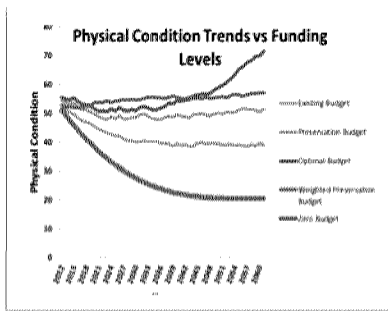


Asset Management Plan for Roads, Bridges and Culverts



ROADS MANAGEMENT SERVICES

ROAD NAME: DEVELOPMENT CREEK ROAD COUNTY: YORK

FROM: 0+00 (RD 4000) TO: 0+200 (1 km NORTH OF RD 4000)

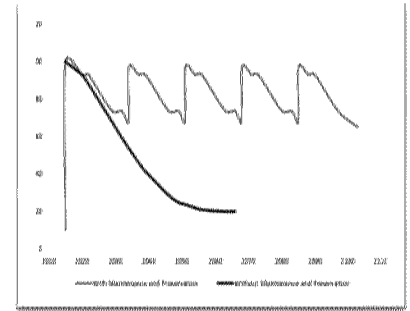
DESIGN DATE: 2000 WORK NO: 200001 ROAD NUMBER: 200

Element	System	Structure	Location
Length	117 m		
Existing PAVEMENT	ASPH	ASPH	ASPH
Shoulder PAVEMENT	ASPH	ASPH	ASPH
Curbs	CONC	CONC	CONC
Surface Width	11.00 m		
Shoulder Width	2.25 m		
Median Width	0.00 m		

ROAD TYPE: 02 ROAD CLASS: 01 ROAD STATUS: 01

TRAFFIC CLASS: 01 ROAD CLASS: 01 ROAD STATUS: 01

ROAD CLASS: 01 ROAD CLASS: 01 ROAD STATUS: 01



4 Roads Management Services Inc.

7 Candle Crescent, Kitchener Ontario, N2P 2K7

www.4roads.ca



7 Candle Crescent,
Kitchener Ontario, N2P 2K7

December 10, 2013

Township of Scugog
181 Perry Street
Port Perry, ON, L9L 1A7

Attention: Mr. Ian Roger, P.Eng, Director of Public Works and Roads

Subject: Township of Scugog, Asset Management Plan

Dear Mr. Roger,

4 Roads Management Services Inc. (4 Roads) is pleased to provide this Asset Management Plan to further the Townships efforts in the management of its road, bridge and culvert assets.

Road related information is drawn from the 2011 Road Needs Study provided by AECOM. 4 Roads has updated estimated improvement and replacement costs using more current unit costs provided by the Township. Calculations for Time of Need, Improvement and Replacement Costs and Performance modeling were developed utilizing WorkTech Asset Manager Foundation Software.

Similarly, Structures information is drawn from the 2012 Structures Inventory and Inspection provided by AECOM. We trust that the information provided in this report will be beneficial to the Township of Scugog in the continuing evolution of their Asset Management Plans.

Please do not hesitate to call or email if you require any further information or discussion on any aspect of the report. Thank you for the opportunity to prepare this report. If 4 Roads Management Services Inc. may be of any further service, please do not hesitate to contact the undersigned.

Yours truly,

David Anderson, CET
President,
4 Roads Management Services Inc.
Dave.anderson@4roads.ca
519 505 5065

December 10, 2013

Township of Scugog
Asset Management Plan for Roads and Structures

 ***4 Roads Management Services Inc.***

7 Candle Crescent, Kitchener Ontario, N2P 2K7

www.4roads.ca

Executive Summary

In the fall of 2012, the Province of Ontario, introduced a requirement for an Asset Management Plan (AMP) as a prerequisite for municipalities seeking funding assistance for capital projects, from the province; effectively creating a conditional grant. To qualify for future infrastructure grants, an AMP has to be developed and approved by a municipal council by December 31, 2013. On April 26, 2013 the province announced that it had created a \$100 million Infrastructure Fund for small, rural and northern municipalities.

The province requires AMP's for Roads Structures, Water and Waste treatment collection and distribution and Social housing. The Township of Scugog (ToS) has responsibility for the local roads and structures within the ToS. Accordingly, the scope of this plan only includes the road and structure assets.

Project Approach

Project approach was predicated on the ToS's goal that AMP's would be developed for all assets and/or asset groups. The ToS recognized that as the management of corporate assets evolved, there should be a corporate policy providing general direction and guidance that could be applied to all assets as their respective plans were developed. The corporate asset management policy forms Appendix A of this report and provides guidance and direction. Appendix A also includes the specific AMP policies that were developed for the Road and Structures Asset Groups.

The ToS has been diligent in the continuing condition rating of their road and structures asset groups. The 2011 Road Needs Study, is essentially the current State of the Infrastructure (SotI); the 2012 Structures Inventory and Inspection report provides the SotI for the Structures Inventory.

The scope of this report is to develop an AMP following the provincial guidelines producing an AMP with the following content

1. Executive Summary
2. Introduction
3. State of Local Infrastructure (SotI)
4. Desired Levels of Service
5. Asset Management Strategy
6. Financing Strategy

In order to develop the AMP, the following approach was adopted

1. Staff AMP and LOS workshop
2. Draft AM Policy Development
3. Draft AM Policy and LOS development for Roads and Structures
4. Draft AMP Policy Workshop and presentation to Council
5. Council Policy Adoption
6. State of the Infrastructure (SotI) development for roads and structures
7. Development of Asset Management and Financing Strategies
8. Revision / Finalization of Asset Management and Financing Strategies
9. AMP Review meeting
10. Final Report preparation
11. AMP presentation to and adoption by Council

State of the Infrastructure

The 2013 AMP provides an overview of the physical and financial needs of the road system and structures inventory in their entirety. The existing inventory data and condition ratings were used to develop programming and budgets. However, once an asset reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of each project.

For road assets, data and road condition ratings were completed generally in accordance with the Ministry of Transportation Ontario (MTO) *Inventory Manual for Municipal Roads* from 1991 (*Inventory Manual or IM*) during a survey in the spring of 2011 (AECOM-Township of Scugog 2011 Road Needs Study)

For structure assets, data and structure condition ratings were completed in accordance with the most current version of the Municipal Bridge Appraisal Manual and Ontario Structure Inspection Manual in 2012 (AECOM 2012 Municipal Structure Inventory and Inspection)

When the *Inventory Manual* was originally developed, the Province provided funding for municipal road systems; the road systems were measured by their system adequacy. The system adequacy is the percentage of the road system that is not a "NOW" need.

Based on the current unit costs being experienced for roads, the estimated total cost of recommended improvements is **\$155,717,675**. The improvement costs include **\$104,807,747** for those roads identified as NOW needs and **\$50,909,928** is for road work required in the '1 to 10' year time period or for maintenance. The improvement costs do not include improvements that are required on road sections with less than 50 vehicles per day.

Based on the composition of the road system, budget recommendations have been developed for annual capital and maintenance programs as follows:

- **\$5,890,753** for the roads capital/depreciation, excluding resurfacing, based upon a 50-year life cycle. (this would be similar to the PSAB 3150 amortization value)
- **\$1,067,447** for average annual hot mix resurfacing, based upon an 19-year cycle.(This would approximate an average of 5.6 km per year)
- **\$315,200** annually, for single surface treatment of existing surface-treated roads, based on a seven-year cycle (this does not include additional padding or geometric correction).
- **\$1,966,100** annually, for resurfacing gravel roads on a three-year cycle (this does not include any additional gravel road conversion costs; nor ditching, re-grading, dust control, etc.).
- **\$93,200** annually for crack sealing

Based on the current unit costs being experienced for structures, the estimated total cost of recommended improvements is **\$8,808,000**. The improvement costs include **\$7,168,000** for those structures identified as NOW needs and **\$1,640,000** is for structure work required in the '1 to 10' year time period. The average age of the bridges is approximately 53 years and the culverts 47 years. Both asset groups had a 50 year design life.

Based on the composition of the structures inventory, budget recommendations have been developed for annual capital and maintenance programs as follows:

- **\$413,950** for the structures capital/depreciation, based upon an average 40 year design life of the existing inventory
- **\$82,600** for the structures maintenance and minor rehabilitations program.

Financial Plan

Integral to the asset management plan, is the financial plan/strategy.

The 2011 Road Needs Study (AECOM) identified that current funding level for the road asset group was insufficient to maintain the condition of the asset group and that it would continue to decline. Further it was identified that the overall condition of the system was below the minimum target set by the province when prior to the removal of conditional grants in the mid 1990's. Updated modeling confirms that those circumstances have not changed.

The 2012 Structures Report identifies significant Structure needs including four structures that are identified as 'NOW' needs for replacement. This factor poses a significant impact to the ToS from both functional and financial perspectives. Currently, the TOS has not budgeted an annual amount for a structures program.

The funding for the two asset groups included in this report is not at a sustainable level. The funding gap is significant and it would be unrealistic to expect that a two or threefold increase could be implemented over a short time period. The plan provides for increases to the recommended funding levels over a 50 year period. There will be a dedicated increase for road and structure assets at the rate of 1% of the tax levy per year (compounded and adjusted for inflation) until the recommend funding level is reached.

For roads, it is recognized that, at this funding level, the overall condition of the road system will lessen over the early years of the plan but will reach the desired Level of Service (LOS) of 60 near the end of the 50 year modeling period. The priorities will be to satisfy the preservation and maintenance needs to the greatest extent possible from the available funding. Priority projects that are beyond the Township's available funding have also been identified as candidates for Provincial Infrastructure Funding applications. This report includes recommended programming for 10 years based on the ToS funding levels anticipated over that time period.

For structures, the 'NOW' need structures, and their total cost, are significant liabilities for the ToS. Programming for structures improvements will be based on a combination of debt financing, provincial infrastructure grants, and other financing in the near term. The strategy for the structures inventory is a worst first approach due to the overall condition and age of the inventory. Similar to the roads, priority structure projects, which are beyond the Township's available funding, have been identified as candidates for Provincial Infrastructure Funding applications. There is a potential for structure closures.

Asset management strategies (AMS) are critical to managing the performance of an asset group, more so, if funding is limited. Funding constraints should push the strategy toward those programs that extend the life cycle of the road by providing the correct treatment at the optimum time. For roads, resurfacing, rehabilitation, and preservation projects should be a higher priority than reconstruction projects. The objective is to "keep the good roads good". Similarly for structures, the best return on investment is in timely replacement of the bridge deck wearing surface, waterproofing, expansion joints and minor rehabilitations.

Township of Scugog, Asset Management Plan
December 10, 2013

In addition to the budgetary recommendations, the following recommendations are provided for the management of the road and structures inventories;

1. The information and budget recommendations included in this report to further develop the corporate Asset Management Plan.
2. The cycle for review of the road system should be continued reviewing the entire system on a four year cycle.
3. The cycle for review of the structures inventory should be continued, reviewing the entire system on a two year cycle
4. Programming should be reviewed to ensure that resurfacing and preservation programs are optimized.
5. Traffic counts should be updated and repeated on a regular basis. The counting should include the percentage of truck traffic.
6. Further analysis should be undertaken on the Gravel Road system, with respect to the potential for conversion to a hardtop surface.
7. The Level of Service for the road system should be system Adequacy 60%, Physical Condition 60 and MPMP measure of Good to Very Good of 60.
8. The Level of Service for the Structures should be zero load posted structures.

Summary Information

Table ES 1: Roadside Environment and Surface Type

Surface Type	Roadside Environment						Total		% of Total	
	Rural		Semi-Urban		Urban		Cl-km	Lane-km	Cl-km	Lane-km
	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km				
Asphalt on Concrete			0.88	1.59			0.88	1.59	0.21%	0.19%
Gravel, Stone, Other Loosetop	187.5	375.01	4.94	7.88			192.44	382.89	46.68%	46.56%
High Class Bit.-asphalt	13.49	26.98	55.27	110.53	35.25	70.61	104.01	208.12	25.23%	25.31%
Low Class Bit.-surface treated	94.92	189.84	19.99	39.97			114.91	229.81	27.87%	27.94%
Total	295.91	591.83	81.07	159.97	35.25	70.61	412.23	822.41		
% of Total	71.78%	71.96%	19.67%	19.45%	8.55%	8.59%				

Table ES 2: Roadside Environment and Functional Class

Road Classification	Roadside Environment						Total		% of Total	
	Rural		Semi-Urban		Urban		Cl-km	Lane-km	Cl-km	Lane-km
	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km				
100	28.5	57					28.5	57	6.91%	6.93%
200	122.79	245.59					122.79	245.59	29.79%	29.86%
300	67.26	134.51					67.26	134.51	16.31%	16.36%
400	61.88	123.76	0.94	1.88			62.82	125.64	15.24%	15.28%
500	13.16	26.31					13.16	26.31	3.19%	3.20%
600	2.33	4.66					2.33	4.66	0.57%	0.57%
C/R			7.18	14.36	7.72	15.44	14.9	29.8	3.61%	3.62%
CCI					1.29	2.52	1.29	2.52	0.31%	0.31%
L/R			69.75	137.33	25.37	50.74	95.12	188.07	23.07%	22.87%
LCI			3.2	6.4	0.87	1.91	4.07	8.31	0.99%	1.01%
Total	295.91	591.83	81.07	159.97	35.25	70.61	412.23	822.41		
% of Total	71.78%	71.96%	19.67%	19.45%	8.55%	8.59%				

Table ES 3: Roadside Environment and Lanes

Lanes	Roadside Environment						Total		% of Total	
	Rural		Semi-Urban		Urban		CI-km	Lane-km	CI-km	Lane-km
	CI-km	Lane-km	CI-km	Lane-km	CI-km	Lane-km				
1			2.17	2.17	0.06	0.06	2.23	2.23	0.54%	0.27%
2	295.91	591.83	78.9	157.8	35.02	70.04	409.83	819.67	99.42%	99.67%
3					0.17	0.51	0.17	0.51	0.04%	0.06%
Total	295.91	591.83	81.07	159.97	35.25	70.61	412.23	822.41		
% of Total	71.78%	71.96%	19.67%	19.45%	8.55%	8.59%				

Table ES 4: Bridge Structure Summary by Sub-Type and Deck Area

Sub-Type	Foundation				Deck Area M ²
	C - Cast In Place	S - Steel	T - Timber/Wood	Unknown	
BO - Box, Open Footing	109.44				109.44
CC - Concrete, Cast in Place	109.44				109.44
HB - Half-Through Beams/Girder	89.78				89.78
CC - Concrete, Cast in Place	89.78				89.78
HT - Half-Through Truss		80.85			80.85
TL - Transverse Lam. Timber		80.85			80.85
IB - I-Beams or Girders		123.1			123.1
CC - Concrete, Cast in Place		45.1			45.1
TC - Timber-Concrete Composite		78			78
RF - Rigid Frame, Vert. Legs	122.51				122.51
TS - Thick Slab	122.51				122.51
SS - Solid Slab	178.7		833.22		1011.92
CC - Concrete, Cast in Place	178.7				178.7
TC - Timber-Concrete Composite			833.22		833.22
Unknown				80.85	80.85
Grand Total	500.43	203.95	833.22	80.85	1618.45

Table ES 5: Culvert Structure Summary by Subtype and Footprint

CPS - Corrugated Plate Steel			
Subtype	Total Length	Total Width	Area (M ²)
PA - Pipe Arch	137.1	30.9	4236.39
PHE - Pipe Horiz. Ellipse	24.4	3.3	80.52
Grand Total	161.5	34.2	5523.3

Table ES 6: Load Restricted Structures

Asset ID	Location	Existing Load Limit			Recommended Load Limit		
		L3	L2	L1	L3	L2	L1
000006	Seagrave Bridge, Lot 23/24, Con 13, River Street, Seagrave, .95km N of Regional Road 2	10			5		

Table ES 7: MMS Class by Lanes and Roadside Environment

MMS Class	3		4		5		6		TOTAL		% OF TOTAL		
	Lanes	Roadside	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Lane-km
1	S	0	0	0	0	2.09	2.09	0.08	0.08	2.17	2.17	0.53%	0.26%
1	U	0	0	0	0.06	0.06	0	0	0.06	0.06	0.01%	0.01%	
2	R	9.51	19.02	246.8	493.61	11.3	22.6	28.3	56.6	295.91	591.83	71.78%	71.96%
2	S	0.13	0.26	26.14	52.27	51.81	103.61	0.83	1.66	78.9	157.8	19.14%	19.19%
2	U	2.64	5.28	13.48	26.96	18.9	37.8	0	0	35.02	70.04	8.50%	8.52%
3	U	0	0	0.17	0.51	0	0	0	0	0.17	0.51	0.04%	0.06%
TOTAL		12.28	24.56	286.59	573.35	84.16	166.16	29.21	58.34	412.23	822.41		
% OF TOTAL		2.98%	2.99%	69.52%	69.72%	20.41%	20.20%	7.09%	7.09%				

Table ES 8: Time of Need by Length and MMS Class (Adjusted for boundary roads)

Time of Need	MMS Class												Total			
	3		4		5		6		6		6			Total		
	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km
NOW	1.98	3.96	145.12	290.24	38.07	74.05							185.17	368.25		
1-5	5.86	11.72	43.87	87.74	10.64	21.28							60.37	120.74		
6-10	3.03	6.06	55.81	111.62	13.2	26.4							72.04	144.08		
ADEQ.	1.41	2.82	41.79	83.75	22.25	44.43							94.66	189.34		
Total	12.28	24.56	286.59	573.35	84.16	166.16	29.21	58.34	29.21	58.34	412.23	822.41				
% of Total	2.98%	2.99%	69.52%	69.72%	20.41%	20.20%	7.09%	7.09%	7.09%	7.09%						
System Adequacy %	83.9	83.9	49.4	49.4	54.8	55.4	100.0	100.0	100.0	100.0	55.1	55.2				
Good to Very Good %	36.2	36.2	34.1	34.1	42.1	42.6	100.0	100.0	100.0	40.4	40.4	40.5				

