82,750	NOW	50.0	
474	16896	429	Main Street East	Centre Street North	Patterson Street		Urban	Asphalt	50	2	213	13.0		ART	4ART	3	4000-4999	4500	6300	1995	2004			8	9.4	89.1						
475	16898	316	Main Street West	Second Street	Centre Street North		Urban	Asphalt	50	2	109	13.0		ART	4ART	3	4000-4999	4700	6580	1995	2004			8								

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

Line Number	Municipal ID	Priority Rank	Name	From	To	Boundary Road	Environment	Surface	Speed (km/h)	Numbr of Lanes	Length (m)	Surface Width	Shoulder Width	Function Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Need	RCR	DMI	Condition Index (PCI)	Condition Improvement	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition Improvement Priority Guide Number (PGN)
535	15983	428	Nelson Street East	Dungey Crescent	John Avenue		Urban	Asphalt	50	2	105	8.5		L/R	L/R	5	50-199	120	132	1995	1995			6	9.7	84.0					
536	16002	408	Nelson Street East	Downey Avenue	Dungey Crescent		Urban	Asphalt	50	2	301	8.5		L/R	L/R	5	50-199	120	132	1995	1995			6	9.6	82.7					
537	16019	221	Nelson Street East	East Avenue	.06 Km East of East Avenue		Semi-Urban	Gravel	40	2	68	6.5	0.5	LCI	200	5	50-199	150	165	1940		Deficient			6	7.9	66.9				
538	16027	19	Nelson Street East	Fletcher Street	East Avenue		Semi-Urban	Asphalt	40	2	87	6.7	0.5	L/R	L/R	5	400-999	400	440	1965	1965			3	7.7	39.9	REC	\$648	\$56,376	NOW	3.0
539	16036	16	Nelson Street East	Lorne Street	Fletcher Street		Semi-Urban	Asphalt	40	2	191	6.7	0.5	L/R	L/R	5	400-999	400	440	1965	1965	Deficient		3	7.3	39.9	REC	\$648	\$123,768	NOW	3.2
540	16046	330	Nelson Street East	McDonald Street	Lorne Street		Urban	Asphalt	40	2	184	9.1		L/R	L/R	5	400-999	750	825	1965	1965			5	9.6	76.4	R	\$228	\$41,952	6 to 10 Years	3.0
541	16054	216	Nelson Street East	Dufferin Street South	McDonald Street		Urban	Asphalt	50	2	182	9.1		L/R	L/R	4	400-999	750	825	1965	1965			5	9.1	71.6	R	\$228	\$41,496	6 to 10 Years	3.6
542	16064	189	Nelson Street East	Centre Street South	CP Rail Line		Urban	Asphalt	50	2	114	8.0		L/R	L/R	5	50-199	150	165	1965	1965			5	8.5	66.2	R	\$364	\$41,496	1 to 5 Years	0.5
543	160648	386	Nelson Street East	CP Rail Lin	Dufferin Street South		Urban	Asphalt	50	2	43	6.5		L/R	L/R	6	0-149	20	22	1965	1965			6	9.1	78.8	R	\$228	\$9,804	6 to 10 Years	0.1
544	16073	190	Nelson Street East	Church Street South	Centre Street South		Urban	Asphalt Over Concrete	50	2	183	10.4		L/R	L/R	5	400-999	460	506	1955	1965			4	9.6	66.8	R	\$364	\$66,612	1 to 5 Years	1.6
545	16085	135	Nelson Street West	Paris Street	Church Street South		Urban	Asphalt Over Concrete	50	2	259	10.4		L/R	L/R	4	1000-1999	1053	1158	1955	1965			4	9.2	63.5	R	\$364	\$94,276	NOW	4.0
546	16091	35	Nelson Street West	Orange Street	Paris Street		Urban	Concrete	50	2	133	8.3		L/R	L/R	4	1000-1999	1050	1155	1945	1945			3	8.8	46.4	BS	\$496	\$65,968	NOW	8.7
547	16101	380	Nelson Street West	Ontario Street South	Orange Street		Urban	Asphalt	50	2	209	8.3		L/R	L/R	4	1000-1999	1050	1155	1965	1965			7	9.2	83.9					
548	16109	434	Nelson Street West	King Street South	Ontario Street South		Urban	Asphalt	50	2	223	8.3		L/R	L/R	4	1000-1999	1050	1155	1965	1965			7	9.5	86.9					
549	17090	124	Nolan Road	Queen Street North	East Limit of Tottenham		Rural	Asphalt	40	2	499	6.2	1.6	600	600	4	2000-2999	2402	3603	1995	2007			5	8	61.7	PR	\$331	\$165,169	1 to 5 Years	25.4
550	19612	784	Nunn Crescent	John W Taylor Avenue	John W Taylor Avenue		Urban	Asphalt	50	2	449	8.5		L/R	L/R	5	200-399	300	330	2008	2008			9	10	97.4					
551	15869	425	Oak Street	Banting Drive	East End		Urban	Asphalt	50	2	92	9.1		L/R	L/R	4	400-999	800	880	1995	1995			7	9.4	86.2					
552	15879	483	Oak Street	Gray Avenue	Banting Drive		Urban	Asphalt	50	2	202	9.1		L/R	L/R	4	400-999	800	880	1995	1995			7	9.9	90.1					
553	15885	578	Oak Street	0.05 Km East of William Street	Gray Avenue		Urban	Asphalt	50	2	100	9.1		L/R	L/R	4	400-999	800	880	1995	1995			8	9.9	93.8					
554	15890	581	Oak Street	Cowan Avenue	William Street		Urban	Asphalt	35	2	103	9.1		L/R	L/R	5	1000-1999	1000	1100	1995	1995			8	9.8	92.7					
555	17103	515	Oleary Court	Queen Street North	West End Cul-De-Sac		Urban	Asphalt	50	2	172	8.5		L/R	L/R	5	50-199	150	165	1995	1995			7	9.9	90.3					
556	16063	510	Ontario Street North	Victoria Street West	Elizabeth Street		Urban	Asphalt	50	2	66	7.5		L/R	L/R	5	200-399	200	220	1975	1975			7	9.9	90.1					
557	16082	89	Ontario Street South	Wellington Street West	Victoria Street West		Urban	Concrete	50	2	120	8.4		L/R	L/R	4	1000-1999	1350	1485	1945	1945			4	8.8	59.2	R	\$364	\$43,680	NOW	5.8
558	16102	365	Ontario Street South	Nelson Street West	Wellington Street West		Urban	Asphalt	50	2	121	8.5		L/R	L/R	4	1000-1999	1260	1386	1965	2008			7	9	82.8					
559	16120	731	Ontario Street South	Albert Street West	Nelson Street West		Urban	Asphalt	50	2	135	8.5		L/R	L/R	4	1000-1999	1260	1386	2008	2008			9	10	97.4					
560	16125	174	Ontario Street South	Tupper Street	Albert Street West		Urban	Asphalt	50	2	39	10.4		L/R	L/R	4	1000-1999	1060	1166	1965	1965			4	9.7	67.7	R	\$364	\$14,196	NOW	3.6
561	16112	503	Orange Street	Albert Street West	Nelson Street West		Urban	Asphalt Over Concrete	50	2	131	7.3		L/R	L/R	5	200-399	200	220	1955	1985			7	9.8	89.7					
562	17144	146	Orsi Court	Alexander Street	West End Cul-De-Sa		Urban	Asphalt	50	2	30	8.5		L/R	L/R	5	50-199	50	55	1975	1975			4	9.1	62.0	R	\$364	\$10,920	1 to 5 Years	0.2
563	19595	650	Paddison Place	John W Taylor Avenue	John W Taylor Avenue		Urban	Asphalt	50	2	286	8.5		L/R	L/R	5	200-399	300	330	2010	2010			9	9.8	95.4					
564	16070	482	Paris Street	Wellington Street West	Victoria Street West		Urban	Asphalt	50	2	121	7.4		LCI	LCI	5	400-999	400	440	1995	1995			7	9.6	88.2					
565	16086	131	Paris Street</																												

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

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624	16850	799	Reynolds Avenue	Coburn Crescent	Coburn Crescent		Urban	Asphalt	50	2	89	9.5		L/R	L/R	5	200-399	200	220	1995	1995			9	10	97.4						
625	16862	787	Reynolds Avenue	Coburn Crescent	Bateman Street		Urban	Asphalt	50	2	89	9.5		L/R	L/R	5	200-399	200	220	1995	1995			9	10	97.4						
626	17212	616	Richmond Street East	Forestell Street	Keogh Street		Semi-Urban	Asphalt	50	2	160	6.0	2.0	L/R	400	5	400-999	450	495	1975	2004			8	9.9	93.9						
627	17217	476	Richmond Street East	Queen Street South	Forestell Street		Semi-Urban	Asphalt	50	2	153	6.0	2.0	L/R	400	4	400-999	710	781	1975	2004			7	9.8	89.7						
628	17223	141	Richmond Street West	Queen Street South	West End Checkerboard		Semi-Urban	Asphalt	50	2	136	6.5	1.0	L/R	200	5	50-199	150	165	1975	1975			5	7.8	60.4	PR	\$191	\$25,976	1 to 5 Years	2.4	
629	19611	785	Riley Road	John W Taylor Avenue	End		Urban	Asphalt	50	2	124	8.5		L/R	L/R	5	50-199	150	165	2010	2010			9	10	97.4						
630	16209	381	Robins Lane	Anderson Road	Riverley Lane		Urban	Asphalt	50	2	80	9.1		L/R	L/R	4	400-999	750	825	2005	2005			6	9.7	84.0						
631	16869	555	Robinson Court	Danielle Avenue South	West End Cul-De-Sac		Urban	Asphalt	50	2	62	8.5		L/R	L/R	5	50-199	110	143	1995	1995			8	9.7	92.1						
632	17256	91	Rodcliff Road	Lionel Stone Avenue West	North End		Semi-Urban	Asphalt	50	2	171	6.0	1.0	L/R	200	5	50-199	150	165	1965	1965			4	8.3	54.9	PR	\$191	\$32,661	NOW	2.7	
633	17266	113	Rodcliff Road	South End	Lionel Stone Avenue West		Semi-Urban	Asphalt	50	2	178	6.0	1.0	L/R	200	5	50-199	150	165	1965	1965			4	8.8	59.2	PR	\$191	\$33,998	NOW	2.5	
634	17238	187	Rogers Road	Adeline Avenue	Dillane Street East		Urban	Asphalt	40	2	222	9.5		L/R	L/R	5	400-999	760	836	1975	1975			4	9.4	65.3	R	\$364	\$80,808	1 to 5 Years	2.8	
635	17241	106	Rogers Road	Queen Street South	Adeline Avenue		Urban	Asphalt	40	2	134	9.5		L/R	L/R	5	400-999	970	1067	1975	1975			High	4	8.6	57.5	R	\$364	\$48,776	NOW	4.3
636	15938	567	Rogers Road Alliston	Tottenham Road	East End		Semi-Urban	Asphalt	50	2	244	6.7	1.8	L/R	200	5	50-199	100	110	1995	1995			8	9.7	92.4						
637	19163	790	Ruthven Crescent	Falkner Road	Falkner Road		Urban	Asphalt	40	2	224	8.5		L/R	L/R	5	200-399	220	242	2006	2006			9	10	97.4						
638	21297	769	Scott Drive	Morrison Avenue	8th Avenue		Semi-Urban	Asphalt	50	2	152	8.5		L/R	300	5	200-399	250	275	2010	2010			9	10	97.4						
639	16823	239	Second Street	Stewart Street	Hammond Street		Urban	Asphalt	50	2	91	8.5		L/R	L/R	5	200-399	300	360	1975	1975			5	8.9	70.1	R	\$228	\$20,748	6 to 10 Years	2.1	
640	16834	140	Second Street	Hammond Street	Highland Road		Urban	Asphalt	50	2	90	8.5		L/R	L/R	5	200-399	200	240	1975	1975			4	8.9	60.3	R	\$364	\$32,760	1 to 5 Years	0.9	
641	16842	255	Second Street	Highland Road	South End Turnaround		Urban	Asphalt	50	2	45	8.5		L/R	L/R	6	01-49	30	36	1975	1975			5	9.1	71.8	R	\$228	\$10,260	6 to 10 Years	0.1	
642	16880	401	Second Street	Prospect Street	North End Checkerboard		Semi-Urban	Asphalt	50	2	237	6.3	0.5	L/R	200	5	50-199	150	180	1975	2003			6	9.5	82.3						
643	16899A	757	Second Street	Main Street East	0.07 Km North of Main Street East		Urban	Asphalt	50	2	72	6.7	0.6	LCI	LCI	5	50-199	150	180	1975	1975			9	10	97.4						
644	16899B	480	Second Street	0.07 Km North of Main Street East	Prospect Street		Semi-Urban	Asphalt	50	2	158	6.1	0.6	L/R	200	5	50-199	150	180	1975	1975			7	9.6	88.0						
645	17812B	719	Shepard Avenue	310m East of Wallace Street	Church Street North		Urban	Asphalt	50	2	47	8.5		L/R	L/R	4	1000-1999	1000	1100	2011	2011			9	10	97.4						
646	21090	726	Shepard Avenue	Swenson Street	Boyne Street		Urban	Asphalt	50	2	68	8.5		L/R	L/R	4	1000-1999	1000	1100	2011	2011			9	10	97.4						
647	21091	704	Shepard Avenue	James A McGaule Avenue	Swenson Street		Urban	Asphalt	50	2	250	8.5		L/R	L/R	4	1000-1999	1000	1100	2011	2011			9	10	97.4						
648	21092	705	Shepard Avenue	Swenson Street	James A McGaule Avenue		Urban	Asphalt	50	2	260	8.5		L/R	L/R	4	1000-1999	1000	1100	2011	2011			9	10	97.4						
649	21093	709	Shepard Avenue	Church Street North	Swenson Street		Urban	Asphalt	50	2	90	8.5		L/R	L/R	4	1000-1999	1000	1100	2011	2011			9	10	97.4						
650	17764	565	Shephard Avenue	Stoneham Street	Cowan Avenue		Urban	Asphalt	50	2	148	8.5		L/R	L/R	4	1000-1999	1000	1100	2003	2003			9	9.6	93.5						
651	17765	566	Shephard Avenue	Cowan Avenue	Wallace Street		Urban	Asphalt	50	2	136	8.5		L/R	L/R	4	1000-1999	1000	1100	2003	2004			9	9.6	93.5						
652	17812A	678	Shephard Avenue	Wallace Street	0.31 Km East of Wallace Street		Urban	Asphalt	50	2	310	8.5		L/R	L/R	4	1000-1999	1000	1100	2003	2004			9	10	97.1						
653	15808	321	Sideroad 10	1.38 Km North of Line 14 (E)	Hwy #89		Rural	Asphalt	80	2	282	6.5	1.8	500	500	3	1000-1999	1975	2962	1955	1999			7	9.1	83.4	R	\$149	\$42,018	6 to 10 Years	10.0	
654	15997	320	Sideroad 10	14th Line (E)	1.38 Km North of 14th Line (E)		Rural	Asphalt	80																							

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

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713	15913	612	Sir Frederick Banting Road	Victoria Street	John W Taylor Avenue		Urban	Asphalt	60	2	566	8.7		C/R	C/R	3	3000-3999	3415	4440	2010	2010			9	9.8	95.8					
714	19184A	657	Sir Frederick Banting Road	John W Taylor Avenue	North Limit of Alliston		Urban	Asphalt	60	2	141	9.3		C/R	C/R	4	400-999	850	1105	2010	2010			9	9.9	96.4					
715	19184B	718	Sir Frederick Banting Road	141m North of John W Taylor Avenue	Municipal Boundary		Urban	Asphalt	60	2	1093	7.4	1.5	C/R	C/R	4	400-999	836	1087	2010	2011			9	10	97.4					
716	15961	60	Smalley Street	Victoria Street East	Queen Street		Semi-Urban	Asphalt	50	2	99	7.0	0.8	L/R	400	4	400-999	600	660	1965	1965	High		4	8.1	53.2	PR	\$223	\$22,077	NOW	9.7
717	16207	686	Smith Street	150 M South of Preston Avenue	Eighth Avenue		Urban	Asphalt	50	2	248	8.5		L/R	L/R	5	200-399	300	330	1997	1997			9	9.9	96.7					
718	16208	629	Smith Street	Preston Avenue	150 M South of Preston Avenue		Urban	Asphalt	50	2	155	8.5		L/R	L/R	5	200-399	300	330	1997	1997			8	9.9	94.3					
719	16754	392	Smyth Crescent	Lilly Street West	East End Cul-De-Sac		Urban	Asphalt	50	2	197	8.5		L/R	L/R	5	200-399	200	220	1975	1975			6	9.5	81.8					
720	19608	776	Steele Street	John W Taylor Avenue	Davidson Drive		Urban	Asphalt	50	2	211	8.5		L/R	L/R	5	200-399	300	330	2010	2010			9	10	97.4					
721	19609	786	Steele Street	Davidson Drive	John W Taylor Avenue		Urban	Asphalt	50	2	263	8.5		L/R	L/R	5	200-399	300	330	2010	2010			9	10	97.4					
722	16146	162	Stewart Avenue	Kerr Boulevard	Mitchell Avenue		Urban	Asphalt	50	2	154	10.3		L/R	L/R	4	1000-1999	1350	1485	1975	1975	High		4	9.5	66.1	R	\$364	\$56,056	NOW	4.8
723	16166	155	Stewart Avenue	Cunningham Drive	Kerr Boulevard		Urban	Asphalt	50	2	160	10.3		L/R	L/R	4	400-999	500	550	1975	1975	High		4	9.4	64.6	R	\$364	\$58,240	NOW	1.9
724	16172	251	Stewart Avenue	Mitchell Avenue	Cunningham Drive		Urban	Asphalt	50	2	92	10.3		L/R	L/R	4	400-999	600	660	1975	1975			5	9.5	75.3	R	\$228	\$20,976	6 to 10 Years	2.5
725	16804	607	Stewart Street East	Haines Street	Patterson Street		Urban	Asphalt	50	2	101	9.5		L/R	L/R	5	200-399	200	240	1995	1995			8	9.9	93.8					
726	16806	518	Stewart Street East	Centre Street	Haines Street		Semi-Urban	Asphalt	50	2	184	6.7	0.5	L/R	200	5	50-199	50	60	1955	2007			7	9.9	90.6					
727	16816	275	Stewart Street West	Second Street	Centre Street North		Urban	Asphalt	50	2	94	8.5		L/R	L/R	5	200-399	200	240	1975	1975			5	9.2	72.5	R	\$228	\$21,432	6 to 10 Years	1.0
728	16819	277	Stewart Street West	Dayfoot Street	Second Street		Urban	Asphalt	50	2	156	8.5		L/R	L/R	5	200-399	200	240	1975	1975			5	9.2	72.7	R	\$228	\$35,568	6 to 10 Years	1.0
729	17658	493	Stoneham Street	Essa Road	Chantier Road		Urban	Asphalt	50	2	86	8.5		L/R	L/R	4	1000-1999	1000	1100	2002	2002			9	9.3	90.9					
730	17762	574	Stoneham Street	Chantier Road	Shephard Avenue		Urban	Asphalt	50	2	258	8.5		L/R	L/R	4	1000-1999	1000	1100	2003	2003			9	9.6	93.7					
731	17763	632	Stoneham Street	Shephard Avenue	North End		Urban	Asphalt	50	2	54	8.5		L/R	L/R	6	01-49	30	33	2003	2003			9	9.6	93.5					
732	16161	328	Storey Gate	Eighth Avenue	Tupper Boulevard		Urban	Asphalt	50	2	71	10.3		L/R	L/R	4	400-999	800	880	1975	1975			8	8.3	79.8	R	\$228	\$16,188	6 to 10 Years	2.7
733	17173	103	Sullivan Drive	Queen Street North	Walkem Drive		Semi-Urban	Asphalt	50	2	91	6.0	0.8	L/R	200	5	50-199	180	198	1975	1975			4	8.5	57.1	PR	\$191	\$17,381	NOW	3.1
734	20599	21	Sullivan Drive	Walkem Drive	West End		Semi-Urban	Asphalt	50	2	54	6.5	1.3	L/R	L/R	5	50-199	50	55	1995	1995			3	7.8	39.9	REC	\$592	\$11968	NOW	0.4
735	21088	764	Swenson Street	Shepard Avenue	James A McGaule Avenue		Urban	Asphalt	50	2	314	8.5		L/R	L/R	5	400-999	450	495	2011	2011			9	10	97.4					
736	21089	763	Swenson Street	James A McGaule Avenue	Shepard Avenue		Urban	Asphalt	50	2	347	8.5		L/R	L/R	5	400-999	450	495	2011	2011			9	10	97.4					
737	17058	511	Tecumseth Heights Drive	6th Line	Themer Court		Semi-Urban	Asphalt	50	2	455	6.7	1.0	L/R	300	5	200-399	200	220	1985	1985			7	9.9	90.1					
738	17064	418	Tecumseth Heights Drive	Themer Court	McCague Court		Semi-Urban	Asphalt	50	2	229	6.7	1.0	L/R	200	5	50-199	120	132	1985	1985			6	9.6	83.3					
739	16905	110	Tecumseth Street North	Main Street	Prospect Street		Semi-Urban	Asphalt	50	2	242	6.1	0.6	L/R	400	5	400-999	450	540	1975	1975			4	8.6	58.2	PR	\$223	\$53,966	NOW	6.8
740	16916	105	Tecumseth Street South	Maple Avenue	Main Street		Semi-Urban	Asphalt	50	2	122	6.7	0.5	L/R	300	5	200-399	341	546	1955	1955	High		4	8.6	57.5	PR	\$191	\$23,302	NOW	7.2
741	16935	196	Tecumseth Street South	South End	Maple Avenue		Semi-Urban	Asphalt	50	2	155	6.7	0.5	L/R	200	5	50-199	50	80	1975	2003			5	8.7	68.2	PR	\$191	\$29,605	1 to 5 Years	0.8
742	17189	59	The Boulevard	Mill Street	Pettit Court		Urban	Asphalt	50	2	70	14.6		L/R	ART	4	400-999	759	835	1975	1975			4	8.1	52.9	R	\$632	\$44,240	NOW	2.2
743	17205	123	The Boulevard																												

**New Tecumseth Road Study**  
Appendix A - Road Inventory and Assessment

Line Number	Municipal ID	Priority Rank	Name	From	To	Boundary Road	Environment	Surface	Speed (km/h)	Numbr of Lanes	Length (m)	Surface Width	Shoulder Width	Function Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Need	RCR	DMI	Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Time	Condition Improvement Priority Guide Number (PGN)	
802	160408	471	Wellington Street East	CP Rail Line	Dufferin Street South		Urban	Asphalt	50	2	52	8.3		L/R	L/R	6	01-49	40	44	1965				6	9.9	85.3					
803	16052	109	Wellington Street East	Church Street South	Centre Street South		Urban	Asphalt Over Concrete	50	2	182	8.3		LCI	L/R	5	400-999	400	440	1955	1995			4	8.6	57.9	R	\$364	\$66,248	NOW	1.8
804	16069	398	Wellington Street West	Paris Street	Church Street South		Urban	Asphalt	50	2	249	11.7		LCI	ART	4	1000-1999	1460	1606	1975	1975			7	9.3	84.9					
805	16075	397	Wellington Street West	Orange Street	Paris Street		Urban	Asphalt	50	2	134	8.5		L/R	L/R	4	1000-1999	1460	1606	1975	1975			6	9.8	84.9					
806	16081	87	Wellington Street West	Ontario Street South	Orange Street		Urban	Asphalt	50	2	208	8.5		L/R	L/R	4	1000-1999	1460	1606	1975	1975			4	8.6	58.1	R	\$364	\$75,712	NOW	6.4
807	16097	385	Wellington Street West	King Street South	Ontario Street South		Urban	Asphalt	50	2	221	8.5		L/R	L/R	4	1000-1999	1690	1859	1975	1975			7	9.2	84.3					
808	15798A	323	Wesson Road	Hwy #89	259 m S. of Highway 89		Rural	Gravel	80	2	259	4.0	0.5	100	100	6	01-49	45	50	1940				4	10	72.1					
809	15798B	322	Wesson Road	259 S. of Highway 89	East End Checkerboard		Rural	Gravel	80	2	601	4.0	0.5	100	100	6	01-49	41	45	1940				4	10	72.1					
810	17139	215	Western Avenue	Walkem Drive	Queen Street North		Semi-Urban	Asphalt	50	2	96	6.2	2.2	L/R	400	4	400-999	720	792	1975	1975			5	9.1	71.6	R	\$149	\$14,304	6 to 10 Years	5.3
811	16181	96	Whiteside Court	Mackenzie Street	North End Cul-De-Sac		Urban	Asphalt	50	2	59	10.3		L/R	L/R	5	50-199	60	66	1975	1975			4	8.3	55.5	R	\$364	\$21,476	NOW	0.3
812	17263	628	William Smart Road	Brown Street	Lionel Stone Avenue East		Urban	Asphalt	50	2	100	8.5		L/R	C/R	5	50-199	140	154	1995	1995			8	9.9	94.3					
813	15886	338	William Street	Oak Street	Park Street		Semi-Urban	Asphalt	50	2	212	6.7	1.2	L/R	300	5	200-399	200	220	1965	1965			5	9.7	77.3	R	\$119	\$25,228	6 to 10 Years	1.5
814	15921	222	William Street	George Street	Oak Street		Semi-Urban	Asphalt	50	2	197	6.7	1.2	L/R	400	4	400-999	900	990	1965	1965			5	9.1	72.1	R	\$149	\$29,353	6 to 10 Years	6.5
815	15893A	466	Willis Drive	Hutchinson Drive	0.14 Km from Hutchinson Drive		Urban	Asphalt	50	2	142	8.5		L/R	L/R	5	50-199	150	165	1985	1985			7	9.5	86.9					
816	15893B	797	Willis Drive	0.14 Km West of Hutchinson Drive	James A. McCauley Avenue		Urban	Asphalt	50	2	43	8.5		L/R	L/R	5	50-199	150	165	2010	2010			9	10	97.4					
817	16931	182	Willow Drive	Maple Avenue West	Main Street West		Urban	Asphalt	50	2	121	8.5		L/R	L/R	5	50-199	150	240	1975	1975			4	9.3	64.2	R	\$364	\$44,044	1 to 5 Years	0.7
818	17180	49	Wilson Street	Dickerson Street	Eastern Avenue		Semi-Urban	Asphalt	50	2	161	7.0	1.4	L/R	400	4	400-999	970	1067	1975	1975	High		4	7.6	49.1	BS	\$407	\$65,527	NOW	9.3
819	17181	36	Wilson Street	Alexander Street	Dickerson Street		Urban	Asphalt	50	2	71	6.5		L/R	L/R	5	200-399	370	407	1985	1985	High		3	8.2	41.0	BS	\$496	\$35,216	NOW	3.4
820	17185	18	Wilson Street	McGoey Drive	Alexander Street		Urban	Asphalt	50	2	39	6.5		L/R	L/R	5	200-399	370	407	1985	1985	High		3	7.5	39.9	REC	\$989	\$38,571	NOW	1.7
821	17190	15	Wilson Street	Queen Street North	McGoey Drive		Urban	Asphalt	50	2	81	6.5		L/R	L/R	5	200-399	370	407	1985	1985			3	7	39.9	REC	\$989	\$80,109	NOW	1.7
822	17146	62	Windle Court	Eastern Avenue	West End Cul-De-Sac		Semi-Urban	Asphalt	50	2	53	7.0	1.4	L/R	200	5	50-199	130	143	1975	1975			4	7.5	47.8	PR	\$191	\$10,123	NOW	2.7
823	17096	412	Wolfe Avenue	Lavrock Street	Hammell Boulevard		Urban	Asphalt	50	2	421	8.6		L/R	L/R	5	400-999	450	495	1985	1985			6	9.6	83.2					
824	16831	690	Wright Street	Reynolds Avenue	East End Barricade		Urban	Asphalt	50	2	45	9.5		L/R	L/R	5	200-399	200	220	1997	1997			9	9.9	96.9					
825	16835	691	Wright Street	Patterson Street	Reynolds Avenue		Urban	Asphalt	50	2	142	9.5		L/R	L/R	5	200-399	200	220	1997	1997			9	9.9	96.9					
826	16136A	481	Young Street	0.18 Km West of King Street South	8th Avenue		Urban	Asphalt	50	5	161	18.8		ART	5ART	2	15000+	16285	21170	1995	1995			8	9.9	94.0					
827	16136B	138	Young Street	King Street South	0.18 Km West of King Street South		Urban	Asphalt	50	4	186	15.0		ART	4ART	2	15000+	16282	21167	1995	1995			6	8.2	70.6	R	\$884	\$164,424	1 to 5 Years	22.7
828	16143	335	Young Street	8th Avenue	Industrial Parkway		Urban	Asphalt	50	5	289	18.8		ART	5ART	2	15000+	15150	19695	1995	1995			8	9.3	88.4					
829	16145	559	Young Street	Industrial Parkway	234m West of Industrial Parkway		Urban	Asphalt	60	5	234	18.8		ART	5ART	2	2000-1499	14016	18221	1998	1998			9	9.9	96.1					



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**Appendix B**  
**Summary Reports For Traffic Counting**  
**Program**

## Appendix B

## Urban Traffic Count Summary (Fall 2011, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)

Count Number	ID	Municipality	Road	From	To	Direction	Average Daily Volume	Average Peak Hour Volume	Average Speed	85th %	67th %	Average Cars	Average Trucks	Average Heavy Trucks	Average Daily Volume	Posted Speed or Legal Speed	Average Speed	85th %	67th %	Average Cars	Average Trucks	% Average Trucks	Average Heavy Trucks	% Heavy Trucks	
<b>Alliston</b>																									
22	16083	Alliston	Albert St E	Centre St	Dufferin St	EB	4654	398	27	45	34	4446	140	68	8849	777	40	28	46	36.5	8285	416	4.7	148	1.7
						WB	4195	379	29	47	39	3839	276	80											
24	16076	Alliston	Albert St E	Dufferin St	McDonald St	EB	2896	266	37	52	47	2757	85	54	5358	491	40	36	52	47	5047	203	3.8	108	2.0
						WB	2462	225	35	52	47	2290	118	54											
30	15999	Alliston	Albert St E	John Ave	Douglas Dr	EB	1423	142	58	61	58	1402	12	9	3475	320	60	57.5	60	58	3430	30	0.9	15	0.4
						WB	2052	178	57	59	58	2028	18	6											
13	16133	Alliston	Albert St W	King St S	Ontario St S	EB	3488	295	41	54	49	3424	17	47	6408	566	50	41	53.5	49	6286	37	0.6	85	1.3
						WB	2920	271	41	53	49	2862	20	38											
27	15995	Alliston	Boyne St	Victoria St E	Queen St	NB	2298	224	40	56	50	2169	87	42	6002	522	50	37.5	55	48	5709	190	3.2	103	1.7
						SB	3704	298	35	54	46	3540	103	61											
28	19028E	Alliston	Boyne St	Gray Ave	North of Gray Ave	NB	1089	117	46	69	61	937	117	35	1909	216	60	46.5	66	59	1651	201	10.5	57	3.0
						SB	820	99	47	63	714	84	22												
21	16065	Alliston	Centre St	Nelson St E	Wellington St E	NB	822	97	33	51	45	752	64	6	1528	170	50	31.5	49.5	42.5	1443	75	4.9	10	0.7
						SB	706	73	30	48	40	691	11	4											
19	16024	Alliston	Church St N	Dominion St	Fletcher Cres	NB	2391	236	36	52	47	2374	11	6	4760	420	50	36	52.5	47	4724	23	0.5	13	0.3
						SB	2369	184	36	53	47	2350	12	7											
20	15993	Alliston	Church St N	Evans Rd	Doner St	NB	1367	146	53	48	1327	26	14	3264	315	50	37.5	53.5	48.5	3130	106	3.2	28	0.9	
						SB	1897	169	37	54	49	1803	80	14											
7	17410	Alliston	Church St S	Industrial Pkwy	Alderson Ct	NB	2690	281	50	60	56	2350	175	165	5153	508	50	56	68	62.5	4340	351	6.8	462	9.0
						SB	2463	227	62	76	69	1990	176	297											
18	16053	Alliston	Church St S	Victoria St	Wellington St	NB	2567	272	24	40	30	2393	149	25	4474	439	50	24	40	30.5	4233	198	4.4	43	1.0
						SB	1907	167	24	40	31	1840	49	18											
23	16094	Alliston	Dufferin St	Tupper St E	Albert St E	NB	2254	206	31	49	43	1937	111	206	4380	408	50	33	50	44.5	3944	205	4.7	231	5.3
						SB	2126	202	35	51	46	2007	94	25											
25	16035	Alliston	Dufferin St	Wellington St E	Victoria St E	NB	788	74	30	48	40	762	21	5	1492	143	50	29.5	47.5	39	1435	45	3.0	12	0.8
						SB	704	69	29	47	38	673	24	7											
16	16015B	Alliston	Fletcher Cres	King St N	Fletcher Lane	EB	1212	103	31	49	43	1148	56	8	2533	261	40	30	48.5	41	2425	94	3.7	14	0.6
						WB	1321	158	29	48	39	1277	38	6											
2	16238	Alliston	Industrial Pkwy	Young St	Preston Ave	NB	2897	288	53	66	61	2427	148	322	5557	549	50	52.5	65	60	4665	272	4.9	620	11.2
						SB	2660	261	52	64	59	2238	124	298											
3	16234	Alliston	Industrial Pkwy	Eighth Ave	King St S	EB	2918	311	60	69	64	2508	159	251	5746	587	50	58.5	68.5	63	4937	313	5.4	496	8.6
						WB	2828	276	57	68	62	2429	154	245											
5	16244	Alliston	Industrial Pkwy	King St S	Ellis St	EB	3114	316	58	64	61	2674	120	320	6425	664	50	60	67.5	63.5	5557	335	5.2	533	8.3
						WB	3311	348	62	71	66	2883	215	213											
6	16243B	Alliston	Industrial Pkwy	Ellis St	Church St S	EB	3341	349	63	71	66	2898	157	286	6991	752	50	64	72.5	67	6121	358	5.1	512	7.3
						WB	3650	403	65	74	68	3223	201	226											
8	16233A	Alliston	Industrial Pkwy	Church St S	East of Church St S	EB	4434	461	71	84	76	3800	238	396	6795	725	60	67.5	81	73	5765	437	6.4	593	8.7
						WB	2361	264	64	78	70	1965	199	197											
9	16233B	Alliston	Industrial Pkwy	Tottenham Road	977 m West of Tottenham Road	EB	4885	537	68	77	71	4056	292	537	10195	1114	60	68.5	78	72	8594	625	6.1	976	9.6
						WB	5310	577	69	79</															