Table ES 9: Road System Needs Summary

Imp. Class	Imp. Type	Time of Need												TOTAL		% OF TOTAL	
		1 to 5		6 to 10		ADEQ		NOW		TOTAL		% OF TOTAL					
		Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost	Cl-km	Imp. Cost
Const	BS	23.06	6,806,771	42.8	11,458,623			40.64	11,262,888	106.49	29,528,282	25.83%	19.22%				
Const	NONE					35.24	0	0.4	0	35.64	0	8.64%					
Const	REC	23.03	13,012,468	2.44	2,112,365			120.35	72,771,763	145.82	87,896,597	35.37%	57.20%				
Const	RNS	0.15	146,496					0.33	322,291	0.48	468,786	0.12%	0.31%				
Const	RSS	4.96	8,360,524	1.63	2,912,553			8.73	15,171,537	15.32	26,444,614	3.72%	17.21%				
Const	RW	0.43	398,560							0.43	398,560	0.10%	0.26%				
Maintenance	CRK			0.3	1,200	23.44	94,100			23.74	95,300	5.76%	0.06%				
Maintenance	NONE<50					29.21	0	0.28	0	29.49	0	7.15%					
Maintenance	SD			14.05	0	6.04	0			20.09	0	4.87%					
Maintenance	SR					0.73	0			0.73	0	0.18%					
Rehab	PR2	3.26	779,877	2.39	556,376			14.44	3,213,547	20.09	4,549,801	4.87%	2.96%				
Rehab	R1	0.3	36,706	8.44	2,137,755					8.74	2,174,461	2.12%	1.42%				
Rehab	R2	5.19	2,095,554							5.19	2,095,554	1.26%	1.36%				
TOTAL		60.37	31,636,956	72.04	19,178,872	94.66	94,100	185.17	102,742,026	412.23	153,651,954						

Table ES 10: Bridge Structures Time of Need

Improvement Class	Time of Need				Total
	NOW	1 to 5	6 to 10		
Construction	3,172,000	813,000	0		3,985,000
Construction Extra	937,000	187,000	0		1,124,000
Inspection	0	0	0		0
Rehabilitation	969,000	421,000	53,000		1,443,000
Rehabilitation Extra	110,000	119,000	7,000		236,000
Total	5,188,000	1,540,000	60,000		6,788,000

**From AECOM 2012 Municipal Structure Inventory and Inspection*

Table ES 11: Culvert Structures Inventory by Time of Need

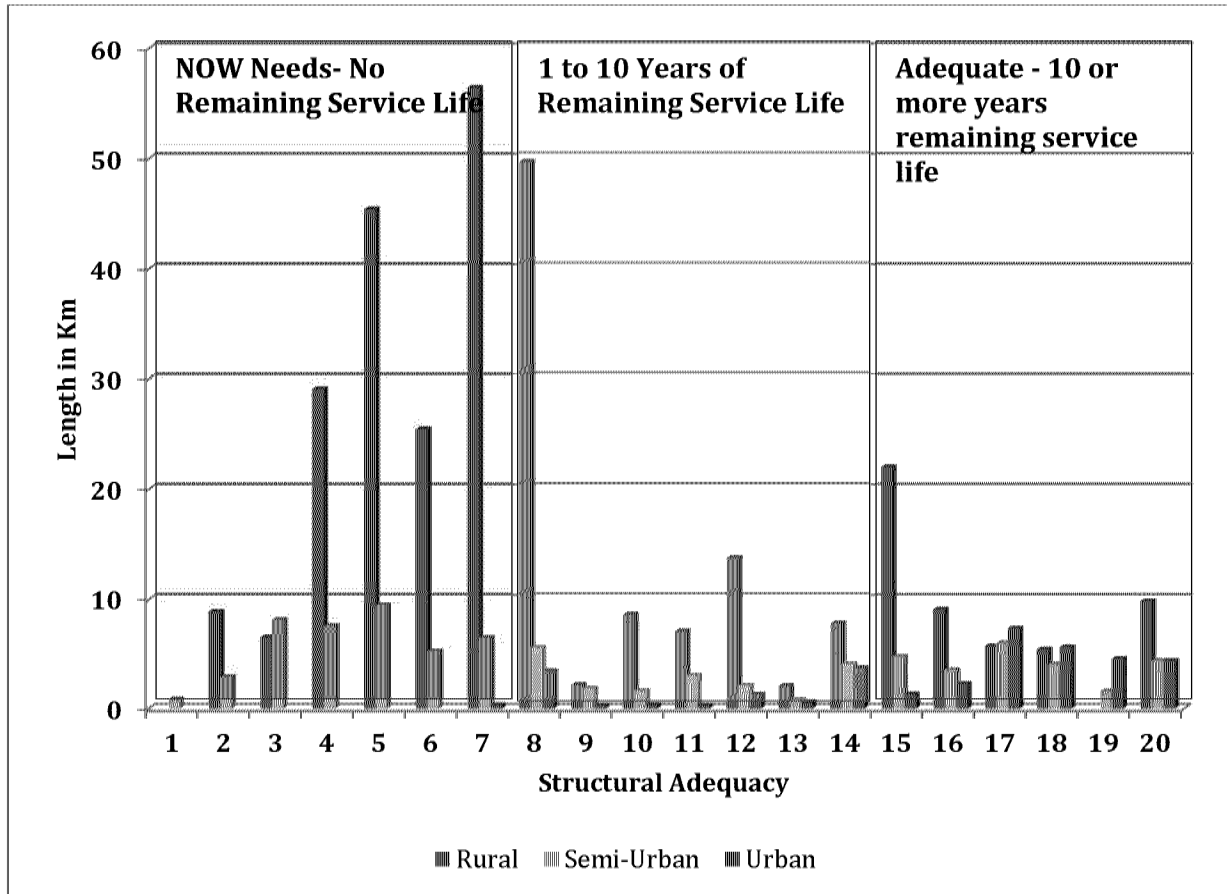
Improvement Class	Time of Need				Total
	NOW	1 to 5	6 to 10		
Construction	1,391,000	0	0		1,391,000
Construction Extra	171,000	0	0		171,000
Inspection	0	0	0		0
Rehabilitation	390,000	33,000	0		423,000
Rehabilitation Extra	28,000	7,000	0		35,000
Total	1,980,000	40,000	0		2,020,000

**From AECOM 2012 Municipal Structure Inventory and Inspection*

Table ES 8: Boundary Roads

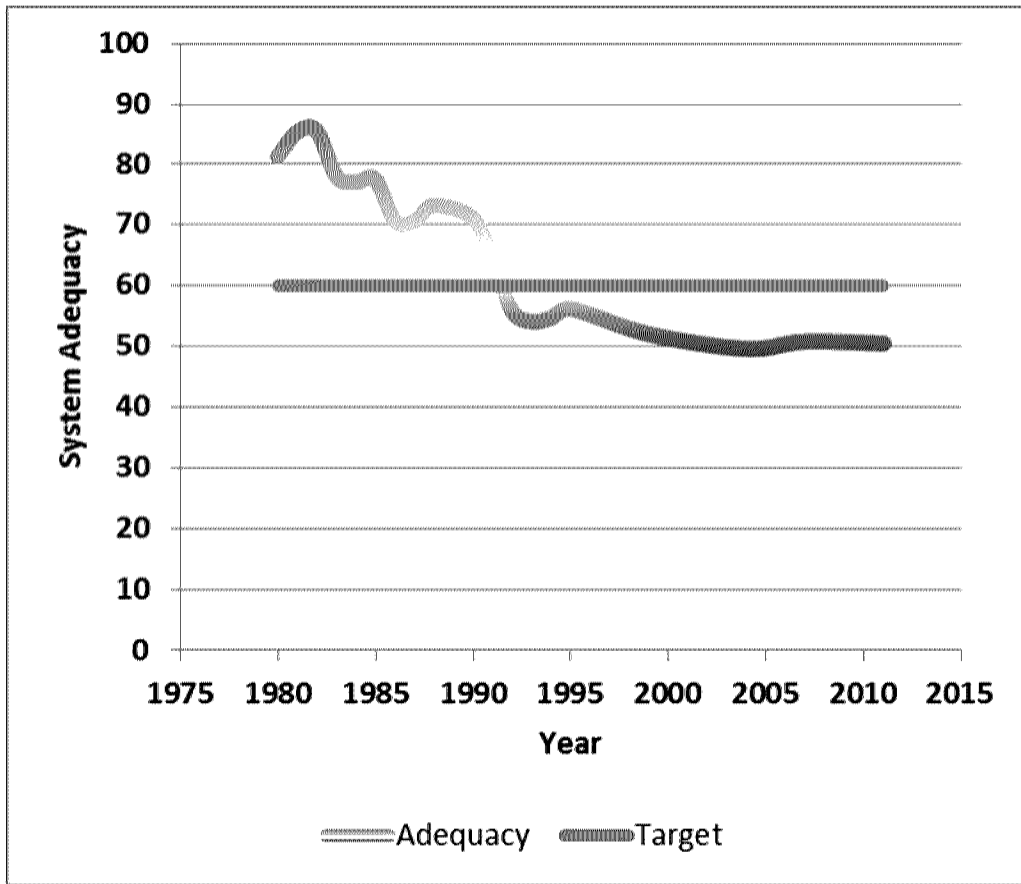
	Adjacent Agency	Street Name	Roadside Environment				TOTAL
			R	S	U		
10101	City of Oshawa	Coates Road East	1.39				1.39
10101	City of Oshawa	Coates Road West	3.25				3.25
10402	Municipality of Clarington	Boundary Road	0.8	1.41			2.21
10404	Town of Whitby	Coates Road West	0.75				0.75
10404	Town of Whitby	Town Line Road	6.49				6.49
10601	Township of Brock	Brock/1st Line	1.9				1.9
10601	Township of Brock	Scugog Brock Townline	7.07				7.07
10601	Township of Brock	Victoria Corners Road	3.56				3.56
72101	City of Kawartha Lakes	Bank Road		0.11			0.11
72101	City of Kawartha Lakes	Brunon Avenue		1.5			1.5
72101	City of Kawartha Lakes	Cartwright/Manvers Boundary Road		0.34			0.34
72101	City of Kawartha Lakes	Manvers/Scugog Townline Road	6.09				6.09
72101	City of Kawartha Lakes	Nesbitt Line	4.48				4.48
72101	City of Kawartha Lakes	River Street, Seagrave		0.18			0.18
TOTAL			35.78	3.54	0		39.32

Graph ES1: Road Structural Adequacy Rating vs. Length



Note: Data is from the 2011 Study

Graph ES 2: Road System Adequacy vs. Time



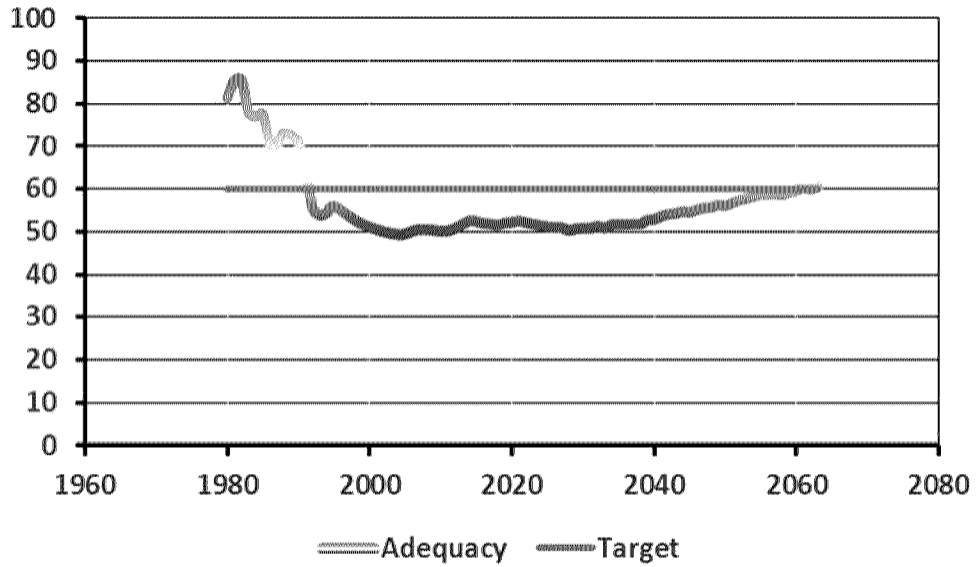
Note: Roads with a traffic count of less than 50 aadt are not included in this measure.

Data is from the 2011 Study

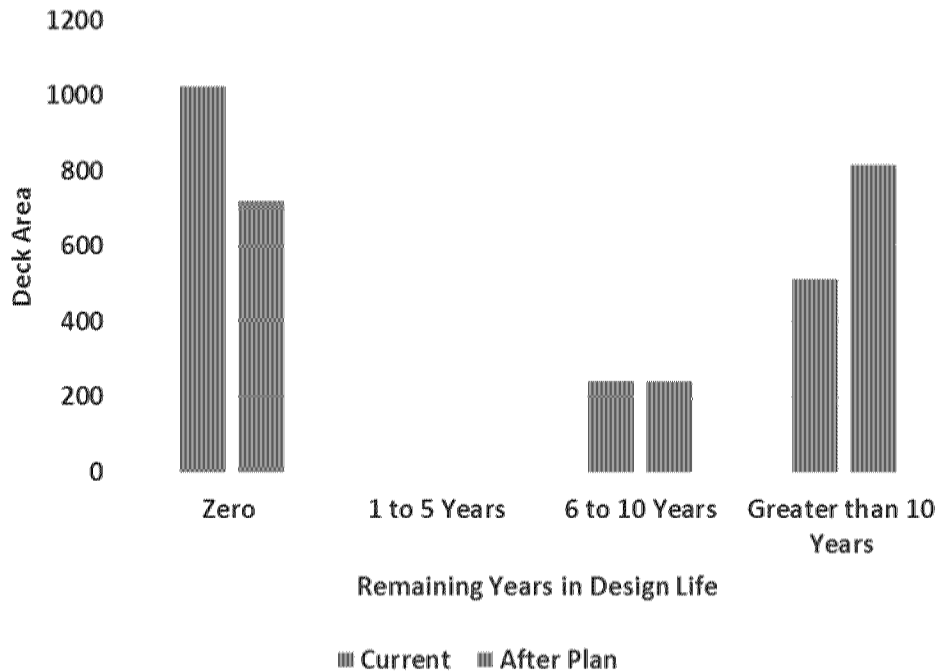
Table ES 9: 10 Year Asset Management Plan and Financial Plan

ROADS - Maintenance Improvement Type	10 Year Roads, Bridges and Culverts Management Plan										Grand Total	
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Base and Surface								431,658	531,247	952,233	1,122,502	3,037,640
Crack Seal	58,700	34,200	840	41,880	21,940	13,520	38,840	18,960	18,960	8,560	9,600	247,040
Gravel Resurfacing - 150mm		21,762	7,660	48,674	110,986	48,674	37,024	178,579	139,966	72,279	139,966	665,604
Microsurfacing		1,218		23,777		39,193	25,493	109,203	26,006		19,213	244,103
Pulverize and Resurface- 2 Lifts	367,188	406,673	207,379	77,256	372,125	1,071,682	937,403	583,611	134,499	603,692	261,946	4,157,816
Resurface 1 Lift			374,862	445,979	817,741	241,888		149,354				2,895,462
Resurface 2 Lifts	196,937	603,722	564,007	587,769								1,952,435
Rural Reconstruction	361,272										43,809	405,081
Single Surface Treatment				16,028	4,695		34,650	25,561	22,315	47,438		150,687
Sub-Total - Roads	984,097	1,067,575	1,154,748	1,241,363	1,327,487	1,414,957	1,505,068	1,596,515	1,685,085	1,778,973	1,778,973	13,755,868
Bridge and Culvert Structures												
Bridge 00009 Replacement		1,145,000										1,145,000.00
Bridge 00006 Replacement				1,996,000								1,996,000.00
Bridge 00012 Replacement								1,000,000				1,000,000.00
Bridge 00011 Replacement						1,434,000						1,434,000.00
Bridge 00016 Removal		78,000										78,000.00
Sub-Total - Bridge and Culvert Structures	-	1,223,000	-	1,996,000	-	1,434,000	-	1,000,000	-	-	-	5,653,000
ROADS - Capital Reconstruction												
Ashburn Road - Townline to Middle March	2,000,000											2,000,000.00
Crandell St - Hwy 7A to Queen St			750,000									750,000.00
Perry St - Hwy 7A to Mary St					750,000							750,000.00
Casimir St - Simcoe to Walter St							750,000					750,000.00
Perry St - Simcoe to Queen St									600,000			600,000.00
Ashburn Road - Middle March to Line 4										2,000,000		2,000,000.00
Sub-Total - Road Reconstruction	2,000,000	-	750,000	-	750,000	-	750,000	-	600,000	2,000,000	2,000,000	6,850,000.00
Grand Total - Roads, Bridges, Culverts	2,984,097	2,290,575	1,904,748	3,237,363	2,077,487	2,848,957	2,255,068	2,596,515	2,285,085	3,778,973	2,285,085	26,258,868

Graph ES 3: Projected Road System Improvements Resultant from Plan



Graph ES 4: Projected Bridge Structure Improvements Resultant from Plan



Contents

1	INTRODUCTION AND BACKGROUND	1
2	PROJECT APPROACH OVERVIEW	2
3	CORPORATE ASSET MANAGEMENT POLICY	2
3.1	Guiding Principles.....	2

4	ASSET CONDITION RATING METHODOLOGY-ROADS.....	2
4.1	Asset Condition Rating Methodology	2
4.1.1	Inventory Manual History.....	3
4.1.2	Inventory Manual Overview.....	3

5	ASSET CONDITION METHODOLOGY -STRUCTURES.....	5
5.1	Asset Condition Rating Methodology- Structures	5
5.2	Improvement Types –Structures.....	5

6	STATE OF THE INFRASTRUCTURE -ROADS	7
6.1	Scope / Asset Type(s)	7
6.2	Road System Inventory and Classification	7
6.3	Surface Types and Roadside Environment.....	7
6.4	MMS Classification	8
6.4.1	Functional / Existing / Design Classifications	10
6.5	Horizontal and Vertical Alignment.....	10
6.6	Drainage	13
6.7	DRAINAGE OUTLET AND MASTER PLANNING	14
6.8	Boundary Roads	15

7	STATE OF THE INFRASTRUCTURE – STRUCTURES	16
7.1	Scope / Asset Type(s)	16
7.2	Structure Inventory and Classification	16
7.2.1	Load Restrictions	16
7.3	Structure Types	17

8	ROAD SYSTEM CONDITION	19
8.1	Road System Condition by Time of Need.....	19
8.2	Road System Adequacy.....	19
8.2.1	Physical Condition - Roads.....	21
8.2.2	Remaining Service Life -Roads.....	21
8.3	Record of Assumptions –TON, Improvement and Replacement Costs - Roads.....	22

9	STRUCTURE INVENTORY CONDITION.....	23
9.1	Structures Inventory by Time of Need.....	23

Township of Scugog, Asset Management Plan
December 10, 2013

9.2	Structure Inventory Overall Condition	23
9.2.1	Remaining Design Life - Structures.....	24
9.3	Record of Assumptions –TON, Improvement and Replacement Costs - Structures.....	26
<hr/>		
10	REPLACEMENT COST VALUATION - ROADS.....	26
11	REPLACEMENT COST VALUATION - STRUCTURES.....	26
12	ASSET CONDITION ASSESSMENT AND PLAN UPDATES.....	27
12.1	Condition Assessment Cycle Recommendation - Roads.....	27
12.2	Condition Assessment Cycle Recommendation - Structures	27
<hr/>		
13	LEVEL OF SERVICE (LOS) - ROADS.....	28
13.1	Current Level of Service Measurement	28
13.1.1	System Adequacy	28
13.1.2	Physical Condition	28
13.1.3	MPMP Good to Very Good.....	28
<hr/>		
14	LEVEL OF SERVICE (LOS) - STRUCTURES	28
14.1	Current Level of Service Measurement- Structures.....	29
14.1.1	Adequacy Index	29
14.1.2	NOW Needs Structures Requiring Replacement.....	29
14.1.3	MPMP Good to Very Good.....	29
<hr/>		
15	PROGRAM FUNDING RECOMMENDATIONS- ROADS.....	30
15.1	Overview	30
15.2	Capital Depreciation.....	30
15.3	Hot Mix Resurfacing.....	30
15.4	Surface Treatment Resurfacing.....	31
15.5	Gravel Road Resurfacing	32
15.6	Crack Sealing	32
15.7	Performance Modeling- Budget Effect on System Performance.....	32
15.7.1	Asset Management Plan and Strategy Analysis	32
15.7.2	Performance Model Overview	33
15.8	System Performance at Various Budget Levels- Roads.....	33
15.9	Record of Assumptions -Performance Modeling.....	35
15.9.1	Pavement Classification for Modeling.....	35
15.10	10 Year Program -Roads	37
<hr/>		
16	PROGRAM FUNDING RECOMMENDATIONS- STRUCTURES	37
16.1	Overview	37
16.2	Capital Depreciation.....	38
16.3	Bridge Deck and Superstructure Lifecycle Maintenance	38
16.4	10 Year Program- Structures.....	39

Township of Scugog, Asset Management Plan
December 10, 2013

17	ASSET MANAGEMENT STRATEGY	40
17.1	Asset Management Overview	40
17.2	Priority Rating vs. Condition Rating- Roads	41
17.3	Cross Asset Integration and Project Prioritization	42
17.4	Asset Management Strategy	43

18	FINANCIAL STRATEGY AND PLAN	43
18.1	Financial Plan Overview	43
18.2	Asset Management Plan / Financial Plan Decision Matrix.....	44
18.2.1	Non-Infrastructure Solutions.....	45
18.2.2	Maintenance Activities and Renewal / Rehabilitation Activities	45
18.2.3	Replacement Activities	46
18.2.4	Disposal Activities	46
18.2.5	Expansion Activities	46
18.2.6	Funding Sources	46
18.3	Asset/ Financial Plan	46
18.3.1	Anticipated Plan Outcomes.....	48

19	RECOMMENDATIONS.....	49
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List of Tables

Table 5.1: Structure Improvement Types	6
Table 6.1: Surface Type and Roadside Environment Distribution	7
Table 6.2: Regulation 23/10 Minimum Maintenance Standard Road Classification	9
Table 6.3: Minimum Maintenance Standards Class Distribution	10
Table 6.4: Functional Road Class Distribution	10
Table 6.5: Posted Speed vs. Minimum Tolerable Operating Speed.....	12
Table 6.6: Drainage by Time of Need.....	14
Table 6.7: Boundary Roads	15
Table 7.1: Load Restricted Structures	17
Table 7.2: Bridge Structure Summary by Sub-Type and Deck Area.....	17
Table 7.3: Culvert Structure Summary by Subtype and Footprint.....	18
Table 8.1: Roads System by Time of Need and MMS Class	19
Table 8.2: Unit Costs	20
Table 9.1: Bridge Structures Inventory by Time of Need.....	24
Table 9.2: Culvert Structures Inventory by Time of Need	24
Table 15.1: Hot Mix Asphalt Roads by Asset Class and Life Cycle	31
Table 15.2: Road Asset Classes	36
Table 18.1: Proposed AMP and Funding.....	47

List of Figures

Figure 6.1: Safe Stopping Distance	11
Figure 6.2: Potentially Substandard Vertical and Horizontal Alignment	12
Figure 6.3: OPSS 200.10	13
Figure 7.1 Triple Load Posting Sign	16
Figure 8.1: System Adequacy vs. Time.....	21
Figure 8.2: Remaining Service Life -Roads	22
Figure 9.1: Remaining Design Life – Bridge Structures	25
Figure 9.2: Remaining Design Life – Culvert Structures.....	25
Figure 15.1: Performance Modeling at Various Budget Levels.....	34
Figure 15.2: Treatment Selection vs. Condition.....	37
Figure 17.1: Treatment Cost vs. Deterioration	42
Figure 18.1: Projected Road System Improvements Resultant from Plan	48
Figure 18.2: Projected Structures Inventory Improvements Resultant from Plan	48

List of Appendices

Appendix A Corporate Asset Management Policy	
Appendix B Inventory Manual Methodology Overview	
Appendix C Pavement Structure and Defects.....	
Appendix D: Gravel Road Conversion	
Appendix E Potential Substandard Alignment.....	
Appendix F Deterioration Curve Detail.....	
Appendix G 10 Year Program Based on Proposed Funding Level.....	
Appendix H Critical Deficiencies by Asset ID - Roads.....	
Appendix I Road Needs Sorted By Time of Need and Improvement ID	
Appendix J: Bridge and Culvert Needs Summary.....	

1 Introduction and Background

In the fall of 2012, the Province of Ontario, introduced a requirement for an Asset Management Plan (AMP) as a prerequisite for municipalities seeking funding assistance for capital projects, from the province; effectively creating a conditional grant. To qualify for future infrastructure grants, municipalities are required to develop an AMP that is approved by council by December 31, 2013. On April 26, the province announced that it had created a \$100 million Infrastructure Fund for small, rural and northern municipalities. Accessing these funds requires an asset management plan.

The province requires AMP's for Roads, Structures, Water and Waste treatment collection and distribution and Social housing. The Township of Scugog (ToS) has responsibility for the local roads and structures within the ToS. Accordingly, the scope of this plan only includes the road and structure assets.

The provincial requirements for content of an AMP include;

1. Executive Summary
2. Introduction
3. State of the Local infrastructure
4. Expected Levels of Services
5. Asset Management Strategy and,
6. Financing Strategy

The 2013 AMP provides an overview of the physical and financial needs of the road system and structures inventory in their entirety. The existing inventory data and condition ratings were used to develop programming and budgets. However, once an asset reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of each project.

Further, the AMP also provides a financial strategy. The current funding for the two asset groups included in this report is not at a sustainable level. The funding gap is significant and it would be unrealistic to expect that a two or threefold increase could be implemented over a short time period. The plan provides for a recommended implementation timeline and interim financing options.

Key to the development of an AMP is a 'State of the Infrastructure' (SotI) review of the asset or asset group. Understanding the composition and replacement and maintenance costs of an asset group is essential to development of an AMP. This report incorporates the condition information from the AECOM 2011 Road Needs Study and the AECOM 2012 Municipal Structure Inventory and Inspection.

2 Project Approach Overview

3 Corporate Asset Management Policy

3.1 Guiding Principles

The province currently requires AMPs for five primary areas and as such the initial plan speaks to two of those areas –roads and structures that the ToS has responsibility for. The ToS has recognized that developing asset management plans for all of the asset groups for which they have responsibility is the ultimate goal. There should be consistency, to the greatest extent possible, between the plans for all asset groups.

Appendix A of the AMP includes the council approved Corporate Asset Management Policy. The policy includes the guiding principles to assist with decision making and the development of Asset Management plan for other asset groups. Appendix A also includes specific asset management policies for roads and structures. The subject areas of the policy include:

- Scope
- Asset Data Storage
- Asset verification and Condition Rating
- Condition Assessment Cycle
- Level of Service
- Asset Management Strategy
- Financial Strategy
- Funding Sources
- Plan Maintenance Continuity and Currency
- Innovation
- Public Notification

4 Asset Condition Rating Methodology-Roads

4.1 Asset Condition Rating Methodology

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The road section reviews follow the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

The condition of the road system is mandated by provincial Legislation by the following:

- Municipal Act 2001, Section 44 (1).The municipality that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge. 2001, c. 25, s. 44 (1).

- Regulation 239/02 –Minimum Maintenance Standards for Municipal Highways -is a result of Section 44

4.1.1 Inventory Manual History

From the 1960's until the mid-1990's, the Ministry of Transportation (MTO) required municipalities to regularly update the condition ratings of their road systems in a number of key areas. The process was originally created by the MTO, as a means to distribute conditional funding, on an equitable basis, between municipalities. The reports were referred to as a 'Road Needs Study' (RNS) and were required in order to receive a conditional grant to subsidize the municipal road programs. After the introduction in the 1960's by the MTO, the methodology evolved into the current format by the late 1970's. The most current version of the Inventory Manual is dated 1991, and is the methodology used for this report. The practice was discontinued by a number of municipalities, when conditional funding for roads was eliminated in the mid 1990's.

4.1.2 Inventory Manual Overview

The Inventory Manual Methodology is a sound, consistent, asset management practice that still works well today, and in view of the increasing demands on efficiency and asset management, represents a sound asset management practice that should be repeated on a cyclical basis. The road section review identifies the condition of each road asset by its time of need and recommended rehabilitation strategy.

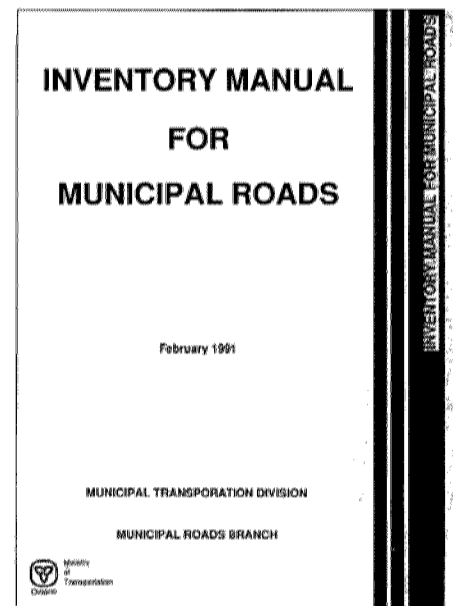
The Township of Scugog SotI-Roads section of this report summarizes the condition of the road system survey conducted during the spring 2011. The SotI-Roads section provides an overview of the overall condition of the road system by road section, including such factors as structural adequacy, drainage, and surface condition. The study also provides an indication of apparent deficiencies in horizontal and vertical alignment elements, as per the Ministry of Transportation's manual, "Geometric Design Standards for Ontario Highways".

The SotI provides an overview of the physical and financial needs of the road system, which may be used for programming and budgeting. However, once a road section reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of the project.

Asset Management by its very nature is holistic. Managing a road network based solely on pavement condition would be critically deficient in scope in terms of the information required to make an informed decision as to the improvements required on a road section.

The *Inventory Manual* offers a holistic review of each road section, developing a Time of Need (TON) or an Adequate rating in six areas that are critical to municipal decision making:

1. Geometrics
2. Surface Type
3. Surface Width
4. Capacity



5. Structural Adequacy
6. Drainage

During the 2011 survey, evaluations of each road section were completed generally in accordance with the MTO's *Inventory Manual for Municipal Roads* (1991). Data collected was entered directly into WorkTech's Asset Foundation software. Condition ratings, Time of Need, Priority Ratings, and associated costs were then calculated by the software, in accordance with the *Inventory Manual*. Updated 2013 Unit costs for construction were provided by staff. Improvement and replacement costs were recalculated

Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, or a combination of these factors. As an example, section changes should occur as surface type, surface condition, cross-section, or speed limit changes.

The Condition Ratings, developed through the scoring in the *Inventory Manual*, classify roads as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction. The Time of Need is a prediction of the time until the road requires reconstruction, *not the time frame until action is required*. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible, to further defer the need to reconstruct.

Field data is obtained through a visual examination of the road system and includes: structural adequacy, level of service, maintenance demand, horizontal and vertical alignment, surface and shoulder width, surface condition, and drainage. The Condition Rating is calculated based upon a combination of other calculations and data.

To best utilize the database information and modern asset management concepts, it has to be understood that the Time of Need (TON) ratings are the estimated time before the road would require reconstruction. NOW needs are still roads that require reconstruction; however, it is not intended that '1 to 5' and '6 to 10' year needs are to be acted on in that timeframe. The '1 to 5' and '6 to 10' year needs are current candidates for resurfacing treatments that will elevate their structural status to 'ADEQ', and offer the greatest return on investment for a road authority (notwithstanding a drainage or capacity need, etc.).

The Time of Need ratings from the Structural Adequacy perspective are described more fully in **Appendix B**.

Appendix C of this report includes a discussion of Pavement Structure and defects.

5 Asset Condition Methodology -Structures

5.1 Asset Condition Rating Methodology- Structures

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices.

Provincial legislation requires that all structures with a span of 3 metres or greater be inspected under the supervision of a structural engineer every two years, in accordance with the Ontario Structure Inspection Manual (OSIM) or equivalent. 4 Roads understands that the Municipal Bridge Appraisal Data Entry System (MBADES) has been identified as an equivalent. The ToS reporting conforms to the MBADES format.

Structural inspections shall be in accordance with the following regulations:

- 104/97, 472/10 Standards for Bridges
- Regulation 103/97 Standard to determine Allowable Gross Weight for bridges and 160/02, 278/06 and 472/10 (Amending 104/97)

The condition of the structures inventory is further mandated by Provincial Legislation by the following:

- Municipal Act 2001, Section 44 (1).The municipality that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge. 2001, c. 25, s. 44 (1).
- Regulation 239/02 – Minimum Maintenance Standards for Municipal Highways - is a result of Section 44

Bridge and Culvert structures are rated as deficient in the 'NOW', 1 to 5 or 6 to 10 timelines due to:

- Insufficient width of structure (six metre minimum)
- Vertical clearance
- Level of Service (cannot accommodate peak hour traffic)
- Structural Capacity.
- Safety Treatments

The Condition Ratings, developed through the scoring in MBADES, classify structures as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction or rehabilitation. Similar to roads, structures with rehabilitation treatments should be dealt with as a priority, to further defer the need to reconstruct and maximize the value and life cycle of the asset.

Field data is obtained through a visual examination of each structure. Overall ratings and Time of Need are calculated based upon the condition ratings and a combination of other calculations and data.

5.2 Improvement Types –Structures

Bridge structures in particular, are complex and are constructed in several parts referred to as elements. The number of elements per structure can vary based on the original design/construction of the structure. Each element may have its' own evaluation.

As such, a structure may have more than one improvement type. In the MBADES inspection format, the review of the structure is divided into two evaluation categories: Material Condition Rating (MCR) and Performance Condition Rating (PCR). Depending on site specific conditions, there may also be recommendations for channel improvements and additional engineering studies such as deck conditions surveys.

Table 5.1: Structure Improvement Types

Structure Improvement Types	
BIR – Bearing Improvement / Replacement	REB – Remove Existing Bridge
CDS – Concrete Deck Soffit Repairs	RCS - Rehabilitation/Replacement of Safety Curbs / Sidewalks
CPS – Cathodic Protection System	RCB - Replace Culvert with Bridge
CDR – Complete Deck Replacement	RSL - Replace Bridge or Culvert – Same Location
CSS – Coating Structural Steel	RNL - Replace Bridge New Location
CSR – Coat Steel Railings	RRW - Rehabilitate/ Replace Retaining Walls
C/R – Channel Realignment	WS - Removal of Existing Asphalt Wearing Surface and Bridge Deck Waterproofing
C/I – Channel Improvements	RSP - Rehabilitate Superstructure
DCS – Deck Condition Survey	RSB - Rehabilitate Substructure
C/I – Condition Inspection (Engineering Investigation)	RIR - Railing Improvement/Replacement
EIR - Embankment Improvements	SPI - Scour Protection Improvements
HCI - Horizontal Clearance Improvements	TES - Twin Existing Bridge
IAB - Installation of Approach Safety Shape Barrier	TJS - Transverse Expansion Joint Sealant Replacement
IAG - Installation of Approach guiderail	TJR -Transverse Expansion Joint Replacement
LJS - Longitudinal Expansion Joint Sealant Replacement	VCI -Vertical Clearance Improvements
LJM - Longitudinal Expansion Joint Modification	WAP - Waterproof and Asphalt Paving
LJR - Longitudinal Expansion Joint Replacement	WSR - Wearing Surface Rehabilitation
LMC - Latex Modified Concrete Overlay	WSO - Widen Superstructure Only
OWP - Overlay Waterproof and Asphalt Paving	WSS - Widen Superstructure and Substructure
OTH - Other Engineering Investigations	RDI - Routine Detailed Inspection
PDR - Partial Deck Replacement	CE - Load Capacity Evaluation
PPT - Provision for Pedestrian Traffic	RRA - Rehabilitation / Replacement Analysis
PWP - Patch Waterproof and Pave	

6 State of the Infrastructure -Roads

6.1 Scope / Asset Type(s)

This section of the report addresses road assets only. The content will provide review and analysis of the road system from a number of perspectives including condition rating, functional classification, roadside environment, replacement cost and regulation 239/02 classification.

6.2 Road System Inventory and Classification

Road sections within road systems may be classified in a number of ways, to illustrate their roadside environment, surface type, functional classification, and so forth. The classifications provide assistance in developing further information, with respect to the road system, such as replacement costs and performance expectations.

6.3 Surface Types and Roadside Environment

Roadside environment and surface type criteria of a road section are useful in characterization of the road section, and in determining costs for replacement, reconstruction and rehabilitation treatments.

The *Inventory Manual* classifies the roadside environment as Rural, Semi-Urban or Urban. The classification is determined by length, servicing, and adjacent land use.

- **Rural Roads** – within areas of sparse development, or where development is less than 50% of the frontage, including developed areas extending less than 300 m on one side or 200 m on both sides, with no curbs and gutters.
- **Semi-Urban Roads** – within areas where development exceeds 50% of the frontage for a minimum of 300 m on one side, or 200 m on both sides, with no curbs and gutters, with or without storm/combination sewers, or for subdivisions where the lot frontages are 30 m or greater.
- **Urban Roads** – within areas where there are curbs and gutters on both sides, served with storm or combination sewers, or curb and gutter on one side, served with storm or combination sewers, or reversed paved shoulders with, or served by, storm or combination sewers, or for subdivisions with frontages less than 30 m.