## Appendix B

Urban Traffic Count Summary (Fall 2011, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)

## Tottenham

## Appendix B

## Rural Traffic Count Summary (Spring 2012, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)

Number	ID	Road	From	To	Direction	Average Daily Volume	Average Peak Hour Volume	Average Speed	85th %	65th %	Average Cars	Average Trucks	Average Heavy Trucks	Average Daily Volume	Average Peak Hour Volume	Posted Speed or Legal Speed	Average Speed	85th %	65th %	Average Cars	Average Trucks	% Average Trucks	Average Heavy Trucks	% Heavy Trucks
58	16648	10th Line	10th Sideroad	15th Sideroad	EB	69	9	68	82	74	60	7	2											
					WB	77	11	68	87	77	71	5	1	146	20	80	68	84.5	75.5	131	12	8.2	3	2.1
85	16559	10th Lline	15th Sideroad	20th Sideroad	EB	24	6	60	85	75	19	3	2											
					WB	43	7	57	78	68	33	10	0	67	13	80	58.5	81.5	71.5	52	13	19.4	2	3.0
118	16384	10th Line	20th Sideroad	East Town Boundary	EB	41	7	51	72	62	35	3	3											
					WB	45	8	53	76	64	39	6	0	86	15	80	52	74	63	74	9	10.5	3	3.5
22	16817	10th Line	Adjala-Tecumseth Townline	Tottenham Road	EB	33	5	53	72	64	26	6	1											
					WB	37	6	53	73	65	32	4	1	70	11	80	53	72.5	64.5	58	10	14.3	2	2.9
30	16724	10th Lline	Tottenham Road	10th Sideroad	EB	64	10	57	80	69	57	4	3											
					WB	66	11	46	68	58	59	4	3	130	21	80	51.5	74	63.5	116	8	6.2	6	4.6
57	16500B	11th Line	0.3 Km West of 15th Sideroad	15th Sideroad	EB	250	41	84	95	89	237	9	4											
					WB	287	35	80	91	85	272	11	4	537	76	80	82	93	87	509	20	3.7	8	1.5
84	16337	11th Line	15th Sideroad	20th Sideroad	EB	51	8	73	89	82	48	2	1											
					WB	69	8	74	94	85	63	4	2	120	16	80	73.5	91.5	83.5	111	6	5.0	3	2.5
117	16254	11th Line	20th Sideroad	East Town Boundary	EB	137	24	95	156	96	125	8	4											
					WB	142	17	71	92	80	131	6	5	279	41	80	83	124	88	256	14	5.0	9	3.2
23	16707	11th Line	Adjala-Tecumseth Townline	Tottenham Road	EB	84	11	65	88	76	68	11	5											
					WB	87	12	66	85	75	65	16	6	171	23	80	65.5	86.5	75.5	133	27	15.8	11	6.4
29	16618	11th Line	Tottenham Road	10th Sideroad	EB	42	6	63	80	71	38	1	3											
					WB	47	6	55	72	66	43	2	2	89	12	80	59	76	68.5	81	3	3.4	5	5.6
28	16417B	12th Line	1.5 Km East of Tottenham Road	10th Sideroad	EB	124	17	71	92	76	110	11	3											
					WB	120	15	59	82	69	110	8	2	244	32	80	65	87	72.5	220	19	7.8	5	2.0
56	16279A	12th Line	10th Sideroad	1.6 Km East of 10th Sideroad	EB	47	7	64	79	72	40	6	1											
					WB	40	5	57	80	67	35	4	1	87	12	70	60.5	79.5	69.5	75	10	11.5	2	2.3
116	16150	12th Line	20th Sideroad	East Town Boundary	EB	16	5	61	87	71	13	3	0											
					WB	19	5	57	87	71	15	3	1	35	10	80	59	87	71	28	6	17.1	1	2.9
24	16582A	12th Line	Adjala-Tecumseth Townline	1.75 Km East of Adjala-Tecumseth Townline	EB	120	14	63	80	70	115	4	1											
					WB	117	14	65	82	74	115	2	0	237	28	80	64	81	72	230	6	2.5	1	0.4
27	16264C	13th Line	1.2 Km East of Tottenham Road	Train Street	EB	83	9	44	60	54	77	5	1											
					WB	95	10	40	58	51	87	8	0	178	19	50	42	59	52.5	164	13	7.3	1	0.6
55	16224	13th Line	10th Sideroad	15th Sideroad	EB	247	43	75	88	81	237	8	2											
					WB	246	31	78	90	83	234	9	3	493	74	80	76.5	89	82	471	17	3.4	5	1.0
83	16107	13th Line	15th Sideroad	20th Sideroad	EB	246	42	84	96	88	239	4	3											
					WB	238	27	87	98	90	230	6	2	484	69	80	85.5	97	89	469	10	2.1	5	1.0
115	15936	13th Line	20th Sideroad	East Town Boundary	EB	210	27	86	97	90	205	3	2											
					WB	221	24	93	102	93	214	5	2	431	51	80	89.5	99.5	91.5	419	8	1.9	4	0.9
25	16348A	13th Line	Adjala-Tecumseth Townline	1.43 Km East of Adjala-Tecumseth Townline	EB	100	10	60	74	66	91	6	3											
					WB	122	14	66	83	73	111	8	3	222	24	80	63	78.5	69.5	202	14	6.3	6	2.7
54	16001A	14th Line	10th Sideroad	0.76 Km East of 10th Sideroad	EB	1377	175	78	93	82	1315	27	35											
					WB	1556	146	86	99	90	1485	29	42	2933	321	80	82	96	86	2800	56	1.9	77	2.6
82	15860	14th Line	15th Sideroad	20th Sideroad	EB	85	18	66	86	76	79	5	1											
					WB	61	7	65	85	75	54	4	3	146	25	80	65.5	85.5	75.5	133	9	6.2	4	2.7
114	15796	14th Line	20th Sideroad	East Town Boundary	EB	65	11	66	81	73	61	4	0											
					WB	58																		

## Appendix B

## Rural Traffic Count Summary (Spring 2012, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)

Number	ID	Road	From	To	Direction	Average Daily Volume	Average Peak Hour Volume	Average Speed	85th %	65th %	Average Cars	Average Trucks	Average Heavy Trucks	Average Daily Volume	Average Peak Hour Volume	Posted Speed or Legal Speed	Average Speed	85th %	65th %	Average Cars	Average Trucks	% Average Trucks	Average Heavy Trucks	% Heavy Trucks
94	17074	4th Line	15th Sideroad	18th Sideroad	EB	121	24	72	80	75	121	0	0	251	41	80	72.5	80.5	75.5	250	0	0.0	1	0.4
					WB	130	17	73	81	76	129	0	1											
123	17026	4th Line	20th Sideroad	East Town Boundary	EB	60	8	56	78	67	54	2	4	120	17	80	59	79	67	111	4	3.3	5	4.2
					WB	60	9	62	80	67	57	2	1											
18	17273	4th Line	Adjala-Tecumseth Townline	West Limit of Tottenham	EB	590	55	82	93	85	567	17	6	1159	118	80	83	93.5	86	1109	34	2.9	16	1.4
					WB	569	63	84	94	87	542	17	10											
92	16994B	5th Line	0.25 Km East of 15th Sideroad	20th Sideroad	EB	810	99	80	90	83	776	16	18	1590	190	60	79.5	89.5	82.5	1525	36	2.3	29	1.8
					WB	780	91	79	89	82	749	20	11											
62	17065A	5th Line	10th Sideroad	2.2 Km East of 10th Sideroad	EB	735	105	73	82	76	709	17	9	1464	181	80	83.5	93	86	1405	33	2.3	26	1.8
					WB	729	76	94	104	96	696	16	17											
91	17016A	5th Line	15th Sideroad	1.25 Km Est of 15th Sideroad	EB	761	92	82	93	86	731	20	10	1490	180	80	82	92.5	86	1431	37	2.5	22	1.5
					WB	729	88	82	92	86	700	17	12											
122	16984	5th Line	20th Sideroad	East Town Boundary	EB	614	87	80	91	83	585	19	10	1169	134	60	78.5	89.5	82	1115	38	3.3	16	1.4
					WB	555	47	77	88	81	530	19	6											
34	17085A	5th Line	East Limit of Tottenham	1.25 Km East of the East Limit of Tottenham	EB	674	137	76	87	80	649	17	8	1335	230	80	77.5	88	81.5	1282	37	2.8	16	1.2
					WB	661	93	79	89	83	633	20	8											
89	16974B	6th Line	0.3 Km East of 15th Sideroad	18th Sideroad	EB	58	9	62	79	70	52	4	2	119	19	80	60.5	80	70	108	9	7.6	2	1.7
					WB	61	10	59	81	70	56	5	0											
61	16999B	6th Line	0.55 Km East of 10th Sideroad	15th Sideroad	EB	82	13	53	69	62	73	7	2	167	24	80	50.5	67.5	59.5	150	14	8.4	3	1.8
					WB	85	11	48	66	57	77	7	1											
121	16949	6th Line	20th Sideroad	East Town Boundary	EB	66	11	69	80	72	57	6	3	122	18	80	73.5	84.5	76.5	99	14	11.5	9	7.4
					WB	56	7	78	89	81	42	8	6											
19	17080	6th Line	Adjala-Tecumseth Townline	Tottenham Road	EB	110	13	85	96	88	101	4	5	211	24	80	80.5	92.5	84.5	197	8	3.8	6	2.8
					WB	101	11	76	89	81	96	4	1											
33	17031	6th Line	Tecumseth Heights Drive	10th Sideroad	EB	177	18	65	81	72	169	7	1	305	38	80	65.5	79.5	72	291	12	3.9	2	0.7
					WB	128	20	66	78	72	122	5	1											
87	16936B	7th Line	0.3 Km West of 18th Sideroad	18th Sideroad	EB	553	58	77	88	82	530	17	6	1219	134	70	78	89	82.5	1173	34	2.8	12	1.0
					WB	666	76	79	90	83	643	17	6											
32	16988B	7th Line	0.9 Km East of Tottenham Road	10th Sideroad	EB	399	42	73	84	78	381	14	4	863	96	80	73	84	77.5	828	22	2.5	13	1.5
					WB	464	54	73	84	77	447	8	9											
60	16963C	7th Line	1.05 Km East of 10th Sideroad	15th Sideroad	EB	697	67	69	80	72	667	19	11	1099	124	70	82.5	93	86.5	1054	35	3.2	10	0.9
					WB	812	85	78	89	81	780	14	18											
120	16846	7th Line	20th Sideroad	East Town Boundary	EB	239	22	82	93	86	227	8	4	1509	152	70	73.5	84.5	76.5	1447	33	2.2	29	1.9
					WB	253	28	86	97	89	240	6	7											
20	17022	7th Line	Adjala-Tecumseth Townline	Tottenham Road	EB	214	32	79	95	84	200	8	6	492	50	80	84	95	87.5	467	14	2.8	11	2.2
					WB	194	32	80	94	85	182	10	2											
59	16735B	9th Line	1.3 Km East of 10th Sideroad	15th Sideroad	EB	364	39	85	98	89	348	14	2	740	90	80	87	98.5	90.5	708	27	3.6	5	0.7
					WB	376	51	89	99	92	360	13	3											
119	16602	9th Line	20th Sideroad	East Town Boundary	EB	413	48	71	83	76	399	7	7	846	93	70	72.5	84	77	815	17	2.0	14	1.7
					WB	433	45	74	85	78	416	10	7											
21	16945	9th Line	Adjala-Tecumseth Townline	Tottenham Road	EB	467	54	59	69	63	452	7	8	1048	108	60	57	70	62.5	1012	20	1.9	16	1.5
					WB	581	54	55	71	62	560	13	8											
31	16853	9th Line	Tottenham Road	West Limit of Beeton	EB	360	44																	

## Appendix B

## Rural Traffic Count Summary (Spring 2012, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)

Number	ID	Road	From	To	Direction	Average Daily Volume	Average Peak Hour Volume	Average Speed	85th %	65th %	Average Cars	Average Trucks	Average Heavy Trucks	Average Daily Volume	Average Peak Hour Volume	Posted Speed or Legal Speed	Average Speed	85th %	65th %	Average Cars	Average Trucks	% Average Trucks	Average Heavy Trucks	% Heavy Trucks			
52	15828	Kindlers Road	Highway 89	0.3 Km South of Highway 89	NB	54	7	26	44	33	50	2	2				111	14	50	27	45	34.5	103	4	3.6	4	3.6
					SB	57	7	28	46	36	53	2	2														
39	17288B	Sideroad 10	0.3 Km North of 2nd Line	3rd Line	NB	521	81	71	89	78	482	15	24				1138	150	80	79	93	74	1064	38	3.3	36	3.2
					SB	617	69	87	97	70	582	23	12														
45	16736B	Sideroad 10	0.35 Km North of Lily Street East	10th Line	NB	1407	148	72	79	74	1331	28	48				2824	279	70	88	94	88	2634	82	2.9	108	3.8
					SB	1417	131	104	109	102	1303	54	60														
43	17000B	Sideroad 10	0.45 Km North of 6th Line	7th Line	NB	592	93	78	90	83	563	13	16				1148	165	80	78.5	90.5	83.5	1097	25	2.2	26	2.3
					SB	556	72	79	91	84	534	12	10														
48	16298B	Sideroad 10	0.5 Km North of 12th Line	13th Line	NB	1335	143	83	92	87	1281	24	30				2687	257	80	86	94.5	89.5	2570	58	2.2	59	2.2
					SB	1352	114	89	97	92	1289	34	29														
46	16649	Sideroad 10	10th Line	11th Line	NB	1414	149	83	92	87	1336	31	47				2835	278	60	83	92	86.5	2677	69	2.4	89	3.1
					SB	1421	129	83	92	86	1341	38	42														
47	16501A	Sideroad 10	11th Line	0.2 Km South of 12th Line	NB	1514	165	83	92	86	1446	29	39				2887	306	80	83	92	86	2741	62	2.1	84	2.9
					SB	1373	141	83	92	86	1295	33	45														
49	16225A	Sideroad 10	13th Line	0.92 Km North of 13th Line	NB	1463	156	86	94	88	1403	30	30				2962	303	80	83.5	91.5	86	2828	70	2.4	64	2.2
					SB	1499	147	81	89	84	1425	40	34														
40	17247	Sideroad 10	3rd Line	4th Line	NB	1411	221	82	92	86	1355	30	26				2708	399	80	81	90.5	85	2588	65	2.4	55	2.0
					SB	1297	178	80	89	84	1233	35	29														
41	17108A	Sideroad 10	4th Line	0.45 Km South of 5th Line	NB	1256	194	78	88	82	1210	29	17				2506	345	80	75.5	86	80	2415	55	2.2	36	1.4
					SB	1250	151	73	84	78	1205	26	19														
42	17066	Sideroad 10	5th Line	6th Line	NB	1279	169	74	83	77	1224	31	24				2548	313	80	72	81	75	2443	60	2.4	45	1.8
					SB	1269	144	70	79	73	1219	29	21														
44	16964	Sideroad 10	7th Line	South Limit of Beeton	NB	1417	180	80	89	83	1359	31	27				2793	320	80	74	83	77.5	2681	62	2.2	50	1.8
					SB	1376	140	68	77	72	1322	31	23														
38	17311	Sideroad 10	Highway 9	2nd Line	NB	1394	229	88	97	91	1338	24	32				2666	425	70	88	97	91	2554	54	2.0	58	2.2
					SB	1272	196	88	97	91	1216	30	26														
75	16560	Sideroad 15	10th Line	11th Line	NB	286	36	80	92	84	275	5	6				514	67	80	82	94	86	486	19	3.7	9	1.8
					SB	228	31	84	96	88	211	14	3														
76	16338A	Sideroad 15	11th Line	0.85 Km North of 11th Line	NB	98	14	67	83	75	91	5	2				178	23	80	68	84.5	76.5	161	12	6.7	5	2.8
					SB	80	9	69	86	78	70	7	3														
77	16242	Sideroad 15	12th Line	13th Line	NB	90	14	79	93	83	80	4	6				152	22	80	71.5	86.5	78	134	11	7.2	7	4.6
					SB	62	8	64	80	73	54	7	1														
78	16108	Sideroad 15	13th Line	14th Line	NB	94	13	68	82	72	87	5	2				160	22	80	64	78	69.5	147	9	5.6	4	2.5
					SB	66	9	60	74	67	60	4	2														
79	15861	Sideroad 15	14th Line	15th Line	NB	107	17	68	80	74	101	3	3				187	25	80	73	85.5	79	172	9	4.8	6	3.2
					SB	80	8	78	91	84	71	6	3														
80	15779	Sideroad 15	15th Line	Highway 89	NB	125	18	60	82	72	112	6	7				216	29	80	55	76	66.5	195	12	5.6	9	4.2
					SB	91	11	50	70	61	83	6	2														
66	17297A	Sideroad 15	2nd Line	0.9 Km North of Highway 9	NB	651	99	77	87	81	625	12	14				1259	177	80	83	92.5	86	1205	28	2.2	26	2.1
					SB	608	78	89	98	91	580	16	12														
67	17269	Sideroad 15</																									

**Appendix B**

**Rural Traffic Count Summary (Spring 2012, Counts by Ontario Traffic Inc.) - Town of New Tecumseth Road Study (Listed By Community and Street Name)**

Number	ID	Road	From	To	Direction	Average Daily Volume	Average Peak Hour Volume	Average Speed	85th %	65th %	Average Cars	Average Trucks	Average Heavy Trucks	Average Daily Volume	Average Peak Hour Volume	Posted Speed or Legal Speed	Average Speed	85th %	65th %	Average Cars	Average Trucks	% Average Trucks	Average Heavy Trucks	% Heavy Trucks
112	15746	Sideroad 20	15th Line	Highway 89	NB	167	21	33	51	46	155	9	3	333	42	80	34	51.5	46	312	16	4.8	5	1.5
					SB	166	21	35	52	46	157	7	2											
101	17184	Sideroad 20	2nd Line	3rd Line	NB	582	95	85	96	89	564	8	10	1131	173	80	85.5	96	89.5	1088	18	1.6	25	2.2
					SB	549	78	86	96	90	524	10	15											
102	17087	Sideroad 20	3rd Line	4th Line	NB	484	85	92	101	93	466	10	8	942	179	80	87	96.5	89	910	20	2.1	12	1.3
					SB	458	94	82	92	85	444	10	4											
103	17027	Sideroad 20	4th Line	5th Line	NB	411	72	87	98	91	393	11	7	776	124	80	82	93	86	747	19	2.4	10	1.3
					SB	365	52	77	88	81	354	8	3											
104	16985	Sideroad 20	5th Line	6th Line	NB	59	10	54	73	64	56	3	0	104	16	60	50.5	70.5	60.5	99	4	3.8	1	1.0
					SB	45	6	47	68	57	43	1	1											
105	16847	Sideroad 20	7th Line	Simcoe Road 1	NB	43	6	50	68	59	37	6	0	85	15	60	49.5	66.5	58.5	75	10	11.8	0	0.0
					SB	42	9	49	65	58	38	4	0											
106	16603	Sideroad 20	9th Line	10th Line	NB	48	8	54	72	63	41	7	0	92	14	80	55	73.5	65	84	8	8.7	0	0.0
					SB	44	6	56	75	67	43	1	0											
53	15798B	Wesson Road	0.26 Km South of Highway 89	East End Checkerboard	NB	21	3	25	45	33	19	2	0	41	7	80	22	40.5	28	38	3	7.3	0	0.0
					SB	20	4	19	36	23	19	1	0											



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## **Appendix C**

### **Parameters For Road Surface Assessment**

**Town of New Tecumseth Road Study**  
**Appendix C**

**Calculation of Distress Manifestation Index (DMI), Pavement Condition Index (PCI), Priority Category, Priority Sensitivity Guide Number (SGN) and Lifecycle Priority Guide Number (PGN)**

**Weighting Factors For Distress Manifestations**

Distress Manifestation For Asphalt Roads or Concrete Roads	Weighting Factor (W)	Distress Manifestation For Surface Treated Roads	Weighting Factor (W)	Distress Manifestation For Gravel Roads	Weighting Factor (W)
Raveling and coarse aggregate loss	3.0	Cover Aggregate Loss	3.0	Flat/reverse crown	2.0
Flushing	1.5	Flushing	2.0	Loose gravel	1.5
Rippling and shoving (Polishing or scaling in concrete)	1.0	Rippling and Shoving	2.0	Dust	0.5
Wheel track rutting (Potholing in concrete roads)	3.0	Wheel track rutting	3.0	Break-up	3.0
Distortion	3.0	Distortion	3.0	Washboarding	1.0
Longitudinal wheel track - single/multiple cracking	1.5	Streaking	1.0	Rutting	3.0
Longitudinal wheel track - alligator cracking	3.0	Alligator Cracking	3.0	Distortion	3.0
Centerline - single/multiple cracking	0.5	Edge Cracking	1.0	Potholes	2.0
Centerline - alligator cracking	2.0	Edge Break	2.0		
Pavement edge - single/multiple cracking	0.5	Transverse Cracking	0.5		
Pavement edge - alligator cracking	1.5	Longitudinal Cracking	1.0		
Transverse - singel/multiple cracking	1.0	Potholing	1.0		
Transverse - alligator cracking	3.0				
Longitudinal, meander and midlane cracking	1.0				
Random cracking	0.5				

Distress Density Factors	Distress Severity Factors	Ride Condition Rating Factors			
Density of Distress Asphalt or Gravel Roads	Density Factor (D)	Severity of Distress (Asphalt or Gravel Roads)	Severity Factor (S)	Ride Condition Rating (RCR)	Factor
Few (<10%)	0.5	Very Slight	0.5	Very Poor	1
Intermittent (10 to 20%)	1.0	Slight	1.0	Poor	2 to 3
Frequent (20 to 40%)	2.0	Moderate	2.0	Fair	4 to 6
Extensive (40 to 80%)	3.0	Severe	3.0	Good	7 to 9
Throughout (>80%)	4.0	Very Severe	4.0	Very Good	10

**Empirical Formulae For Calculation of Distress Manifestation Index (DMI)**

Surface Type	Formulae For Distress Manifestation Index (DMI)
Asphalt	DMI = 10 x (208 - summation of W x (D+S))/208
Surface Treatment	DMI = 10 x (135 - summation of W x (D+S))/135
Gravel or Earth	DMI = 10 x (135 - 2 x (summation of W x (D+S)))/135

**Empirical Formulae For Calculation of Pavement Condition Index (PCI)**

Surface Type	Formulae For Pavement Condition Index (PCI)
Asphalt	PCI = 13.75 + (9 x DMI) - (7.5 x e <sup>(8.5-RCR)/3.02</sup> )
Surface Treatment or Gravel or Earth	PCI = 12.75 + (9 x DMI) - (5.5 x e <sup>(9.94-RCR)/3.46</sup> )

**Criteria For Establishing Priority Category**

Minimum PCI trigger	45	Maintenance Class 2 or 3
	40	Maintenance Class 4, 5 or 6
Priority Category	1	PCI condition is presently less than or equal to minimum PCI trigger
	2	PCI degrades to less than or equal to minimum PCI trigger in year 1.
	3	PCI degrades to less than or equal to minimum PCI trigger in year 2.
	4	PCI degrades to less than or equal to minimum PCI trigger in year 3.
	5	PCI degrades to less than or equal to minimum PCI trigger in year 4.
	6	PCI degrades to less than or equal to minimum PCI trigger in year 5.
	7	PCI degrades to less than or equal to minimum PCI trigger after year 5.

**Formula For Calculation of Priority Sensitivity Guide Number (SGN) (Function of PCI, Maintenance Class and Priority Category)**

$$\text{Sensitivity Guide Number} = (100-\text{PCI}) * (1/\text{Maintenance Class}^{0.75}) * (1/\text{Priority Category})$$

**Formula For Calculation of Lifecycle Priority Guide Number (Function of PCI, Traffic Volumes, Cost and Improvement Type)**

Formula	LCF**	Improvement Type
PGN = $\frac{100 - \text{PCI}}{100 \times (\text{cost per km})}$ x $\frac{\text{Traffic Count} + \text{Ten Year Traffic Count}}{2}$ x LCF	3650	R
	7300	PR, BS, REC, RSS

\*\*LCF = Lifecycle Factor (3650 for 10 years, 7300 for 20 years)



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**Appendix D**  
**Road Improvements – Types, Bench**  
**Mark Costs, Improvement Timelines**

**New Tecumseth Road Study**  
**Table D1- Appendix D**  
**Road Improvement Definitions**

Improvement Type	Description		
	Urban	Rural or Semi Urban - Existing Hard Top	Rural or Semi Urban - Existing Gravel
R - Resurface - Single Lift	Mill asphalt partial depth (40-50 mm). Repair 5% of base and curb. HL8 padding plus 50 mm HL3 surface asphalt.	Repair 5% of base and shoulders/ditch. Asphalt padding plus double surface treatment or 50 mm HL4 surface asphalt, where applicable.	Repair 10% of base and shoulders/ditch. 150 mm Granular A surface, plus double surface treatment or 50 mm HL4 surface asphalt, where applicable.
R - Resurface - Double Lift	Remove existing asphalt full depth. Repair 10% of base, curb and boulevards. 50 mm to 90 mm HL8 base asphalt, 45 mm HL3 surface asphalt.		
PR - Pulverize and Resurface - Single Lift		Pulverize existing asphalt full depth. Repair 10% of existing base and boulevards. 100 mm Granular A, plus double surface treatment or 50 mm HL4 surface asphalt, where applicable.	
PR - Pulverize and Resurface - Double Lift		Pulverize existing asphalt. Repair 10% of existing base and boulevards. 100 mm Granular A, plus 50 mm HL8 base asphalt and 45 mm HL3 surface asphalt, where applicable.	
BS - Base and Surface - Single Lift		Pulverize existing asphalt. Repair 30% of existing base and boulevards. Partial culvert replacement and driveway restoration. 100 mm Granular A, plus double surface treatment or 50 mm HL4 surface asphalt, where applicable.	Repair 30% of existing base and boulevards. Partial culvert replacement. 150 mm Granular A surface, plus double surface treatment or 50 mm HL4 surface asphalt, where applicable.
BS - Base and Surface - Double Lift	Remove existing asphalt full depth. Repair 30% of base, curb and boulevards; repair 10% of driveways. 50 mm to 90 mm HL8 base asphalt, 45 mm surface asphalt.	Pulverize existing asphalt. Repair 30% of existing base, boulevard and subdrains. Partial culvert replacement and driveway restoration. 100 mm Granular A, plus 50 mm HL8 base asphalt and 45 mm HL3 surface asphalt, where applicable.	
REC - Reconstruction - Single Lift		Remove existing asphalt full depth. Total replacement of base, boulevards and driveways. Partial culvert replacement and driveway restoration. Double surface treatment or 50 mm HL4 surface asphalt, where applicable.	
REC - Reconstruction - Double Lift	Remove existing asphalt full depth. Total replacement of road base, curb, subdrains and boulevards; replacement of 50% of driveways. 50 mm to 90 mm HL8 base asphalt, 45 mm HL3 surface asphalt.	Remove existing asphalt full depth. Total replacement of base, boulevards and driveways. Partial culvert replacement and driveway restoration. 50 mm HL8 base asphalt and 45 mm HL3 surface asphalt, where applicable.	Total replacement of existing base, boulevards and driveways. Partial culvert replacement. Double surface treatment or 50 mm HL4 surface asphalt, where applicable.
RSS - Reconstruction Including Storm Sewer - Double Lift		Remove existing asphalt full depth. Total replacement of base and boulevards; replace 50% of driveways. Replace semi-urban drainage system with curbs, subdrains and storm sewer system or replace existing storm sewers. 50 mm to 90 mm HL8 base asphalt, 45 mm HL3 surface asphalt.	

**New Tecumseth Road Study**  
**Table D2 - Appendix D**  
**Road Base Designs and Cross Sections**

**Urban\***

Item	Local Residential (LR)	Local Commercial Industrial (LCI)	Collector Residential (CR)	Collector Commercial Industrial (CCI)	Arterial (ART)	Arterial 4 lane (4ART)	Arterial 5 lane (5 ART)
Granular B	300 mm	450 mm	450 mm	450 mm	450 mm	450 mm	450 mm
Granular A	150 mm	150 mm	150 mm	150 mm	150 mm	150 mm	150 mm
Asphalt Resurfacing	HL8 asphalt padding plus 50 mm HL3 surface asphalt	HL8 asphalt padding plus 50 mm HL3 surface asphalt	HL8 asphalt padding plus 50 mm HL3 surface asphalt	HL8 asphalt padding plus 50 mm HL3 surface asphalt	HL8 asphalt padding plus 50 mm surface asphalt	HL8 asphalt padding plus 50 mm surface asphalt	HL8 asphalt padding plus 50 mm surface asphalt
Asphalt New/Repairs	80 mm HL8 base asphalt plus 45 mm HL3 surface asphalt	100 mm HL8 base asphalt plus 45 mm surface asphalt	100 mm base asphalt plus 45 mm surface asphalt	100 mm base asphalt plus 45 mm surface asphalt	100 mm base asphalt plus 45 mm surface asphalt	100 mm base asphalt plus 45 mm surface asphalt	100 mm base asphalt plus 45 mm surface asphalt
Surface Width (to curb face)	8.5 m	11.0 m	10.0 m	11.5 m	11.5 m	15.7 m	19.5 m

**Rural or Semi-Urban Existing Hard Top\***

Item	0 to 399 AADT	400 to 1999 AADT	>2000 AADT
Granular B	300 mm	450 mm	450 mm
Granular A	150 mm	150 mm	150 mm
Surface Treatment Resurfacing	double surface treatment		
Surface Treatment New/Repairs	100 mm Granular A plus double surface treatment		
Asphalt Resurfacing		HL8 asphalt padding plus 50 mm HL4 surface asphalt	HL8 asphalt padding plus 50 mm HL4 surface asphalt
Asphalt New/Repairs		100 mm Granular A plus 65 mm HL4 surface asphalt	50 mm HL8 plus 45 mm HL3 surface asphalt
Platform Width	10.0 m	10.0 m	10.0 m
Hard Top Width (if applicable)	7.0 m	7.0 m	7.0 m

**Rural or Semi-Urban Existing Gravel\***

Item	0 to 199 AADT	200 to 399 AADT	400 to 1999 AADT
Granular B	300 mm	300 mm	450 mm
Granular A	150 mm	150 mm	150 mm
Granular A Surfacing	150 mm	150 mm	150 mm
Surface Treatment New		double surface treatment	
Asphalt New			65 mm HL4 surface asphalt
Platform Width	10.0 m	10.0 m	10.0 m
Asphalt Width	7.0 m	7.0 m	7.0 m

\*Typical base designs may be modified by project specific geotechnical report.

**Unit Price Form**  
**Table D3 (Appendix D)**

Number	Item	Unit	2008 (From Previous Road Study)	2013 Costs Used In 2013 Road Study
1	Excavation	cu. Metre	\$15.00	\$17.77
2	Hot Mix	tonne	\$65.00	96
3	Granular A	tonne	\$18.50	\$21.66
4	Granular B	tonne	\$14.00	17.64
5	Concrete Base	cu. metre	\$400.00	N/A
6	Curb & Gutter (Remove)	linear metre	\$10.00	\$15.10
7	Curb & Gutter (Place)	linear metre	\$45.00	\$72.39
8	Subdrains	linear metre	\$18.00	N/A
9	Storm Sewer	linear metre	\$350.00	\$360.00
10	Catch Basin Leads	linear metre	\$150.00	\$180.00
11	Manhole (Remove)	each	\$400.00	\$600.00
12	Manholes (Place)	each	\$4,000.00	\$4,200.00
13	Catch Base (Remove)	each	\$400.00	\$600.00
14	Catch Basin (Place)	each	\$1,700.00	\$3,360.00
15	Manhole (Adjust)	each	\$360.00	\$528.24
16	Catch Basin (Adjust)	each	\$360.00	\$528.24
17	Asphalt Planing	sq. metre	\$6.00	5.11 to 7.20
18	Asphalt Pulverizing	sq. metre	\$2.00	\$2.10

**New Tecumseth Road Study**  
**Table D4 - Appendix D**  
**Urban Road Sections - Existing Asphalt Surface**  
**Bench Mark Costs and Time of Improvement**

Improvement Type	Maintenance Class	PCI Range	Functional Classification*	Improvement Surface**	Default Bench Mark Cost (\$/m)	Time of Improvement
R - Resurface	Class 4 or 5 or 6 Class 2 or 3	70-80 75-85	LR	1-HCB	228	6 to 10 years
			LCI	1-HCB	296	
			CR	1-HCB	276	
			CCI	1-HCB	313	
			ART	1-HCB	316	
			4ART	1-HCB	422	
			5ART	1-HCB	520	
R - Resurface	Class 5 or 6 Class 4 Class 2 or 3	45-70 50-70 55-75	LR	2-HCB	364	Class 5 or 6 - 1 to 5 years for PCI 60 to 70 and NOW for PCI 45 to 60 Class 4 - 1 to 5 years for PCI 60 to 70 and NOW for PCI 50 to 60 Class 2 or 3 - 1 to 5 years for PCI 65 to 75 and NOW for PCI 55 to 65
			LCI	2-HCB	527	
			CR	2-HCB	488	
			CCI	2-HCB	558	
			ART	2-HCB	632	
			4ART	2-HCB	884	
			5ART	2-HCB	1052	
BS - Base and Surface	Class 5 or 6 Class 4 Class 2 or 3	40-45 45-50 50-55	LR	2-HCB	496	NOW
			LCI	2-HCB	695	
			CR	2-HCB	652	
			CCI	2-HCB	733	
			ART	2-HCB	870	
			4ART	2-HCB	1060	
			5ART	2-HCB	1302	
REC - Reconstruct	Class 5 or 6 Class 4 Class 2 or 3	<40 <45 <50	LR	2-HCB	989	NOW
			LCI	2-HCB	1316	
			CR	2-HCB	1258	
			CCI	2-HCB	1408	
			ART	2-HCB	1464	
			4ART	2-HCB	1836	
			5ART	2-HCB	2212	
RSS - Reconstruction Including Storm Sewer			LR	2-HB	1576	As required to upgrade or replace drainage system.
			LCI		1885	
			CR		1847	
			CCI		1996	
			ART		2106	

Notes:

- 1) All bench mark costs include 20% for engineering and contingencies.
- 2) Bench mark costs do not include property, sidewalks, street lighting, intersection channelization, utility relocations, traffic signals, sanitary sewers, water mains or other services.

\*Legend For Functional Classification:

Numeric	AADT Range
LR	Local Residential
LCI	Local Commercial Industrial
CR	Collector Residential
CCI	Collector Commercial Industrial
ART	Arterial
4ART	4-lane Arterial
5ART	5-lane Arterial

\*\*Legend For Surface Type

Gravel - Granular A
DST - Double Surface Treatment
1-HCB - Single Lift High Class Bituminous (Asphalt)
2-HCB - Double Lift High Class Bituminous (Asphalt)

**New Tecumseth Road Study**  
**Table D5 - Appendix D**  
**Rural or Semi-Urban -Existing Hard Top (surface treatment, asphalt, asphalt over concrete, concrete)**  
**Bench Mark Costs and Time of Improvement**

Improvement Type	Maintenance Class	PCI Range	AADT Range or Functional Classification	Improvement Surface*	Default Bench Mark Cost (\$/m)	Time of Improvement
R - Resurface	Class 4 or 5 or 6	70-80	<400	DST	\$119	6 to 10 years
			400-1999	1-HCB	\$149	
			>2000	1-HCB	\$149	6 to 10 years
	Class 2 or 3	75-85	All	1-HCB	\$149	
PR - Pulverize and Resurface	Class 5 or 6	45-70	<400	DST	\$191	1 to 5 years for PCI 60 to 70 NOW for PCI 45 to 60
			400-1999	1-HCB	\$223	1 to 5 years for PCI 60 to 70 NOW for PCI 45 to 60
	Class 4	50-70	<400	DST	\$191	1 to 5 years for PCI 60 to 70 NOW for PCI 50 to 60
			400-1999	1-HCB	\$223	
			>2000	2-HCB	\$331	1 to 5 years for PCI 65 to 75 NOW for PCI 55 to 65
	Class 2 or 3	55-75	All	2-HCB	\$331	
	Class 5 or 6	40-45	<400	DST	\$365	NOW
BS - Base and Surface	Class 4	45-50	400-1999	1-HCB	\$407	NOW
			<400	DST	\$365	
			400-1999	1-HCB	\$407	
	Class 2 or 3	50-55	>2000	2-HCB	\$516	NOW
			All	2-HCB	\$516	
REC - Reconstruction	Class 5 or 6	<40	<400	DST	\$592	NOW
			400-1999	1-HCB	\$648	
	Class 4	<45	<400	DST	\$592	
			400-1999	1-HCB	\$648	
			>2000	2-HCB	\$814	
	Class 2 or 3	<50	All	2-HCB	\$814	
RSS - Reconstruction Including Storm Sewer			LR	2-HCB	\$1,576	As required to upgrade or replace drainage system.
			LCI		\$1,885	
			CR		\$1,847	
			CCI		\$1,996	
			ART		\$2,106	

Notes:

- 1) All bench mark costs include 20% for engineering and contingencies.
- 2) Bench mark costs do not include property, sidewalks, street lighting, intersection channelization, utility relocations, traffic signals, sanitary sewers, water mains or other services.

\*Legend For Functional Classification:

Numeric	AADT Range
LR	Local Residential
LCI	Local Commercial Industrial
CR	Collector Residential
CCI	Collector Commercial Industrial
ART	Arterial
4ART	4-lane Arterial
5ART	5-lane Arterial

\*\*Legend For Surface Type

Gravel - Granular A
DST - Double Surface Treatment
1-HCB - Single Lift High Class Bituminous (Asphalt)
2-HCB - Double Lift High Class Bituminous (Asphalt)

**New Tecumseh Road Study**  
**Table D6 - Appendix D**  
**Rural or Semi-Urban - Existing Gravel Surface**  
**Bench Mark Costs and Time of Improvement**

Improvement Type	Maintenance Class	PCI Range	AADT Range*	Improvement Surface**	Default Bench Mark Cost (\$/m)	Time of Improvement	
R - Resurface	Class 5 or 6	40-60	<200	gravel	\$131	NOW	
			200-399	DST	\$239	NOW	
			400-999	1-HCB	\$250	NOW	
	Class 4	45-70	<400	DST	\$239	NOW	
			400-1999	1-HCB	\$250	NOW	
	BS - Base and Surface	Class 5 or 6	<200	gravel	\$264	NOW	
			200-399	DST	\$372	NOW	
			400-999	1-HCB	\$422	NOW	
		Class 4	25-45	<400	DST	\$372	NOW
		400-1999	1-HCB	\$422	NOW		
REC - Reconstruction	Class 5 or 6	<20	<200	gravel	\$431	NOW	
			200-399	DST	\$540	NOW	
			400-999	1-HCB	\$652	NOW	
	Class 4	<25	<400	DST	\$540	NOW	
			400-1999	1-HCB	\$652	NOW	

Notes:

- 1) All bench mark costs include 20% for engineering and contingencies.
- 2) Bench mark costs do not include property, sidewalks, street lighting, intersection channelization, utility relocations, traffic signals, sanitary sewers, water mains or other services.

\*Legend For Functional Classification:

Numeric	AADT Range		
LR	Local Residential		
LCI	Local Commercial Industrial		
CR	Collector Residential		
CCI	Collector Commercial Industrial		
ART	Arterial		
4ART	4-lane Arterial		
5ART	5-lane Arterial		

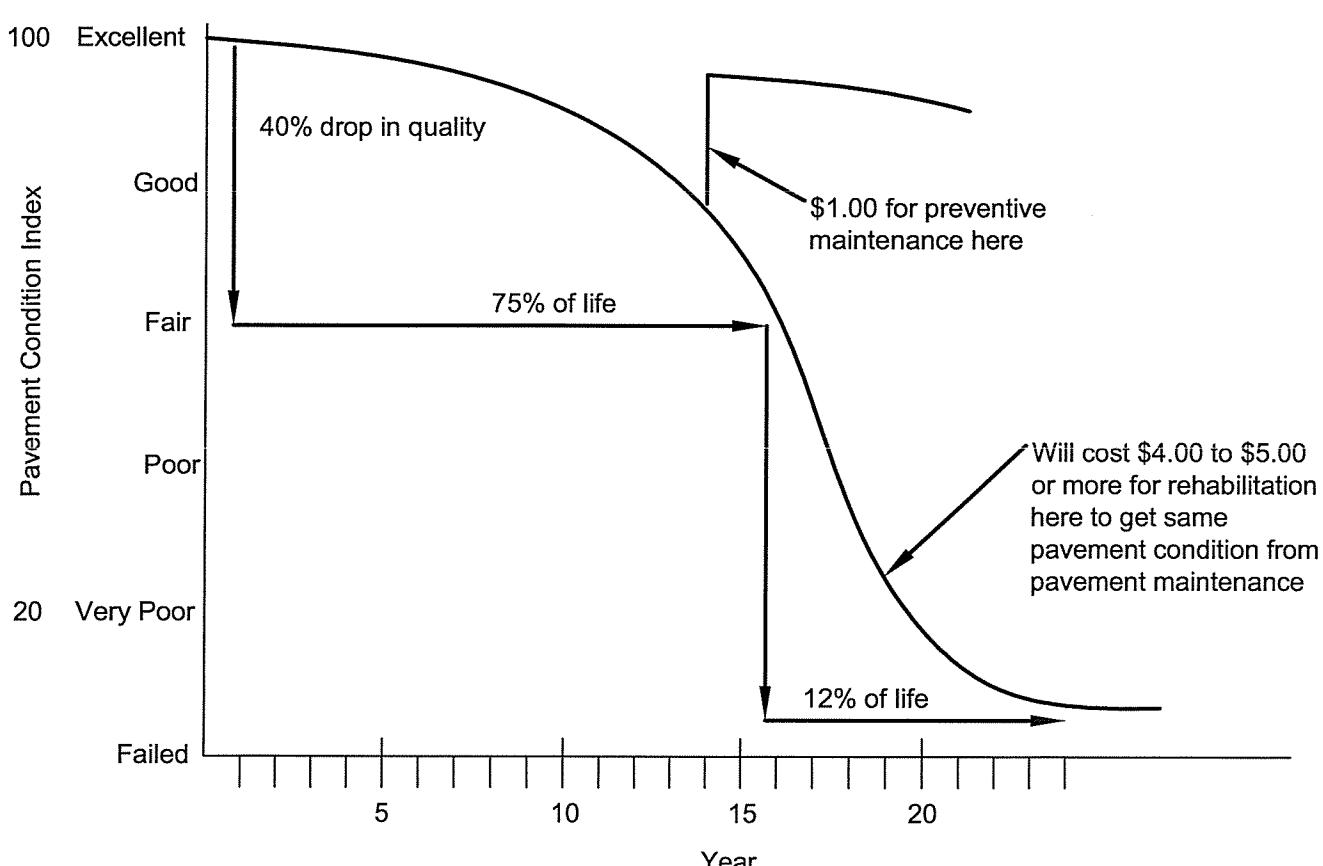
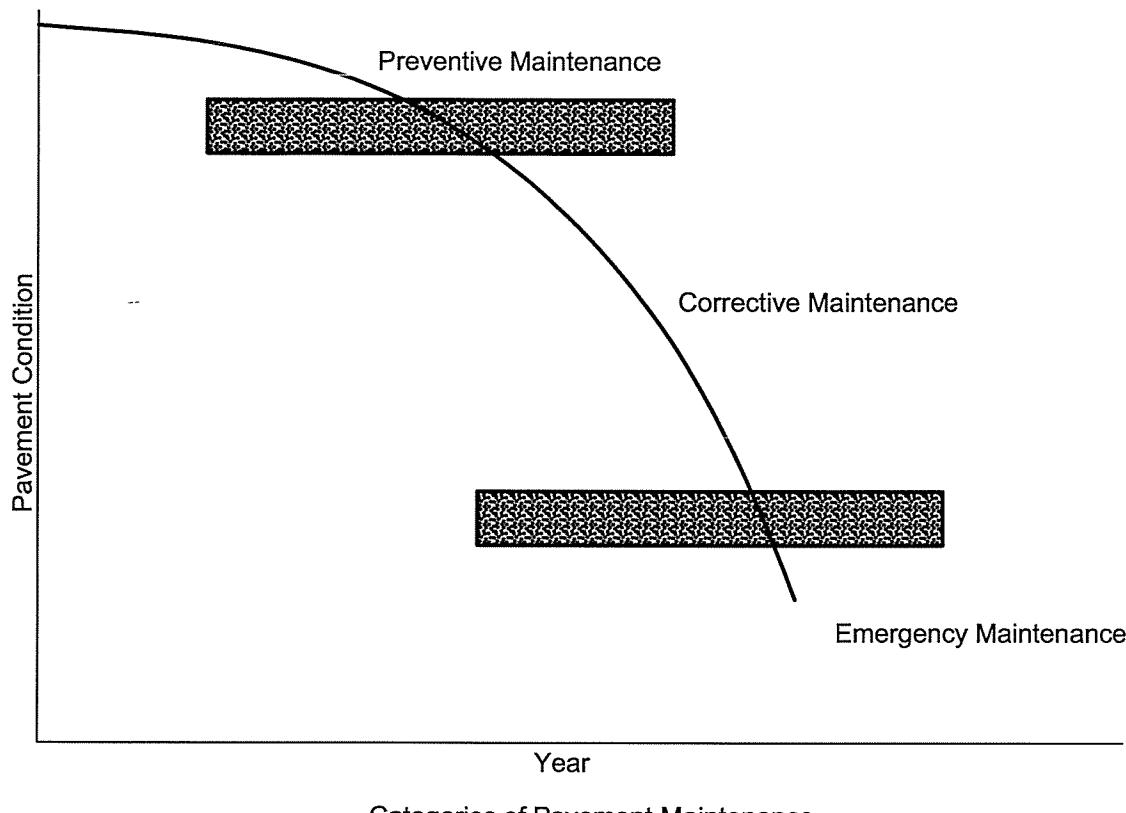
\*\*Legend For Surface Type

Gravel - Granular A
DST - Double Surface Treatment
1-HCB - Single Lift High Class Bituminous (Asphalt)
2-HCB - Double Lift High Class Bituminous (Asphalt)



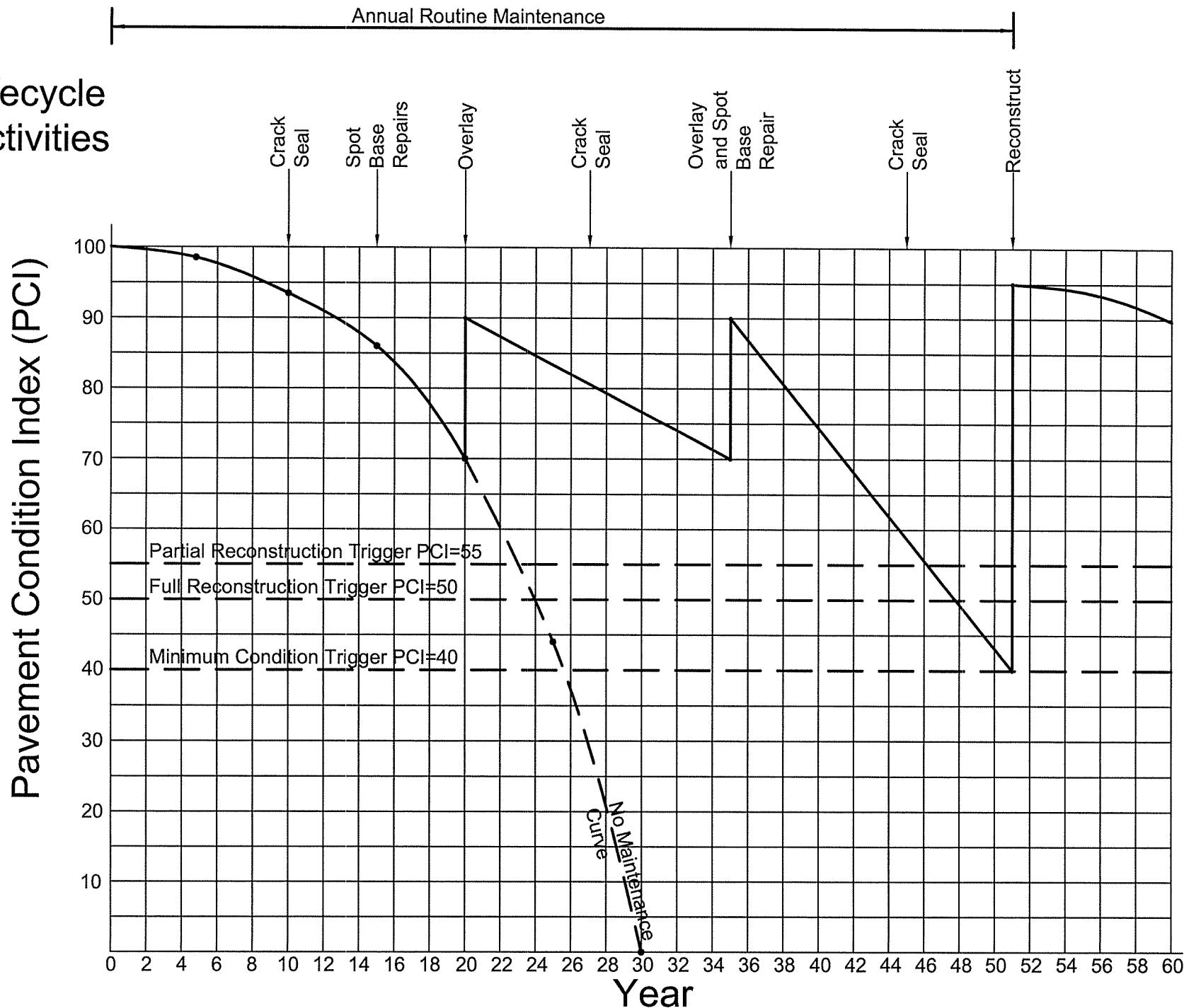
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**Appendix E**  
**Standard Pavement Degradation**  
**Curves**



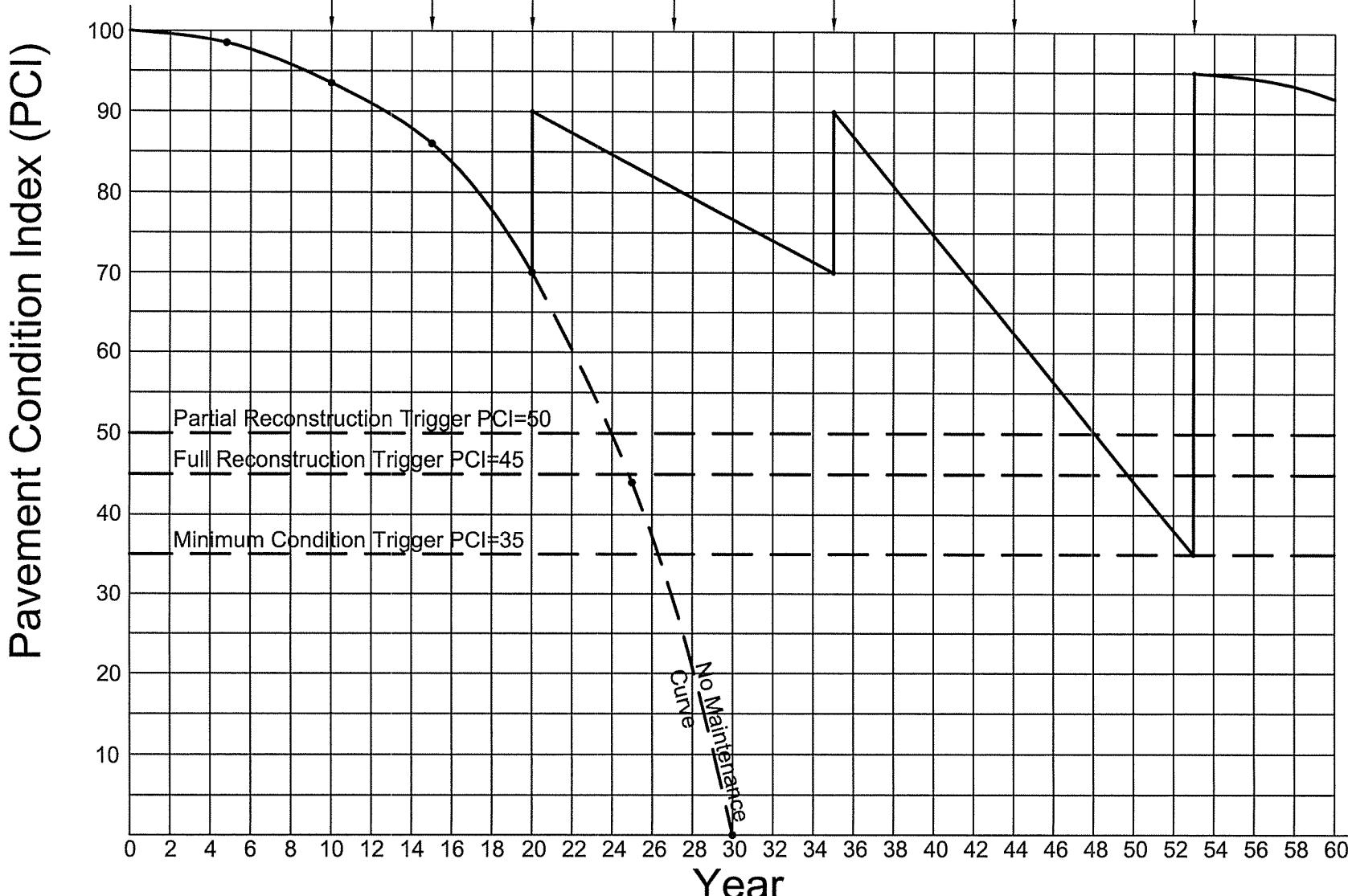
Typical Variation in Pavement Conditions as a Function of Time