Table 6.1: Surface Type and Roadside Environment Distribution

Surface Type	Roadside Environment						Total		% of Total	
	Rural		Semi-Urban		Urban		Cl-km	Lane-km	Cl-km	Lane-km
	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km				
Asphalt on Concrete			0.88	1.59			0.88	1.59	0.21%	0.19%
Gravel, Stone, Other Loosetop	187.5	375.01	4.94	7.88			192.44	382.89	46.68%	46.56%
High Class Bit.-asphalt	13.49	26.98	55.27	110.53	35.25	70.61	104.01	208.12	25.23%	25.31%
Low Class Bit.-surface treated	94.92	189.84	19.99	39.97			114.91	229.81	27.87%	27.94%
Total	295.91	591.83	81.07	159.97	35.25	70.61	412.23	822.41		
% of Total	71.78%	71.96%	19.67%	19.45%	8.55%	8.59%				

6.4 MMS Classification

In November 2002, Regulation 239/02, *Minimum Maintenance Standards for Municipal Highways (MMS)* came into effect. Essentially, if a municipality met the standard and documented it, they would not be negligent per Section 44(3)c of the Municipal Act noted above. Regulation 239/02 provided for a review five years after its original implementation. A process to revise Regulation 239/02, chaired by the Ontario Good Roads Association (OGRA), culminated in a revised regulation, Regulation 23/10, coming into effect in February 2010.

In the late fall of 2011, a court decision (Giuliani) was rendered that effectively created case law that negated the protection that the MMS afforded, and in particular, Tables 4 and 5 of the regulation (Tables 4 and 5 address Snow Accumulation and Icy Roads). Essentially, the decision created a new standard that went beyond the MMS. The effect on a municipality is that a higher standard of weather monitoring and documentation and response to monitoring is required.

OGRA re-called the MMS committee to further amend the regulation, to address the outcome of the Giuliani decision. As a result of the committee meetings and discussions with the province, Regulation 47/13 came into effect, amending Regulations 239/02 and 23/10, on January 25 2013.

The Minimum Maintenance Standards do not have to be adopted by a municipal council per se. The regulation is provincial, applies to all municipalities, and is available for municipalities to use as a defense if they have met the standard and documented it. The more important issue would be to ensure that a municipality has the appropriate Standard Operating Procedures (SOP's) in place, and that they are followed and documented, rather than trying to reword or parallel the language of the regulation into a document that is municipality-specific.

Traffic counts are important for a number of decision making purposes, with respect to the road system. Accurate, defensible traffic counts, in conjunction with the posted speed limits, are used in determining the MMS class of the respective road sections. Roads are divided into six service classes by posted speed and traffic count, with Class 1 being the highest service level and Class 6 being the lowest. There are no service standards for Class 6 roads which have less than 50 vehicles per day. **Table 6.2** shows the Regulation 23-10's traffic/speed/ classification matrix.

Table 6.2: Regulation 23/10 Minimum Maintenance Standard Road Classification

Annual Average Daily Traffic (number of motor vehicles per day)	Posted or Statutory Speed Limit (kilometres per hour)						
	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

As per the Regulation, different road classifications require different response times. For example, the response time that is required to remove snow accumulation is 12 hours for a Class 3 road, and 16 hours for a Class 4.

Response time is the time from when the municipality becomes aware that a condition exists, until the time that the condition is corrected or brought within the limits specified in the regulation. This may have a significant impact with respect to the equipment and staffing that may be required to meet the standard, particularly in the case of winter control. The implications are that this increased service level may require the municipality to increase the inspection frequency, staff, and machinery to deliver the service beyond the service delivery hours that may currently exist.

The distribution of the MMS Classes across the road system is detailed in Table 6.3.

Table 6.3: Minimum Maintenance Standards Class Distribution

Roadside	MMS Class				TOTAL	% OF TOTAL
	3	4	5	6		
Rural	9.51	246.8	11.3	28.3	295.91	71.78%
Semi-Urban	0.13	26.14	53.9	0.91	81.07	19.67%
Urban	2.64	13.65	18.96		35.25	8.55%
TOTAL	12.28	286.59	84.16	29.21	412.23	
% OF TOTAL	2.98%	69.52%	20.41%	7.09%		

6.4.1 Functional / Existing / Design Classifications

Roads are further classified within the database by classes such as Local, Collector, or Arterial and Residential or Industrial. Items 33 and 105 in the *Inventory Manual* provide further direction on determination of the Existing or Design Classes of road. Generally, the classifications are predicated on the existing use, roadside environment, and anticipated growth over either the ten- or twenty-year planning horizon.

The road sections are classified by the rater, at the time of the field review. Table 6.4 identifies the Functional Road Class Distribution.

Table 6.4: Functional Road Class Distribution

Road Classification	Roadside Environment						Total		% of Total	
	Rural		Semi-Urban		Urban		Cl-km	Lane-km	Cl-km	Lane-km
	Cl-km	Lane-km	Cl-km	Lane-km	Cl-km	Lane-km				
100	28.5	57					28.5	57	6.91%	6.93%
200	122.79	245.59					122.79	245.59	29.79%	29.86%
300	67.26	134.51					67.26	134.51	16.31%	16.36%
400	61.88	123.76	0.94	1.88			62.82	125.64	15.24%	15.28%
500	13.16	26.31					13.16	26.31	3.19%	3.20%
600	2.33	4.66					2.33	4.66	0.57%	0.57%
C/R			7.18	14.36	7.72	15.44	14.9	29.8	3.61%	3.62%
CCI					1.29	2.52	1.29	2.52	0.31%	0.31%
L/R			69.75	137.33	25.37	50.74	95.12	188.07	23.07%	22.87%
LCI			3.2	6.4	0.87	1.91	4.07	8.31	0.99%	1.01%
Total	295.91	591.83	81.07	159.97	35.25	70.61	412.23	822.41		
% of Total	71.78%	71.96%	19.67%	19.45%	8.55%	8.59%				

6.5 Horizontal and Vertical Alignment

The changes in direction and elevation of the road are referred to as the horizontal and vertical alignment. The changes in direction should be designed and constructed such that the posted speed

limit of the road section may be safely maintained throughout the section. If maintaining the posted speed in safety cannot be achieved, then the horizontal or vertical curve would be identified as substandard.

Lower volume roads that have not been reconstructed, tend to closely follow (or avoid) the existing contours of the land. In southern Ontario, which is relatively flat, there was a greater tendency to follow the alignments of the original Township surveys. However, where these roads were adjacent to larger streams and rivers, there was still a tendency to follow the topography. The result was/is a road alignment that tends to change vertical and horizontal direction frequently; at times without much notice.

When a new road is designed, one of the considerations is the Safe Stopping Distance (SSD). The calculation of the distance to stop safely from any given speed is based upon several factors, such as posted speed limit, reaction times, and friction. When road sections are evaluated for a road needs study, the number of vertical and horizontal curves that appear to be deficient are identified. The identification is based on whether there is sufficient SSD for the posted speed limit. The following table is an excerpt from the Geometric Design Standards for Ontario Highways, and indicates the SSD's required for various design speeds.

Figure 6.1: Safe Stopping Distance

Speed <i>v</i>		Perception and Brake Reaction		Coefficient of friction wet pav't	Braking distance on level	S-Min. Stopping sight distance	
Design	Assumed condition	Time	Distance			calculated	rounded
km/h	km/h	s	m	<i>f</i>	m	m	m
40	40	2.5	28	0.380	17	45	45
50	50	2.5	35	0.358	27	62	65
60	60	2.5	42	0.337	42	84	85
70	70	2.5	49	0.323	60	109	110
80	79	2.5	55	0.312	79	134	135
90	87	2.5	60	0.304	98	158	160
100	95	2.5	66	0.296	120	186	185
110	102	2.5	71	0.290	141	212	215
120	109	2.5	76	0.283	165	241	245
130*	116	2.5	81	0.279	190	271	275
140*	122	2.5	85	0.277	211	296	300
150*	127	2.5	88	0.273	232	320	320
160*	131	2.5	91	0.269	251	342	345

**Design Speeds above 120 km/h are beyond the normal range of application*

On rural roads, one of the effects of substandard alignments is a decrease in the Average Operating Speed through the road section. An Average Operating Speed that is significantly lower than the posted

speed will result in a Geometric Need for the road section. The following table from the *Inventory Manual* identifies the limits that will trigger a geometric need for typical posted speed limits.

Table 6.5: Posted Speed vs. Minimum Tolerable Operating Speed

Item	Speed					
Legal Speed Limit	40	50	60	70	80	90
Minimum Tolerable Operating Speed	35	45	50	60	65	75

The following pictures provide examples of potentially substandard alignments.

Figure 6.2: Potentially Substandard Vertical and Horizontal Alignment



Appendix E includes a listing of all of the rural road sections with potentially sub-standard vertical or horizontal alignments that should be reviewed for signage, speed reduction, or correction.

6.6 Drainage

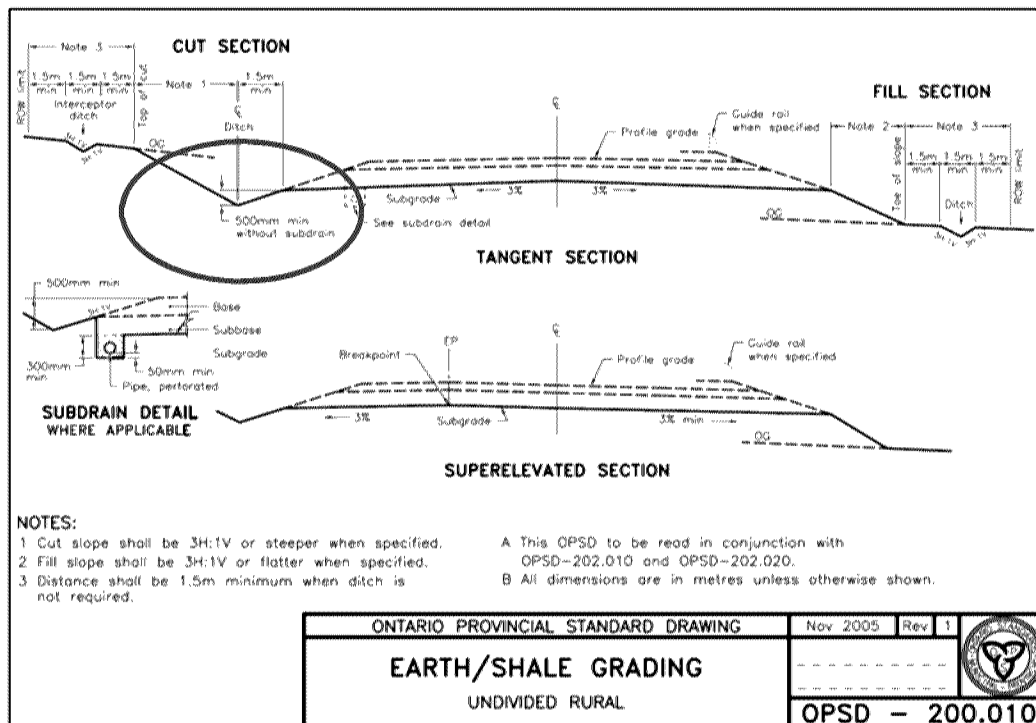
Adequate drainage is critical to the performance of a road to maximize its' life expectancy. Roads are designed, constructed, and maintained in order to minimize the amount of water that may enter, or flow over, the road structure.

In the case of water flowing over the road, assessment must be made of the circumstances on a site-specific basis. Factors that should be considered include the traffic volumes of the road section, economic impacts to the loss of the use of the road, upgrade costs, and risks.

Water in a road base can cause different reactions at different times of the year. In non-freezing conditions, the granular road base can become saturated. Too much water displaces the granular material; it removes the material's ability to support the loads for which it was designed. Too much water in the granular material actually acts like a lubricant, and facilitates the displacement of the material under load. In freezing conditions, water in the road structure can cause frost heave, potholes, and pavement break-up as the water freezes and expands. Generally, a saturated granular road base results in structural failure of the road.

Figure 6.3 provides an example of a rural road, illustrating what the relationship between the gravel road base and the drainage should be. The relationship is the same in an urban system, although not as obvious. Rural road drainage is typically achieved through roadside ditches. Rural road ditches should be a minimum of 500 mm below the granular road base, to ensure that the road base remains free from moisture and maintains its ability to carry loads.

Figure 6.3: OPSS 200.10



Urban roads typically have a storm sewer pipe network that carries the minor storm event. The roadway itself is often part of the overland flow route for the major event. The drainage of the granular road base is accomplished through sub-drains installed below the curb and gutter, lower than the lowest elevation of the granular base. This satisfies the same purpose as the ditch in a rural cross-section, by providing an outlet to ensure that the granular base remains dry

Evaluations of the drainage scores were in part predicated upon the structural score. For example where a road section had virtually no ditch, or very minimal ditching but the road structure did not show any signs of failure typically observed when there is inadequate drainage, then generally a rating was between 12 and 14 and an 'SD- (Spot drainage) improvement noted. Where it was obvious that the inadequate ditch was exacerbating the distress on the road or there was occasional flooding, the score was be further reduced and the improvement type would be some type of major rehabilitation or reconstruction dependent upon the traffic volumes. Table 6.6 provides an overview of the drainage needs of the road system by Time of Need.

Table 6.6: Drainage by Time of Need

Roadside Environment	Time of Need				TOTAL
	1 to 5	6 to 10	ADEQ	NOW	
R	41.11	55.52	55.07	144.22	295.91
S	14.51	11.16	14.78	40.62	81.07
U	4.75	5.36	24.81	0.33	35.25
TOTAL	60.37	72.04	94.66	185.17	412.23

Maintenance of the drainage system(s) is also critical to the long-term performance of a road system. Low volume rural roads tend to have a winter maintenance program that includes the application of sand to improve traction. Over time, that sand builds up on the edge of the pavement, to a point where it effectively blocks runoff from getting to the ditch. The runoff is trapped at the edge of pavement, where it saturates that area of the road bed, contributing to the early failure of the edge of the pavement. This element of the road cross-section is not scored as part of the overall evaluation.

6.7 DRAINAGE OUTLET AND MASTER PLANNING

Correcting drainage issues is not quite as simple as digging a ditch or installing a storm sewer. In Ontario, Common law for drainage is such that water cannot simply be collected and directed. It has to be directed to a legal, adequate outlet. There are two primary methodologies to achieve the legal outlet; a Class Environmental Assessment Process or a petition for a Municipal Drain under the Drainage Act. The 'adequate' component is an engineering function.

As the ToS reconstructs/rehabilitates sections of the road network in the urban and semi urban areas, a Master Drainage Plan should be developed as part of a Class Environmental Assessment process prior to the reconstruction process occurring, in order that both minor and major storm events are dealt with appropriately.

6.8 Boundary Roads

Boundary roads, are roads that a Township would have in common with the abutting municipalities. In order to manage the joint responsibilities, a Boundary Road Agreement that identifies the responsibilities of both agencies is created. The agreements are usually in writing; however, some are informal.

The Boundary Road Agreement should identify costs sharing and responsibility arrangements for maintenance or capital works on the road section. From a risk management perspective the agreement reduces the risk for one of the parties in the event of a claim, depending upon the content of the agreement.

Boundary road reporting can be dealt with in one of two ways: the length can be split to provide a more accurate depiction of the road system that is actually maintained by the agency, or they may not be adjusted. When MTO was providing subsidy, the roads were adjusted for reporting and accounting purposes. For the purposes of this report adjustment has been made to the road system sizes to account for the 50% sharing of the length of the boundary roads.

When a boundary is reconstructed on a day labour basis by the adjacent municipalities, the project should be treated no differently than if the work were being tendered. The exposure to risk for the Township is no different. The assignment of the various aspects of the work should be clear and the timing for completion of the tasks clearly identified and adhered to. Table 6.7 identifies the Township of Scugog boundary roads.

Table 6.7: Boundary Roads

	Adjacent Agency	Street Name	Roadside Environment			TOTAL
			R	S	U	
10101	City of Oshawa	Coates Road East	1.39			1.39
10101	City of Oshawa	Coates Road West	3.25			3.25
10402	Municipality of Clarington	Boundary Road	0.8	1.41		2.21
10404	Town of Whitby	Coates Road West	0.75			0.75
10404	Town of Whitby	Town Line Road	6.49			6.49
10601	Township of Brock	Brock/1st Line	1.9			1.9
10601	Township of Brock	Scugog Brock Townline	7.07			7.07
10601	Township of Brock	Victoria Corners Road	3.56			3.56
72101	City of Kawartha Lakes	Bank Road		0.11		0.11
72101	City of Kawartha Lakes	Brunon Avenue		1.5		1.5
72101	City of Kawartha Lakes	Cartwright/Manvers Boundary Road		0.34		0.34
72101	City of Kawartha Lakes	Manvers/Scugog Townline Road	6.09			6.09
72101	City of Kawartha Lakes	Nesbitt Line	4.48			4.48
72101	City of Kawartha Lakes	River Street, Seagrave		0.18		0.18
TOTAL			35.78	3.54	0	39.32

7 State of the Infrastructure – Structures

7.1 Scope / Asset Type(s)

This section of the report addresses structure assets with a span of 3 metres or greater only. This includes structures defined as bridges and culverts. The content will provide review and analysis of the structures inventory from a number of perspectives including condition rating, functional classification, roadside environment, replacement cost. Information for this section of the report is drawn from the 2012 Municipal Structure Inventory and Inspection prepared by AECOM

7.2 Structure Inventory and Classification

Bridges and culverts are defined as follows:

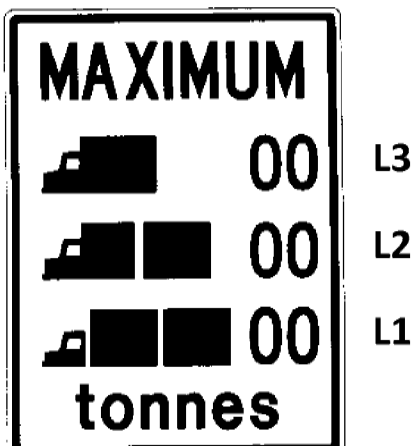
Bridge -In general, transfers all live loads through a superstructure to a substructure and foundations. AECOM's 2012 Structures Inspection report indicates that for bridges that were originally designed as a bridge and have some depth of fill placed over the deck have been appraised as a bridge. Similarly, Box or open type structures that have less than 600 mm of cover were appraised as a bridge and those with more than 600 mm of cover were appraised as a culvert.

Culvert -In general, transfers all live loads through fill.

7.2.1 Load Restrictions

It should be noted that a deficient bridge may have a load posting/restriction. The Highway Traffic Act (HTA) provides for municipalities to pass by-laws to restrict loads on a structure. Generally load restricted structures are identified by the following signage, where a triple posting exists.

Figure 7.1: Triple Load Posting Sign



L3 postings govern single unit vehicles; L2 postings govern two unit vehicles; and L1 postings govern vehicle trains. Section 13 of Bill 92 amends Section 123 of the Highway Traffic Act dealing with the load limit by-laws. Municipalities retain the authority to pass load limit by-laws, but approval of the Minister of

Transportation is no longer required. Two engineer's stamps for all load limit by-law recommendations, including load posting and duration, generally 2 years, are now required. Load posting assessments are currently being carried out during the annual bridge appraisal updates. Load limit recommendations are summarized in Table 7.1.