## Lifecycle Activities

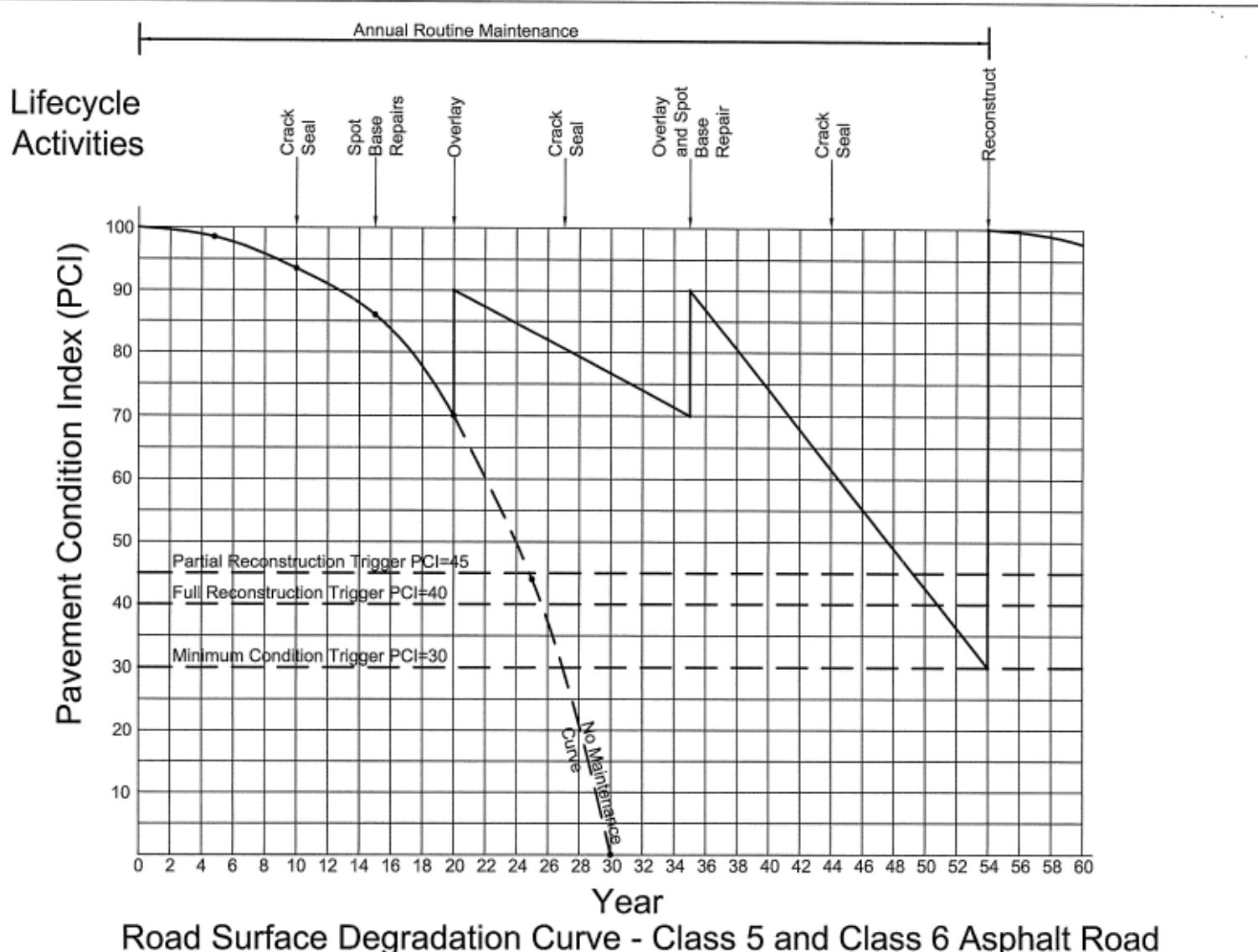


Road Surface Degradation Curve - Class 3 Asphalt Road

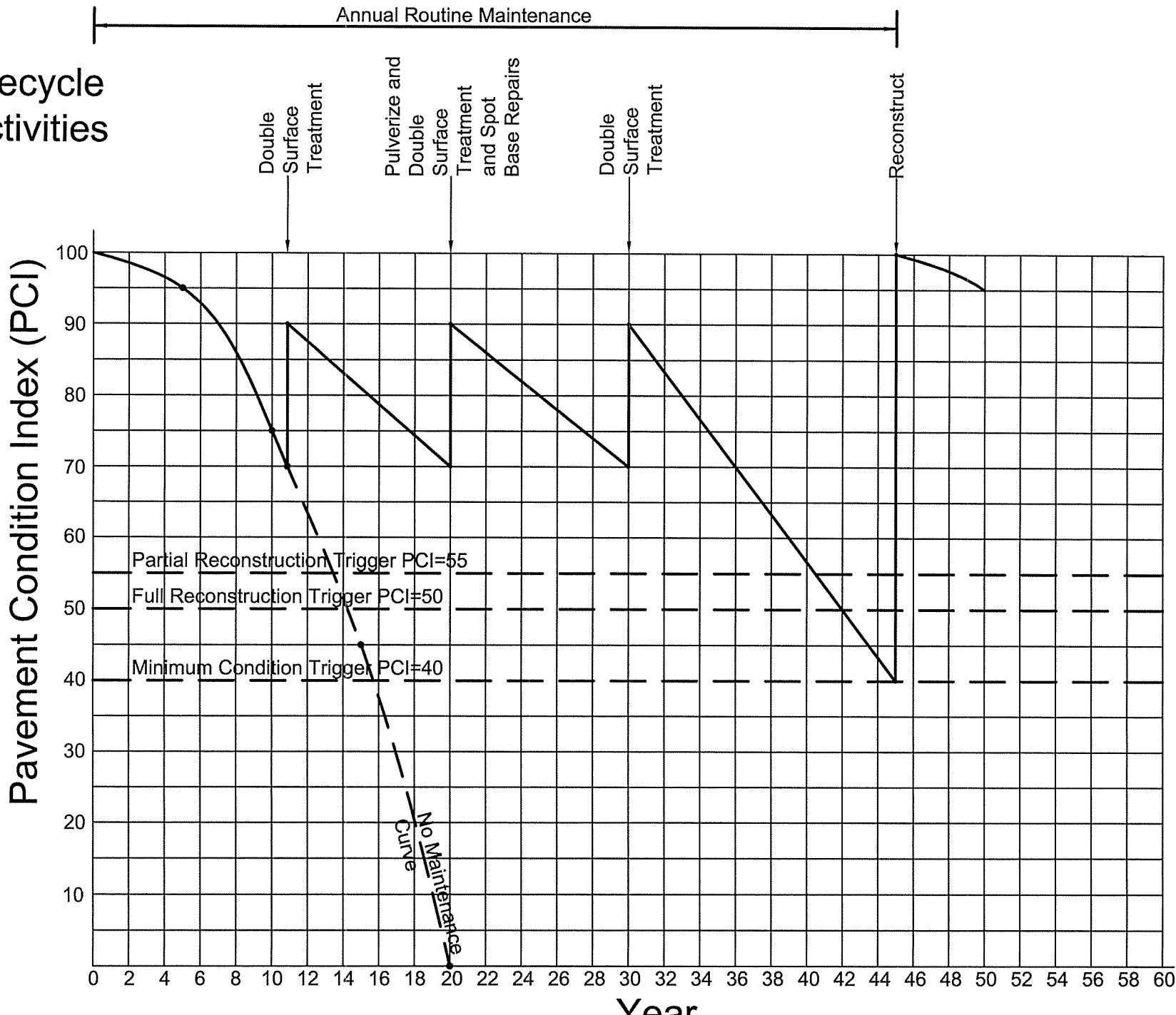
## Lifecycle Activities



Road Surface Degradation Curve - Class 4 Asphalt Road

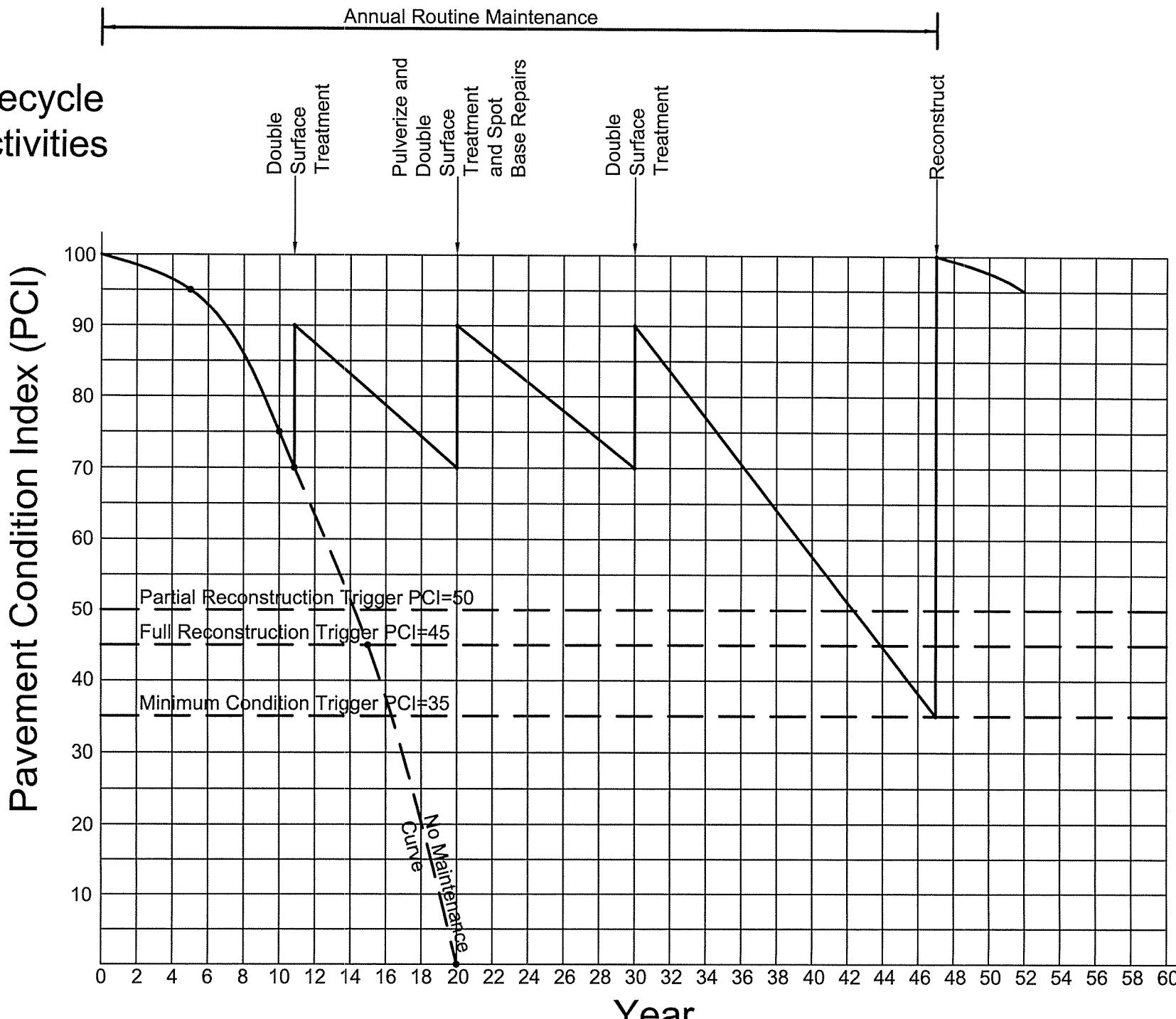


## Lifecycle Activities



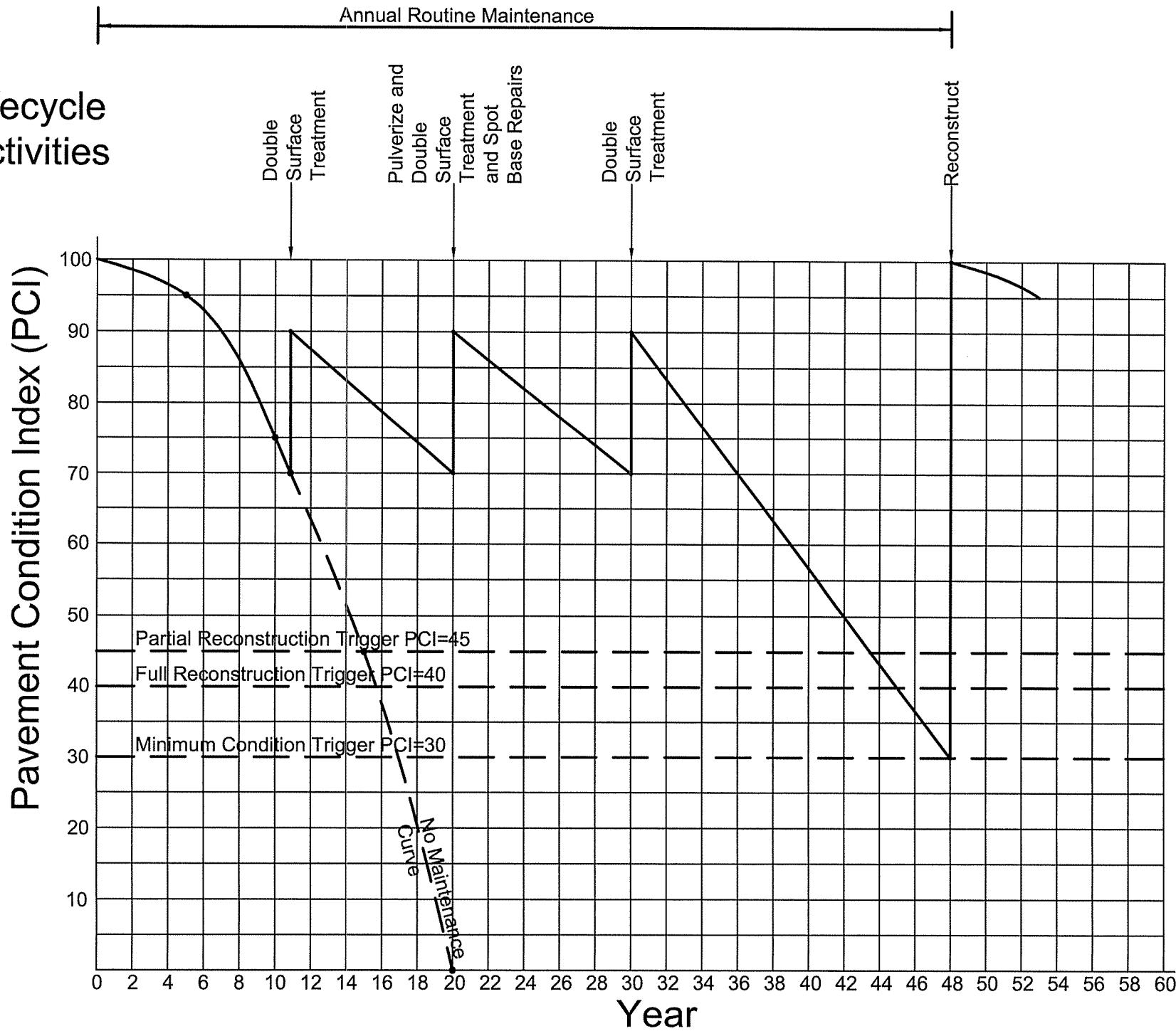
Road Surface Degradation Curve - Class 3 Surface Treatment Road

## Lifecycle Activities



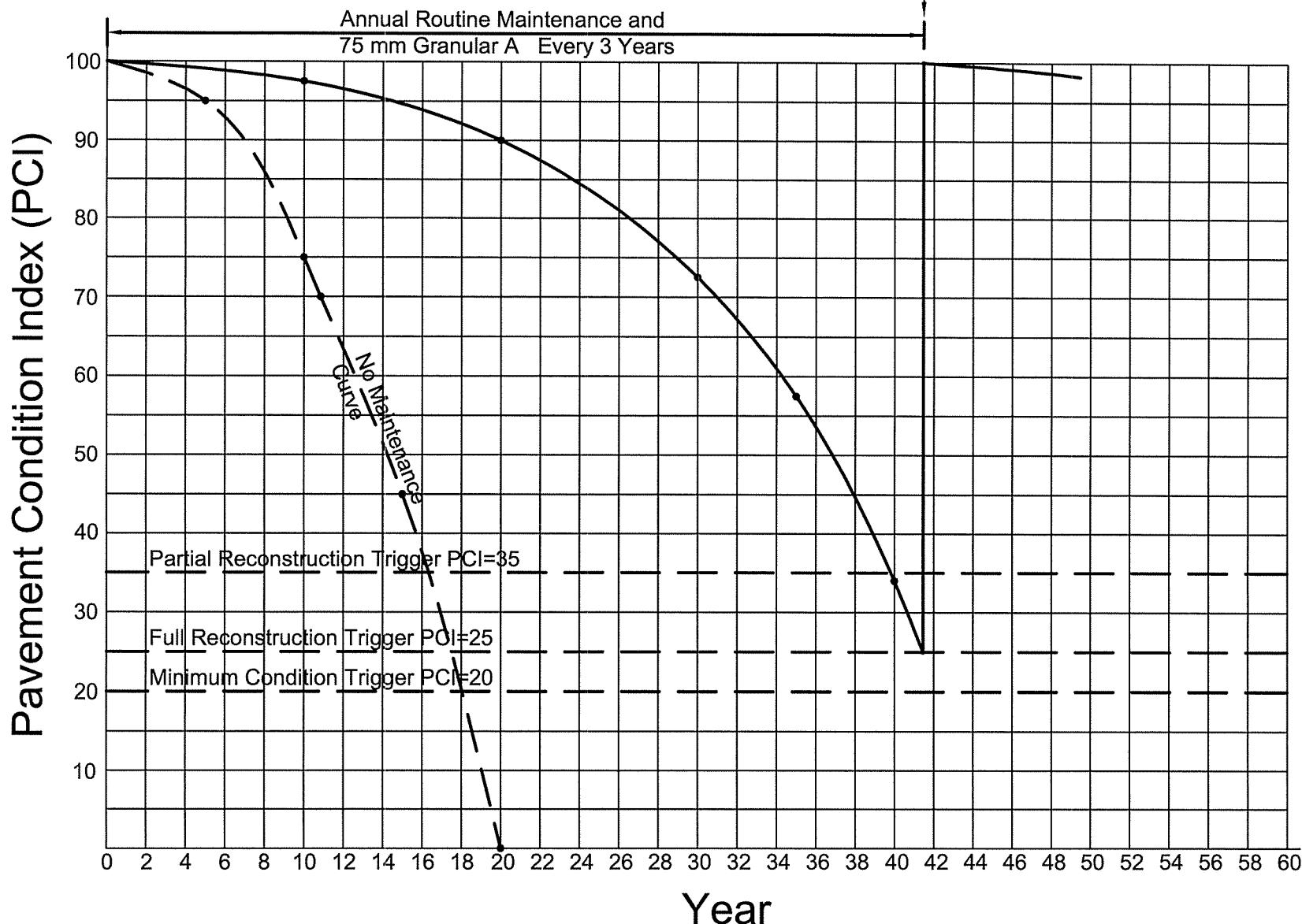
Road Surface Degradation Curve - Class 4 Surface Treatment Road

# Lifecycle Activities



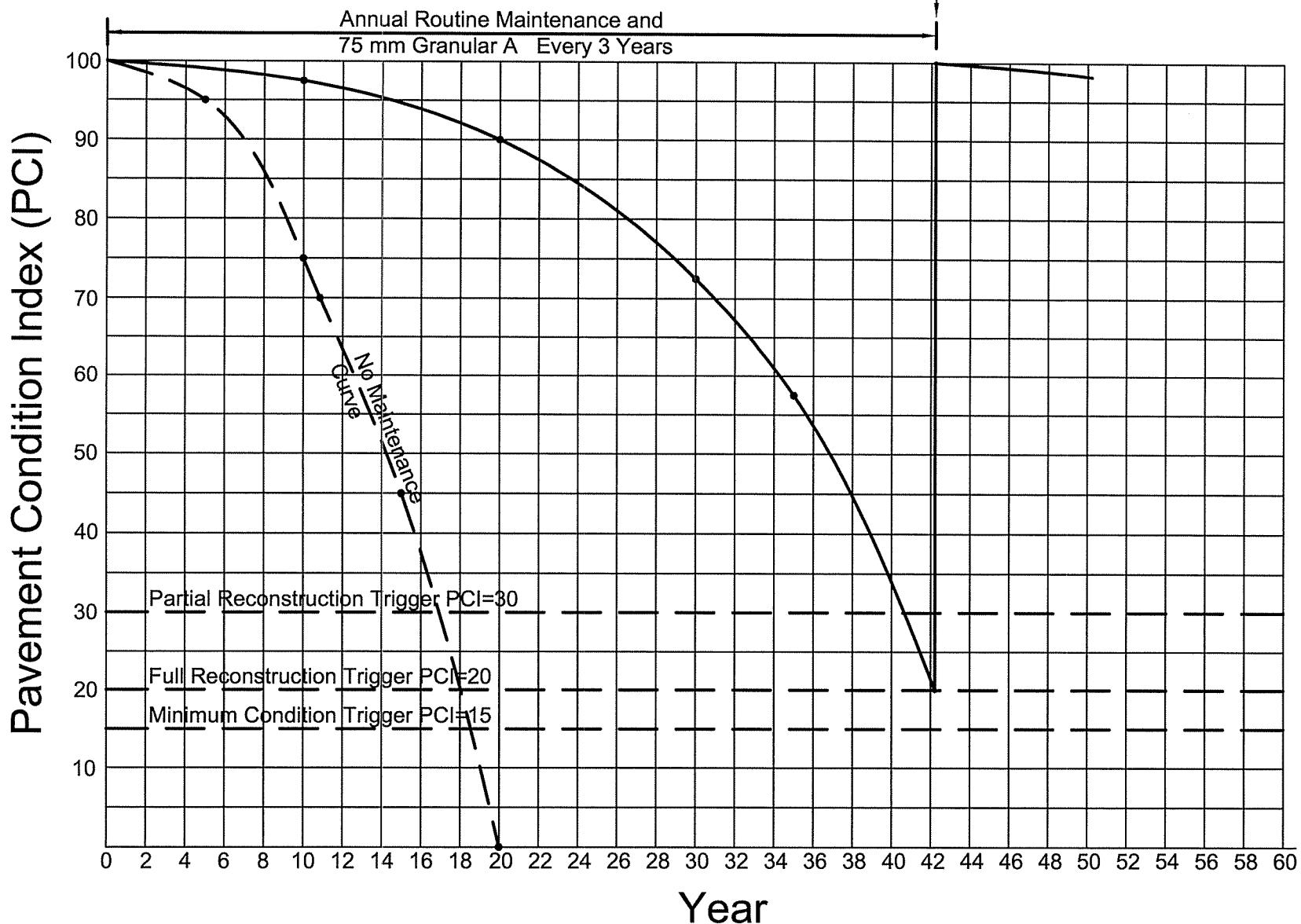
Road Surface Degradation Curve - Class 5 and Class 6 Surface Treatment Road

# Lifecycle Activities



Road Surface Degradation Curve - Class 4 Gravel Road

## Lifecycle Activities

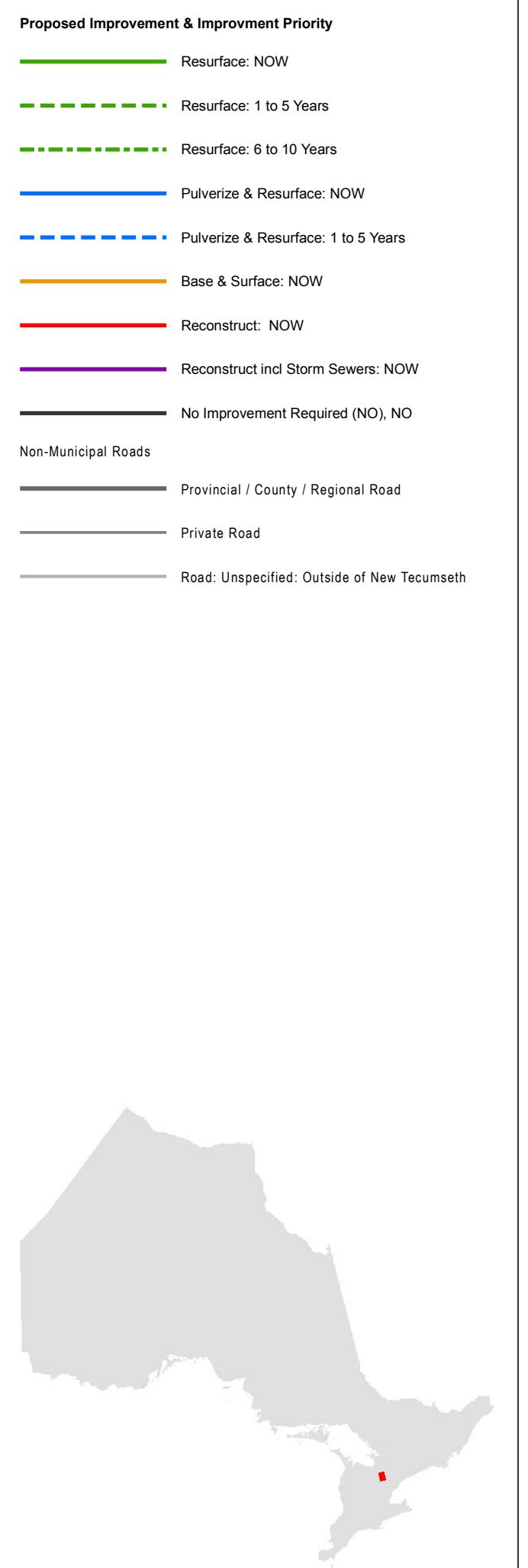


Road Surface Degradation Curve - Class 5 and Class 6 Gravel Road



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**Appendix F**  
**Summary Database of Road Condition**  
**Needs Including Mapping**



**NOTES:**  
Different themes represented on this map reflect different levels of temporal accuracy.  
Transportation, hydrographic, and cadastral features are more likely to reflect current ground conditions than land use, and cultural landmarks (e.g. buildings and other structures), especially around urban areas are will be less temporally accurate.

**DATA SOURCES:**  
1. Ministry of Natural Resources. © Queen's Printer for Ontario  
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada  
3. Simcoe County

**DISCLAIMER:**  
R.J. Burnside & Associates Limited and the above-mentioned sources and agencies are not responsible for the accuracy of the original temporal or observational data used to create the information on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). The data represented on this map may be subject to updates and future reproductions may not be identical.

N  
Grid North  
Datum: NAD 83  
Projection: UTM Zone 17  
0 1,000 2,000 3,000 4,000 Meters

No. Revision Date  
1. Final Report Map 30 August, 2013

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Closed Project

**Town of New Tecumseh Road Needs Study, Vehicle Traffic Count Program, & Pavement Asset Management Program**

**Title**  
**Condition Assessment Improvement Time**

Prepared P. Stuber Checked H. Centen  
Scale 1:50,000 Project F  
Network User: psstuber  
Network Time: 12/20/2013 3:43:14 PM  
MCO02985

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Network User: psstuber  
Network Time: 12/20/2013 3:43:14 PM

**New Tecumseth Road Study**  
**Appendix F - Resurfacing (R) Improvements**

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic Factor	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Priority Guide Number (PGN)
15778	15th Line	15th Sideroad	20th Sideroad		Rural	Gravel	80	2	3117	4.5	0.5	200	200	4	50-199	64	1.1	70	1940			High	5	8.8	69.2	R	\$239.00	\$744,963.00	NOW	8.8	0.3
16021	Wellington Street East	McDonald Street	Lorne Street	Urban	Concrete	40	2	183	8.3	1/R	1/R	5	200-399	240	1.1	264	1945	1945			High	3	8.7	45.5	R	\$364.00	\$66,612.00	NOW	8.7	1.4	
16022	McDonald Street	Wellington Street East	Victoria Street East	Urban	Asphalt Over Concrete	50	2	120	8.6	1/R	1/R	4	400-999	780	1.1	858	1955	1955			High	4	7.9	51.2	R	\$364.00	\$43,680.00	NOW	7.9	4	
16024	Church Street North	Dominion Street	Fletcher Crescent	Urban	Asphalt	50	2	133	14.0	CCI	4ART	3	4000-4999	4760	1.1	5236	1975	1975			High	4	8.8	60.1	R	\$558.00	\$74,214.00	NOW	8.8	13	
16033	Church Street North	Victoria Street West	Dominion Street	Urban	Concrete	50	2	47	14.0	CCI	4ART	3	5000-5999	5010	1.1	5511	1975	1975			High	4	8.9	61	R	\$558.00	\$62,266.00	NOW	8.9	13.4	
16034	Wellington Street East	Dufferin Street South	McDonald Street	Urban	Asphalt Over Concrete	50	2	182	8.3	1/R	1/R	5	50-199	190	1.1	209	1955	1955			High	3	8.7	45.5	R	\$364.00	\$66,248.00	NOW	8.7	1.1	
16047	McDonald Street	Nelson Street East	Wellington Street East	Urban	Asphalt	50	2	122	8.6	1/R	1/R	4	400-999	720	1.1	792	1975	1975			5	8.5	66.2	R	\$364.00	\$44,408.00	NOW	8.5	2.6		
16052	Wellington Street East	Church Street South	Centre Street South	Urban	Asphalt Over Concrete	50	2	182	8.3	LCI	1/R	5	400-999	400	1.1	440	1955	1955			4	8.6	57.9	R	\$527.00	\$95,914.00	NOW	8.6	1.2		
16067	McDonald Street	Albert Street East	Nelson Street East	Urban	Asphalt	50	2	120	8.6	1/R	1/R	4	400-999	720	1.1	792	1975	1975			5	8.8	69.5	R	\$364.00	\$43,680.00	NOW	8.8	2.3		
16076	Albert Street East	Dufferin Street South	McDonald Street	Urban	Asphalt	40	2	182	10.0	C/R	C/R	3	5000-5999	5358	1.3	6965	1965	1965			4	8.5	57.2	R	\$488.00	\$88,816.00	NOW	8.5	19.7		
16081	Wellington Street West	Ontario Street South	Orange Street	Urban	Asphalt	50	2	208	8.5	1/R	1/R	4	1000-1999	1460	1.1	1606	1975	1975			4	8.6	58.1	R	\$364.00	\$75,712.00	NOW	8.6	6.4		
16082	Ontario Street South	Wellington Street West	Victoria Street West	Urban	Concrete	50	2	120	8.4	1/R	1/R	4	1000-1999	1350	1.1	1485	1945	1945			High	4	8.8	59.2	R	\$364.00	\$43,680.00	NOW	8.8	5.8	
16083	Albert Street East	Centre Street South	Dufferin Street South	Urban	Asphalt	40	2	180	10.6	C/R	C/R	3	8000-9999	8849	1.3	11504	1965	1965			High	4	8.6	57.5	R	\$488.00	\$87,840.00	NOW	8.6	32.3	
16085	Nelson Street West	Paris Street	Church Street South	Urban	Asphalt Over Concrete	50	2	259	10.4	1/R	1/R	4	1000-1999	1053	1.1	1158	1955	1965			4	9.2	63.5	R	\$364.00	\$94,276.00	NOW	9.2	4		
16088	Paris Street	Nelson Street West	Wellington Street West	Urban	Concrete	50	2	122	7.0	1/R	1/R	4	400-999	840	1.1	924	1945	1945			4	9.1	62.7	R	\$364.00	\$44,408.00	NOW	9.1	3.3		
16104	Paris Street	Albert Street West	Nelson Street West	Urban	Concrete	50	2	130	7.0	1/R	1/R	4	400-999	700	1.1	770	1945	1945			High	4	9.3	64	R	\$364.00	\$47,320.00	NOW	9.3	2.7	
16105	Tupper Street East	Church Street South	Centre Street South	Urban	Asphalt	50	2	181	9.1	1/R	1/R	5	200-399	200	1.1	220	1985	1985			4	8.2	54.2	R	\$364.00	\$65,884.00	NOW	8.2	1		
16117	Centre Street	Beech Street	Tupper Street East	Urban	Asphalt Over Concrete	50	2	120	11.8	LCI	ART	5	50-199	150	1.1	165	1955	1965			High	4	8.1	53.6	R	\$527.00	\$63,240.00	NOW	8.1	0.5	
16125	Ontario Street South	Tupper Street	Albert Street West	Urban	Asphalt	50	2	39	10.4	1/R	1/R	4	1000-1999	1060	1.1	1166	1965	1965			4	9.7	67.7	R	\$364.00	\$14,196.00	NOW	9.7	3.6		
16128	Parsons Road	0.45km East of Dufferin Street South	Albert Street	Semi-Urban	Gravel	50	2	622	6.5	0.5	LCI	400	4	400-999	800	1.1	880	1975	1975			High	6	7.4	62.2	R	\$250.00	\$155,500.00	NOW	7.4	4.6
16137	Mitchell Avenue	Tupper Street West	Tupper Street West	Urban	Asphalt	50	2	88	10.4	1/R	1/R	4	2000-2999	2500	1.1	2750	1975	1975			4	9.7	68.1	R	\$364.00	\$32,032.00	NOW	9.7	8.4		
16139	Tupper Street West	King Street	Mitchell Avenue	Urban	Asphalt	50	2	254	10.3	1/R	1/R	4	1000-1999	1350	1.1	1485	1975	1975			5	8.9	69.7	R	\$364.00	\$92,456.00	NOW	8.9	4.3		
16140	King Street South	Tupper Street West	Albert Street West	Urban	Asphalt	50	2	100	10.3	C/R	C/R	3	6000-7999	6366	1.3	8276	1975	1975			High	4	8.4	56.2	R	\$488.00	\$48,800.00	NOW	8.4	24	
16146	Stewart Avenue	Kerr Boulevard	Mitchell Avenue	Urban	Asphalt	50	2	154	10.3	1/R	1/R	4	1000-1999	1350	1.1	1485	1975	1975			High	4	9.5	66.1	R	\$364.00	\$56,056.00	NOW	9.5	4.8	
16148	King Street South	Colbeck Crescent	Tupper Street West	Urban	Asphalt	50	2	102	10.3	C/R	C/R	3	5000-5999	5900	1.3	7670	1975	1975			High	4	8.9	60.5	R	\$488.00	\$49,776.00	NOW	8.9	20	
16150	McCague Crescent Alliston	Tupper Boulevard	Tupper Boulevard	Urban	Asphalt	50	2	387	10.3	1/R	1/R	5	200-399	250	1.1	275	1975	1975			4	8.7	58.8	R	\$364.00	\$140,868.00	NOW	8.7	1.1		
16157	Tupper Boulevard	Storey Gate	McCague Crescent	Urban	Asphalt	50	2	72	10.3	1/R	1/R	4	400-999	800	1.1	880	1975	1975			4	9.5	65.7	R	\$364.00	\$26,208.00	NOW	9.5	2.9		
16166	Stewart Avenue	Cunningham Drive	Kerr Boulevard	Urban	Asphalt	50	2	160	10.3	1/R	1/R	4	400-999	500	1.1	550	1975	1975			High	4	9.4	64.6	R	\$364.00	\$58,240.00	NOW	9.4	1.9	
16180	Mackenzie Street	Whiteside Court	King Street	Urban	Asphalt	50	2																								

**New Tecumseth Road Study**  
**Appendix F - Resurfacing (R) Improvements**

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic Factor	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Priority Guide Number (PGN)	
17242	Queen Street South	Rogers Road	Dillane Street		Urban	Asphalt	50	2	192	14.0		ART	4ART	3	6000-7999	7910	1.3	10283	1995	1995		6	8.4	72.3	R	\$632.00	\$121,344.00	1 to 5 Years	8.4	14.6	
17245	The Boulevard	Bradley Court	South End Cul-De-Sac		Urban	Asphalt	50	2	181	14.6		U/R	ART	5	200-399	300	1.1	330	1975	1975		High	4	9.1	62.7	R	\$364.00	\$65,884.00	1 to 5 Years	9.1	1.2
17254	Adeline Avenue	Brown Street	Lionel Stone Avenue East		Urban	Asphalt	50	2	294	7.4		U/R	L/R	5	400-999	450	1.1	495	1975	1975		High	4	9.2	62.9	R	\$364.00	\$107,016.00	1 to 5 Years	9.2	1.8
17262	Brown Street	Wm Smart Road	Adeline Avenue		Urban	Asphalt	50	2	195	7.4		U/R	L/R	5	400-999	450	1.1	495	1975	1975		High	4	9.3	63.8	R	\$364.00	\$70,980.00	1 to 5 Years	9.3	1.7
20609	Church Lane	Victoria Street West	Queen Street		Urban	Asphalt	50	1	100	4.7		U/R	L/R	5	50-199	50	1.1	55	1965	1965			5	8.8	69.5	R	\$364.00	\$36,400.00	1 to 5 Years	8.8	0.2
<b>Total Resurfacing (R) Needs in the 1 to 5 Year Time Period</b>																															
<b>\$2,245,408.00</b>																															
15808	Sideroad 10	1.38 Km North of Line 14 (E)	Hwy #89		Rural	Asphalt	80	2	282	6.5	1.8	500	500	3	1000-1999	1975	1.5	2962	1955	1999		7	9.1	83.4	R	\$149.00	\$42,018.00	6 to 10 Years	9.1	10	
15850	Cowan Avenue	Park Street	0.06 Km North of Park Street		Semi-Urban	Asphalt	40	2	58	6.7	1.2	U/R	400	5	400-999	500	1.1	550	1985	1985		5	9	70.8	R	\$149.00	\$8,642.00	6 to 10 Years	9	3.8	
15872	Cowan Avenue	Essa Road	Park Street		Semi-Urban	Asphalt	40	2	141	6.7	1.2	U/R	400	5	400-999	500	1.1	550	1985	1985		6	8.7	75.1	R	\$149.00	\$21,009.00	6 to 10 Years	8.7	3.2	
15886	William Street	Oak Street	Park Street		Semi-Urban	Asphalt	50	2	212	6.7	1.2	U/R	300	5	200-399	200	1.1	220	1965	1965		5	9.7	77.3	R	\$119.00	\$25,228.00	6 to 10 Years	9.7	1.5	
15912	Victoria Street East	Sir Frederick Banting Road	Tottenham Road		Urban	Asphalt	50	4	207	18.8		ART	5ART	2	15000+	16000	1.3	20800	1975	1975		7	9.2	84.1	R	\$316.00	\$65,412.00	6 to 10 Years	9.2	33.8	
15916	George Street	Banting Drive	Donner Street		Semi-Urban	Asphalt	50	2	207	6.7	1.2	U/R	400	4	400-999	900	1.1	990	1955	1955		5	9.3	73.8	R	\$149.00	\$30,843.00	6 to 10 Years	9.3	6.1	
15921	William Street	George Street	Oak Street		Semi-Urban	Asphalt	50	2	197	6.7	1.2	U/R	400	4	400-999	900	1.1	990	1965	1965		5	9.1	72.1	R	\$149.00	\$29,353.00	6 to 10 Years	9.1	6.5	
15922	George Street	Donner Street	William Street		Semi-Urban	Asphalt	50	2	97	6.7	1.2	U/R	400	4	400-999	900	1.1	990	1955	1955		5	9	70.8	R	\$149.00	\$14,453.00	6 to 10 Years	9	6.8	
15923	Banting Drive	Elm Street	George Street		Semi-Urban	Asphalt	50	2	99	6.7	1.2	U/R	400	4	400-999	600	1.1	660	1965	1965		6	8.9	76.9	R	\$149.00	\$14,751.00	6 to 10 Years	8.9	3.6	
15952	Queen Street Alliston	Walnut Street	Smalley Street		Semi-Urban	Asphalt	50	2	197	7.0	0.8	U/R	400	5	400-999	400	1.1	440	1955	1955		5	9.1	71.6	R	\$149.00	\$29,353.00	6 to 10 Years	9.1	2.9	
15960	Victoria Street East	Downey Avenue	John Avenue		Semi-Urban	Asphalt	50	2	399	8.0	2.8	ART	800	2	15000+	15878	1.3	20641	1975	2004		7	9.2	84.1	R	\$149.00	\$59,451.00	6 to 10 Years	9.2	71.1	
15973	Walnut Street	Victoria Street East	Queen Street		Semi-Urban	Asphalt	50	2	99	7.0	0.8	U/R	400	4	400-999	800	1.1	880	1985	1985		6	9.2	79	R	\$149.00	\$14,751.00	6 to 10 Years	9.2	4.3	
15976	Douglas Drive	Albert Street East	Tottenham Road		Semi-Urban	Asphalt	50	2	340	6.2	0.5	U/R	200	5	50-199	160	1.1	176	1995	1995		5	8.9	70.1	R	\$119.00	\$40,460.00	6 to 10 Years	8.9	1.5	
15985	Victoria Street East	Lorne Street	East Avenue		Urban	Asphalt	40	3	268	11.0		ART	ART	2	15000+	15000	1.3	19500	1975	2004		6	9.5	82.5	R	\$316.00	\$84,688.00	6 to 10 Years	9.5	34.9	
15986	Queen Street Alliston	Dufferin Street North	Boyne Street		Urban	Asphalt	50	2	262	9.1		U/R	1/R	5	400-999	410	1.1	451	1985	1985		6	9.2	79.4	R	\$228.00	\$59,736.00	6 to 10 Years	9.2	1.4	
15994	Victoria Street East	Boyne Street	Lorne Street		Urban	Asphalt	40	2	119	11.0		ART	ART	2	15000+	15000	1.3	19500	1975	2004		6	9.4	81.1	R	\$316.00	\$37,604.00	6 to 10 Years	9.4	37.7	
15997	Sideroad 10	14th Line (E)	1.38 Km North of 14th Line (E)		Rural	Asphalt	80	2	1385	6.5	1.8	500	500	3	1000-1999	1999	1.5	2880	1955	1999		7	9.1	83.4	R	\$149.00	\$206,365.00	6 to 10 Years	9.1	9.8	
15999	Albert Street East	John Street	Douglas Drive		Semi-Urban	Asphalt	60	2	451	7.0	0.5	C/R	700	3	3000-3999	3475	1.3	4518	1955	2004	Deficient	6	9.6	82.9	R	\$149.00	\$67,399.00	6 to 10 Years	9.6	16.7	
16012	Fletcher Lane	Fletcher Crescent	North End		Semi-Urban	Asphalt	50	1	72	3.8	1.1	U/R	100	6	01-49	40	1.1	44	1955	1955		5	9.1	72.1	R	\$119.00	\$8,568.00	6 to 10 Years	9.1	0.4	
16013	Sideroad 10	Riverview Road	14th Line (E)		Rural	Asphalt	80	2	205	6.5	1.8	600	600	3	2000-2999	2300	1.5	3450	1995	1999		7	9.2	84.1	R	\$149.00	\$30,545.00	6 to 10 Years	9.2	11.2	
16028	Albert Street East	Downey Avenue	John Avenue		Semi-Urban																										

**New Tecumseth Road Study**  
**Appendix F - Resurfacing (R) Improvements**

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Cost	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Priority Guide Number (PGN)	
17234	Bradley Court	The Boulevard	West End Cul-De-Sac		Urban	Asphalt	50	2	23	10.0		L/R	L/R	5	50-199	50	1.1	55	1975	1975			5	9.5	75.5	R	\$228.00	\$5,244.00	6 to 10 Years	9.5	0.2
17246	3rd Line	10th Sideroad	15th Sideroad		Rural	Surface Treatment	80	2	3102	6.7	0.9	300	4	200-399	238	1.3	309	1955	2006			7	8.3	74.9	R	\$119.00	\$369,138.00	6 to 10 Years	8.3	2.1	
17247	Sideroad 10	3rd Line	4th Line		Rural	Asphalt	80	2	1431	6.5	1.5	600	600	3	2000-2999	2708	1.5	4062	1995	1995			7	9.2	84.3	R	\$149.00	\$213,219.00	6 to 10 Years	9.2	13
17250	Lionel Stone Avenue East	Wm Smart Road	Adeline Avenue		Urban	Asphalt	50	2	242	7.4		L/R	L/R	4	400-999	600	1.1	660	1975	1975			5	9.5	75.3	R	\$228.00	\$55,176.00	6 to 10 Years	9.5	2.5
17251	Lionel Stone Avenue East	Queen Street South	Wm Smart Road		Urban	Asphalt	50	2	225	7.4		L/R	L/R	4	400-999	600	1.1	660	1975	1975			5	9.4	74.9	R	\$228.00	\$51,300.00	6 to 10 Years	9.4	2.5
17252	Queen Street South	Lionel Stone Avenue East	Rogers Road		Urban	Asphalt	50	2	94	14.0		ART	4ART	3	6000-7999	7500	1.3	9750	1995	1995			6	9.4	81.4	R	\$316.00	\$29,704.00	6 to 10 Years	9.4	18.5
17253	Queen Street South	Lionel Stone Avenue West	Lionel Stone Avenue East		Urban	Asphalt	50	2	13	14.0		ART	4ART	3	6000-7999	7510	1.3	9763	1995	1995			6	9.5	82.3	R	\$316.00	\$4,108.00	6 to 10 Years	9.5	17.7
17264	Queen Street South	Brown Street	Lionel Stone Avenue West		Urban	Asphalt	50	2	84	14.0		ART	4ART	3	6000-7999	7000	1.3	9100	1995	1995			6	9.5	82.3	R	\$316.00	\$26,544.00	6 to 10 Years	9.5	16.5
17267	Queen Street South	South Limit of Tottenham	Brown Street		Urban	Asphalt	50	2	225	10.5		ART	ART	3	6000-7999	6615	1.3	8600	1995	1995			5	9.5	75.5	R	\$316.00	\$71,100.00	6 to 10 Years	9.5	21.5
17280B	Sideroad 20	0.25 Km North of Hwy. 9	2nd Line		Rural	Asphalt	80	2	1181	6.7	0.9	500	500	3	1000-1999	1429	1.3	1858	1955	2001			6	9.3	80.1	R	\$149.00	\$175,969.00	6 to 10 Years	9.3	8
17281A	3rd Line	Tottenham Road	650m East of Tottenham Road		Rural	Surface Treatment	80	2	630	6.7	0.9	300	300	4	200-399	336	1.3	437	1955	2006			7	8.4	75.9	R	\$119.00	\$74,970.00	6 to 10 Years	8.4	2.9
17281B	3rd Line	Tottenham Road	650m East of Tottenham Road 10th Sideroad		Rural	Surface Treatment	80	2	2503	6.7	0.9	300	300	4	200-399	336	1.3	437	1955	2006			7	8.4	75.9	R	\$119.00	\$297,857.00	6 to 10 Years	8.4	2.9
17293	Adjala-Tecumseth Townline	5 Sideroad Adjala	4th Line	yes	Rural	Asphalt	60	2	1172	6.7	1.2	500	500	4	1000-1999	1689	1.3	2196	1965	1965			5	9	71.2	R	\$149.00	\$174,628.00	6 to 10 Years	9	13.7
17299	Adjala-Tecumseth Townline	3rd Line	5 Sideroad Adjala	yes	Rural	Asphalt	60	2	210	6.7	1.2	500	500	4	1000-1999	1690	1.3	2197	1965	1965			5	9.4	74.4	R	\$149.00	\$31,290.00	6 to 10 Years	9.4	12.2
17409A	Church Street South	0.4 Km South of Beech Street	Alderson Court		Semi-Urban	Asphalt	50	2	315	6.5	1.8	CCI	800	3	4000-4999	4810	1.1	5291	1975	2008			6	9.7	83.6	R	\$149.00	\$46,935.00	6 to 10 Years	9.7	20.3
17410	Church Street South	Industrial Parkway	Alderson Court		Semi-Urban	Asphalt	50	2	426	6.5	1.8	CCI	800	3	5000-5999	5153	1.1	5668	1995	1995			6	9.4	81	R	\$149.00	\$63,474.00	6 to 10 Years	9.4	25.2
20606	Paris Street	Victoria Street West	Parking Lot		Urban	Asphalt	50	2	27	10.0		LCI	LCI	4	400-999	775	1.1	853	1995	1995			6	9.1	78.8	R	\$296.00	\$7,992.00	6 to 10 Years	9.1	2.1

Total Resurfacing (R) Needs in the 6 to 10 Year Time Period

\$6,372,371.00

Total Resurfacing (R) Needs

\$15,171,004.00

**New Tecumseth Road Study**  
Appendix F - Pulverize/Resurface (PR) Improvements

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic Factor	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Priority Guide Number (PGN)	
15849	Park Street	Cowan Avenue	William Street		Semi-Urban	Asphalt	40	2	96	6.7	1.2	L/R	200	5	50-199	100	1.1	110	1975	1975			4	8.5	56.6	PR	\$191.00	\$18,336.00	NOW	8.5	1.7
15914A	Hussey Street	Evans Road	0.06 Km East of Evans Road		Semi-Urban	Asphalt	50	2	66	6.7	1.2	L/R	400	4	400-999	500	1.1	550	1965	1965	High	4	8.4	56.2	PR	\$223.00	\$14,718.00	NOW	8.4	7.5	
15917	Hussey Street	Church Street North	Evans Road		Semi-Urban	Asphalt	50	2	96	6.7	1.2	L/R	400	4	400-999	500	1.1	550	1965	1965			4	8.7	58.8	PR	\$223.00	\$21,408.00	NOW	8.7	7.1
15925	Hussey Street	Banting Drive	Church Street North		Semi-Urban	Asphalt	50	2	96	6.7	1.2	L/R	400	4	400-999	700	1.1	770	1965	1965	High	4	8.5	56.8	PR	\$223.00	\$21,408.00	NOW	8.5	10.4	
15926	Banting Drive	Hussey Street	Elm Street		Semi-Urban	Asphalt	50	2	22	6.7	1.2	L/R	300	5	200-399	200	1.1	220	1965	1965	High	4	8.5	56.6	PR	\$191.00	\$42,402.00	NOW	8.5	3.5	
15945	Banting Drive	Doner Street	Hussey Street		Semi-Urban	Asphalt	50	2	242	6.7	1.2	L/R	400	5	400-999	400	1.1	440	1965	1965	High	4	8.4	56.4	PR	\$223.00	\$53,966.00	NOW	8.4	6	
15961	Smalley Street	Victoria Street East	Queen Street		Semi-Urban	Asphalt	50	2	99	7.0	0.8	L/R	400	4	400-999	600	1.1	660	1965	1965	High	4	8.1	53.2	PR	\$223.00	\$22,077.00	NOW	8.1	9.6	
16020	East Avenue	Nelson Street East	Victoria Street East		Semi-Urban	Asphalt	40	2	259	6.2	0.9	L/R	400	5	400-999	900	1.1	990	1975	1975	Deficient	4	8.6	57.9	PR	\$223.00	\$57,757.00	NOW	8.6	13	
16051B	Elizabeth Street	East of Victoria Street West	0.22 Km East of Victoria Street West		Semi-Urban	Asphalt	50	2	223	5.0	0.8	L/R	200	5	50-199	150	1.1	165	1975	1975			4	8.2	54	PR	\$191.00	\$42,593.00	NOW	8.2	2.8
16057	Lorne Street	Albert Street East	Nelson Street East		Semi-Urban	Asphalt	50	2	121	6.8	0.7	L/R	300	5	200-399	240	1.1	264	1975	1975	Deficient	High	4	8	52.5	PR	\$191.00	\$23,111.00	NOW	8	4.6
16126	Beech Street East	Church Street South	Centre Street South		Semi-Urban	Asphalt	50	2	182	6.5	1.0	L/R	300	5	200-399	200	1.1	220	1985	1985	High	4	8.3	55.3	PR	\$191.00	\$34,762.00	NOW	8.3	3.6	
16501	Sideroad 10	11th Line	12th Line		Rural	Asphalt	80	2	1358	6.5	1.8	600	600	3	2000-2999	2887	1.5	4330	1995	1995		4	8.6	57.7	PR	\$331.00	\$449,498.00	NOW	8.6	33.7	
16693	Sideroad 15	9th Line	10th Line		Rural	Surface Treatment	80	2	1402	6.0	1.1	400	400	4	400-999	514	1.3	668	1955	1985		4	7.6	50.8	PR	\$223.00	\$31,646.00	NOW	7.6	9.5	
16791A	Sideroad 15	8th Line	1.1 Km North of 8th Line		Rural	Surface Treatment	80	2	1096	6.0	1.1	400	400	4	400-999	626	1.3	814	1955	1985		4	7.8	52.1	PR	\$223.00	\$244,408.00	NOW	7.8	11.3	
16791B	Sideroad 15	1.1 Km North of 8th Line	9th Line		Rural	Surface Treatment	60	2	298	6.0	1.1	400	400	4	400-999	625	1.3	812	1955	1985		4	8.3	57.1	PR	\$223.00	\$66,454.00	NOW	8.3	10.1	
16820	Dayfoot Street	Stewart Street	McKeown Street		Semi-Urban	Asphalt	50	2	107	6.5	0.9	L/R	500	4	1000-1999	1000	1.3	1300	1975	1975		4	8.3	55.5	PR	\$223.00	\$23,861.00	NOW	8.3	16.8	
16836	Cedar Street	Hendrie Street	Haines Street		Semi-Urban	Asphalt	50	2	185	6.4	0.5	L/R	200	5	50-199	50	1.2	60	1985	2007			4	8.3	55.5	PR	\$191.00	\$35,335.00	NOW	8.3	0.9
16858	Dayfoot Street	Kate Aitken Crescent	Highland Road		Semi-Urban	Asphalt	50	2	273	6.5	0.9	L/R	500	4	1000-1999	1300	1.3	1690	1985	1985		4	8	52.3	PR	\$223.00	\$60,879.00	NOW	8	23.3	
16892	Main Street East	Patterson Street	East Limit of Beeton		Semi-Urban	Asphalt	50	2	250	6.7	2.5	ART	700	4	3000-3999	3982	1.4	5575	1995	1995	High	4	8	52.5	PR	\$331.00	\$82,750.00	NOW	8	50	
16905	Tecumseth Street North	Main Street	Prospect Street		Semi-Urban	Asphalt	50	2	242	6.1	0.6	L/R	400	5	400-999	450	1.2	540	1975	1975		4	8.6	58.2	PR	\$223.00	\$53,966.00	NOW	8.6	6.8	
16914	Dayfoot Street	Main Street West	Prospect Street		Semi-Urban	Asphalt	50	2	277	6.5	0.7	L/R	500	4	1000-1999	1839	1.3	2391	1985	1985		4	7.8	51	PR	\$223.00	\$61,771.00	NOW	7.8	33.9	
16916	Tecumseth Street South	Maple Avenue	Main Street		Semi-Urban	Asphalt	50	2	122	6.7	0.5	L/R	300	5	200-399	341	1.6	546	1955	1955	High	4	8.6	57.5	PR	\$191.00	\$23,302.00	NOW	8.6	7.2	
17023	Adjala-Tecumseth Townline	7th Line	County Road 1	yes	Rural	Surface Treatment	60	2	911	6.7	1.2	500	500	4	1000-1999	1860	1.3	2418	1955	1955		6	6.6	54.9	PR	\$223.00	\$203,153.00	NOW	6.6	31.6	
17045	Adjala-Tecumseth Townline	Keenansville Road	7th Line	yes	Rural	Surface Treatment	60	2	404	6.7	0.9	500	500	4	1000-1999	1692	1.3	2200	1955	1975		6	6.6	54.9	PR	\$223.00	\$50,092.00	NOW	6.6	28.7	
17081	Adjala-Tecumseth Townline	6th Line	Keenansville Road	yes	Rural	Surface Treatment	60	2	907	6.7	0.9	500	500	4	1000-1999	1801	1.3	2341	1955	1955		6	6.4	52.9	PR	\$223.00	\$202,261.00	NOW	6.4	31.9	
17133	Alphonsus Court	Eastern Avenue	East End Cul-De-Sac		Semi-Urban	Asphalt	50	2	158	7.0	1.4	L/R	200	5	50-199	170	1.1	187	1975	1975		4	7.6	49.1	PR	\$191.00	\$30,178.00	NOW	7.6	3.5	
17143	Alexander Street	Ori's Court	Eastern Avenue		Semi-Urban	Asphalt	50	2	160	7.0	1.4	L/R	400	5	400-999	450	1.1	495	1975	1975		4	8.1	53.6	PR	\$223.00	\$35,680.00	NOW	8.1	7.2	
17146	Windle Court	Eastern Avenue	West End Cul-De-Sac																												

**New Tecumseth Road Study**  
**Appendix F - Base and Surface (BS) Improvements**

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic Factor	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Cost	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Priority Guide Number (PGN)	
16091	Nelson Street West	Orange Street	Paris Street		Urban	Concrete	50	2	133	8.3		L/R	L/R	4	1000-1999	1050	1.1	1155	1945	1945		High	3	8.8	46.4	BS	\$496.00	\$65,968.00	NOW	8.8	8.7	
16198	King Street South	Hancey Crescent	Mackenzie Street		Urban	Asphalt	50	2	123	10.3		C/R	C/R	3	5000-5999	5700	1.3	7410	1975	1975		High	4	8.3	54.9	BS	\$652.00	\$80,196.00	NOW	8.3	33.1	
16348B	13th Line	Tottenham Road	1.4 Km West of Tottenham Road		Rural	Gravel	80	2	1486	7.0	2.0	300	300	4	200-399	222	1.1	244	1940				High	4	6.7	42.8	BS	\$372.00	\$552,792.00	NOW	6.7	2.6
16417B	12th Line	10th Sideroad	2.0 Km West of 10th Sideroad		Rural	Asphalt	80	2	2008	6.5	0.9	300	300	4	200-399	244	1.3	317	1965	1965			4	7.7	49.7	BS	\$365.00	\$732,920.00	NOW	7.7	2.8	
16877	Dayfoot Street	Kate Aitken Crescent	Kate Aitken Crescent		Semi-Urban	Asphalt	50	2	292	6.5	0.9	L/R	500	4	1000-1999	1300	1.3	1690	1985	1985		High	4	7.5	48.4	BS	\$407.00	\$118,844.00	NOW	7.5	13.8	
16937	Sideroad 15	Simcoe Road 1	7th Line		Rural	Surface Treatment	80	2	1411	6.7	1.4	400	400	4	400-999	829	1.3	1078	1955	1985		High	4	7.3	48.1	BS	\$407.00	\$574,277.00	NOW	7.3	8.9	
16946	Adjala-Tecumseth Townline	9th Line	10th Line	yes	Rural	Asphalt	80	2	1377	7.0	0.8	700	700	3	3000-3999	3094	1.3	4022	1965	2000			4	7.7	50.1	BS	\$516.00	\$710,532.00	NOW	7.7	25.1	
16963A	7th Line	2.7 Km West of 15th Sideroad	10th Sideroad		Rural	Asphalt	70	2	348	7.0	0.5	500	500	3	1000-1999	1100	1.3	1430	1955	1955			4	8.2	54.2	BS	\$516.00	\$179,568.00	NOW	8.2	8.2	
16963C	7th Line	15th Sideroad	2.0 Km West of 15th Sideroad		Rural	Asphalt	70	2	2061	7.0	0.5	500	500	3	1000-1999	1099	1.3	1429	1955	1955			4	7.8	51	BS	\$516.00	\$1,063,476.00	NOW	7.8	8.8	
16975	Sideroad 15	7th Line	6th Line		Rural	Surface Treatment	80	2	1328	6.7	1.4	400	400	4	400-999	966	1.3	1256	1955	1985			4	7.5	49.5	BS	\$407.00	\$540,496.00	NOW	7.5	10.1	
17017	Sideroad 15	6th Line	5th Line		Rural	Surface Treatment	80	2	1477	6.7	1.4	500	500	3	1000-1999	1048	1.3	1362	1955	1985			4	7.9	53.5	BS	\$516.00	\$762,132.00	NOW	7.9	7.9	
17142	Sideroad 15	4th Line	3rd Line		Rural	Surface Treatment	80	2	1455	6.7	1.4	400	400	4	400-999	973	1.3	1265	1955	1985		High	4	7	45.1	BS	\$407.00	\$592,185.00	NOW	7	11	
17145	Eastern Avenue	Alexander Street	Windle Court		Semi-Urban	Asphalt	50	2	93	7.0	1.4	L/R	400	4	400-999	520	1.1	572	1985	1985			3	8.7	45.7	BS	\$407.00	\$37,851.00	NOW	8.7	5.3	
17180	Wilson Street	Dickerson Street	Eastern Avenue		Semi-Urban	Asphalt	50	2	161	7.0	1.4	L/R	400	4	400-999	970	1.1	1067	1975	1975		High	4	7.6	49.1	BS	\$407.00	\$65,527.00	NOW	7.6	9.3	
17181	Wilson Street	Alexander Street	Dickerson Street		Urban	Asphalt	50	2	71	6.5		L/R	L/R	5	200-399	370	1.1	407	1985	1985		High	3	8.2	41	BS	\$496.00	\$35,216.00	NOW	8.2	3.4	
17215	Industrial Road	Mill Street West	North End		Semi-Urban	Asphalt	50	2	524	6.7	1.7	LCI	400	4	400-999	981	1.1	1079	1975	1975			High	4	7.5	48.4	BS	\$407.00	\$213,268.00	NOW	7.5	9.5

Total Base and Surface (BS) Needs in the NOW Time Period

\$6,325,248.00

**New Tecumseth Road Study**  
**Appendix F - Reconstruction (REC) Improvements**

Municipal ID	Name	From	To	Boundary Road	Environment	Surface Type	Speed (km/h)	Number of Lanes	Length (m)	Surface Width (m)	Shoulder Width (m)	Functional Class	Design Class	Maintenance Class	AADT Range (vpd)	Existing Traffic 2012 (vpd)	Ten Year Traffic Factor	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurfacing Year	Drainage Need	Maintenance Need	Ride Comfort Rating (RCR)	Distress Manifestation Index (DMI)	Pavement Condition Index (PCI)	Condition Improvement	Condition Improvement Cost/m	Condition Improvement Time	Distress Manifestation Index (DMI)	Condition Improvement Cost	Condition Improvement Priority Guide Number (PGN)
15915	Evans Road	Hussey Street	North End		Semi-Urban	Asphalt	50	2	37	6.5	1.0	L/R	L/R	6	01-49	30	1.1	33	1965	1965			2	7.8	19.5	REC	\$592.00	\$21,904.00	NOW	7.8	0.3
15918A	Church Street North	Hussey Street	0.04 km North of Hussey Street		Semi-Urban	Asphalt	50	2	37	6.5	1.0	L/R	L/R	6	01-49	30	1.1	33	1965	1965			2	7.8	19.5	REC	\$592.00	\$21,904.00	NOW	7.8	0.3
15930	Elm Street	Donner Street	Banting Drive		Semi-Urban	Asphalt	50	2	196	6.7	1.2	L/R	L/R	4	400-999	700	1.1	770	1965	1965			3	8.1	40.1	REC	\$648.00	\$127,008.00	NOW	8.1	5
15944	Church Street North	Doner Street	Hussey Street		Semi-Urban	Asphalt	50	2	150	6.5	1.0	L/R	L/R	4	2000-2999	2000	1.1	2200	1965	1965			3	8.1	40.5	REC	\$814.00	\$122,100.00	NOW	8.1	11.2
15966	Tracey Drive	Evans Road	Hutchinson Drive		Semi-Urban	Asphalt	50	2	131	6.7	1.2	L/R	L/R	4	400-999	600	1.1	660	1955	1955			2	8	21	REC	\$648.00	\$84,888.00	NOW	8	5.6
15993	Church Street North	Evans Road	Doner Street		Urban	Asphalt	50	2	264	9.8		C/R	C/R	4	3000-3999	3264	1.1	3590	1975	1975			3	8.1	40.7	REC	\$1,258.00	\$332,112.00	NOW	8.1	11.8
15996	Church Street North	Fletcher Crescent	Evans Road		Urban	Asphalt	50	2	21	9.8		C/R	C/R	4	2000-2999	2550	1.1	2805	1975	1975			3	8.1	40.7	REC	\$1,258.00	\$26,418.00	NOW	8.1	9.2
16001A	14th Line East	15th Sideroad	1.6 Km West of 15th Sideroad		Rural	Surface Treatment	80	2	1565	6.3	0.5	600	600	3	2000-2999	2933	1.1	3226	1955	1955			4	6.9	43.8	REC	\$814.00	\$1,273,910.00	NOW	6.9	15.5
16001B	14th Line East	10th Sideroad	1.6 Km West of 15th Sideroad		Rural	Surface Treatment	80	2	998	6.3	0.5	600	600	3	2000-2999	2950	1.1	3245	1955	1955			4	6.3	38.8	REC	\$814.00	\$812,372.00	NOW	6.3	17
16007	Lorne Street	Wellington Street East	Victoria Street East		Urban	Asphalt Over Concrete	40	2	122	10.7		LCI	LCI	5	400-999	770	1.1	847	1955	1975	Deficient		2	6.3	5.9	REC	\$1,316.00	\$160,552.00	NOW	6.3	4.2
16027	Nelson Street East	Fletcher Street	East Avenue		Semi-Urban	Asphalt	40	2	87	6.7	0.5	L/R	L/R	5	400-999	400	1.1	440	1965	1965			3	7.7	36.6	REC	\$648.00	\$56,376.00	NOW	7.7	3
16036	Nelson Street East	Lorne Street	Fletcher Street		Semi-Urban	Asphalt	40	2	191	6.7	0.5	L/R	L/R	5	400-999	400	1.1	440	1965	1965	Deficient		3	7.3	32.7	REC	\$648.00	\$123,768.00	NOW	7.3	3.2
16045B	Fletcher Street	Nelson Street East	0.07 Km South of Nelson Street East		Semi-Urban	Asphalt	50	2	72	6.9	0.5	L/R	L/R	4	400-999	900	1.1	990	1965	1965	Deficient	High	3	8	39.2	REC	\$648.00	\$46,656.00	NOW	8	6.5
16738	Lilly Street East	Patterson Street	Haines Street		Semi-Urban	Asphalt	50	2	100	6.7	0.8	C/R	C/R	4	1000-1999	1279	1.6	2046	1985	1985			3	8.1	40.1	REC	\$648.00	\$64,800.00	NOW	8.1	11.2
16818	Adjala-Tecumseth Townline	10th Line	11th Line	yes	Rural	Asphalt	80	2	1378	7.0	0.8	700	700	3	3000-3999	3093	1.3	4021	1965	2000			4	7.3	46.2	REC	\$814.00	\$1,121,692.00	NOW	7.3	17.2
16826	Dayfoot Street	Highland Road	Stewart Street		Semi-Urban	Asphalt	50	2	122	6.5	0.9	L/R	L/R	4	1000-1999	1300	1.3	1690	1985	1985			3	7.8	37.9	REC	\$648.00	\$79,056.00	NOW	7.8	10.5
17075	Sideroad 15	5th Line	4th Line		Rural	Surface Treatment	80	2	1358	6.7	1.4	400	400	4	400-999	938	1.3	1219	1955	1985			3	7.1	35.9	REC	\$648.00	\$879,984.00	NOW	7.1	7.8
17113	Adjala-Tecumseth Townline	County Road 14W	6th Line	yes	Rural	Surface Treatment	60	2	923	6.7	1.2	500	500	4	1000-1999	1657	1.3	2154	1955	1975			5	6	44.2	REC	\$648.00	\$598,104.00	NOW	6	12
17134	Eastern Avenue	Perdue Place	Alphonsus Court		Semi-Urban	Asphalt	50	2	96	7.0	1.4	L/R	L/R	4	400-999	580	1.1	638	1985	1985			3	8.1	40.5	REC	\$648.00	\$62,208.00	NOW	8.1	4.1
17136	Eastern Avenue	Queen Street North	Perdue Place		Semi-Urban	Asphalt	50	2	95	7.0	1.4	L/R	L/R	4	400-999	580	1.1	638	1985	1985			3	7.8	37.7	REC	\$648.00	\$61,560.00	NOW	7.8	4.3
17138	Eastern Avenue	Alphonsus Court	Alexander Street		Semi-Urban	Asphalt	50	2	147	7.0	1.4	L/R	L/R	4	400-999	580	1.1	638	1985	1985			3	7.5	34.7	REC	\$648.00	\$95,256.00	NOW	7.5	4.5
17151	Walkem Drive	Park Crescent	Western Avenue		Semi-Urban	Asphalt	50	2	140	6.0	1.0	L/R	L/R	5	200-399	360	1.1	396	1995	1995			3	7.5	34.5	REC	\$592.00	\$82,880.00	NOW	7.5	3
17160	Eastern Avenue	Windle Court	Greenaway Street		Semi-Urban	Asphalt	50	2	174	7.0	1.4	L/R	L/R	4	400-999	520	1.1	572	1985	1985			3	7.8	37.9	REC	\$648.00	\$112,752.00	NOW	7.8	3.8
17170	Eastern Avenue	Greenaway Street	Wilson Street		Semi-Urban	Asphalt	50	2	106	7.0	1.4	L/R	L/R	4	400-999	520	1.1	572	1985	1985			3	7.8	37.9	REC	\$648.00	\$68,688.00	NOW	7.8	3.8
17185	Wilson Street	McGoey Drive	Alexander Street		Urban	Asphalt	50	2	39	6.5		L/R	L/R	5	200-399	370	1.1	407	1985	1985			3	7.5	35.3	REC	\$989.00	\$38,571.00	NOW	7.5	1.8
17190	Wilson Street	Queen Street North	McGoey Drive		Urban	Asphalt	50	2	81	6.5		L/R	L/R	5	200-399	370	1.1	407	1985	1985			3	7	30.6	REC	\$989.00	\$80,109.00	NOW	7	2
17202	McGoey Drive	Mill Street East	Wilson Street		Semi-Urban	Asphalt	50	1	103	4.5	0.5	L/R	L/R	5	200-399	200	1.1	220	1975	1975			3	7.9	38.6	REC	\$592.00	\$60,976.00	NOW	7.9	1.6
17218	Queen Street South	Richmond Street	Mill Street</																												



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**Appendix G**  
**Inventory and Appraisal For Railway**  
**Level Crossings**

**Appendix G - Inventory and Appraisal For Railway Level Crossings - Town of New Tecumseth**

**Canadian Pacific Railway**

Crossing Number	Road Section Number	Crossing Location	Number of Road Lanes	CP Mileage	CP Subdivision	Train Count	Train Speed	Senior Party	Current Protection	Existing Traffic (vpd)	Existing Exposure Index*	Forecast Ten Year Traffic (vpd)	Ten Year Exposure Index	Warranted Protection** (Ten Year)	Cost Estimate to Upgrade Protection (Ten Year)	Upgrade Priority	Crossing Condition	Crossing Maintenance	Existing Monthly Maintenance***
1	17306	2nd Line, East of Tottenham Road	2	33.55	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	350	6300	455	8190	Flashing Lights and Bells and Gates	\$400,000	4	good	50% Town 50% Railway	\$333.61
2	17281	3rd Line, East of Tottenham Road	2	34.50	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	336	6048	437	7866	Flashing Lights and Bells and Gates	\$400,000	5	poor	50% Town 50% Railway	\$333.61
3	17192B	Mill Street, Tottenham, East of Keogh Street	2	35.36	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	2850	51300	3705	66690	Flashing Lights, Bells and Gates	\$400,000	2	poor	50% Town 50% Railway	\$333.61
4	17090	Nolan Road, Tottenham, East of Tottenham Road	2	36.22	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	2402	43236	3603	64854	Flashing Lights, Bells and Gates	\$400,000	3	good	50% Town 50% Railway	\$333.61
5	17031	6th Line, East of Tottenham Road	2	37.18	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	305	5490	396	7128	Flashing Lights and Bells and Gates	\$400,000	6	poor	50% Town 50% Railway	\$333.61
6	16817	10th Line, West of Tottenham Road	2	40.63	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells and Gates	70	1260	77	1386	Flashing Lights and Bells and Gates	\$400,000	8	good	50% Town 50% Railway	\$333.61
7	16707	11th Line, West of Tottenham Road	2	41.53	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights, Bells and Gates	171	3078	188	3384	Flashing Lights and Bells and Gates			poor	50% Town 50% Railway	\$333.61
8	16582A	12th Line, West of Tottenham Road	2	42.40	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells	237	4266	261	4698	Flashing Lights and Bells and Gates	\$400,000	7	fair	50% Town 50% Railway	\$333.61
9	16348	13th Line, West of Tottenham Road	2	43.27	MACTIER	18	55 mph	Town of New Tecumseth	Railway Crossing Signs and Stop Signs	220	3960	242	4356	Flashing Lights and Bells and Gates	\$400,000	1	poor	50% Town 50% Railway	
10	16233	Industrial Parkway, West of Tottenham Road	4	44.10	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights, Bells and Gates	6795	122310	8834	159012	Flashing Lights, Bells and Gates			poor	50% Town 50% Railway	\$333.61
11	16083	Albert Street, Alliston, West of Dufferin Street	2	44.96	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights, Bells and Gates	8849	159282	11504	207072	Marginal Warrant for Grade Separation	Recommend monitoring to confirm if upgrade required	To be determined	good	50% Town 50% Railway	\$333.61
12	16016B	Victoria Street, Alliston, West of Dufferin Street	2	45.18	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights, Bells and Gates	15000	270000	19500	351000	Grade Separation	\$6,707,000 (as per Municipal Structure Inventory and Inspection Study) Class EA required to confirm if upgrade required.	To be determined	good	50% Town 50% Railway	\$333.61
13	19028A	Boyne Street, Alliston, North of Maple Lane	2	45.84	MACTIER	18	55 mph	Town of New Tecumseth	Flashing Lights and Bells and Gates	4500	81000	5850	105300	Flashing Lights, Bells and Gates			fair	50% Town 50% Railway	\$333.61

\* Existing exposure index = No. trains per day x existing traffic; Ten year exposure index = No. trains per day x ten year traffic.