Table 7.1: Load Restricted Structures

Asset ID	Location	Existing Load Limit			Recommended Load Limit		
		L3	L2	L1	L3	L2	L1
000006	Seagrave Bridge, Lot 23/24, Con 13, River Street, Seagrave, .95km N of Regional Road 2	10			5		

Load limited structures can impose significant constraints on service delivery both public and private. A fully loaded tandem truck with plough blade attached could easily reach 25 tonnes. A Fire Department tanker truck could weigh more than that.

7.3 Structure Types

Bridge structures are classified through a number of data fields; Sub-Type, Articulation, Material Types, Substructure, Superstructure, Wearing Surface etc. Table 7.2 summarizes the composition of the ToS Bridge Structures Inventory by Sub Type and Deck Area.

Table 7.2: Bridge Structure Summary by Sub-Type and Deck Area

Sub-Type	Foundation				Deck Area M ²
	C - Cast In Place	S - Steel	T - Timber/Wood	Unknown	
BO - Box, Open Footing	109.44				109.44
CC - Concrete, Cast in Place	109.44				109.44
HB - Half-Through Beams/Girder	89.78				89.78
CC - Concrete, Cast in Place	89.78				89.78
HT - Half-Through Truss		80.85			80.85
TL - Transverse Lam. Timber		80.85			80.85
IB - I-Beams or Girders		123.1			123.1
CC - Concrete, Cast in Place		45.1			45.1
TC - Timber-Concrete Composite		78			78
RF - Rigid Frame, Vert. Legs	122.51				122.51
TS - Thick Slab	122.51				122.51
SS - Solid Slab	178.7		833.22		1011.92
CC - Concrete, Cast in Place	178.7				178.7
TC - Timber-Concrete Composite			833.22		833.22
Unknown				80.85	80.85
Grand Total	500.43	203.95	833.22	80.85	1618.45

Culvert Structures may also be classified by similar parameters as the bridge structures. In the ToS, all of the culvert structures are constructed of the same material type; Corrugated Plate Steel.

Table 7.3: Culvert Structure Summary by Subtype and Footprint

CPS - Corrugated Plate Steel			
Subtype	Total Length	Total Width	Area (M ²)
PA - Pipe Arch	137.1	30.9	4236.39
PHE - Pipe Horiz. Ellipse	24.4	3.3	80.52
Grand Total	161.5	34.2	5523.3

8 Road System Condition

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The road section reviews follow the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

8.1 Road System Condition by Time of Need

The Inventory Manual methodology results in overall rating of road sections by Time of Need (TON); NOW, 1 to 5, 6 to 10, or Adeq (Adequate). **Table 8.1** below provides a breakdown of the road system by time of Need and MMS Class.

8.2 Road System Adequacy

The system adequacy is a measure of the ratio of the 'NOW' needs to the total system, and includes needs from the six critical areas described earlier in the report. The overall TON is the most severe or earliest identified need. For example a road section may appear to be in good condition, but is identified as a NOW need for capacity, indicating that it requires additional lanes.

Equation 8.2: System Adequacy Calculation

$$\text{System Adequacy} = \frac{\text{Total System (km)} - \text{NOW Deficiencies (km)}}{\text{Total System (km)}} \times 100$$

The Township of Scugog currently has a road system adequacy measure of 55.1%. The road system currently measures 412.23 centreline-kilometres (adjusted for boundary roads), with 185.17 kilometres rated as deficient in the 'NOW' time period.

Table 8.1: Roads System by Time of Need and MMS Class

Time of Need	MMS Class								Total	
	3		4		5		6		CI-km	Lane-km
	CI-km	Lane-km	CI-km	Lane-km	CI-km	Lane-km	CI-km	Lane-km	CI-km	Lane-km
NOW	1.98	3.96	145.12	290.24	38.07	74.05			185.17	368.25
1-5	5.86	11.72	43.87	87.74	10.64	21.28			60.37	120.74
6-10	3.03	6.06	55.81	111.62	13.2	26.4			72.04	144.08
ADEQ	1.41	2.82	41.79	83.75	22.25	44.43	29.21	58.34	94.66	189.34
Total	12.28	24.56	286.59	573.35	84.16	166.16	29.21	58.34	412.23	822.41
% of Total	2.98%	2.99%	69.52%	69.72%	20.41%	20.20%	7.09%	7.09%		
System Adequacy %	83.9	83.9	49.4	49.4	54.8	55.4	100.0	100.0	55.1	55.2
Good to Very Good %	36.2	36.2	34.1	34.1	42.1	42.6	100.0	100.0	40.4	40.5

The estimates provided in this report are in accordance with the formulae in the *Inventory Manual*, and utilize the unit costs as identified in Table 8.2. These costs include adjustment factors as per the *Inventory Manual*, such as Basic Construction, Terrain, Contingency Roadside Environment, and Engineering.

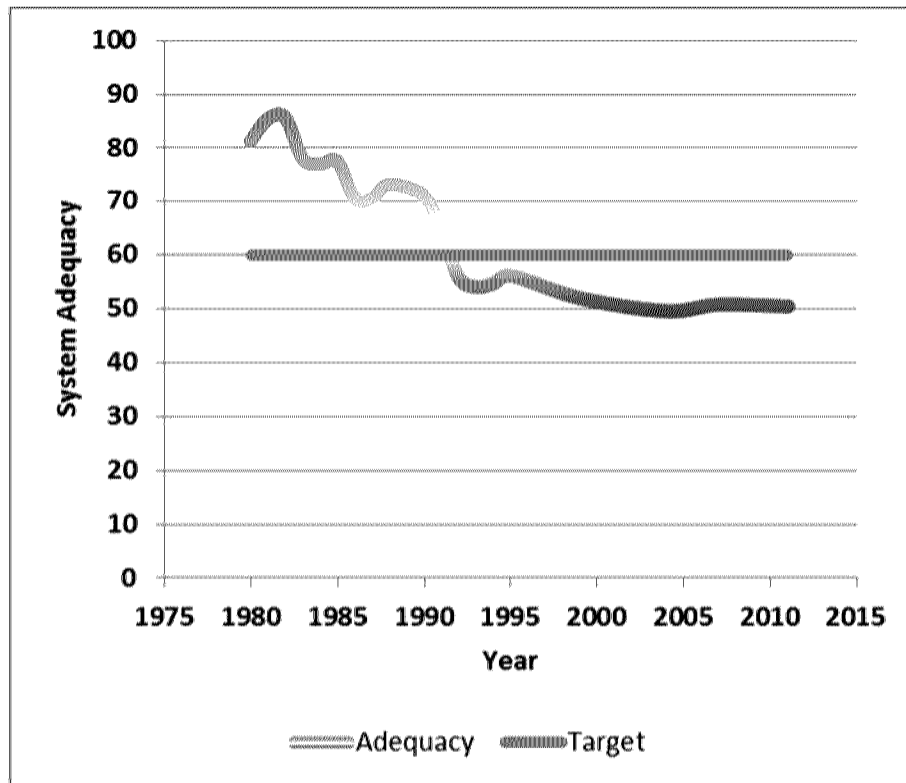
Table 8.2: Unit Costs

Item	Unit	2013 Costs \$
Excavation	m ³	14.00
Hot Mix Asphalt	t	90.00
Single Surface Treatment	m ²	2.75
Granular A	t	20.00
Granular B	t	14.5
Conc- Curb and Gutter-place	linear m	51.50
Conc- Curb and Gutter-removal	linear m	15.00
Subdrains	linear m	20.15
Storm Sewer-525mm	linear m	400.00
Manholes	ea	3750.00
- manhole removed	ea	1000.00
- manholes-Adjust	ea	1000.00
Catch Basins	ea	1800.00
Catch-Basins- removed	ea	400.00
Catch Basin Leads	Linear m	205.00
Catch Basins - adjust	ea	1000.00
Asphalt Planing	m ²	7.00
Asphalt Pulverizing	m ²	3.00
Crack Sealing	m	2.00

The traditional target adequacy for upper-tier road systems (Regions and Counties) was 75%, while a lower-tier's target adequacy was 60%. Based on these former MTO targets, which were in effect when the municipal grant system was in place, the target adequacy for the ToS should be 60%, as a minimum. The minimum target adequacies were established by MTO, to reflect the nature and purpose of the road system.

Based on the current review of the road system, the current system adequacy measure is 55.1% (adjusted for boundary roads) meaning that, 44.9% of the road system is deficient in the 'NOW' time period.

Figure 8.1: System Adequacy vs. Time



8.2.1 Physical Condition - Roads

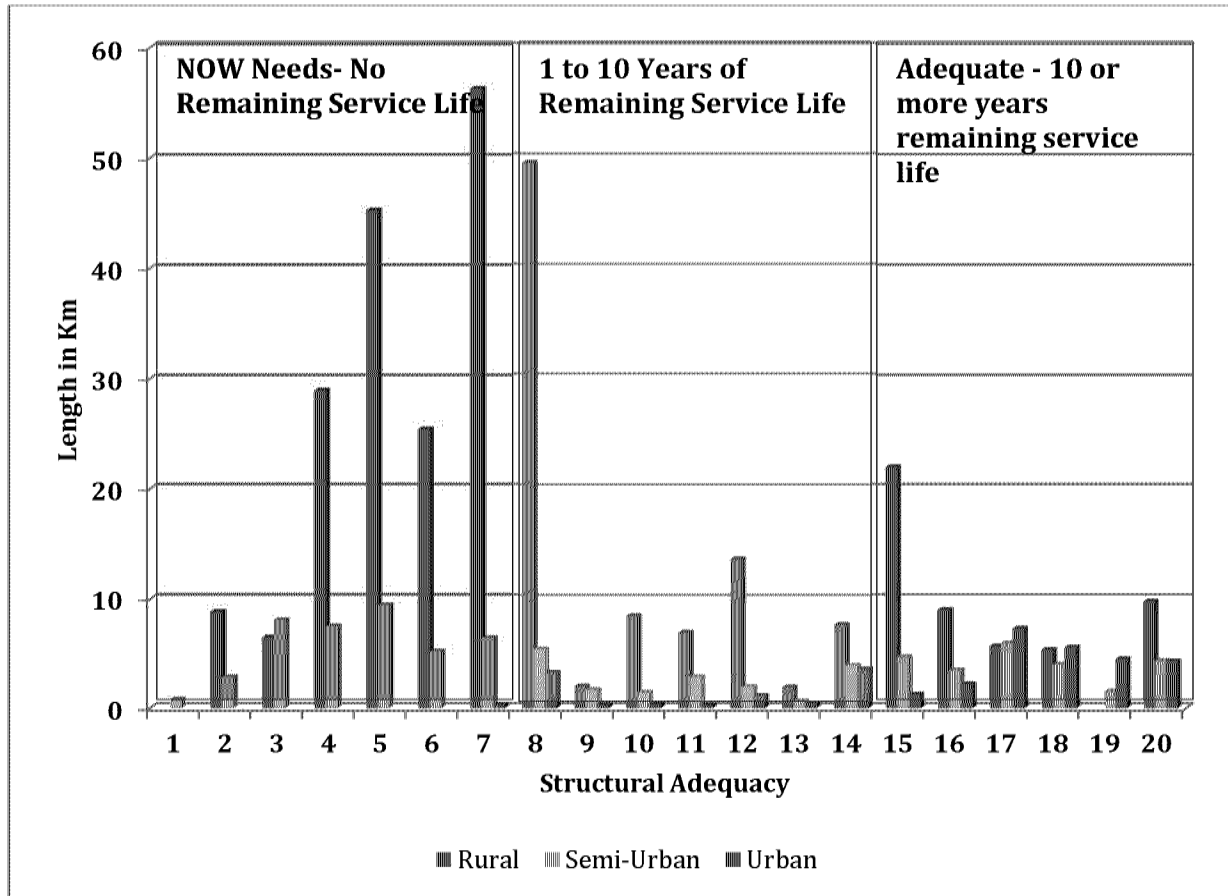
The Physical Condition is an alternate method of describing the condition of a road section or the average condition of the road system. The value is the structural adequacy converted to be expressed as a value out of 100, instead of 20. This methodology lends itself to modeling and comparators that may be more easily understood. There isn't a 1:1 relationship between the weighted average physical condition and the system adequacy.

The average Physical Condition of the road system is currently 52.85.

8.2.2 Remaining Service Life -Roads

As indicated previously, the Time of Need is really a prediction model in terms of an estimate based on current condition to the time for reconstruction. The TON then also provides an estimate of the remaining life in the road system/section. The following figure summarizes the structural adequacy ratings of the road system and illustrates the estimated remaining service life of the road system.

Figure 8.2: Remaining Service Life -Roads



8.3 Record of Assumptions –TON, Improvement and Replacement Costs - Roads

The methodology of this report is such that a number of the Inventory Manual itself forms the basis of a large number of assumptions in terms of;

- Dimensional requirements for the development of improvement and replacement costs
- Structural requirements based on road classification
- Time of needs based on the ratings and subsequent calculations

9 Structure Inventory Condition

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. Provincial legislation requires that all structures with a span of 3 metres or greater be inspected under the supervision of a structural engineer every two years, in accordance with the Ontario Structure Inspection Manual (OSIM) or equivalent. The Municipal Bridge Appraisal Data Entry System (MBADES) has been identified as an equivalent. The ToS reporting conforms to the MBADES format.

9.1 Structures Inventory by Time of Need

The MBADES Manual methodology results in overall rating of Bridge and Culvert Structures by Time of Need (TON); NOW, 1 to 5, 6 to 10, or Adeq (Adequate). **Table 9.1** provides a breakdown of the Bridge and Culvert Structure Inventories system by Time of Need.

9.2 Structure Inventory Overall Condition

Relating the overall condition of the structure inventory is more complex than the road section as the bridge structure evaluations will produce a 'NOW' need for a structure due to the absence of end treatments at the corners of a structure, or the end of the guide rail on a culvert structure. To gain a sense of the condition of the overall bridge structures inventory, the current estimated replacement cost has been compared to the estimated cost of the current needs that have been identified. The following equation describes the ratio of the replacement cost to the needs costs.

Equation 1: Bridge Structure Replacement to Improvement Ratio

$$\text{Adequacy Index} = \frac{\text{Total Replacement Cost} - \text{Total Needs Cost}}{\text{Total Replacement Cost}}$$

Using Equation 1, the Adequacy Index for the ToS Structures Inventory is **33%**. The bridge structures inventory includes four structures recommended for replacement (2 may be deferred with major rehabilitations) and of those structure one is load restricted to 5 tonnes.

Applying the same calculation to the culvert structures inventory produces an Adequacy Index of **30**.

Table 9.1: Bridge Structures Inventory by Time of Need

Improvement Class	Time of Need			Total
	NOW	1 to 5	6 to 10	
Construction	3,172,000	813,000	0	3,985,000
Construction Extra	937,000	187,000	0	1,124,000
Inspection	0	0	0	0
Rehabilitation	969,000	421,000	53,000	1,443,000
Rehabilitation Extra	110,000	119,000	7,000	236,000
Total	5,188,000	1,540,000	60,000	3,788,000

**From AECOM 2012 Municipal Structure Inventory and Inspection*

Table 9.2: Culvert Structures Inventory by Time of Need

Improvement Class	Time of Need			Total
	NOW	1 to 5	6 to 10	
Construction	1,391,000	0	0	1,391,000
Construction Extra	171,000	0	0	171,000
Inspection	0	0	0	0
Rehabilitation	390,000	33,000	0	423,000
Rehabilitation Extra	28,000	7,000	0	35,000
Total	1,980,000	40,000	0	2,020,000

**From AECOM 2012 Municipal Structure Inventory and Inspection*

The number and condition of the bridge and culvert inventory has remained relatively static since the last report.

9.2.1 Remaining Design Life - Structures

As indicated previously, the Time of Need is really a prediction model in terms of an estimate based on current condition to the time for reconstruction. The TON then also provides an estimate of the remaining life in the road system/section. The following figure summarizes the structural adequacy ratings of the road system and illustrates the estimated remaining service life of the road system.

Figure 9.1: Remaining Design Life – Bridge Structures

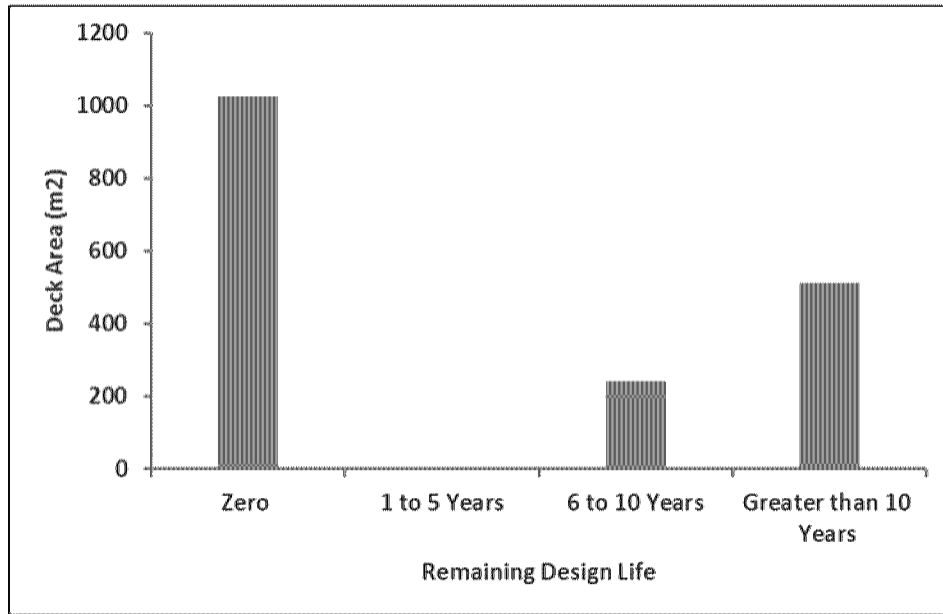
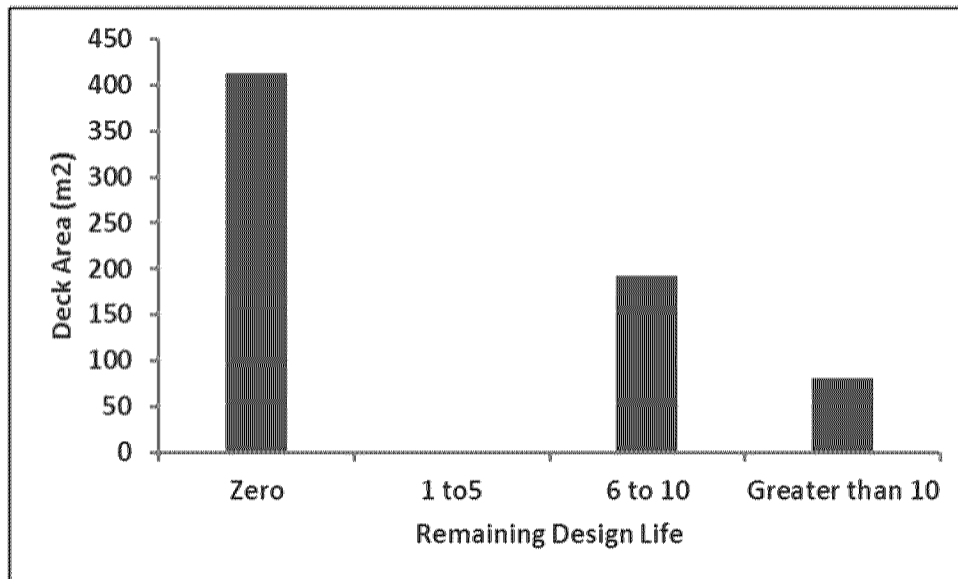


Figure 9.2: Remaining Design Life – Culvert Structures



9.3 Record of Assumptions –TON, Improvement and Replacement Costs - Structures

The methodology of this report is such that the MBADES Manual itself forms the basis of a large number of assumptions in terms of;

- Dimensional requirements for the development of improvement and replacement costs
- Structural requirements based on field ratings of elements
- Time of needs based on the ratings and subsequent calculations

10 Replacement Cost Valuation - Roads

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, and functional class of the individual assets. Recommended funding for the road system should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth. The Township should consider those items as additional to the recommendations in this report. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the road system. 4 Roads estimates the cost to replace the road system, to its current standard, at **\$294,537,600**. This estimate is based on the Township's unit costs.