\*\* Protection Warrants (As per Transport Canada Grade Crossing Standards)

Exposure Index	Type of Protection
0 to 1,000	Cross Bucks and Advance Warning Signs
1,000 to 49,999	Flashing Lights and Bell
50,000 to 200,000	Flashing Lights, Bells and Gates
Above 200,000	Grade Separation
At Grade Crossing Where Train Speed May Exceed 50 mph.	Flashing Lights, Bells and Gates

\*\*\*Standard amount based on CTA rates. Does not include additional maintenance works due to unforeseen damages.

Train count and train speed obtained from CP Rail (personal communication, Li-Lian Lui, February 2013).

**South Simcoe Tourist Railway**

Crossing Number	Road Section Number	Crossing Location	Number of Lanes	Train Count					Current Protection	Existing Traffic (vpd)	Existing Exposure Index*	Forecast Ten Year Traffic (vpd)	Ten Year Exposure Index	Warranted Protection** (Ten Year)			Crossing Condition		
A	17034	6th Line, between Tottenham Road and Tecumseth Heights Drive	2	8					Railway Crossing Signs	495	1980	644	5152	Low Speed Crossing Controlled By Flagmen			Fair		
B	16988A	7th Line, between Tottenham Road and 10th Sideroad	2	8					Railway Crossing Signs	863	6920	1124	8992	Low Speed Crossing Controlled By Flagmen			Fair		
C	16920	Main Street West, west of Willow Drive	2	8					Railway Crossing Signs	3998	31984	5597	44776	Low Speed Crossing Controlled By Flagmen			Fair		
D	16857	Danieles Gate, between Daniele Ave. S and Dayfoot Street	2	8					Railway Crossing Signs	1121	8968	1457	11656	Low Speed Crossing Controlled By Flagmen			Fair		



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## **Appendix H**

### **H1 - Five Year Capital Improvement**

#### **Plan and Map**

#### **H2 - Improvements Sorted By Priority**



**New Tecumseth Road Study**  
**Appendix H1 - Improvement Plan**

Line Number	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Year	Plan Group	
Five Year Capital Improvements																														
1	2	11.8	16818	Adjala-Tecumseth Townline	10th Line	11th Line		Rural	Asphalt	1378	700	3	3000-3999	3093	4021	1965	2000			4	7.3	46.2	\$814	\$1,121,692	NOW	17.2	REC	2014	5	
2	2	10.9	16946	Adjala-Tecumseth Townline	9th Line	10th Line		Rural	Asphalt	1377	700	3	3000-3999	3094	4022	1965	2000			4	7.7	50.1	\$516	\$710,532	NOW	25.1	BS	2015	5	
3	1	28.1	16007	Lorne Street	Wellington Street East	Victoria Street East	Alliston	Urban	Asphalt Over Concrete	122	LCI	5	400-999	770	847	1955	1975			2	6.3	5.9	\$1,316	\$160,552	NOW	4.2	REC	2016	5	
4	1	27.9	15966	Tracey Drive	Evans Road	Hutchinson Drive	Alliston	Semi-Urban	Asphalt	131	L/R	4	400-999	600	660	1955	1995			2	8.0	21.0	\$648	\$84,888	NOW	5.6	REC	2016	5	
5	1	24.3	17218	Queen Street South	Richmond Street	Mill Street	Tottenham	Urban	Asphalt	112	ART	3	8000-9999	8000	10400	1995	1995			High	4	7.1	44.5	\$1,836	\$205,632	NOW	20.3	REC	2016	5
6	1	23.1	17138	Eastern Avenue	Alphonous Court	Alexander Street	Tottenham	Semi-Urban	Asphalt	147	L/R	4	400-999	580	638	1985	1985	NOW		3	7.5	34.7	\$648	\$95,256	NOW	4.5	REC	2016	5	
7	1	22.0	17136	Eastern Avenue	Queen Street North	Perdue Place	Tottenham	Semi-Urban	Asphalt	95	L/R	4	400-999	580	638	1985	1985			3	7.8	37.7	\$648	\$61,560	NOW	4.3	REC	2016	5	
8	1	22.0	17160	Eastern Avenue	Windle Court	Greenaway Street	Tottenham	Semi-Urban	Asphalt	174	L/R	4	400-999	520	572	1985	1985			3	7.8	37.9	\$648	\$112,752	NOW	3.8	REC	2016	5	
9	1	22.0	17170	Eastern Avenue	Greenaway Street	Wilson Street	Tottenham	Semi-Urban	Asphalt	106	L/R	4	400-999	520	572	1985	1985			3	7.8	37.9	\$648	\$68,688	NOW	3.8	REC	2016	5	
10	1	21.5	16045	Fletcher Street	Nelson Street East	0.07 Km South of Nelson Street East	Alliston	Semi-Urban	Asphalt	72	L/R	4	400-999	900	990	1965	1965			High	3	8.0	39.2	\$648	\$46,656	NOW	6.5	REC	2016	5
11	1	21.0	15915	Evans Road	Hussey Street	North End	Alliston	Semi-Urban	Asphalt	37	L/R	6	01-49	30	33	1965	1965			2	7.8	19.5	\$592	\$21,904	NOW	0.3	REC	2016	5	
12	1	20.8	17190	Wilson Street	Queen Street North	Mcgoey Drive	Tottenham	Urban	Asphalt	81	L/R	5	200-399	370	407	1985	1985			3	7.0	30.6	\$989	\$80,109	NOW	2.0	REC	2016	5	
13	1	20.1	16036	Nelson Street East	Lorne Street	Fletcher Street	Alliston	Semi-Urban	Asphalt	191	L/R	5	400-999	400	440	1965	1965			3	7.3	32.7	\$648	\$123,768	NOW	3.2	REC	2016	5	
14	1	19.6	17151	Walkem Drive	Western Avenue	Tottenham	Semi-Urban	Asphalt	140	L/R	5	200-399	360	396	1995	1995			High	3	7.5	34.5	\$592	\$82,880	NOW	3.1	REC	2016	5	
15	1	24.7	16001A	14th Line East	2.6 Km West of 15th Sideroad			Rural	Surface Treatment	1565	600	3	2000-2999	2933	3226	1955	1955			4	6.9	43.8	\$814	\$1,273,910	NOW	15.5	REC	2017	5	
16	1	22.7	17075	Sideroad 15	5th Line	4th Line		Rural	Surface Treatment	1358	400	4	400-999	938	1219	1955	1985			High	3	7.1	35.9	\$648	\$879,984	NOW	7.8	REC	2018	5
17	1	19.3	17185	Wilson Street	Mcgoey Drive	Alexander Street	Tottenham	Urban	Asphalt	39	L/R	5	200-399	370	407	1985	1985			High	3	7.5	35.3	\$989	\$38,571	NOW	1.9	REC	2018	5
18	1	19.0	16027	Nelson Street East	Fletcher Street	East Avenue	Alliston	Semi-Urban	Asphalt	87	L/R	5	400-999	400	440	1965	1965			High	3	7.7	36.6	\$648	\$56,376	NOW	3.0	REC	2018	5
19	1	18.8	17255	Lionel Stone Avenue West	Rodcliff Road	Queen Street South	Tottenham	Semi-Urban	Asphalt	83	L/R	5	400-999	450	495	1975	1975			High	3	7.8	37.3	\$648	\$53,784	NOW	3.3	REC	2018	5
20	1	18.6	20599	Sullivan Drive	West End	Tottenham	Semi-Urban	Asphalt	54	L/R	5	50-199	50	55	1995	1995			3	7.8	37.7	\$592	\$31,968	NOW	0.4	REC	2018	5		
21	1	18.4	17202	McGoey Drive	Mill Street East	Wilson Street	Tottenham	Semi-Urban	Asphalt	103	L/R	5	200-399	200	220	1975	1975			High	3	7.9	38.6	\$592	\$60,976	NOW	1.6	REC	2018	5
Total Estimated Cost For Five Year Capital Improvements																												\$5,372,438		

Development Charge Projects - One to Five Year Time Period																												DC-5		
22	1	26.8	16001B	14th Line East	1.6 Km West of 15th Sideroad	10th Sideroad		Rural	Surface Treatment	998	600	3	2000-2999	2950	3245	1955	1955			4	6.3	38.8	\$814	\$812,372	NOW	17.0	REC		DC-5	
23	1	22.0	16826	Dayfoot Street	Highland Road	Stewart Street	Beeton	Semi-Urban	Asphalt	122	L/R	4	1000-1999	1300	1690	1985	1985			3	7.8	37.9	\$648	\$79,056	NOW	10.5	REC		DC-5	
24	1	21.0	15918A	Church Street North	Hussey Street	0.04 km North of Hussey Street	Alliston	Semi-Urban	Asphalt	37	L/R	6	01-49	30	33	1965	1965			High	2	7.8	19.5	\$592	\$21,904	NOW	0.3	REC		DC-5
25	2	10.5	15944	Church Street North	Doner Street	Hussey Street	Alliston	Semi-Urban	Asphalt	150	L/R	4	2000-2999	2000	2200	1965	1965			High	3	8.1	40.5	\$814	\$122,100	NOW	11.2	REC		DC-5
26	2	10.5	15993	Church Street North	Evans Road</																									

**New Tecumseth Road Study**  
**Appendix H1 - Improvement Plan**

Line Number	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Year	Plan Group
82	7	1.1	15974	Victoria Street East	East Avenue	Walnut Street	Alliston	Urban	Asphalt	44	ART	2	15000 +	15000	19500	1975	2004			7	9.6	87.6						DC-10	
83	7	1.0	15798A	Wesson Road	Hwy #89	259 m S. of Highway 89		Rural	Gravel	259	100	6	01-49	45	50	1940				4	10.0	72.1						DC-10	
84	7	1.0	17409A	Church Street South	0.4 Km South of Beech Street	Alderson Court	Alliston	Semi-Urban	Asphalt	315	CCI	3	4000-4999	4810	5291	1975	2008			6	9.7	83.6	\$149	\$46,935	6 to 10 Years	20.3	R	DC-10	
85	7	1.0	15940	Victoria Street East	John Avenue	Sir Frederick Banting Road	Alliston	Semi-Urban	Asphalt	474	ART	2	15000 +	16000	20800	1975	2004			7	9.6	88.1						DC-10	
86	7	1.0	17247	Sideroad 10	3rd Line	4th Line	Alliston	Rural	Asphalt	1431	600	3	2000-2999	2708	4062	1995	1995			7	9.2	84.3	\$149	\$213,219	6 to 10 Years	13.0	R	DC-10	
87	7	1.0	15899	Victoria Street East	Tottenham Road	Addison	Alliston	Urban	Asphalt	1016	ART	2	15000 +	16016	20821	1975	1975			7	9.7	88.6						DC-10	
88	7	0.9	16044A	Albert Street East	Parson's Road	Downey Avenue	Alliston	Semi-Urban	Asphalt	157	C/R	3	4000-4999	4420	5747	1955	1965			7	9.4	85.8						DC-10	
89	7	0.8	15975	Albert Street East	Douglas Drive	Tottenham Road	Alliston	Semi-Urban	Asphalt	223	C/R	3	3000-3999	3475	4518	1955	2004			7	9.5	86.7						DC-10	
90	7	0.8	15972	Victoria Street East	Walnut Street	Downey Avenue	Alliston	Urban	Asphalt	176	ART	2	15000 +	15000	19500	1975	2004			7	9.9	90.3						DC-10	
91	7	0.8	16910	Main Street West	Ellison Avenue	Tecumseth Street	Beeton	Urban	Asphalt	181	ART	3	4000-4999	4570	6398	1995	2000			7	9.5	86.9						DC-10	
92	7	0.8	16133A	Albert Street West	King Street South	Ontario Street South	Alliston	Urban	Asphalt Over Concrete	228	C/R	3	6000-7999	6408	8330	1955	2006			7	9.6	88.0						DC-10	
93	7	0.7	16896	Main Street East	Centre Street North	Patterson Street	Beeton	Urban	Asphalt	213	ART	3	4000-4999	4500	6300	1995	2004			8	9.4	89.1						DC-10	
94	7	0.6	16016B	Victoria Street East	Church Lane	Dufferin Street North	Alliston	Urban	Asphalt	117	ART	2	15000 +	15000	19500	1975	1999			8	9.8	92.7						DC-10	
95	7	0.5	16233A	Industrial Parkway	977m West of Tottenham Road	Church Street South	Alliston	Urban	Asphalt	1134	ART	3	6000-7999	6795	8834	1997	1997			7	10.0	91.4						DC-10	
96	7	0.5	16053	Church Street South	Wellington Street West	Victoria Street West	Alliston	Urban	Asphalt	122	CCI	3	4000-4999	4474	4921	1995	1995			8	9.8	92.7						DC-10	
97	7	0.4	16233B	Industrial Parkway	Tottenham Road	977m West of Tottenham Road	Alliston	Urban	Asphalt	977	ART	4	10000-11999	10195	13254	1997	1997			7	10.0	91.4						DC-10	
98	7	0.4	16103	Albert Street West	Paris Street	Church Street South	Alliston	Urban	Asphalt Over Concrete	270	C/R	3	6000-7999	6500	8450	1955	2006			8	9.8	93.2						DC-10	
99	7	0.4	17409B	Church Street South	Beech Street	0.4 Km South of Beech Street	Alliston	Semi-Urban	Asphalt	403	CCI	4	4000-4999	4810	5291	1995	2008			8	9.6	91.7						DC-10	
100	7	0.4	16806	Stewart Street East	Centre Street	Haines Street	Beeton	Semi-Urban	Asphalt	184	L/R	5	50-199	50	60	1955	2007			7	9.9	90.6						DC-10	
101	7	0.4	15856	C W Leach Road	Mackenzie Pioneer Road	Hwy #89	Alliston	Urban	Asphalt	295	L/R	4	3000-3999	3633	3996	1998	1998			8	9.7	92.3						DC-10	
102	7	0.4	16827A	Patterson Street North	Cedar Street	0.083 Km from Cedar Street	Beeton	Urban	Asphalt	84	C/R	4	2000-2999	2800	4200	1955	2011			8	9.7	92.4						DC-10	
103	7	0.4	19663	Tottenham Road	Douglas Drive	Victoria Street East	Alliston	Urban	Asphalt	213	C/R	4	3000-3999	3475	4518	2006	2006			8	9.7	92.5						DC-10	
104	7	0.4	16764	Lilly Street West	Smyth Crescent	West End of Beeton	Beeton	Urban	Asphalt	213	C/R	4	1000-1999	1006	1308	1975	2010			8	9.8	92.7						DC-10	
105	7	0.4	16114	14th Line	C W Leach Road	10th Sideroad	Unknown	Rural	Asphalt	1593	600	3	2000-2999	2744	3567	1955	2007			8	9.9	94.4						DC-10	
106	7	0.3	16182	14th Line	County Road 10	C W Leach Road		Rural	Asphalt	800	600	3	2000-2999	2859	3717	1955	2007			8	10.0	94.6						DC-10	
107	7	0.3	15963	Tottenham Road	Albert Street East	Douglas Drive	Alliston	Urban	Asphalt	114	C/R	4	3000-3999	3475	4518	2006	2006			8	9.9	93.8						DC-10	
108	7	0.3	16753	Lilly Street West	Bray Street	Smyth Crescent	Beeton	Urban	Asphalt	53	C/R	4	1000-1999	1200	1560	1975	2010			8	10.0	94.9						DC-10	
109	7	0.2	21209	Mackenzie Pioneer	Dunam Drive	Industrial Parkway	Alliston	Semi-Urban	Asphalt	497	CCI	4	1000-1999	1000	1600	2011	2011			9	9.7	95.1						DC-10	
110	7	0.2	16111	Albert Street West	Orange Street	Paris Street	Alliston	Urban	Asphalt Over Concrete	125	C/R	3	6000-7999	6500	8450	1955	2006			9	9.9	96.7						DC-10	
111	7	0.2	16119	Albert Street West	Ontario Street South	Orange Street	Alliston	Urban	Asphalt Over Concrete	217	C/R	3	6000-7999	6500	8450	1955	2006			9	9.9	96.7						DC-10	
112	7	0.2	16095	Albert Street East	Church Street South	Centre Street South	Alliston	Urban	Asphalt	182	C/R	3	8000-9999	8850	11505	1955	2000			9	9.9	96.7						DC-10	
113	7	0.2	16964	Sideroad 10	7th Line	South Limit of Beeton		Rural	Asphalt	1234	600	3	2000-2999	2793	4190	1955	2010			9	10.0	97.4						DC-10	
114	7	0.1	16800	Patterson Street North	Stewart Street East	English Drive	Beeton	Semi-Urban	Asphalt	281	C/R	4	2000-2999	2800	4200	1995	2011			9	10.0</								

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group	
<b>Priority Category 1</b>																													
1	1	28.1	16007	Lorne Street	Wellington Street East	Victoria Street East	Alliston	Urban	Asphalt Over Concrete	122	LCI	5	400-999	770	847	1955	1975			2	6.3	5.9	\$1,316	\$160,552	NOW	4.2	REC	5	
2	1	27.9	15966	Tracey Drive	Evans Road	Hutchinson Drive	Alliston	Semi-Urban	Asphalt	131	C/R	4	400-999	600	660	1955	1955		High	2	8	21	\$648	\$84,888	NOW	5.6	REC	5	
3	1	26.8	16001B	14th Line East	1.6 Km West of 15th Sideroad	10th Sideroad	Alliston	Rural	Surface Treatment	998	600	3	2000-2999	2950	3245	1955	1955			4	6.3	38.8	\$814	\$812,372	NOW	17.0	REC	DC-5	
4	1	24.7	16001A	14th Line East	15th Sideroad	1.6 Km West of 15th Sideroad	Alliston	Rural	Surface Treatment	1565	600	3	2000-2999	2933	3226	1955	1955			4	6.9	43.8	\$814	\$1,273,910	NOW	15.5	REC	5	
5	1	24.3	17218	Queen Street South	Richmond Street	Mill Street	Tottenham	Urban	Asphalt	112	ART	3	8000-9999	8000	10400	1995	1995		High	4	7.1	44.5	\$1,836	\$205,632	NOW	20.3	REC	5	
6	1	23.1	17138	Eastern Avenue	Alphonsus Court	Alexander Street	Tottenham	Semi-Urban	Asphalt	147	L/R	4	400-999	580	638	1985	1985	NOW	High	3	7.5	34.7	\$648	\$95,256	NOW	4.5	REC	5	
7	1	22.7	17075	Sideroad 15	5th Line	4th Line	Tottenham	Rural	Surface Treatment	1358	400	4	400-999	938	1219	1955	1985		High	3	7.1	35.9	\$648	\$879,984	NOW	7.8	REC	5	
8	1	22.0	17136	Eastern Avenue	Queen Street North	Perdue Place	Tottenham	Semi-Urban	Asphalt	95	L/R	4	400-999	580	638	1985	1985			3	7.8	37.7	\$648	\$61,560	NOW	4.3	REC	5	
9	1	22.0	17160	Eastern Avenue	Windle Court	Greenaway Street	Tottenham	Semi-Urban	Asphalt	174	L/R	4	400-999	520	572	1985	1985			3	7.8	37.9	\$648	\$112,752	NOW	3.8	REC	5	
10	1	22.0	16826	Dayfoot Street	Highland Road	Stewart Street	Beeton	Semi-Urban	Asphalt	122	L/R	4	1000-1999	1300	1690	1985	1985			3	7.8	37.9	\$648	\$79,056	NOW	10.5	REC	DC-5	
11	1	22.0	17170	Eastern Avenue	Greenaway Street	Wilson Street	Tottenham	Semi-Urban	Asphalt	106	L/R	4	400-999	520	572	1985	1985			3	7.8	37.9	\$648	\$68,688	NOW	3.8	REC	5	
12	1	21.5	16045B	Fletcher Street	Nelson Street East	0.07 Km South of Nelson Street East	Alliston	Semi-Urban	Asphalt	72	L/R	4	400-999	900	990	1965	1965		High	3	8	39.2	\$648	\$46,656	NOW	6.5	REC	5	
13	1	21.0	15915	Evans Road	Hussey Street	North End	Alliston	Semi-Urban	Asphalt	37	L/R	6	01-49	30	33	1965	1965			2	7.8	19.5	\$592	\$21,904	NOW	0.3	REC	5	
14	1	21.0	15918A	Church Street North	Hussey Street	0.04 km North of Hussey Street	Alliston	Semi-Urban	Asphalt	37	L/R	6	01-49	30	33	1965	1965		High	2	7.8	19.5	\$592	\$21,904	NOW	0.3	REC	DC-5	
15	1	20.8	17190	Wilson Street	Queen Street North	McGoey Drive	Tottenham	Urban	Asphalt	81	L/R	5	200-399	370	407	1985	1985			3	7	30.6	\$898	\$80,109	NOW	2.0	REC	5	
16	1	20.1	16036	Nelson Street East	Lorne Street	Fletcher Street	Alliston	Semi-Urban	Asphalt	191	L/R	5	400-999	400	440	1965	1965			3	7.3	32.7	\$648	\$123,768	NOW	3.2	REC	5	
17	1	19.6	17151	Walker Drive	Park Crescent	Western Avenue	Tottenham	Semi-Urban	Asphalt	140	L/R	5	200-399	360	396	1995	1995		High	3	7.5	34.5	\$592	\$82,880	NOW	3.1	REC	5	
18	1	19.3	17185	Wilson Street	McGoey Drive	Alexander Street	Tottenham	Urban	Asphalt	39	L/R	5	200-399	370	407	1985	1985			High	3	7.5	35.3	\$898	\$38,571	NOW	1.9	REC	5
19	1	19.0	16027	Nelson Street East	Fletcher Street	East Avenue	Alliston	Semi-Urban	Asphalt	87	L/R	5	400-999	400	440	1965	1965		High	3	7.7	36.6	\$648	\$56,376	NOW	3.0	REC	5	
20	1	18.8	17255	Lionel Stone Avenue West	Rodcliff Road	Queen Street South	Tottenham	Semi-Urban	Asphalt	83	L/R	5	400-999	450	495	1975	1975		High	3	7.8	37.3	\$648	\$53,784	ROAD	3.3	REC	5	
21	1	18.6	20599	Sullivan Drive	Walkem Drive	West End	Tottenham	Semi-Urban	Asphalt	54	L/R	5	50-199	50	55	1995	1995			3	7.8	37.7	\$592	\$31,968	NOW	0.4	REC	5	
22	1	18.4	17202	McGoey Drive	Mill Street East	Tottenham	Semi-Urban	Asphalt	103	L/R	5	200-399	200	220	1975	1975		High	3	7.9	38.6	\$592	\$60,976	NOW	1.6	REC	5		
<b>Priority Category 2</b>																													
23	2	11.8	16818	Adjala-Tecumseth Townline	10th Line	11th Line		Rural	Asphalt	1378	700	3	3000-3999	3093	4021	1965	2000			4	7.3	46.2	\$814	\$1,121,692	NOW	17.2	REC	5	
24	2	10.9	16946	Adjala-Tecumseth Townline	9th Line	10th Line		Rural	Asphalt	1377	700	3	3000-3999	3094	4022	1965	2000			4	7.7	50.1	\$516	\$710,532	NOW	25.1	BS	5	
25	2	10.7	16963C	7th Line	15th Sideroad	2.0 Km West of 15th Sideroad		Rural	Asphalt	2061	500	3	1000-1999	1099	1429	1955	1955			4	7.8	51	\$516	\$1,063,476	NOW	8.8	BS		
26	2	10.6	16738	Lilly Street East	Patterson Street	Haines Street	Beeton	Semi-Urban	Asphalt	100	C/R	4	1000-1999	1279	2046	1985	1985			3	8.1	40.1	\$648	\$75,942	NOW	11.2	REC	DC-10	
27	2	10.6	15930	Elm Street	Donner Street	Banting Drive	Alliston	Semi-Urban	Asphalt	196	L/R	4	400-999	700	770	1965	1965			3	8.1	40.1	\$648	\$127,008	NOW	5.0	REC		
28	2	10.5	17134	Eastern Avenue	Perdue Place	Alphonsus Court	Tottenham	Semi-Urban	Asphalt	96	L/R	4	400-999	580	638	1985	1985			3	8.1	40.5	\$648	\$62,208	NOW	4.1	REC		
29	2	10.5	15944	Church Street North	Doner Street	Hussey Street	Alliston	Semi-Urban	Asphalt	150	L/R	4	2000-2999	2000	2200</td														

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group
91	4	3.4	17256	Rodcliff Road	Lionel Stone Avenue West	North End	Tottenham	Semi-Urban	Asphalt	171	L/R	5	50-199	150	165	1965	1965			4	8.3	54.9	\$191	\$32,661	NOW	2.7	PR	
92	4	3.4	16832	Hammond Street	Highland Road	Second Street	Beeton	Urban	Asphalt	166	L/R	5	50-199	170	204	1975	1975			4	8.3	54.9	\$364	\$60,424	NOW	0.8	R	
93	4	3.3	16126	Beech Street East	Church Street South	Centre Street South	Alliston	Semi-Urban	Asphalt	182	L/R	5	200-399	200	220	1985	1985			4	8.3	55.3	\$191	\$34,762	NOW	3.6	PR	
94	4	3.3	16836	Cedar Street	Hendrie Street	Haines Street	Beeton	Semi-Urban	Asphalt	185	L/R	5	50-199	50	60	1985	2007			4	8.3	55.5	\$191	\$35,335	NOW	0.9	PR	
95	4	3.3	17159	Alexander Street	Greenaway Street	Orsi Court	Tottenham	Semi-Urban	Asphalt	192	L/R	5	400-999	450	495	1975	1975			4	8.3	55.5	\$223	\$42,816	NOW	6.9	PR	
96	4	3.3	16181	Whiteside Court	Mackenzie Street	North End Cul-De-Sac	Alliston	Urban	Asphalt	59	L/R	5	50-199	60	66	1975	1975			4	8.3	55.5	\$364	\$21,476	NOW	0.3	R	
97	4	3.3	16193	Tupper Boulevard	Mackenzie Street	Hunter Court	Alliston	Urban	Asphalt	133	L/R	5	400-999	400	440	1975	1975			4	8.4	55.8	\$364	\$48,412	NOW	1.9	R	
98	4	3.3	16801	McKeown Street	Dayfoot Street	Centre Street North	Beeton	Urban	Asphalt	203	L/R	5	50-199	120	144	1975	1975			4	8.4	56.2	\$364	\$73,892	NOW	0.6	R	
99	4	3.3	17205	Bryan Court	The Boulevard	West End Cul-De-Sac	Tottenham	Urban	Asphalt	48	L/R	5	50-199	80	88	1975	1975			4	8.4	56.2	\$364	\$17,472	NOW	0.4	R	
100	4	3.2	15945	Banting Drive	Doner Street	Hussey Street	Alliston	Semi-Urban	Asphalt	242	L/R	5	400-999	400	440	1965	1965			4	8.4	56.4	\$223	\$53,966	NOW	6.0	PR	
101	4	3.2	15926	Banting Drive	Hussey Street	Elm Street	Alliston	Semi-Urban	Asphalt	22	L/R	5	200-399	200	220	1965	1965			4	8.5	56.6	\$191	\$4,202	NOW	3.5	PR	
102	4	3.2	15849	Park Street	Cowan Avenue	William Street	Alliston	Semi-Urban	Asphalt	96	L/R	5	50-199	100	110	1975	1975			4	8.5	56.6	\$191	\$18,336	NOW	1.7	PR	
103	4	3.2	17173	Sullivan Drive	Queen Street North	Walkem Drive	Tottenham	Semi-Urban	Asphalt	91	L/R	5	50-199	180	198	1975	1975			4	8.5	57.1	\$191	\$17,381	NOW	3.1	PR	
104	4	3.2	17193	Pettit Court	The Boulevard	West End Cul-De-Sac	Tottenham	Urban	Asphalt	58	L/R	5	50-199	90	99	1975	1975			4	8.6	57.5	\$364	\$21,112	NOW	0.4	R	
105	4	3.2	16916	Tecumseth Street South	Maple Avenue	Main Street	Beeton	Semi-Urban	Asphalt	122	L/R	5	200-399	341	546	1955	1955			4	8.6	57.5	\$191	\$23,302	NOW	7.2	PR	DC-5
106	4	3.2	17241	Rogers Road	Queen Street South	Adeline Avenue	Tottenham	Urban	Asphalt	134	L/R	5	400-999	970	1067	1975	1975			4	8.6	57.5	\$364	\$48,776	NOW	4.3	R	
107	4	3.2	17135	Perdue Place	Eastern Avenue	North End Cul-De-Sac	Tottenham	Urban	Asphalt	62	L/R	5	50-199	70	77	1975	1975	NOW	High	4	8.6	57.7	\$364	\$22,568	NOW	0.3	R	
108	4	3.1	16020	East Avenue	Nelson Street East	Victoria Street East	Alliston	Semi-Urban	Asphalt	259	L/R	5	400-999	900	990	1975	1975			4	8.6	57.9	\$223	\$57,757	NOW	13.0	PR	
109	4	3.1	16052	Wellington Street East	Church Street South	Centre Street South	Alliston	Urban	Asphalt Over Concrete	182	LCI	5	400-999	400	440	1955	1995			4	8.6	57.9	\$527	\$95,914	NOW	1.2	R	
110	4	3.1	16905	Tecumseth Street North	Main Street	Prospect Street	Beeton	Semi-Urban	Asphalt	242	L/R	5	400-999	450	540	1975	1975			4	8.6	58.2	\$223	\$53,966	NOW	6.8	PR	DC-5
111	4	3.1	16156	Mccague Crescent Alliston	Tupper Boulevard	Tupper Boulevard	Alliston	Urban	Asphalt	387	L/R	5	200-399	250	275	1975	1975			4	8.7	58.8	\$364	\$140,868	NOW	1.1	R	
112	4	3.1	16930	Maple Avenue West	Tecumseth Street South	Willow Drive	Beeton	Urban	Asphalt	443	L/R	5	400-999	460	736	1975	1975			4	8.7	59	\$364	\$161,252	NOW	2.5	R	
113	4	3.1	17266	Rodcliff Road	South End	Lionel Stone Avenue West	Tottenham	Semi-Urban	Asphalt	178	L/R	5	50-199	150	165	1965	1965			4	8.8	59.2	\$191	\$33,998	NOW	2.5	PR	
137	4	2.5	16010	Walkway Lane	Fletcher Crescent	End	Alliston	Urban	Asphalt Over Concrete	40	LCI	6	01-49	10	11	1999	2009			4	9	61.4	\$527	\$21,080	1 to 5 Years	0.0	R	

**Priority Category 5**

115	5	2.9	17102	Queen Street North	Oleary Court	Lavrock Street	Tottenham	Urban	Asphalt	97	ART	3	8000-9999	9900	12870	1995	1995			5	8.6	67.3	\$632	\$61,304	1 to 5 Years	21.5	R	
116	5	2.9	17098	Queen Street North	Lavrock Street	Nolan Road	Tottenham	Urban	Asphalt	151	ART	3	8000-9999	9900	12870	1995	1995			5	8.6	67.3	\$632	\$95,432	1 to 5 Years	21.5	R	
117	5	2.8	16920	Main Street West	West Limit of Beeton	Willow Drive	Beeton	Urban	Asphalt	132	ART	4	3000-3999	3998	5597	1995	1995			4	8.8	59.9	\$632	\$83,424	NOW	11.1	R	
118	5	2.8	16023	Dominion Street	Church Street North	Queen Street	Alliston	Semi-Urban	Asphalt	182	LCI	4	1000-1999	1000	1100	1975	1975			4	8.9	60.3	\$223	\$40,586	1 to 5 Years	13.7	PR	
119	5	2.8	17137	Queen Street North	Eastern Avenue	Fraser Avenue	Tottenham	Urban	Asphalt	164	ART	3	8000-9999	9500	12350	1995	1995			5	8.7	68.2	\$364	\$103,648	1 to 5 Years	20.1	R	
120	5	2.8	17163	Queen Street North	Greenaway Street	Eastern Avenue	Tottenham	Urban	Asphalt																			

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group
264	6	1.2	16012	Fletcher Lane	Fletcher Crescent	North End	Alliston	Semi-Urban	Asphalt	72	L/R	6	01-49	40	44	1955	1955			5	9.1	72.1	\$119	\$8,568	6 to 10 Years	0.4	R	
<b>Priority Category 7</b>																												
183	7	1.8	17074	4th Line	15th Sideroad	18th Sideroad	Rural	Gravel	1869	300	4	200-399	251	276	1940			High	6	7.7	64.9	\$239	\$446,691	NOW	1.4	R		
184	7	1.8	16236	13th Line	Train Street	10th Sideroad	Rural	Gravel	1115	300	5	200-399	250	275	2007			High	6	7	58.9	\$239	\$266,485	NOW	1.6	R		
114	7	2.9	16348B	13th Line	Tottenham Road	1.4 Km West of Tottenham Road	Rural	Gravel	1486	300	4	200-399	222	244	1940				4	6.7	42.8	\$372	\$552,792	NOW	2.6	BS		
138	7	2.5	16136B	Young Street	King Street South	0.18 Km West of King Street South	Alliston	Urban	Asphalt	186	ART	2	15000 +	16282	21167	1995	1995			6	8.2	70.6	\$632	\$117,552	1 to 5 Years	31.8	R	
142	7	2.3	15998	Victoria Street East	Mcdonald Street	Boyne Street	Alliston	Urban	Asphalt	63	ART	2	15000 +	15000	19500	1975	1975			5	9.2	72.5	\$632	\$39,816	1 to 5 Years	27.4	R	DC-10
167	7	1.9	17141	3rd Line	15th Sideroad	17th Sideroad	Rural	Gravel	1243	200	4	50-199	121	133	1940				6	7.3	61.6	\$239	\$297,077	NOW	0.7	R		
173	7	1.9	16128B	Parsons Road	0.45km East of Dufferin Street South	Albert Street	Alliston	Semi-Urban	Gravel	622	LCI	4	400-999	800	880	1975			High	6	7.4	62.2	\$250	\$155,500	NOW	4.6	R	
177	7	1.9	16582A	12th Line	1.2 Km West of Tottenham Road	Adjala-Tecumseth Townline	Rural	Gravel	1751	300	4	200-399	237	261	1940			High	6	7.5	62.9	\$239	\$418,489	NOW	1.4	R		
179	7	1.8	16999C	6th Line	15th Sideroad	2.7 Km West of 15th Sideroad	Rural	Gravel	2722	200	4	50-199	170	187	1940				6	7.6	64.2	\$239	\$650,558	NOW	1.0	R		
186	7	1.7	16237	Train Street	13th Line	North End	Alliston	Semi-Urban	Gravel	359	L/R	6	01-49	40	44	1940				5	7	53.2	\$131	\$47,029	NOW	0.5	R	
188	7	1.7	16338B	Sideroad 15	0.85 Km North of 11th Line	12th Line	Rural	Gravel	545	200	4	50-199	180	198	1940			High	5	8.5	66.5	\$239	\$130,255	NOW	1.0	R		
192	7	1.6	16264B	13th Line	0.8 Km West of Train Street	1.2 Km West of Train Street	Rural	Gravel	664	200	4	50-199	180	198	2007			High	7	7.6	67.9	\$239	\$158,696	NOW	0.9	R		
194	7	1.6	15994	Victoria Street East	Boyne Street	Lorne Street	Alliston	Urban	Asphalt	119	ART	2	15000 +	15000	19500	1975	2004			6	9.4	81.1	\$316	\$37,604	6 to 10 Years	37.7	R	DC-10
195	7	1.6	16264C	13th Line	0.8 km West of Train Street	Train Street	Rural	Gravel	842	200	5	50-199	178	196	2007			High	6	7.5	62.9	\$239						
197	7	1.6	17248	2nd Line	17th Sideroad	20th Sideroad	Rural	Gravel	1876	300	4	200-399	216	238	1940			High	6	8.1	68.9	\$239	\$448,364	NOW	1.1	R		
198	7	1.6	17345	Adjala-Tecumseth Townline	Highway 9	2nd Line	Rural	Asphalt	1392	500	4	1000-1999	1287	1673	1965	1965			5	8.8	69	\$223	\$310,416	1 to 5 Years	15.0	PR	Adj. Mun.	
199	7	1.6	15778	15th Line	15th Sideroad	20th Sideroad	Rural	Gravel	3117	200	4	50-199	64	70	1940			High	5	8.8	69.2	\$239	\$744,963	NOW	0.3	R		
200	7	1.6	16180	Mackenzie Street	Whiteside Court	King Street	Alliston	Urban	Asphalt	73	L/R	4	400-999	800	880	1975	1975			5	8.8	69.2	\$364	\$26,572	NOW	2.6	R	
201	7	1.5	16067	Mcdonald Street	Albert Street East	Nelson Street East	Alliston	Urban	Asphalt	120	L/R	4	400-999	720	792	1975	1975			5	8.8	69.5	\$364	\$43,680	NOW	2.3	R	
202	7	1.5	17267	Queen Street South	South Limit of Tottenham	Brown Street	Tottenham	Urban	Asphalt	225	ART	3	6000-7999	6615	8600	1995	1995			5	9.5	75.5	\$316	\$71,100	6 to 10 Years	21.5	R	
203	7	1.5	16139	Tupper Street West	King Street	Mitchell Avenue	Alliston	Urban	Asphalt	254	L/R	4	1000-1999	1350	1485	1975	1975			5	8.9	69.7	\$364	\$92,456	NOW	4.3	R	
204	7	1.5	17274	Adjala-Tecumseth Townline	4th Line	County Road 14E	Rural	Asphalt	1367	500	4	1000-1999	1676	1965	1965				5	8.9	69.9	\$223	\$304,841	1 to 5 Years	19.0	PR	Adj. Mun.	
205	7	1.5	17204	Queen Street North	Mill Street	Wilson Street	Tottenham	Urban	Asphalt	105	ART	3	8000-9999	950	12350	1995	1995			6	8.8	76	\$316	\$33,180	6 to 10 Years	30.3	R	
206	7	1.5	17127	Queen Street North	Fraser Avenue	Potter Crescent	Tottenham	Urban	Asphalt	89	ART	3	8000-9999	9900	12870	1995	1995			6	8.8	76	\$316	\$28,124	6 to 10 Years	31.6	R	
207	7	1.5	15985	Victoria Street East	Lorne Street	East Avenue	Alliston	Urban	Asphalt	268	ART	2	15000 +	15000	19500	1975	2004			6	9.5	82.5	\$316	\$84,688	6 to 10 Years	34.9	R	DC-10
208	7	1.5	17065B	5th Line	15th Sideroad	0.9 Km West of 15th Sideroad	Rural	Asphalt	914	500	3	1000-1999	1465	2198	1995	2002			6	8.9	76.4	\$149	\$136,186	6 to 10 Years	10.6	R		
209	7	1.5	15922	George Street	Walkem Drive	William Street	Alliston	Semi-Urban	Asphalt	97	L/R	4	400-999	900	990	1995	1995			5	9	70.8	\$149	\$14,453	6 to 10 Years	6.8	R	
210	7	1.5	16349	Adjala-Tecumseth Townline	13th Line	Ellis Street	Rural	Asphalt	1257	700	3	3000-3999	3546	4610	1965	1965			7	8.3	76.5	\$149	\$187,293	6 to 10 Years	23.5	R		
211	7	1.5	17111	Queen Street North	Potter Crescent	McKnight Crescent	Tottenham	Urban	Asphalt	81	ART	3	8000-9999	9900	12870	1995	1995			6	8.9	76.6	\$316	\$25,598	6 to 10 Years	30.8	R	
212	7	1.5	17293	Adjala-T																								

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group
279	7	1.1	16165	Cunningham Drive	Stewart Avenue	Beattie Avenue	Alliston	Urban	Asphalt	128	L/R	4	400-999	500	550	1985	1985			5	9.7	77.3	\$228	\$29,184	6 to 10 Years	1.9	R	
280	7	1.1	16128A	Parsons Road	0.45 Km East of Dufferin Street South	Alliston	Semi-Urban	Asphalt	450	LCI	4	400-999	800	880	1975	1975			6	9	77.5	\$149	\$67,050	6 to 10 Years	4.6	R		
281	7	1.1	15779	Sideroad 15	15th Line	Hwy #89		Rural	Gravel	248	300	4	200-399	216	238	1940			High	6	9.1	77.6						
282	7	1.1	15746	Sideroad 20	15th Line	Hwy #89		Rural	Gravel	240	300	4	200-399	333	366	1940			High	6	9.1	77.6						
283	7	1.1	16385	Sideroad 20	10th Line	11th Line		Rural	Gravel	1380	200	4	50-199	81	89	1940			High	6	9.1	77.6						
284	7	1.1	16298	12th Line	15th Sideroad	1.3 Km West of 15th Sideroad		Rural	Gravel	1376	200	4	50-199	90	99	1940			High	6	9.1	77.6						
285	7	1.1	16941	Maple Avenue West	Elm Court	West End Cul-De-Sac	Beeton	Urban	Asphalt	76	L/R	5	400-999	460	736	1975	1975			5	9.3	73.6	\$228	\$17,328	6 to 10 Years	2.5	R	
286	7	1.1	16122	Paris Street	Tupper Street West	Albert Street West	Alliston	Urban	Asphalt	120	L/R	5	200-399	200	220	1995	1995			6	8.6	73.6	\$228	\$27,360	6 to 10 Years	0.9	R	
287	7	1.1	16039	Mill Street Alliston	Victoria Street West	North End	Alliston	Urban	Asphalt	35	LCI	4	1000-1999	1336	1470	1975	1975		Unknown	6	9	77.9	\$296	\$10,360	6 to 10 Years	3.8	R	
288	7	1.1	16879	Prospect Street	Second Street	Centre Street North	Beeton	Urban	Asphalt	142	L/R	5	400-999	400	480	1985	1985			5	9.4	74	\$228	\$32,376	6 to 10 Years	1.8	R	
289	7	1.1	17253	Queen Street South	Lionel Stone Avenue West	Lionel Stone Avenue East	Tottenham	Urban	Asphalt	13	ART	3	6000-7999	7510	9763	1995	1995			6	9.5	82.3	\$316	\$4,108	6 to 10 Years	17.7	R	
290	7	1.1	17264	Queen Street South	Brown Street	Lionel Stone Avenue West	Tottenham	Urban	Asphalt	84	ART	3	6000-7999	7000	9100	1995	1995			6	9.5	82.3	\$316	\$26,544	6 to 10 Years	16.5	R	
291	7	1.1	16838	Highland Road	Crawford Circle	Second Street	Beeton	Urban	Asphalt	74	L/R	5	400-999	400	480	1975	1975			5	9.4	74.4	\$228	\$16,872	6 to 10 Years	1.8	R	
292	7	1.1	17108B	Sideroad 10	0.45 Km South of 5th Line	5th Line		Rural	Asphalt	384	600	4	2000-2999	2505	3758	1995	1995			7	8.6	78.4	\$149	\$57,216	6 to 10 Years	16.6	R	
293	7	1.1	15965	Victoria Street East	Downey Avenue	Smalley Street	Alliston	Urban	Asphalt	15	ART	2	15000+	15000	19500	1975	2004			7	9.5	87.2						DC-10
294	7	1.1	17227	Hopper Court	The Boulevard	West End Cul-De-Sac	Tottenham	Urban	Asphalt	28	L/R	5	50-199	60	66	1975	1975			5	9.4	74.7	\$228	\$6,384	6 to 10 Years	0.3	R	
295	7	1.1	17209	Keogh Street	Richmond Street East	Mill Street East	Tottenham	Urban	Asphalt	114	L/R	5	400-999	450	495	1975	1975			5	9.4	74.7	\$228	\$25,992	6 to 10 Years	1.9	R	
296	7	1.1	17097	Laverock Street	Queen Street North	Wolfe Avenue	Tottenham	Urban	Asphalt	62	L/R	4	400-999	730	803	1985	1985			5	9.9	78.6	\$228	\$14,136	6 to 10 Years	2.6	R	
297	7	1.1	16724	10th Line	Tottenham Road	10th Sideroad		Rural	Gravel	3127	200	4	50-199	130	143	1940			High	7	8.7	78.6						
298	7	1.1	16050	Victoria Street West	Paris Street	Elizabeth Street	Alliston	Urban	Asphalt	131	ART	2	15000+	15000	19500	1975	2002			7	9.5	87.3						
299	7	1.1	16936B	7th Line	18th Sideroad	0.27 Km West of 18th Sideroad		Rural	Asphalt	272	500	3	1000-1999	1219	1585	1995	2005			7	9	82.8	\$149	\$40,528	6 to 10 Years	5.9	R	
300	7	1.1	16958	Sideroad 18	6th Line	7th Line		Rural	Gravel	1333	200	5	50-199	100	110	1940			High	6	8.8	74.9						
301	7	1.1	16847	Sideroad 20	7th Line	Simcoe Road 1		Rural	Gravel	1398	200	5	50-199	85	94	1940			High	6	8.8	74.9						
302	7	1.1	16958B	Sideroad 18	0.85 Km North of 5th Line	6th Line		Rural	Gravel	641	200	5	50-199	68	75	1940			High	6	8.8	74.9						
303	7	1.1	15937	Sideroad 20	13th Line	14th Line		Rural	Gravel	1576	200	5	50-199	120	132	1940			High	6	8.8	74.9						
304	7	1.1	16959A	Sideroad 18	5th Line	.85 Km North of 5th Line		Semi-Urban	Gravel	846	200	5	50-199	70	77	1940			High	6	8.8	74.9						
305	7	1.1	15999	Albert Street East	John Street	Douglas Drive	Alliston	Semi-Urban	Asphalt	451	C/R	3	3000-3999	3475	4518	1955	2004			6	9.6	82.9	\$149	\$67,199	6 to 10 Years	16.7	R	DC-10
306	7	1.1	20605	Paris Street	Victoria Street West	Parking Lot	Alliston	Urban	Asphalt	27	LCI	4	400-999	775	853	1995	1995			6	9.1	78.8	\$296	\$7,992	6 to 10 Years	2.1	R	
307	7	1.1	16176	Mackenzie Street	King Street	Hancey Crescent	Alliston	Urban	Asphalt	81	L/R	4	400-999	500	550	1975	1975			6	9.1	78.8	\$228	\$18,468	6 to 10 Years	1.8	R	
308	7	1.1	15872	Cowan Avenue	Essa Road	Park Street	Alliston	Semi-Urban	Asphalt	141	L/R	5	400-999	500	550	1985	1985			6	8.7	75.1	\$149	\$21,009	6 to 10 Years	3.2	R	
309	7	1.1	16078	Victoria Street West	Ontario Street North	King Street South	Alliston	Urban	Asphalt	221	ART	2	15000+	15000	19500	1975	2002			7	9.6	87.5						
310	7	1.1	15973	Walnut Street	Victoria Street East	Queen Street	Alliston	Semi-Urban	Asphalt	99	L/R	4	400-999	800	880	1985			6	9.2	79	\$149	\$14,751	6 to 10 Years	4.3	R		
311	7	1.1	16077	Dufferin Street South	Albert Street East	Nelson Street West	Alliston	Urban	As																			

**New Tecumseth Road Study**  
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376	7	0.8	15896	Gray Avenue	Banting Drive	Oak Street	Alliston	Urban	Asphalt	275	L/R	5	200-399	300	330	1995	1995			6	9.4	80.7						
377	7	0.8	15972	Victoria Street East	Walnut Street	Downey Avenue	Alliston	Urban	Asphalt	176	ART	2	15000+	15000	19500	1975	2004			7	9.9	90.3					DC-10	
378	7	0.8	170008	Sideroad 10	0.45 Km North of 6th Line	7th Line		Rural	Asphalt	970	500	3	1000-1999	1148	1722	1955	1999			7	9.5	86.9						
379	7	0.8	16910	Main Street West	Ellison Avenue	Tecumseth Street	Beeton	Urban	Asphalt	181	ART	3	4000-4999	4570	6398	1995	2000			7	9.5	86.9					DC-10	
380	7	0.8	16101	Nelson Street West	Ontario Street South	Orange Street	Alliston	Urban	Asphalt	209	L/R	4	1000-1999	1050	1155	1965	1965			7	9.2	83.9						
381	7	0.8	16209	Robins Lane	Anderson Road	Riverley Lane	Alliston	Urban	Asphalt	80	L/R	4	400-999	750	825	2005	2005			6	9.7	84						
382	7	0.8	16897	Centre Street North Beeton	Main Street East	Dale Drive	Beeton	Urban	Asphalt	95	L/R	4	1000-1999	1054	1265	1975	1975			6	9.7	84						
383	7	0.8	16844	Macpherson Court	Highland Road	South End Cul-De-Sac	Beeton	Urban	Asphalt	74	L/R	5	50-199	80	96	1975	1975			6	9.4	81.1						
384	7	0.8	16692	9th Line	15th Sideroad	18th Sideroad		Rural	Surface Treatment	1837	400	4	400-999	729	948	1955	2004			7	9.4	84.2						
385	7	0.8	16097	Wellington Street West	King Street South	Ontario Street South	Alliston	Urban	Asphalt	221	L/R	4	1000-1999	1690	1859	1975	1975			7	9.2	84.3						
386	7	0.8	160648	Nelson Street East	CP Rail Ln	Dufferin Street South	Alliston	Urban	Asphalt	43	L/R	6	01-49	20	22	1965	1965			6	9.1	78.8	\$228	\$9,804	6 to 10 Years	0.1	R	
387	7	0.8	16708	Adjala-Tecumseth Townline	11th Line	12th Line		Rural	Asphalt	1341	700	3	3000-3999	3164	4113	1955	2003			7	9.6	87.5						
388	7	0.8	17087	Sideroad 20	3rd Line	4th Line		Rural	Asphalt	1466	400	4	400-999	942	1225	1955	2002			7	9.2	84.5						
389	7	0.8	15987	Maple Lane	Queen Street	Boyne Street	Alliston	Urban	Asphalt	349	L/R	5	200-399	300	330	1975	1975			6	9.5	81.7						
390	7	0.8	17026	4th Line	20th Sideroad	East Town Boundary		Rural	Gravel	1232	200	4	50-199	120	132	1940				High	7	9.4	84.6					
391	7	0.8	16648	10th Line	10th Sideroad	15th Sideroad		Rural	Gravel	3136	200	4	50-199	146	161	1940					7	9.4	84.6					
392	7	0.8	16754	Smyth Crescent	Lilly Street West	East End Cul-De-Sac	Beeton	Urban	Asphalt	197	L/R	5	200-399	200	220	1975	1975			6	9.5	81.8						
393	7	0.8	16226	Achibald Lane	Sideroad 1	End		Rural	Gravel	162	100	6	01-49	20	22	1940					7	8.8	79.2					
394	7	0.8	17287B	2nd Line	15th Sideroad	1.2 Km West of 15th Sideroad		Rural	Gravel	1242	300	5	200-399	215	237	1940					7	9.1	81.9					
395	7	0.8	17213	Forestell Street	Richmond Street East	Mill Street East	Tottenham	Semi-Urban	Asphalt	112	L/R	5	200-399	370	407	1975	1975			6	9.5	82						
396	7	0.8	17183	2nd Line	20th Sideroad	East Town Boundary		Rural	Surface Treatment	1253	200	4	50-199	194	252	1955	2007			High	7	9.4	84.9					
397	7	0.8	16075	Wellington Street West	Orange Street	Paris Street	Alliston	Urban	Asphalt	134	L/R	4	1000-1999	1460	1606	1975	1975			6	9.8	84.9						
398	7	0.8	16069	Wellington Street West	Paris Street	Church Street South	Alliston	Urban	Asphalt	249	LCI	4	1000-1999	1460	1606	1975	1975			7	9.3	84.9						
399	7	0.8	16882	Patterson Street North	Dale Drive	Bateman Street	Beeton	Semi-Urban	Asphalt	250	C/R	4	3000-3999	3283	4924	1995	1995			7	9.3	84.9						
400	7	0.8	16760	English Drive	Haines Street	Patterson Street	Beeton	Semi-Urban	Asphalt	100	L/R	5	50-199	50	60	1995	1995			6	9.5	82.2						
401	7	0.8	16880	Second Street	Prospect Street	North End Checkerboard	Beeton	Semi-Urban	Asphalt	237	L/R	5	50-199	150	180	1975	2003			6	9.5	82.3						
402	7	0.8	15971	Gerrard Street	Queen Street	Boyne Crescent	Alliston	Semi-Urban	Asphalt	67	L/R	5	200-399	300	330	1985	1985			6	9.5	82.3						
403	7	0.8	15984	Dungey Crescent	Nelson Street East	Downey Avenue	Alliston	Urban	Asphalt	407	L/R	5	50-199	120	132	1995	1995			6	9.5	82.3						
404	7	0.8	15860	14th Line	15th Sideroad	20th Sideroad		Rural	Gravel	3089	200	4	50-199	146	161	1940				High	8	9.1	85.1					
405	7	0.8	16133	Albert Street West	King Street South	Ontario Street South	Alliston	Urban	Asphalt Over Concrete	228	C/R	3	6000-7999	6408	8330	1955	2006			7	9.6	88					DC-10	
406	7	0.7	16904	Main Street West	Tecumseth Street	Second Street	Beeton	Urban	Asphalt	212	ART	3	4000-4999	4855	6797	1995	2004			8	9.3	88.2						
407	7	0.7	17085A	5th Line	1.1 Km West of 10th Sideroad	Norland Road		Rural	Asphalt	1469	500	3	1000-1999	1335	2002	1995	2005			7	9.6	88.2						
408	7	0.7	16002	Nelson Street East	Downey Avenue	Dungey Crescent	Alliston	Urban	Asphalt	301	L/R	5	50-199	120	132	1995	1995			6	9.6	82.7						
409	7	0.7	15989	Morrow Drive	Doner Street	South End Cul-De-Sac	Alliston	Urban	Asphalt	168	L/R	5	50-199	180	198	1985	1985			6	9.6	82.7						
410	7	0.7	17085C	5th Line	10th Sideroad	0.37 Km West of 10th Sideroad		Rural	Asphalt	375	500	4	1000-1999	1335	2002	199												

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group
473	7	0.5	16189	Dufferin Street South	South End	Parsons Road	Alliston	Semi-Urban	Asphalt	459	LCI	4	3000-3999	3000	3300	1975	2008			7	9.8	89.4						
474	7	0.5	17034	6th Line	Tottenham Road	Tecumseth Heights Drive		Rural	Asphalt	195	400	4	400-999	495	644	1965	1965			7	9.8	89.4						
475	7	0.5	16814	Danielle Avenue North	Bray Street	Iulia Drive	Beeton	Urban	Asphalt	118	L/R	5	200-399	300	390	1985	1985			7	9.6	87.5						
476	7	0.5	17217	Richmond Street East	Queen Street South	Forestell Street	Tottenham	Semi-Urban	Asphalt	153	L/R	4	400-999	710	781	1975	2004			7	9.8	89.7						
477	7	0.5	16074	Church Street South	Nelson Street West	Wellington Street West	Alliston	Urban	Asphalt	121	C/R	3	4000-4999	4810	5291	1995	1995			8	9.6	91.7						
478	7	0.5	17092	Hammell Boulevard	Laverock Street	Wolfe Avenue	Tottenham	Urban	Asphalt	118	L/R	5	200-399	380	418	1985	1985			7	9.6	87.9						
479	7	0.5	15977	Queen Street Alliston	Boyne Street	Gerrard Street	Alliston	Semi-Urban	Asphalt	130	L/R	4	400-999	600	660	1955	2004			7	9.8	89.8						
480	7	0.5	168994	Second Street	0.07 Km North of Main Street East	Prospect Street	Beeton	Semi-Urban	Asphalt	158	L/R	5	50-199	150	180	1975	1975			7	9.6	88						
481	7	0.5	16136A	Young Street	0.18 Km West of King Street South	8th Avenue	Alliston	Urban	Asphalt	161	ART	2	15000+	16285	21170	1995	1995			8	9.9	94						
482	7	0.5	16070	Paris Street	Wellington Street West	Victoria Street West	Alliston	Urban	Asphalt	121	LCI	5	400-999	400	440	1995	1995			7	9.6	88.2						
483	7	0.5	15879	Oak Street	Gray Avenue	Banting Drive	Alliston	Urban	Asphalt	202	L/R	4	400-999	800	880	1995	1995			7	9.9	90.1						
484	7	0.5	16884	Prospect Street	Tecumseth Street North	Second Street	Beeton	Urban	Asphalt	168	L/R	5	200-399	230	276	1995	1995			7	9.7	88.4						
485	7	0.5	16794	Bray Street	131 M South of Ernest Kettle Crescent	Danielle Avenue	Beeton	Urban	Asphalt	39	L/R	4	400-999	500	650	1975	1975			7	9.9	90.3						
486	7	0.5	15902	Hutchinson Drive	Hussey Street	Willis Drive	Alliston	Urban	Asphalt	89	L/R	4	400-999	500	550	1985	1985			7	9.9	90.3						
487	7	0.5	172738	4th Line	Adjala-Tecumseth Townline	2280m East of Adjala-Tecumseth Townline		Rural	Asphalt	2280	500	3	1000-1999	1159	1507	1955	2005			8	9.7	92.2						
488	7	0.5	17273	4th Line	2280m East of Adjala-Tecumseth Townline	2506m East of Adjala-Tecumseth Townline		Rural	Asphalt	226	500	3	1000-1999	1159	1507	1955	2005			8	9.7	92.2						
489	7	0.5	16096	Church Street South	Albert Street West	Nelson Street West	Alliston	Urban	Asphalt	127	C/R	3	4000-4999	4810	5291	1995	1995			8	9.7	92.3						
490	7	0.5	16185	Preston Avenue	Smith Street	Eighth Street	Alliston	Urban	Asphalt	181	L/R	4	400-999	500	550	1997	1997			8	9.5	90.6						
491	7	0.5	16118	King Street South	Nelson Street West	Young Street	Alliston	Urban	Asphalt	63	ART	3	12000-14999	13920	18096	2000	2000			8	9.7	92.5						
492	7	0.5	16864	Dugdale Avenue	Mccullough Avenue	North End Barricade	Beeton	Urban	Asphalt	170	L/R	5	50-199	160	208	1995	1995			7	9.7	89						
493	7	0.5	17658	Stoneham Street	Essa Road	Chantier Road	Alliston	Urban	Asphalt	86	L/R	4	1000-1999	1000	1100	2002	2002			9	9.3	90.9						
494	7	0.5	16053	Church Street South	Wellington Street West	Victoria Street West	Alliston	Urban	Asphalt	122	CCI	3	4000-4999	4474	4921	1995	1995			8	9.8	92.7		DC-10				
495	7	0.5	16886	Prospect Street	Mcginty Court	Tecumseth Street North	Beeton	Urban	Asphalt	95	L/R	5	200-399	230	276	1995	1995			7	9.8	89.3		DC-5				
496	7	0.5	16106	Church Street South	Tupper Street East	Albert Street West	Alliston	Urban	Asphalt	120	CCI	4	4000-4999	4810	5291	2001	2001			8	9.6	91						
497	7	0.5	16006	Dufferin Street North	Victoria Street East	Queen Street	Alliston	Urban	Asphalt	101	L/R	5	400-999	400	440	1975	1975			7	9.8	89.4						
498	7	0.4	16337	11th Line	15th Sideroad	20th Sideroad	Unknown	Rural	Surface Treatment	3151	200	4	50-199	120	156	1955	2004			8	9.8	91.1						
499	7	0.4	16000	John Avenue	Albert Street East	Nelson Street East	Alliston	Semi-Urban	Asphalt	107	L/R	5	200-399	250	275	1975	1975			7	9.8	89.5						
500	7	0.4	17121	Hammell Boulevard	Fraser Avenue	Metcalf Crescent	Tottenham	Urban	Asphalt	93	L/R	5	200-399	380	418	1985	1985			7	9.8	89.5						
501	7	0.4	16773	English Drive	Dayfoot Street	Centre Street North	Beeton	Urban	Asphalt	118	L/R	5	50-199	70	84	1995	1995			7	9.8	89.5						
502	7	0.4	15959	Previn Court	Bowerman Blvd.	East End Cul-De-Sac	Alliston	Urban	Asphalt	224	L/R	5	200-399	250	275	1995	1995			8	9.4	89.7						
503	7	0.4	16112	Orange Street	Albert Street West	Nelson Street West	Alliston	Urban	Asphalt Over Concrete	131	L/R	5	200-399	200	220	1955	1985			7	9.8	89.7						
504	7	0.4	16233B	Industrial Parkway	977m West of Tottenham Road	Alliston	Urban	Asphalt	977	ART	4	10000-11999	10195	13254	1997	1997			7	10	91.4		DC-10					
505	7	0.4	15892	Hutchinson Drive	Willis Drive	North End	Alliston	Urban	Asphalt	122	L/R	5	50-199	150	165	1985	1985			7	9.8	89.9						
506	7	0.4	16100	Centre Street	Tupper Street East	Albert Street East	Alliston	Urban	Asphalt	119	LCI	5	200-399	300	330	1965	1965			8	9.4	89.9						
507	7	0.4	17284	Burnell Street	Hwy #9	North End Turnaround		Semi-Urban	Asphalt	242	L/R	5	50-199	140	154	1985	1985			7	9.8							