11 Replacement Cost Valuation - Structures

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, and functional class of the individual assets. Recommended funding for the road system should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth. The Township should consider those items as additional to the recommendations in this report. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the road system. 4 Roads estimates the cost to replace the road system, to its current standard, at **\$10,076,400**. This estimate is based on the Township's unit costs and the AECOM 2012 Municipal Structure Inventory and Inspection.

12 Asset Condition Assessment and Plan Updates

12.1 Condition Assessment Cycle Recommendation - Roads

4 Roads would recommend a four year cycle – maximum - for review and update of road system condition ratings.

12.2 Condition Assessment Cycle Recommendation - Structures

The Township of Scugog's practice has been to update the condition of the structures inventory in accordance with the legislated requirements. The bridge and culvert structures with a span greater than 3 metres should continue to be reviewed on a two year cycle, as required by regulation.

13 Level of Service (LOS) - Roads

Level of Service has a different meaning for different interests. For instance, the cost per unit may not have an impact to a ratepayer whose chief concern may be service delivery. Similarly, cost or expenditure per unit may not illustrate the condition of the asset to the end user. Further, municipalities are required to report on various Municipal Performance Measures (MPMP)

4 Roads believes that multiple service measures may be required to adequately relate the condition of an asset to the various user groups; condition, operating costs, and end user. The following sections identify various measurements of service of the road system

13.1 Current Level of Service Measurement

13.1.1 System Adequacy

As described earlier in the report, the system adequacy is the ration of the “NOW” need roads to the total system. This is a holistic measure as, using the Inventory Manual Methodology, needs are identified in six critical areas, not just the distress on the road surface.

The current system adequacy is **55.1%** (adjusted for boundary roads).

13.1.2 Physical Condition

Physical condition is the Structural Adequacy rating multiplied by five to produce a rating of between 5 and 100. This is a measure of the amount of distress on the road however the scale is not linear. The current average Physical Condition of the road system is **52.85**.

13.1.3 MPMP Good to Very Good

The province requires annual reporting on the percentage of roads that are rated as good to very good. It has been assumed that the 6-10 and adequate roads are good to very good and this has been expressed as a percentage of the system. Good to very good roads represent **40.4%** of the road system.

14 Level of Service (LOS) - Structures

Level of Service has a different meaning for different interests. For instance, the cost per unit may not have an impact to a ratepayer whose chief concern may be service delivery. Similarly, cost or expenditure per unit may not illustrate the condition of the asset to the end user. Further, municipalities are required to report on various Municipal Performance Measures (MPMP)

4 Roads believes that multiple service measures may be required to adequately relate the condition of an asset to the various user groups; condition, operating costs, and end user. The following sections identify various measurements of service of the road system

14.1 Current Level of Service Measurement- Structures

14.1.1 Adequacy Index

4 Roads examined the database provided and believed that one means of expressing the condition of the bridge and culvert structures inventory would be a measure of the ratio of the current improvement needs to the current replacement cost. The bridge structures Adequacy Index is 30 meaning that the remaining value of the inventory is 30% of its replacement cost.

The culvert structures Adequacy Index is **33** meaning that the remaining value of the culvert inventory is 33% of its replacement cost.

14.1.2 NOW Needs Structures Requiring Replacement

The current structures database includes recommendations for replacement of four (4) bridge structures and two (2) culvert structures. The replacements represent **25%** of each of their respective inventories.

14.1.3 MPMP Good to Very Good

The province requires annual reporting on the percentage of bridges and culverts that are rated as good to very good. It has been assumed that the 6-10 and adequate roads are good to very good and this has been expressed as a percentage of the system. Good to very good bridges and culverts represent approximately **30%** of the inventory system

15 Program Funding Recommendations- Roads

15.1 Overview

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, functional class of the individual assets and current unit costing. Recommended funding for the road system should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the road system. 4 Roads estimates the cost to replace the road system, to its current standard, at **\$294,537,600**. The budget recommendations provided in this report are based on the constitution of the road system. This represents an opportunity to develop a financial plan in concert with the asset management plan, for a phased implementation.

15.2 Capital Depreciation

The estimated replacement/depreciation value of the Township road system to the current standard is **\$294,537,600**. This equates to an annual capital depreciation of **\$5,890,700**. The annual capital depreciation is strictly a function of the replacement cost and the design life, and would best be described as an 'Accountaneering' number. This estimate does not include bridges, culverts, cross culverts less than 3 m, sidewalks, or street lighting. The typical design life for a road structure is 50 years before reconstruction/replacement. If the life span is 50 years, then 2% of the replacement cost should be the annual contribution to the capital reserve, to ensure that it can be reconstructed in that time frame.

The estimated replacement/depreciation is based upon the replacement value of the road system over a 50-year life cycle. However, the 50-year life cycle can only be a reality if maintenance and preservation treatments such as crack sealing and hot mix asphalt overlays are delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

Analogies to houses and cars sometimes make road maintenance easier to understand. If a house does not have the roof renewed within the correct time frame, there will be damage to the structure, below the roof, and if this is not dealt with, it will result in a rapid deterioration of the house. Similarly, roads require crack sealing and resurfacing at the appropriate time, during the life cycle, in order to maximize the life expectancy of the asset. Preservation and maintenance extend the useful life of the pavement, reducing life cycle costs.

15.3 Hot Mix Resurfacing

Roads require major maintenance throughout the life cycle, in order to optimize and maximize the asset life span. Roads require resurfacing at the appropriate interval, for the respective class of road. Different agencies categorize the expense differently, usually dependent upon the dollar value; however, resurfacing is essentially a maintenance activity.

Resurfacing schedules are dependent upon traffic loading and the percentage of commercial traffic. Higher traffic volumes and percentages of commercial traffic shorten the interval between resurfacings. Optimal resurfacing intervals will vary from ten to twenty years (or more), depending upon the road function, classification, and quality of design and construction.

The Hot Mix Asphalt Resurfacing recommendation in this report is based upon the distribution of the Township's hot mix asphalt inventory. As such, the optimal budget calculation will focus on the 19-year interval (18.88), for hot mix roads.

Given the aforementioned, and the information with respect to surface type contained in Table 15.1, the funding for the annual resurfacing program should be **\$1,067,400** per year on average, in order to maintain the system at its current adequacy level. This estimate is for the major resurfacing work only, and does not include any estimated costs for other pavement preservation activities or programs. Table 15.1 identifies the distribution of hot asphalt roads by asset class and the basis for the recommendation for the annual program budget recommendation.

Table 15.1: Hot Mix Asphalt Roads by Asset Class and Life Cycle

Asset Class	Life Cycle Yrs	Average Annual Cost	Asset Qty.	Unit Cost	Weighted Average
A/C-R	20	0	0	0	0.00
A/C-S	20	5003.74	0.88	5686.07	0.17
A/C-U	20	0	0	0	0.00
HCB1-R	10	0	0	0	0.00
HCB1-S	10	0	0	0	0.00
HCB1-U	10	0	0	0	0.00
HCB2-R	12	0	0	0	0.00
HCB2-S	12	0	0	0	0.00
HCB2-U	12	0	0	0	0.00
HCB3-R	15	33319.72	4.07	8186.66	0.58
HCB3-S	15	59121.46	7.56	7820.3	1.07
HCB3-U	15	261263.59	11.96	21844.78	1.70
HCB4-R	20	54210.35	9.42	5754.81	1.78
HCB4-S	20	284869.21	48.5	5873.59	9.18
HCB4-U	20	369658.95	23.29	15872	4.41
Totals			105.68	71038.21	18.88

15.4 Surface Treatment Resurfacing

Most agencies report that the average life of surface treated road is seven years. Similar to the concept applied to the development of the hot mix resurfacing recommendations, the surface-treated road network should be completely resurfaced every seven years, or approximately 14% of the surface treated inventory in each calendar year.

At a unit cost of \$2.75 per square metre, the annual program size should be **\$315,200**, on average, exclusive of hot mix asphalt padding and other preparatory work.

15.5 Gravel Road Resurfacing

When MTO was providing maintenance subsidy, the standard practice for gravel road maintenance was to place approximately 75 mm of gravel on each gravel road section, every three years.

Since the conditional grant system was discontinued, a large number of municipalities have reduced the amount of gravel that has been placed on gravel roads, to the point where the gravel roads in the system are a major maintenance problem, particularly in the latter part of the winter and early spring. If the granular base is not replenished, the road structure will disappear through normal usage, and the remaining gravel typically becomes contaminated by other materials, such as the native soil and winter sand.

Township of Scugog has 192.44 km of gravel surfaced roads. Using the Township's benchmark costing, the annual gravel resurfacing program size should be **\$1,966,100** per year, based on adding 75 mm of gravel every three years. This estimate does not include costs for re-grading, dust control, or gravel road conversion.

15.6 Crack Sealing

Crack sealing is a preservation activity that extends the life of a hot mix asphalt surface. A program estimate is provided based on crack sealing one metre per two lane metre of pavement every 5 years at the unit cost provided by the Township. Based on that premise, the recommended budget for crack sealing is **\$93,200**.

15.7 Performance Modeling- Budget Effect on System Performance

15.7.1 Asset Management Plan and Strategy Analysis

The asset management plan is a function of the strategy and available financing. The development process for all elements is iterative, concurrent and holistic on a number of levels. It is complex.

The provincial guidelines for the preparation of an AMP indicate that the following must be considered;

- Options must be compared on Lifecycle cost- the total cost of constructing, maintaining, renewing and operating an infrastructure asset throughout its service life. Future costs must be discounted and inflation must be incorporated.
- Assessment of all other relevant direct and indirect costs and benefits associated with each option.
 - Direct benefits and Costs
 - Efficiencies and network effects
 - Investment scheduling to appropriately time expansion in asset lifecycles
 - Safety
 - Environmental
 - Vulnerability to climate change
 - Indirect Benefits and Costs
 - Municipal wellbeing and costs

- Amenity values
- Value of culturally or historically significant sites
- Municipal image
- Assessment of Risks associated with all potential options. Each option must be evaluated based on its potential risk, using an approach that allows for comparative analysis. Risks associated with each option can be scored based on quantitative measures when reasonable estimates can be made of the probability of the risk event happening and the cost associated with the risk event. Qualitative measures can be used when reasonable estimates of probability and cost associated with the risk event cannot be made.

Significant effort (and expense) will be required to meet all of these requirements.

15.7.2 Performance Model Overview

A properly developed performance model will satisfy the majority of the requirements identified in the foregoing. Key elements of a Performance Model will include;

- Deterioration Curves identifying anticipated deterioration of an appropriately constructed asset over the life cycle of the asset
- 'Trigger' points throughout the deterioration curve identifying appropriate treatments at condition ranges
- Current costing for all treatments identified

To capture the essence of the provincial requirements, development and use of a Performance Model is recommended. Through modeling and the resultant outputs the following may be addressed;

- Review of options and lifecycle effects based on a Return on Investment Analysis
- Efficiencies and network effects
- Budget requirements to achieve LOS goals

It is respectfully suggested that a 10 year AMP can be developed through a Performance model, however, 4 Roads is of the opinion a number of other requirements that the province has identified should not be addressed until they reach the project stage. Further, a number of those requirements would be addressed through a Class Environmental Assessment process.

Through performance modeling appropriate budget levels, programming and associated costs can be determined, delivering key elements of any plan that can be refined or revisited as circumstances change. Once a model is developed, then the effect of any alternatives may also be measured.

15.8 System Performance at Various Budget Levels- Roads

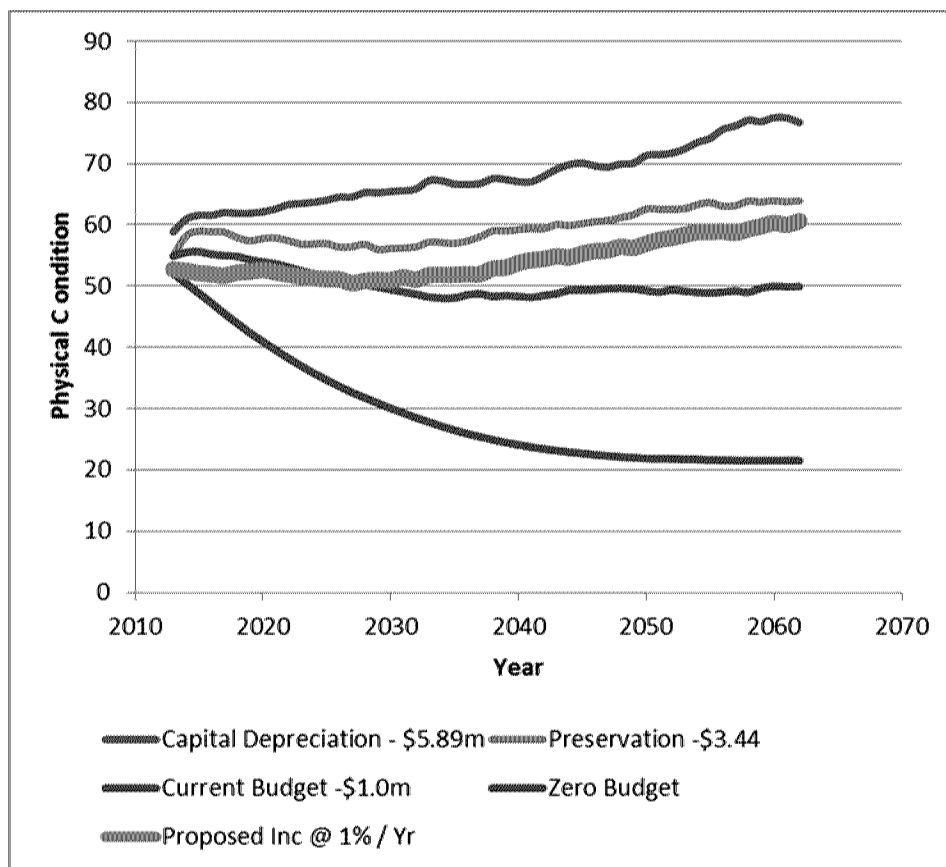
This report includes budget recommendations for various aspects of the programming that are typical to road departments. System performance can be predicted based on the level of funding.

4 Roads has prepared four different 50-year performance models for the road system. The models have been prepared with the following parameters:

- Zero budget – demonstrates the effect of no work being performed on the road system and how quickly it will deteriorate
- Existing budget – \$1.0m
- Preservation budget – \$3.44m -This includes the total dollar value of the budget recommendations for Hot Mix Asphalt resurfacing, surface treatment, crack sealing, and gravel road resurfacing
- Capital Depreciation / Amortization budget \$5.89m- full replacement cost of the road system annualized

The Average Physical Condition of the road system is currently 53; the weighted average is 46.6. The performance model calculations all begin with the current Average Physical Condition and for purposes of the graphing, the year-end Physical Condition is displayed based on the effects that the improvements have had on the overall condition of the road system.

Figure 15.1: Performance Modeling at Various Budget Levels



In reviewing the results of the performance models, it should be understood that, with the methodology being used, the trigger for a resurfacing activity is a Physical condition of 70. The existing system has an average Physical Condition of 52.85.

Deterioration curves developed by 4 Roads have been utilized for development of funding and prediction models, and based on our experience with a large cross-section of municipalities and resultant feedback, we believe that those deterioration profiles are representative, if the roads are constructed to the assumed standard.

The models indicate that the overall condition of the ToS road system will continue to decrease over time at the current funding level.

In the Capital Depreciation and Preservation funding models, not all of the funding will be spent each year once the average rises above 70. The deterioration curves that have been used consider an average/typical performance for the various road classes. When used in the model at a reasonable funding level, the overall average system condition will remain at a similar level as the model will treat the pavements as perpetual. For the purposes of shorter term plans (up to 20 years), 4 Roads believes that this does not pose a problem.

The ToS has agreed upon an annual funding increase for roads and bridge and culvert structures that is equal to 1% of the levy. The increase will be cumulative, compounded and adjusted for inflation on an annual basis. The allocations from the additional funding for roads and structures will be an 80/20 split.

The proposed funding level and its effect on the condition of average condition of the road system is represented by the orange line in **Figure 15.1**. The proposed funding level will cause an overall increase to the road system over the 50 year modeling period.