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

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570	7	0.3	19028A	Boyne Street	Buchanan Drive	0.15 Km North of Buchanan Drive	Alliston	Urban	Asphalt	147	C/R	3	4000-4999	4500	5850	2009	2010			8	10	94.9						
571	7	0.3	16225A	Sideroad 10	13th Line	918 m N. of 13th Line (W)		Rural	Asphalt	917	600	3	2000-2999	2962	4443	1955	2009			8	10	94.9						
572	7	0.3	16225B	Sideroad 10	0.9m North of 13th Line	14th Line (W)		Rural	Asphalt	472	600	3	2000-2999	2950	4440	1955	2009			8	10	94.9						
573	7	0.3	19660	Industrial Parkway	30 Sideroad Adjala	Preston Avenue		Rural	Asphalt	781	800	3	5000-5999	5650	7345	1997	1997			8	10	94.9						
574	7	0.3	17762	Stoneham Street	Chantler Road	Shephard Avenue	Alliston	Urban	Asphalt	258	L/R	4	1000-1999	1000	1100	2003	2003			9	9.6	93.7						
575	7	0.3	15963	Tottenham Road	Albert Street East	Douglas Drive	Alliston	Urban	Asphalt	114	C/R	4	3000-3999	3475	4518	2006	2006			8	9.9	93.8					DC-10	
576	7	0.3	15863	Gray Avenue	Darling Crescent	Darling Crescent	Alliston	Urban	Asphalt	82	L/R	4	400-999	800	880	1995	1995			8	9.9	93.8						
577	7	0.3	16857	Daniels Gate	Dayfoot Street	Danielle Avenue South	Beeton	Urban	Asphalt	112	L/R	4	1000-1999	1121	1457	1995	1995			8	9.9	93.8						
578	7	0.3	15885	Oak Street	0.05 Km East of William Street	Gray Avenue	Alliston	Urban	Asphalt	100	L/R	4	400-999	800	880	1995	1995			8	9.9	93.8						
579	7	0.3	15880	Gray Avenue	Oak Street	Darling Crescent	Alliston	Urban	Asphalt	79	L/R	4	400-999	800	880	1995	1995			8	9.9	93.8						
580	7	0.3	16878	Kate Aitken Crescent	Dayfoot Street	D A Jones Crescent	Beeton	Urban	Asphalt	104	L/R	4	400-999	500	600	1995	1995			8	9.9	93.8						
581	7	0.3	15890	Oak Street	Cowan Avenue	William Street	Alliston	Urban	Asphalt	103	L/R	5	1000-1999	1000	1100	1995	1995			8	9.8	92.7						
582	7	0.3	15864	Darling Crescent	Gray Avenue	Gray Avenue	Alliston	Urban	Asphalt	466	L/R	5	400-999	400	440	1995	1995			8	9.8	92.7						
583	7	0.3	16890	Prospect Street	Dayfoot Street	Ellison Avenue	Beeton	Urban	Asphalt	151	L/R	5	200-399	230	276	1995	1995			8	9.8	92.7					DC-5	
584	7	0.3	17167	Mccurdy Drive	Carter Court	Gunning Crescent	Tottenham	Urban	Asphalt	96	C/R	4	1000-1999	1450	1595	1995	1995			8	9.9	93.9						
585	7	0.3	16164	Henderson Crescent	Eighth Avenue	Eighth Avenue	Alliston	Urban	Asphalt	465	L/R	5	200-399	300	330	1995	1995			9	9.5	92.9						
586	7	0.3	17655	Chantler Road	Stoneham Street	Cowan Avenue	Alliston	Urban	Asphalt	319	L/R	5	200-399	300	330	2002	2002			9	9.5	92.9						
587	7	0.3	16984	5th Line	20th Sideroad	East Town Boundary		Rural	Asphalt	1244	500	4	1000-1999	1169	1754	1955	2008			8	9.9	94						
588	7	0.3	15853	Gray Avenue	Darling Crescent	North End Turnaround	Alliston	Urban	Asphalt	363	L/R	4	400-999	800	880	1995	1995			8	9.9	94						
589	7	0.3	16080	Reserve Lane (Ludlow Lane)	King Street	West End	Alliston	Urban	Asphalt	85	LCI	4	400-999	800	880	2000	2000			8	9.9	94						
590	7	0.3	16911	Ellison Avenue	Main Street West	Prospect Street	Beeton	Urban	Asphalt	261	L/R	5	200-399	200	240	1985	1985			8	9.8	93						
591	7	0.3	17128	Mcgahay Street	Mccurdy Drive	East End Barricade	Tottenham	Urban	Asphalt	90	L/R	5	50-199	150	165	1995	1995			8	9.8	93						
592	7	0.3	21208	Dunham Drive	Highway 89	Mackenzie Pioneer	Alliston	Urban	Asphalt	293	CCI	4	3000-3999	3000	4800	2010	2010			9	9.6	94.1						
593	7	0.3	16895	Mcginty Court	Prospect Street	South End Cul-De-Sac	Beeton	Urban	Asphalt	76	L/R	5	50-199	150	180	1995	1995			8	9.8	93.2						
594	7	0.3	17211	Walkers Drive	Mill Street West	George Street	Tottenham	Semi-Urban	Asphalt	110	L/R	4	400-999	500	550	1985	2010			8	9.9	94.3						
595	7	0.3	16810	Centre Street North Beeton	Stewart Street	McKeown Street	Beeton	Semi-Urban	Asphalt	95	L/R	4	400-999	930	1116	1975	2006			8	9.9	94.3						
596	7	0.3	16127	Church Street South	Beech Street	Tupper Street East	Alliston	Urban	Asphalt	121	CCI	4	4000-4999	4810	5291	2001	2001			8	9.9	94.3						
597	7	0.3	17154	Park Crescent	Walkem Drive	Western Avenue	Tottenham	Urban	Asphalt	411	L/R	5	400-999	490	539	2001	2001			8	9.8	93.4						
598	7	0.3	17178	Mccurdy Drive	Mill Street	Carter Court	Tottenham	Urban	Asphalt	56	C/R	4	1000-1999	1470	1617	1995	1995			8	10	94.5						
599	7	0.3	16796	Centre Street North Beeton	McKeown Street	Thomas Street	Beeton	Semi-Urban	Asphalt	93	L/R	4	400-999	930	1116	1975	2006			8	10	94.5						
600	7	0.3	17018	5th Line	18th Sideroad	0.6 Km West of 18th Sideroad		Rural	Asphalt	619	500	4	1000-1999	1490	2235	1955	2006			8	10	94.5						
601	7	0.3	16994A	5th Line	1.0 Km West of 20th Sideroad	18th Sideroad		Semi-Urban	Asphalt	249	L/R	4	1000-1999	1590	2385	1955	2006			8	10	94.5						
602	7	0.3	16174	8th Avenue	Preston Avenue	Storey Gate	Alliston	Urban	Asphalt	44	L/R	5	400-999	750	825	1997	1997			9	9.6	93.5						
603	7	0.3	16210	Tupper Boulevard	Eighth Avenue	Brooks Court	Alliston	Urban	Asphalt	184	L/R	5	400-999	400	440	1997	1997			9	9.6	93.5						
604	7	0.3	16781	Centre Street North Beeton	Thomas Street	English Drive	Beeton	Semi-Urban	Asphalt	91	L/R	4	400-999	930	1116	1975	2006			8	10	94.6			</td			

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

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667	7	0.2	19028D	Boyne Street	0.28 Km North of Buchanan Drive	Gray Avenue	Alliston	Urban	Asphalt	169	C/R	3	4000-4999	4500	5850	1955	2013			9	10	97.4						
668	7	0.2	15995	Boyne Street	Victoria Street East	Queen Street	Alliston	Urban	Asphalt	111	C/R	3	6000-7999	6002	7803	2009	2010			9	10	97.4						
669	7	0.2	15978	Boyne Street	Queen Street	Maple Lane	Alliston	Urban	Asphalt	106	C/R	3	6000-7999	6002	7803	2009	2010			9	10	97.4						
670	7	0.2	16964	Sideroad 10	7th Line	South Limit of Beeton	Alliston	Rural	Asphalt	1234	600	3	2000-2999	2793	4190	1955	2010			9	10	97.4					DC-10	
671	7	0.2	19152	King Street South	Falkner Road	Anderson Road	Alliston	Urban	Asphalt	171	C/R	3	5000-5999	5200	6760	2007	2007			9	10	97.4						
672	7	0.2	17287A	2nd Line	1.2 Km West of 15th Sideroad	10th Sideroad	Alliston	Rural	Asphalt	1876	300	5	200-399	215	280	2010	2010			9	9.9	96.3						
673	7	0.2	16855	Coburn Crescent	Reynolds Avenue	Beeton	Urban	Asphalt	343	L/R	5	200-399	300	330	1995	1995			9	9.9	96.3							
674	7	0.2	16015C	Fletcher Crescent	Museum Lane	End of Road	Alliston	Urban	Asphalt	69	LCI	4	2000-2999	2550	2805	1999	2009			9	9.9	96.9						
675	7	0.2	19193	John W Taylor Avenue	Callander Crescent	Dunning Drive	Alliston	Urban	Asphalt	74	C/R	4	1000-1999	1700	1870	2006	2006			9	9.9	96.9						
676	7	0.2	15967	Evans Road	Tracey Drive	Hussey Street	Alliston	Semi-Urban	Asphalt	280	L/R	4	400-999	900	990	1965	2009			9	10	97						
677	7	0.1	16863	Kate Aitken Crescent	D A Jones Crescent	Chiccony Court	Beeton	Urban	Asphalt	78	L/R	4	400-999	500	600	1995	1995			9	10	97.1						
678	7	0.1	17812A	Shephard Avenue	Wallace Street	0.31 Km East of Wallace Street	Alliston	Urban	Asphalt	310	L/R	4	1000-1999	1000	1100	2003	2004			9	10	97.1						
679	7	0.1	15969	Doner Street	Morrow Drive	Banting Drive	Alliston	Semi-Urban	Asphalt	150	L/R	4	1000-1999	1200	1320	1955	2007			9	10	97.1						
680	7	0.1	15992	Evans Road	Church Street North	Evans Road	Alliston	Semi-Urban	Asphalt	215	L/R	4	400-999	900	990	1965	2009			9	10	97.1						
681	7	0.1	16211	8th Avenue	Tupper Boulevard	Smith Street	Alliston	Urban	Asphalt	137	L/R	5	400-999	600	660	1997	1997			9	9.9	96.7						
682	7	0.1	19062	John W Taylor Avenue	Riley Road	Steele Street	Alliston	Urban	Asphalt	83	C/R	5	1000-1999	1000	1100	2010	2010			9	9.9	96.7						
683	7	0.1	19150	Anderson Road	Robins Lane	Warman Street	Alliston	Urban	Asphalt	227	L/R	5	200-399	300	330	2005	2005			9	9.9	96.7						
684	7	0.1	16194	8th Avenue	Smith Street	Preston Avenue	Alliston	Urban	Asphalt	87	L/R	5	400-999	600	660	1997	1997			9	9.9	96.7						
685	7	0.1	19061	John W Taylor Avenue	Steele Street	Davidson Drive	Alliston	Urban	Asphalt	117	C/R	5	1000-1999	1000	1100	2010	2010			9	9.9	96.7						
686	7	0.1	16207	Smith Street	150 M South of Preston Avenue	Eighth Avenue	Alliston	Urban	Asphalt	248	L/R	5	200-399	300	330	1997	1997			9	9.9	96.7						
687	7	0.1	16845	Reynolds Avenue	Wright Street	Coburn Crescent	Beeton	Urban	Asphalt	91	L/R	5	200-399	200	220	1995	1995			9	9.9	96.7						
688	7	0.1	19063	John W Taylor Avenue	Nunn Crescent	Riley Road	Alliston	Urban	Asphalt	202	C/R	5	1000-1999	1000	1100	2010	2010			9	9.9	96.7						
689	7	0.1	19028G	Boyne Street	0.16 Km North of Shephard Avenue	0.46 Km North of Shephard Avenue	Alliston	Rural	Surface Treatment	309	500	4	1000-1999	1230	1599	2012	2012			10	10	97.3						
690	7	0.1	16831	Wright Street	Reynolds Avenue	East End Barricade	Beeton	Urban	Asphalt	45	L/R	5	200-399	200	220	1997	1997			9	9.9	96.9						
691	7	0.1	16835	Wright Street	Patterson Street	Reynolds Avenue	Beeton	Urban	Asphalt	142	L/R	5	200-399	200	220	1997	1997			9	9.9	96.9						
692	7	0.1	19507	Jones Street	Falkner Road	South End	Alliston	Urban	Asphalt	98	L/R	5	50-199	100	110	2005	2005			9	9.9	96.9						
693	7	0.1	19028F	Boyne Street	Shephard Avenue	0.16 Km North of Shephard Avenue	Alliston	Urban	Asphalt	155	C/R	4	1000-1999	1230	1599	1955	1965			9	10	97.4						
694	7	0.1	19194	John W Taylor Avenue	38 M West of Callander Crescent	Callander Crescent	Alliston	Urban	Asphalt	37	C/R	4	1000-1999	1500	1650	2006	2006			9	10	97.4						
695	7	0.1	19155	King Street South	Industrial Parkway	Falkner Road	Alliston	Urban	Asphalt	140	C/R	4	4000-4999	4922	6399	2007	2007			9	10	97.4						
696	7	0.1	19190	John W Taylor Avenue	Callander Crescent	Sir Frederick Banting Road	Alliston	Urban	Asphalt	56	C/R	4	2000-2999	2000	2200	2006	2006			9	10	97.4						
697	7	0.1	19191	John W Taylor Avenue	Dunning Drive	Callander Crescent	Alliston	Urban	Asphalt	77	C/R	4	1000-1999	1869	2056	2006	2006			9	10	97.4						
698	7	0.1	17297B	Sideroad 15	Highway 9	0.9 Km North of Highway 9	Alliston	Rural	Asphalt	934	500	4	1000-1999	1260	1630	1955	2010			9	10	97.4						
699	7	0.1	16934	Patterson Street South	South Limit of Beeton	Maple Avenue East	Beeton	Semi-Urban	Asphalt	64	C/R	4	2000-2999	2503	3754	1995	2008			9	10	97.4						
700	7	0.1	16999A	6th Line	3.0 Km West of 15th Sideroad	10th Sideroad	Alliston	Rural	Asphalt	111	200	4	50-199	170	221	1955	1975			9	10	97.4						
701	7	0.1	16891	Dayfoot Street	Prospect Street	Kate Aitken Crescent	Beeton	Semi-Urban	Asphalt	140	L/R	4	1000-1999	1500	1950	2009	2009</											

**New Tecumseth Road Study**  
Appendix H2 - Improvements Sorted By Priority Order

Priority Rank	Priority Category	Priority Sensitivity	Municipal ID	Name	From	To	Community	Environment	Surface Material	Road Length (m)	Design Class	Maintenance Class	AADT Range	Existing Traffic 2012 (vpd)	Ten Year Traffic 2022 (vpd)	Previous Improvement Year	Previous Resurface Year	Drainage Need	Maintenance Demand	RCR	DMI	Condition Index (PCI)	Condition Improvement Bench Mark Cost/m	Condition Improvement Cost	Condition Improvement Time	Condition PGN	Condition Improvement	Plan Group
764	7	0.1	21088	Swenson Street	Shepard Avenue	James A McGaule Avenue	Alliston	Urban	Asphalt	314	L/R	5	400-999	450	495	2011	2011			9	10	97.4						
765	7	0.1	16003	Downey Avenue	Nelson Street East	Dungey Crescent	Alliston	Semi-Urban	Asphalt	112	L/R	5	200-399	280	308	1955	2010			9	10	97.4						
766	7	0.1	16875	D A Jones Avenue	Kate Aitken Crescent	Kate Aitken Crescent	Beeton	Urban	Asphalt	249	L/R	5	200-399	250	300	1995	1995			9	10	97.4						
767	7	0.1	21082	Irwin Cres.	James A. McCaule Avenue	James A. McCaule Avenue	Alliston	Urban	Asphalt	359	L/R	5	200-399	300	330	2010	2010			9	10	97.4						
768	7	0.1	15982	Downey Avenue	Dungey Crescent	Victoria Street East	Alliston	Semi-Urban	Asphalt	130	L/R	5	200-399	280	308	1955	2010			9	10	97.4						
769	7	0.1	21297	Scott Drive	Morrison Avenue	8th Avenue	Alliston	Semi-Urban	Asphalt	152	L/R	5	200-399	250	275	2010	2010			9	10	97.4						
770	7	0.1	21296	Morrison Avenue	Scott Drive	8th Avenue	Alliston	Urban	Asphalt	230	L/R	5	200-399	250	275	2010	2010			9	10	97.4						
771	7	0.1	21295	Morrison Avenue	Falkner Road	Scott Drive	Alliston	Urban	Asphalt	81	L/R	5	200-399	250	275	2010	2010			9	10	97.4						
772	7	0.1	21294	8th Avenue	Scott Drive	Falkner Road	Alliston	Urban	Asphalt	91	L/R	5	400-999	500	550	1997	2000			9	10	97.4						
773	7	0.1	161968	Tupper Boulevard	0.04 Km South of Mackenzie Street	Brooks Court	Alliston	Urban	Asphalt	34	L/R	5	400-999	400	440	1975	1975			9	10	97.4						
774	7	0.1	16859	Chicony Court	Kate Aitken Crescent	North End Cul-De-Sac	Beeton	Urban	Asphalt	65	L/R	5	50-199	70	84	1995	1995			9	10	97.4						
775	7	0.1	21301	Walker Boulevard	Falkner Road	8th Avenue	Alliston	Urban	Asphalt	347	L/R	5	200-399	250	275	2011	2011			9	10	97.4						
776	7	0.1	19608	Steele Street	John W Taylor Avenue	Davison Drive	Alliston	Urban	Asphalt	211	L/R	5	200-399	300	330	2010	2010			9	10	97.4						
777	7	0.1	19148	Anderson Road	Mcmulkin Street	Knight Street	Alliston	Urban	Asphalt	86	L/R	5	400-999	800	880	2006	2006			9	10	97.4						
778	7	0.1	19147	Anderson Road	Milne Street	Mcmulkin Street	Alliston	Urban	Asphalt	88	L/R	5	400-999	900	990	2006	2006			9	10	97.4						
779	7	0.1	19146	Anderson Road	King Street South	Milne Street	Alliston	Urban	Asphalt	82	L/R	5	1000-1999	1000	1100	2006	2006			9	10	97.4						
780	7	0.1	17171	Carter Court	Mccurdy Drive	West End Cul-De-Sac	Tottenham	Urban	Asphalt	73	L/R	5	50-199	100	110	1997	1997			9	10	97.4						
781	7	0.1	210798	Church Street North	77m North of Grey Avenue	Wallace Street	Alliston	Urban	Asphalt	22	L/R	5	200-399	300	330	2010	2010			9	10	97.4						
782	7	0.1	210799	Church Street North	Wallace Street	Shepard Avenue	Alliston	Urban	Asphalt	100	L/R	5	200-399	300	330	2011	2011			9	10	97.4						
783	7	0.1	21079A	Church Street North	Gray Avenue	77m North of Grey Avenue	Alliston	Urban	Asphalt	77	L/R	5	200-399	300	330	2010	2010			9	10	97.4						
784	7	0.1	19612	Nunn Crescent	John W Taylor Avenue	John W Taylor Avenue	Alliston	Urban	Asphalt	449	L/R	5	200-399	300	330	2008	2008			9	10	97.4						
785	7	0.1	19611	Riley Road	John W Taylor Avenue	End	Alliston	Urban	Asphalt	124	L/R	5	50-199	150	165	2010	2010			9	10	97.4						
786	7	0.1	19609	Steele Street	Davison Drive	John W Taylor Avenue	Alliston	Urban	Asphalt	263	L/R	5	200-399	300	330	2010	2010			9	10	97.4						
787	7	0.1	16862	Reynolds Avenue	Coburn Crescent	Bateman Street	Beeton	Urban	Asphalt	89	L/R	5	200-399	200	220	1995	1995			9	10	97.4						
788	7	0.1	19145	Milne Street	Falkner Road	Anderson Road	Alliston	Urban	Asphalt	175	L/R	5	50-199	180	198	2005	2005			9	10	97.4						
789	7	0.1	19151	Anderson Road	Warman Street	Falkner Road	Alliston	Urban	Asphalt	86	L/R	5	50-199	150	165	2005	2005			9	10	97.4						
790	7	0.1	19163	Ruthven Crescent	Falkner Road	Falkner Road	Alliston	Urban	Asphalt	224	L/R	5	200-399	220	242	2006	2006			9	10	97.4						
791	7	0.1	19037	Arthur Street	Boyne Street	Buchanan Drive	Alliston	Urban	Asphalt	114	L/R	5	400-999	450	495	2005	2005			9	10	97.4						
792	7	0.1	19036	Buchanan Drive	Arthur Street	Buchanan Drive	Alliston	Urban	Asphalt	189	L/R	5	50-199	150	165	2005	2005			9	10	97.4						
793	7	0.1	19035	Buchanan Drive	Arthur Street	Buchanan Drive	Alliston	Urban	Asphalt	440	L/R	5	200-399	300	330	2005	2005			9	10	97.4						
794	7	0.1	19160	Falkner Road	Mcmulkin Street	Knight Street	Alliston	Urban	Asphalt	86	L/R	5	400-999	800	880	2005	2005			9	10	97.4						
795	7	0.1	19164	Knight Street	Falkner Road	South End	Alliston	Urban	Asphalt	100	L/R	5	50-199	100	110	2005	2005			9	10	97.4						
796	7	0.1	21293	8th Avenue	Morrison Avenue	Scott Drive	Alliston	Urban	Asphalt	84	L/R	5	200-399	500	550	1997	2000			9	10	97.4						
797	7	0.1	15893B	Willis Drive	0.14 Km West of Hutchinson Drive	James A. McCaule Avenue	Alliston	Urban	Asphalt	43	L/R	5	50-199	150	165	2010	2010			9	10	97.4						
798	7	0.1	16029	Downey Avenue	Albert Street East	Nelson Street East	Alliston	Semi-Urban	Asphalt	112	L/R	5	200-399	280	308	1955	2010			9	10	97.4						
799	7	0.1	16850	Reynolds Avenue	Coburn Crescent	Beeton	Urban	Asphalt	89	L/R	5	200-399	200	220	1995</													



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**Appendix I**

**Typical Preventive Maintenance**

**Techniques For Pavement Management**

New Tecumseth Road Study  
Appendix I  
Preventive Maintenance Techniques For The Preservation of Pavements

Pavement Preservation Technique	Description	Benefits	Constraints	Conclusions and Recommendations
Crack Sealing or Crack Filling (Asphalt Roads)	Crack sealing includes routing, cleaning and filling cracks with hot poured asphalt emulsion. Crack filling includes cleaning and filling cracks with hot poured asphalt emulsion, but does not include routing	Protects pavement structure from premature failure by minimizing moisture infiltration and debris (incompressible materials) accumulation in cracks.	Should be applied to relatively new pavement surfaces, with good structural support, having little or no secondary cracking and little or no ravelling at the crack faces. Alligator cracking is not conducive to crack sealing/filling treatment. Crack sealing/filling should be applied in the Spring or Fall under warm and dry conditions. Vertical movements of cracks (cupping, lipping, faulting) may require patching or milling. Typically cracks >25 mm or non-working cracks may be filled without routing. Working cracks (typically transverse cracks) should be routed, however routing may be cost-beneficial for other cracks as well, since crack filling alone has a reduced lifespan. If asphalt thickness is < 70 mm crack sealing is not recommended. Costs in the order of \$3.00 per m of crack.	Seal or fill cracks on a schedule between overlay resurfacings (see life cycle curves in Technical Memorandum No. 1 for typical timing). Highest priority sections for crack sealing/filling should be those that have Time of Improvement Needs of 6 to 10 years, followed by those that have Time of Improvement Needs of 1 to 5 years.
Small Area Patching	Selective patching and re-paving using a paver or a grader to place hot or cold mix over a localized area. Includes removal of the asphalt and base material, replacement of the road base material and installation and compaction of HL8 base asphalt and HL3 surface asphalt.	Repairs to major pot holes, sunken areas and areas where small sections of the road are deteriorating and require permanent repair to preserve the integrity or safety of the roadway. May be a recommended technique where crack sealing is not adequate but full resurfacing is not yet warranted.	Costs in the order of \$150 to \$200 per sq.m. Patching without the removal of base material is not recommended, in most cases since cracks will reflect through and base instability will not be addressed. However if the patching is completed on a pavement that is near its service life, surface patching may be considered as a temporary measure, pending more extensive rehabilitation work being scheduled.	A small area patching program should be implemented on those roads where crack sealing is completed, to address areas that cannot be dealt with by crack sealing (e.g. localized areas of alligator cracking or settlements).
Thin Hot Mix Overlays (20 to 40 mm)	Application of a dense graded, non-structural hot mix overlay. Milling of existing asphalt to match curb grades or to address surface cracking issues.	Waterproofs surface, seals small cracks, slows surface ravelling, improved ride quality (smoothness), increased friction, reduces noise, restores cross section profile. Particularly suitable for high volume roads in urban areas.	May not be cost-effective unless applied to pavement in good condition, otherwise may be prone to short service life and reflective cracking. Should be applied prior to onset of fatigue-related pavement cracking. Not effective in areas of alligator cracking or rutting. May require milling, localized patching or localized full-depth repairs prior to overlay.	Available budgets or public perceptions may limit the application of this preventive maintenance treatment, since it must be applied to pavements in good condition, early in their life cycle.
Hot-in-Place Recycling (HIR)	Heat pavement surface with infrared, add rejuvenator and/or heated aggregate and/or hot mix (for integral overlay). May add slurry seal, surface treatment or thin overlay for driving surface.	Removes surface distresses (wheel ruts, potholes, cracking). Recycles existing asphalt on site.	Should be applied to structurally sound pavements where defects are in the top layer (ravelling, segregation, cracking, rutting). Requires large treatment train, therefore may not be suitable for tight urban conditions. Typical processing depths of 25 to 50 mm and therefore only restores upper portion of old asphalt. More extensive pavement distresses may remain and reflect through. Extensive previous crack sealing can affect mix design adversely.	Available budgets or public perceptions may limit the application of this preventive maintenance treatment, since it must be applied to pavements in good condition, early in their life cycle.
Micro-Surfacing	Tack coat plus two coats (typical) of slurry mixture of polymer-modified asphalt emulsion, frictional aggregate, mineral filler, water. This is a chemically controlled process.	Waterproofs surface and corrects superficial distresses such as cracking, ravelling, segregation, flushing, loss of friction. Retards oxidation and improves skid resistance. Polymer improves bonding of asphalt cement and reduces its temperature susceptibility. May fill ruts up to 40 mm. Minimum traffic disruption since traffic allowed within one hour of placement. Applicable to roads carrying medium to high traffic volumes. Typically adds from 7 to 10 years, or more to pavement life.	Crack sealing should be completed after micro-surfacing to provide proper bond.	May be considered if budget allows, after crack sealing and small area patching needs have been met.
Slurry Seal (<6 mm)	Slurry mixture, including slow setting asphalt emulsion, graded fine aggregate, mineral fill, water. This is a thermally controlled process.	Waterproofs surface and corrects superficial distresses such as ravelling, coarse aggregate loss, small cracks, loss of friction. Typically adds up to 5 years to pavement life.	Not effective for severe cracking or rutting. Crack sealing should be completed after slurry seal to provide proper bond. Older pavements will require additional emulsion due to the pockmarked, porous, oxidized natures of their surface.	May be considered if budget allows, after crack sealing and small area patching needs have been met.
Surface Treatment	Asphalt binder emulsion immediately followed by a cover aggregate. Includes chip seals, cape seals or sand seals. Cape seals include a slurry seal applied to a chip seal surface.	Waterproofs surface and corrects non-load associated cracking and ravelling, restores friction and maintains wearing surface. Typically adds 5 years or more to pavement life. Cape seals may add 10 to 15 years to the pavement life.	Dust considerations if used in urban areas. Requires protection from high-speed traffic for several hours after application. Requires higher emulsion rates if low AADT to get required aggregate embedment. Not effective for load-associated cracking. Crack sealing should be completed after surface treatment to provide proper bond.	Primarily considered as part of ongoing rehabilitation program for non-urban, surface treated roads.
Surface Seals	Sprayed bituminous material (e.g. diluted asphalt emulsion), light sanding.	Reduces natural oxidation, ravelling, aggregate loss. Fills cracks and provides membrane to resist reflective cracking.	Should apply in first few years.	May be considered if budget allows, after crack sealing and small area patching needs have been met.
Surface Abrasion	Diamond grinding, micro-milling, precision milling.	Reduces rutting and improves smoothness.	High cost on a localized basis.	May be considered if site conditions warrant on a project-by-project basis. Not considered on a network level basis as a preventive maintenance strategy but is more applicable to completion on a full road section basis as part of more major rehabilitation work.
Rejuvenators	Sprayed bituminous material, sanding of surface.	Replenish lighter oils (maltenes) and softens weathered surface, restoring plasticity and ductility of the asphalt cement and restoring some of the pavement durability. Reduces small cracks and loss of fines. Can add up to 5 years to pavement life.	Apply to pavement that is only a few years old.	May be considered if budget allows, after crack sealing and small area patching needs have been met.
Infrared Patching	Heats pavement to a 50 mm depth, without oxidation or burning. Blends new asphalt to heated (scarified) asphalt.	Repairs areas of surface defects.	Not effective for severe cracking, rutting or areas of localized base instability.	May not be cost competitive with conventional small area patching techniques.
Drainage Maintenance	Maintenance of subdrains, storm sewer systems, ditches and culverts.	Ensures drainage of pavement base, minimizes impacts of flooding and erosion.	Costs of improvements may be high due to the small, localized nature of the project.	Ongoing drainage maintenance program is recommended, with improvements focused on road sections where drainage needs have been identified in this Study. Schedule drainage improvements as part of larger projects to address other needs, to obtain economies of scale.
Ultrathin Whitetopping	Portland cement concrete (PCC) layer (< 100 mm thickness) bonded to the surface of the existing asphalt surface. The PCC surface may be fiber reinforced.	Provides long-lasting surface, addressing high traffic or base strength issues. Results in lighter coloured pavement for select areas.	High initial cost, although life cycle cost may be comparable to standard overlays.	No areas have been identified that would benefit by this preventive maintenance treatment.
Shoulder Dressing and Grading	Disc rehabilitation of vegetation along shoulders to re-establish shoulders. Addition of new granular along shoulders where required.	Ensures proper surface drainage and that water is not trapped along shoulders. Ensures that drop-offs do not occur along pavement edges, leading to edge breaks.	Include in maintenance budgets.	Ongoing shouldering program is recommended to continue.



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**Appendix J**  
**Maintenance Classification**  
**Requirements**

## Appendix J

### **MINIMUM MAINTENANCE STANDARDS FOR SELECT ROAD CLASSIFICATIONS**

**Ontario Regulation 239/02 of the Municipal Act**

Maintenance Activity	Class 2	Class 3
Routine Patrolling Frequency	Patrol twice every 7 days	Patrol once every 7 days
Snow Clearing	Clear within 6 hours after snow accumulation of 5 cm	Clear within 12 hours after snow accumulation of 8cm
Icy Roads	Treat within 4 hours after icy condition identified	Treat within 8 hours after icy condition identified
Potholes – Paved Road (exceeding 8 cm in depth and 1000 cm <sup>2</sup> in area (Class 3) or 800 cm <sup>2</sup> in area (Class 2)	Repair within 4 days	Repair within 7 days
Potholes – Non-paved Road (exceeding 1500 cm <sup>2</sup> in area and 8 cm in depth )	N/A	Repair within 7 days
Potholes – Shoulders paved or non-paved (exceeding 1500 cm <sup>2</sup> in area and 8 cm in depth	Repair within 7 days	Repair within 14 days
Shoulder Drop-offs (exceeds 8 cm depth for 20 metres or more)	Repair within 4 days	Repair within 7 days
Cracks (exceeds 5 cm depth and 5 cm width for 3 metres or more)	Repair within 30 days	Repair within 60days
Debris on Roadway	Remove as soon as practicable	Remove as soon as practicable

## **Appendix J (cont'd)**

### **MINIMUM MAINTENANCE STANDARDS FOR SELECT ROAD CLASSIFICATIONS**

**Ontario Regulation 239/02 of the Municipal Act**

<b>Maintenance Activity</b>	<b>Class 4</b>	<b>Class 5</b>
Routine Patrolling Frequency	Patrol once every 14 days	Patrol once every 30 days
Snow Clearing	Clear within 16 hours after snow accumulation of 8 cm	Clear within 24 hours after snow accumulation of 10 cm
Icy Roads	Treat within 12 hours after icy condition identified	Treat within 16 hours after icy condition identified
Potholes – Paved Road (exceeding 8 cm in depth and 1000 cm <sup>2</sup> in area)	Repair within 14 days	Repair within 30 days
Potholes – Non-paved Road (exceeding 1500 cm <sup>2</sup> in area and 10 cm in depth (Class 4) or 12 cm in depth (Class 5))	Repair within 14 days	Repair within 30 days
Potholes – Shoulders paved or non-paved (exceeding 1500 cm <sup>2</sup> in area and 10 cm in depth (Class 4) or 12 cm in depth (Class 5))	Repair within 30 days	Repair within 60 days
Shoulder Drop-offs (exceeds 8 cm depth for 20 metres or more)	Repair within 14 days	Repair within 30 days
Cracks (exceeds 5 cm depth and 5 cm width for 3 metres or more)	Repair within 180 days	Repair within 180 days
Debris on Roadway	Remove as soon as practicable	Remove as soon as practicable