15.9 Record of Assumptions -Performance Modeling

15.9.1 Pavement Classification for Modeling

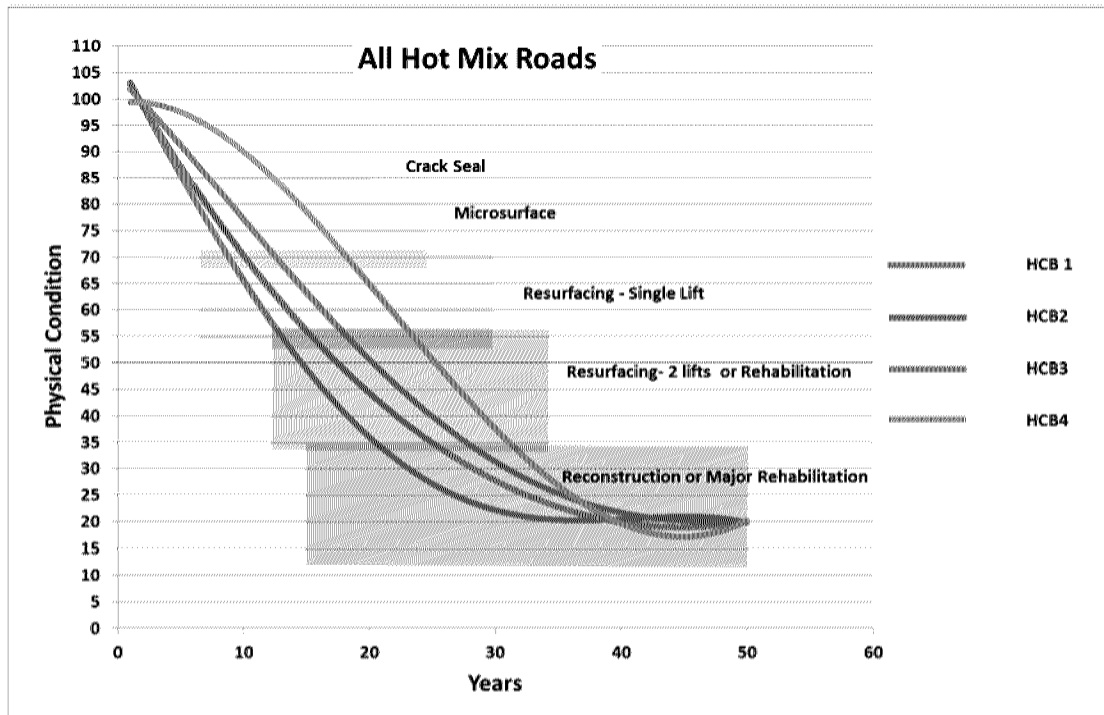
In order to develop budget recommendations, 4 Roads adds an additional classification of roads differentiated by surface type, roadside environment and traffic volume. It is anticipated that each road classification will deteriorate at a different rate. Differentiation by roadside environment within a classification permits calculation of the different replacement costs to reflect the servicing and feature differences.

Table 15.2: Road Asset Classes

Asset Class	Subtype	Material	Roadside		
			Envt	AADT Low	AADT High
A/C	All	A/C	R	1	100,000
CM1	All	C/M	R	1	3,000
CON	All	CON	R	1	100,000
GST1	All	G/S	R	1	10,000
HCB1	All	HCB	R	20,000	100,000
HCB2	All	HCB	R	10,000	20,000
HCB3	All	HCB	R	1,000	10,000
HCB4	All	HCB	R	1	1,000
ICB	All	ICB	S	1	3,000
LCB1	All	LCB	R	1	5,000

Figure 15.2 illustrates treatment selection by time and asset classes for hot mix roads. Typical treatments and/or improvements have been superimposed over the deterioration curves, to illustrate the general timelines for implementing the treatments. Other road asset classes have been treated similarly. An important concept to remember is that as a road deteriorates the cost of rehabilitation increases. The deterioration curves, improvement types, current unit costs and current condition ratings are essentially the assumptions used to develop budget and programming recommendations in this report. Appendix F provides detail on the deterioration curves for all road asset classes.

Figure 15.2: Treatment Selection vs. Condition



15.10 10 Year Program -Roads

A Return on Investment (ROI) Performance Model scenario has been developed as the initial project selection process for the roads program. The details of the 10 year program are included in Appendix G. The overall Asset Management Plan and Financial Plan are discussed further in Section 18 of this report

16 Program Funding Recommendations- Structures

16.1 Overview

Program funding recommendations are a function of the constitution of the bridge and structure inventory. Recommended funding for the structures inventory should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional. Generally, that type of improvement or expansion to the system would be funded from a different source, such as Development Charges.

The budget recommendations bear a direct relationship to the value of the structures inventory. Roads estimates the cost to replace the structures inventory, to its current standard, at \$13,374,000. The budget recommendations provided in this report are based on the constitution of the structures inventory. This represents an opportunity to develop a financial plan in concert with the asset management plan, for a phased implementation.

16.2 Capital Depreciation

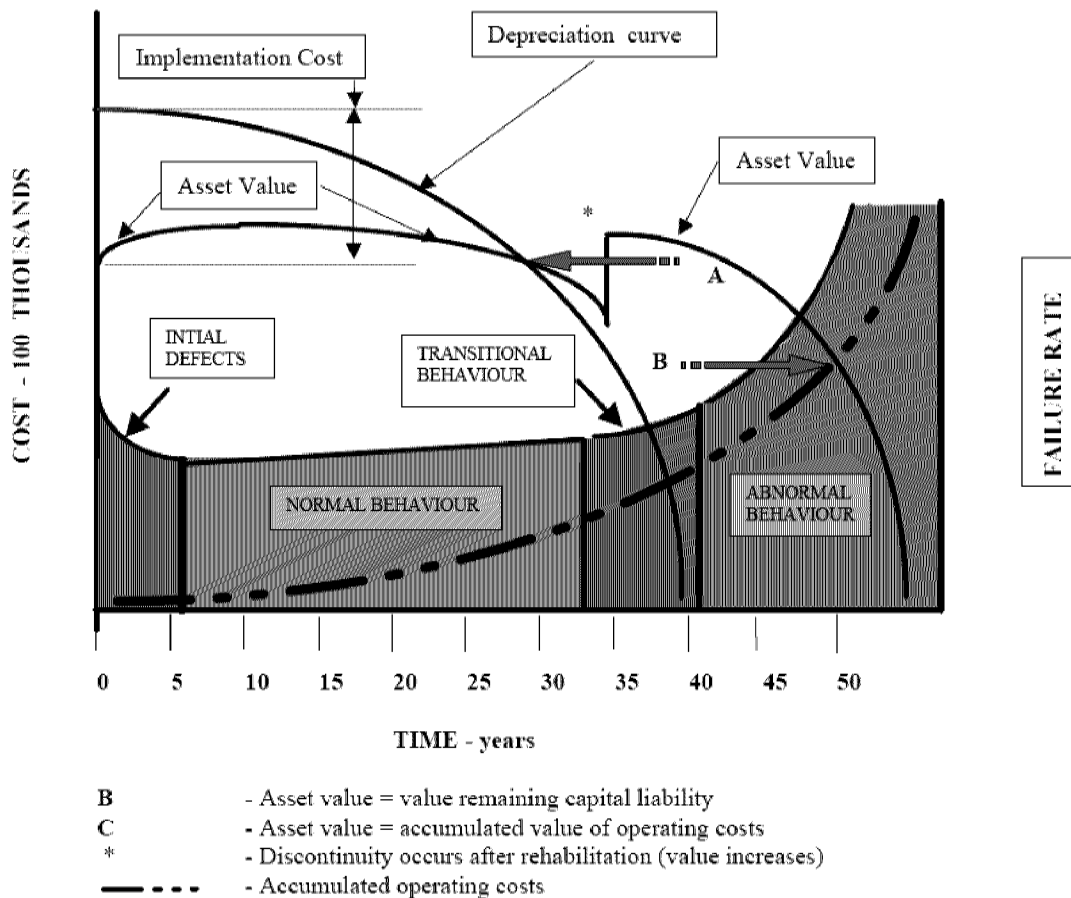
The estimated replacement/depreciation value of the ToS Bridge and Culvert structures Inventory the current standard is **\$13,374,000**. The estimated capital depreciation is **\$413,950**. The annual capital depreciation is estimated based on replacement cost and the design life, and would best be described as an 'Accountaneering' number. This estimate is strictly for structures over 3m span does not include bridges, culverts, cross culverts less than 3 m, sidewalks, or street lighting. The typical design life for a bridge or culvert structure is 50 years if constructed prior to 2000 However, a number of the ToS bridge structures have principal components with average life expectancy of 30 years and the culvert inventory is all steel with an estimated lifespan of 40years. Similar to the roads discussion, if the life span is 50 years, then 2% of the replacement cost should be the annual contribution to the capital reserve, to ensure that it can be reconstructed in that time frame.

The estimated replacement/depreciation is based upon the replacement value of the structures inventory over a 50-or 75 year life cycle. However, the life cycle can only be a reality if maintenance and preservation treatments such as waterproofing and resurfacing and minor rehabilitations delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

16.3 Bridge Deck and Superstructure Lifecycle Maintenance

After construction of a new bridge, some initial maintenance/rehabilitation efforts will have to be undertaken within 12 to 25 years to maintain the lifecycle of the structure. Generally, the pavement and bridge deck waterproofing should be replaced in the 12 to 20 year timeframe, with a deck rehabilitation being undertaken in the 25 to 35 year timeframe. Failure to follow a preventive and proactive maintenance schedule of timely repairs and rehabilitations will result in higher than expected repair costs, or worse, missing the optimum rehabilitation window completely.

The following graph is from the Transportation Association of Canada's (TAC) Bridge Management Guide and illustrates what is referred to as a deterioration curve.



Similar to roads, structures (mostly bridge structures) require major maintenance throughout the life cycle, in order to optimize and maximize the asset life span. Bridges require resurfacing, waterproofing and rehabilitation at the appropriate interval, dependent upon construction type and wearing surface. Different agencies categorize the expense differently, usually dependent upon the dollar value; however, bridge lifecycle minor and major rehabilitations are essentially a maintenance activity.

Given the aforementioned, and the information with respect to surface type contained in Table 7.2, the funding for the annual rehabilitation program should be approximately **\$83,000** per year on average, in order to maximize life expectancy from the bridge and culvert inventory.

16.4 10 Year Program- Structures

The 10 year program for structures is being dealt with on a worst first basis due to the overall condition and age of the inventory. Typical preservation and rehabilitation activities would not see the ROI that

would normally be anticipated. Four bridge structures are recommended for replacement and one is load posted at 5 tonnes (the next option would be closure).

The ToS does not currently have a dedicated funding level for structures. The recommended funding level would be sufficient over time. However, it will be insufficient in the short to mid-term due to the immediate financial requirements of the replacement bridge structures.

17 Asset Management Strategy

17.1 Asset Management Overview

Asset management has as almost as many definitions as there are agencies that manage assets. The American Association of State Highway and Transportation Officials (AASHTO) defines asset management as

“... a strategic approach to managing transportation infrastructure. It focuses on business processes for resource allocation and utilization with the objective of better decision-making based upon quality information and well-defined objectives.”

The document entitled *Managing Public Infrastructure Assets, 2001*, prepared by AMSA, AMWA, WEF, and AWWA, defines asset management as;

‘managing infrastructure assets to minimize the total cost of owning and operating them, while continuously delivering the service levels customers desire, at an acceptable level of risk.’

The Province of Ontario’s document *‘Building Together- Guide for Municipal Asset Management Plans’* indicates

‘The asset management strategy is the set of actions that, taken together, has the lowest total cost- not the set of actions that each has the lowest cost individually’

Regardless of the source of the definition, the key themes that keep being repeated are;

- Managing
- Strategic
- Effective
- Efficient
- \$\$\$\$!!
- Service
- Optimizing asset life cycle
- Risk Management

As an absolute minimum, the objective of any asset management plan, or strategy, should be to ensure that the overall condition of an asset group does not diminish over time. The asset management strategy of an agency is heavily predicated, and inextricably linked to the available funding.

Most agencies are not fully funded, and a large number are not even funded sufficiently as to maintain the current condition of their system. In those circumstances, the strategy should be twofold

- Focus should be on a pavement management strategy that utilizes available funding on preservation and resurfacing programs as a priority. Reconstruction and replacement candidate will remain reconstruction and replacement candidates and cost increases will be incremental with inflation. Preservation and resurfacing opportunities that are missed will escalate in cost by several hundred percent depending on site specifics.
- Develop the financial plan in order that there is sufficient funding to maintain the condition of the road system.

17.2 Priority Rating vs. Condition Rating- Roads

Information in a database may be sorted and analyzed in numerous ways. Understanding what information a data field represents, is key to the analysis. The Inventory Manual has many rated and calculated data fields and thus provides for many ways to sort data. Some commonly used representations, or sorting of information, from the database include:

- Priority Rating
- Priority Guide Number
- Structural Adequacy (Condition)

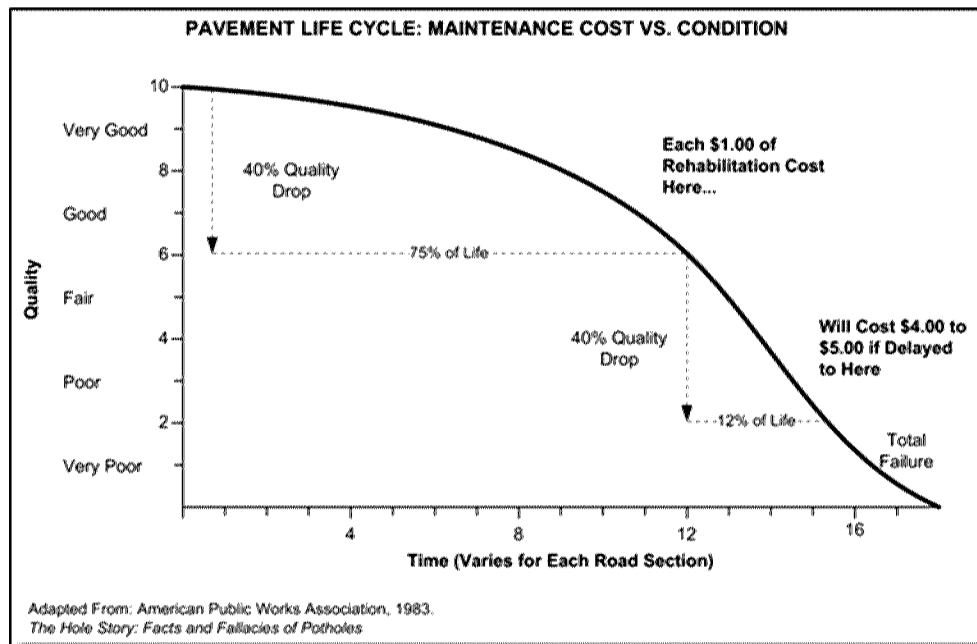
Priority Rating is a calculated field in the Inventory Manual, and is a function of the traffic count and the overall condition rating of the road section. This approach adds weight to the traffic count of the section. Although the word 'priority' is included in the field name, a road section that has a higher calculated 'Priority Rating' is not necessarily a higher priority in the broader sense of asset management.

Similarly, a municipality may choose to sort the road sections based on condition and cost per vehicle. The Priority Guide Number data field would assist in providing that analysis, as sorting on that parameter would prioritize road sections that have higher traffic and thus a lower cost per vehicle.

Developing a road capital program around the Priority Rating or Priority Guide Number fields will likely result in programming that would lead to more rapid and widespread deterioration of the overall road system, as road sections with high traffic and in poor condition would be selected first, as opposed to selecting the best rehabilitation candidates at the appropriate time in their life cycles. The exception to this statement would be cases where rehabilitation funding is at a high enough level to ensure that the preservation program requirements can be met.

From a more current asset management perspective, project selection should be predicated by condition- (Structural Adequacy or PCI). Figure 17.1 clearly illustrates the financial advantages of managing the road system by performing the right treatment at the right time of the asset life cycle. If appropriate strategies are not undertaken at the correct time, there is a less effective usage of the available funding. Similar concepts may be applied to most assets

Figure 17.1: Treatment Cost vs. Deterioration



If an agency’s budget is fully funded, the programming will include reconstruction, resurfacing, and preservation programs. Prioritization within the different programs will vary as demands are different. However, within the resurfacing and preservation programs, the pavement condition should drive the decision making.

Where funding is limited, resurfacing and preservation programs should be prioritized over the construction program. The effect of this approach will be that ‘NOW’ need roads will remain ‘NOW’ needs. However, by virtue of their ‘NOW’ need condition, ‘NOW’ need roads will require increased maintenance and likely generate increased complaints from the driving public. To deal with this eventuality, a municipality should create a ‘*maintenance paving budget*’, over and above the resurfacing budget. The purpose of this budget is to defer the reconstruction needs, and reduce maintenance efforts and complaints until the road can be reconstructed.

17.3 Cross Asset Integration and Project Prioritization

Prioritizing projects from a purely asset management perspective is a relatively straightforward exercise, regardless of funding level. Complications arise when the specific needs, commitments of the agency, and priorities of other utilities factor into the decision making process.

The road system is, in reality, a utility corridor. Multiple utilities in both urban and rural roadside environments will present conflicting demands and priorities in advancing projects. The Road Needs Study provides ratings that deal strictly with the condition of various factors as they relate to the road section. Those factors have to be considered in conjunction with needs and priorities that may exist for other utilities or pending development. In fact, the condition of other infrastructure within the road allowance may be the key element in the prioritization. For example, a road rated as a reconstruction project may have a relatively low priority rating, but a trunk storm sewer servicing a greater area may

require immediate installation. The priority of the road is then dictated by the other utility, and should be integrated into the capital plan, to best serve all interests.

Less tangible priorities may also be project prioritization tools for some agencies. For example, an agency may want to advance projects that also include bus routes or bike lanes.

As a municipal road program is developed, opportunities to complete work on smaller sections adjacent to the main project, at a lesser cost than if completed as a stand-alone project, should be considered to realize economies of scale, and complete improvements that may otherwise be passed over.

17.4 Asset Management Strategy

Notwithstanding the need for program development to include cross asset integration, for the foreseeable future the Township of Scugog program should;

- Focus on those assets that are in a condition range that will benefit from preservation, maintenance and resurfacing treatments and
- Explore alternatives for additional funding such as
 - Increase the levy contribution for road infrastructure
 - User fees
 - Grant funding
 - Local improvements

18 Financial Strategy and Plan

18.1 Financial Plan Overview

Integral to the asset management plan, is the financial plan/strategy. The Township of Scugog's circumstances present a challenge in that the current funding level is not sufficient to maintain the overall condition of the road and structures asset groups.

The 2011 Road Needs Study (AECOM) identified that current funding level for the road asset group was insufficient to maintain the condition of the asset group and that it would continue to decline. Further it was identified that the overall condition of the system was below the minimum target set by the province when prior to the removal of conditional grants in the mid 1990's. Updated modeling confirms that those circumstances have not changed.

The 2012 Structures Report identifies significant Structure needs including four structures that are identified as 'NOW' needs for replacement; the remainder of the structure inventory requires rehabilitation. This factor poses a significant impact to the ToS from both functional and financial perspectives. Currently, the TOS has not budgeted an annual amount for a structures program.

As noted, the current funding for the two asset groups included in this report is not at a sustainable level. The funding gap is significant and it would be unrealistic to expect that a two or threefold increase could be implemented over a short time period.

The ToS has agreed upon an annual funding increase for roads and bridge and culvert structures that is equal to 1% of the 2013 levy. The increase will be cumulative, compounded and adjusted for inflation on

an annual basis. The allocations from the additional funding for roads and structures will be an 80/20 split. The plan provides for increases to the recommend funding levels over a 50 year period.

For roads, it is recognized that at this funding levels the overall condition of the road system will lessen over the early years of the plan but will reach the desired Level of Service (LOS) of 60 near the end of the 50 year modeling period. The priorities will be to satisfy the preservation and maintenance needs to the greatest extent possible from the available funding. This report includes recommended programming for 10 years based on the funding levels anticipated over that time period.

For structures, the 'NOW' need structures, and their total cost, are significant liabilities for the ToS. Programming for structures improvements will be based on a combination of debt financing, provincial infrastructure grants, and other financing in the near term. There is a potential for structure closures.

The strategy for the structures inventory is of a worst first approach due to the overall condition and age of the inventory.

Asset management strategies (AMS) are critical to managing the performance of an asset group, more so, if funding is limited. Funding constraints should push the strategy toward those programs that extend the life cycle of the road by providing the correct treatment at the optimum time. For roads, resurfacing, rehabilitation, and preservation projects should be a higher priority than reconstruction projects. The objective is to "keep the good roads good". Similarly for structures, the best return on investment is in timely replacement of the bridge deck wearing surface, waterproofing, expansion joints and minor rehabilitations.

The proposed funding level and its effect on the condition of average condition of the road system is represented by the orange line in Figure 16.1. The proposed funding level will cause an overall increase to the road system over the 50 year modeling period.

18.2 Asset Management Plan / Financial Plan Decision Matrix

The provincial guide for Municipal Asset Management Plans suggests that the detailed plan review

- Non-Infrastructure Solutions
- Maintenance Activities
- Renewal / Rehabilitation Activities
- Replacement Activities
- Disposal Activities
- Expansion Activities

The ToS considers that an AMP is a dynamic document and will remain in a continuing state of evolution. As condition ratings, technology, site specific circumstances and funding levels change, the asset management plan will also. With respect to the above noted, the ToS will integrate those considerations as identified in the following discussion.

18.2.1 Non-Infrastructure Solutions

The ToS adheres to the Class Environmental Assessment regulation when considering the advancement of projects as part of its standard service delivery practice. The Class EA provides for public notification and involvement and further requires the consideration and analysis of alternatives, as the final solution. Alternatives include analysis of whether an asset is still required and/or required for the same function and purpose.

18.2.2 Maintenance Activities and Renewal / Rehabilitation Activities

Maintenance and renewal /rehabilitation activities have been combined for this discussions as definitions can vary between agencies and may be a reflection of a cost threshold rather than the nature of the activity.

For development of appropriate funding levels, and system performance at varying funding levels, the ToS uses Worktech Asset Manager Foundation. The software's performance modeling capabilities have been used to develop the initial program recommendations and provide information on the longer term effect on the overall road system.

Essentially, the model will provide a recommended treatment based on Return on Investment, current or projected condition of each asset, current recommendation, and current funding level. The analysis is based on the current unit costs for activities and the anticipated effect on the asset if the treatment is applied. Appendix F provides additional detail on the model.

Maintenance and renewal/rehabilitation activities for road assets include

- crack sealing,
- slurry sealing/ Microsurfacing
- renewal of the surface wearing course.

Rehabilitation activities include

- Removal and replacement of all asphalt, including minor drainage improvements
- New technologies may be used in lieu of replacement of both layers of asphalt, such as cold in place recycling, or expanded asphalt

Maintenance and renewal/ rehabilitation activities for structure assets include

- Crack sealing
- Pave and waterproofing the bridge deck
- Minor rehabilitations, expansion joint replacement

Rehabilitation activities for structures would include

- Deck and soffit rehabilitation integrated with a renewal of the wearing course and waterproofing
- Superstructure rehabilitations

18.2.3 Replacement Activities

Replacement activities are distinctly different for the roads and structures asset groups; A bridge or culvert structure will have to be removed completely and replaced whereas there is usually some element of the road asset that may be salvageable.

18.2.4 Disposal Activities

As noted in 18.2.3 there is a distinct difference between road and structure assets in terms of disposal. The disposal of a road cannot be accomplished in the same manner as a piece of equipment; the road allowance is the road allowance and even as rehabilitation occurs, the road is never totally removed and rarely closed completely. Structure disposal is complete at the end of the service life.

18.2.5 Expansion Activities

In concert with the non-infrastructure solutions, expansion requirements will be a consideration in the final project detail. The ToS will consider the Official Plan as an element of any project going forward. The Official plan may indicate a growth potential in the twenty to twenty five year planning horizon and this will be incorporated into the final decision at the project level on a site specific basis. The ToS has very limited expansion potential due to its' location in the Green Belt.

18.2.6 Funding Sources

Going forward, the ToS will consider all funding options in order to maintain and enhance the overall condition of the asset groups. Funding sources will include debentures, capital reserves, operating budgets, gas tax and grants.

18.3 Asset/ Financial Plan

The ToS AMP will be based on building the annual funding level to the 'Preservation budget' level for road assets over a 50 period. Structure assets will be addressed as opportunities for additional funding become available in conjunction with debt financing.

A very likely potential is that there may be additional structure closures in the near term.

Table 18.1 provides an overview of the programming and the funding for the 10 year Asset Management Plan.

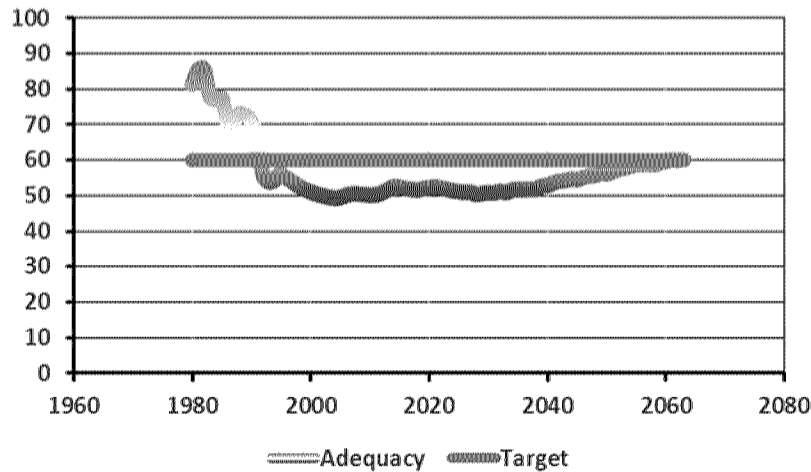
Table 18.1: Proposed AMP and Funding

ROADS - Maintenance Improvement Type	10 Year Roads, Bridges and Culverts Management Plan											Grand Total				
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023						
ROADS - Maintenance																
Base and Surface																
Crack Seal	58,700	34,200	840	41,880	21,940	13,520	38,840	18,960	8,560	9,600	1,122,502	952,233	8,560	9,600	247,040	3,037,640
Gravel Resurfacing - 150mm		21,762	7,660	48,674	110,986	48,674	37,024	178,579	72,279	139,966					665,604	
Microsurfacing		1,218		23,777		39,193	25,493	109,203	26,006	19,213					244,103	
Pulverize and Resurface- 2 Lifts	367,188	406,673	207,379	77,256	372,125	1,071,682	937,403	583,611	603,692	134,499					4,157,816	
Resurface 1 Lift			374,862	445,979	817,741	241,888		149,254		261,946					2,895,462	
Resurface 2 Lifts	196,937	603,722	564,007	587,769											1,952,435	
Rural Reconstruction	361,272														405,081	
Single Surface Treatment				16,028	4,695			34,650	22,315	47,438					150,687	
Sub-Total -Roads	984,097	1,067,575	1,154,748	1,241,363	1,327,487	1,414,957	1,505,068	1,596,515	1,685,085	1,778,973					13,755,868	
Bridge and Culvert Structures																
Bridge 00009 Replacement		1,145,000													1,145,000.00	
Bridge 00006 Replacement				1,996,000											1,996,000.00	
Bridge 00012 Replacement								1,000,000							1,000,000.00	
Bridge 00011 Replacement						1,434,000									1,434,000.00	
Bridge 00016 Removal		78,000													78,000.00	
Sub-Total - Bridge and Culvert Structures	-	1,223,000	-	1,996,000	-	1,434,000	-	1,000,000	-	-					5,653,000	
ROADS - Capital Reconstruction																
Ashburn Road - Townline to Middle March	2,000,000														2,000,000.00	
Cransell St - Hwy 7A to Queen St			750,000												750,000.00	
Perry St - Hwy 7A to Mary St					750,000										750,000.00	
Casimir St - Simcoe to Water St							750,000								750,000.00	
Perry St - Simcoe to Queen St												600,000			600,000.00	
Ashburn Road - Middle March to Line 4														2,000,000	2,000,000.00	
Sub-Total - Road Reconstruction	2,000,000	-	750,000	3,237,363	2,077,487	2,848,957	2,255,068	2,596,515	2,285,085	3,778,973					26,258,868	
Grand Total -Roads, Bridges, Culverts	2,984,097	2,290,575	1,904,748	3,237,363	2,077,487	2,848,957	2,255,068	2,596,515	2,285,085	3,778,973					26,258,868	
Funding Sources / Financial Plan																
Capital Budget																0.00
Operating Budget	984,097	1,067,575	1,154,748	1,241,363	1,327,487	1,414,957	1,505,068	1,596,515	1,685,085	1,778,973					13,755,868.00	
Reserves	200,000		75,000		75,000				60,000	200,000					685,000.00	
Debtenture		1,223,000		1,996,000		1,434,000		1,000,000							5,653,000.00	
Grants	1,800,000		675,000		675,000				540,000	1,800,000					6,165,000.00	
Other																0.00
Total Funding	2,984,097	2,290,575	1,904,748	3,237,363	2,077,487	2,848,957	2,255,068	2,596,515	2,285,085	3,778,973					26,258,868	

18.3.1 Anticipated Plan Outcomes

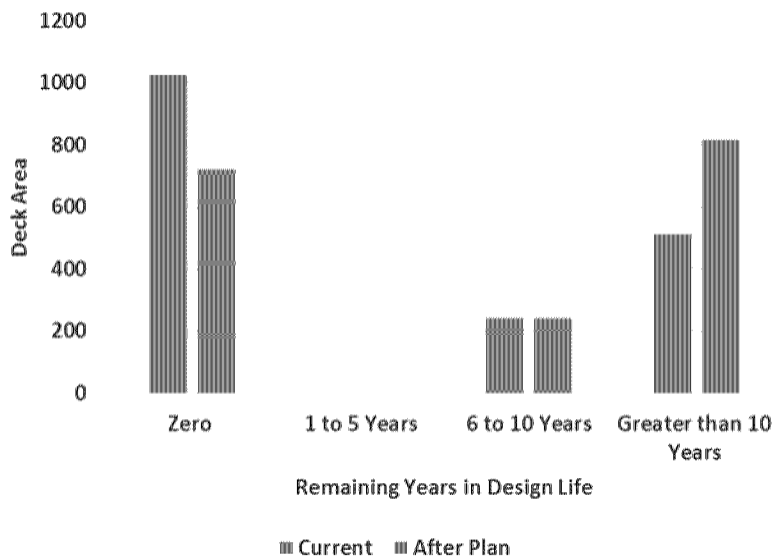
As noted previous, it is recognized that the proposed funding increases are incremental. However, it is believed that adherence to the plan, continued monitoring of condition data plan adjustment as required will result in an increased average condition of the road system. Figure 18.1

Figure 18.1: Projected Road System Improvements Resultant from Plan



It is also anticipated that over the 10 year plan period the condition of the bridge inventory will also improve. This is illustrated in Figure 18.2

Figure 18.2: Projected Structures Inventory Improvements Resultant from Plan



19 Recommendations

In addition to the budgetary recommendations, the following recommendations are provided for the management of the road and structures inventories;

1. The information and budget recommendations included in this report to further develop the corporate Asset Management Plan.
2. The cycle for review of the road system should be continued reviewing the entire system on a four year cycle.
3. The cycle for review of the structures inventory should be continued, reviewing the entire system on a two year cycle
4. Programming should be reviewed to ensure that resurfacing and preservation programs are optimized.
5. Traffic counts should be updated and repeated on a regular basis. The counting should include the percentage of truck traffic.
6. Further analysis should be undertaken on the Gravel Road system, with respect to the potential for conversion to a hardtop surface.
7. The Level of Service for the road system should be system Adequacy 60%, Physical Condition 60 and MPMP measure of Good to Very Good of 60.
8. The Level of Service for the Structures should be zero load posted structures.

Appendix A: Corporate Asset Management Policy

Township of Scugog Asset Management Policy

Township of Scugog is dedicated to development and maintenance of its entire asset inventory in order to provide Township residents with sustainable, reliable services that are appropriate for the Township, are regulatory compliant, and ensure assets will serve for their design life.

Further, the Township of Scugog will endeavour to manage its asset groups to deliver services that represent the optimum aggregate cost, rather than the least single cost, to the greatest extent practical.

Scope: The scope of this policy is applicable to all assets that the Township is responsible for. The Township understands that each asset group will have group specific criteria with respect to the general directives provided in this policy. As the Asset Management Plan (AMP) is developed for each asset group, the guiding principles of this policy shall be applied to develop the specifics for each asset group. Each Asset Group will have its specific asset policy added as addenda to this policy.

Asset Data Storage: To the greatest extent possible, all data for all assets and asset groups will reside in the corporate / enterprise asset management software.

Asset Verification and Condition Rating: The overall condition of each asset group and individual asset condition within a group is measureable. Asset lists shall be field audited to verify that the asset(s) is still retained by the Township and that it has not been disposed or replaced.

Asset condition has to be measured using appropriate engineering or other standards that are established, defensible and repeatable. It is understood that this may not be possible for all assets.

All AMP's for all asset groups shall have

- A record of the assumptions that were made in the development of the conditions ratings, historic costs, replacement costs etc.
- Identify Historic Costs (PSAB records)
- Identify Current Replacement Costs.
- Identify Asset Age distribution (may not be possible for all assets due to improvement of visible elements (i.e. roads and structures)
- Condition rating by individual asset and by asset group, where possible

Condition Assessment Cycle: Asset condition shall be reviewed on a regular cycle, appropriate for the asset group. Determination of an appropriate review cycle shall be predicated upon the following factors

- Regulatory requirements
- Public health and safety
- Criticality
- Asset life cycle / Anticipated deterioration rate
- Consequences of lost opportunity for rehabilitation or maintenance

Asset Management Policy

Level of Service (LOS): All assets shall have a defined level of service or defined levels of service.

The overall AMP includes funding for both capital and operating components. For some assets, both capital and operating LOS may be required. LOS for assets must consider the following in their development:

- Regulatory Compliance
- Criticality
- Municipal Performance Measure Program compatibility /relevance
- Physical Condition LOS (i.e. average system)
- Operating LOS
- End User relevance, and perception of service
- Ease of understanding

Asset Management Strategy: Guiding principles for the preparation of AMP's for specific assets or asset groups shall consider/ utilize the following principles;

- **Condition Sustainability** - The minimum outcome of any AMP will be to ensure that the overall condition of an asset group will not decrease over time, and that over time the asset group will achieve and sustain its' LOS goal.
- **Return on Investment** – life cycle and return on investment analysis of treatments and improvements will be undertaken in order to support decision making. Selection of appropriate treatments, at the appropriate asset condition level, are critical to AMP optimization.
- **Financial Integration** – The AMP shall be integrated with the financial plan
- **Cross Asset Integration** - AMP and resultant strategies will consider other assets that may be affected by, or may affect a specific project scope and timing. This is particularly true of linear assets within the road allowance. Cross asset integration shall consider not only Township assets, but other asset that may have an effect on the Township asset lifecycle and performance, such as other levels of government and utilities.
- **Master Plan Integration** - AMP development shall include the requirements of any Master Planning studies that have been undertaken and shall be integrated into AMP's.
- **Near Term Programming** - Detailed project lists will be developed for a 10 year period as a minimum, and updated on an annual basis
- **Programming and Funding Level Analysis** - High level analysis of funding levels will be undertaken over 50 year periods or the life cycle of the asset, whichever is greater. This analysis will be updated annually to reflect current cost experience.

Financial Strategy: AMP financial strategies shall be fully integrated with the Asset Management Strategy. The financial strategy shall be developed such that the funding shall be sufficient, as a minimum, to sustain the asset or asset group at its current LOS and ideally funded at a level to improve the asset group condition to the target LOS.

Ideally the AMP financing strategy should consider inflation and discount rates over the time of the plan. However, this may not be practical given the volatility of certain product groups over much shorter periods.

Asset Management Policy

In lieu of a financial plan with estimated inflation and discount rates, current dollars and cost experience shall be used and updated annually.

The Financial Strategy shall:

- Identify Funding shortfalls to Council to meet planned/approved LOS
- Identify Funding Sources
- Review alternate funding opportunities / resources
- The financial plan shall include annual forecasts for
 - Non-infrastructure solutions
 - Maintenance Activities
 - Renewal / Rehabilitation Activities
 - Replacement Activities
 - Expansion Activities

Funding Sources: AMP's shall consider the following funding sources;

- Levy Supported Operating Budget
- Rate Supported Operating Budget
- Levy Supported Capital Reserve
- Rate Supported Capital Reserve
- Federal and Provincial Conditional Grants
- Gas Tax
- Debt Financing
- Development Charges
- Other (i.e. Community Enhancement Fund)

Plan Maintenance Continuity and Currency: The AMP's shall be updated on an annual basis to account for;

- Quantity of the asset or asset group (Expansion / Reduction)
- Inflationary changes
- Specific unit cost changes beyond inflation that negatively affects programming and have a negative impact on the average condition of an asset group or groups
- Regulatory changes
- Asset group constitution change
- Improvements to the Asset group
- Pre-mature failure of assets

Innovation:

Township of Scugog is committed to research and review of new technologies for usage by the Township. Trial projects and technologies are to be reviewed on a project specific basis and reported to council before and after trial.

Asset Management Policy

Public Notification:

Township of Scugog will provide notification of its asset management policy in a public forum either collectively for all assets, by asset group or by program group.

Township of Scugog Asset Management Policy for Roads

Scope: This policy is intended to address the road assets owned by Township of Scugog

Asset Data Storage: Road asset data will be stored in the corporate asset management software. Updated data will be shared/provided to the Ontario Good Roads Association (OGRA) Municipal Data Works (MDW) in the interests of ensuring that OGRA has current data to continue representing the collective interests of municipalities and furthering the development of asset management and potential funding opportunities. The data may be shared with other organizational groups as deemed appropriate by the municipality.

Asset Verification: The verification and condition of each road asset shall be field audited to verify that the asset(s) is still retained by the Township and that it has not been disposed or replaced. The initial verification of the entire asset group is required only once. Conformity with other requirements of the policy will ensure that the road asset group as a whole will remain current.

Condition Assessment Methodology: There are two **levels of condition assessment required for municipal roads; capital condition and operational condition.** The capital condition of all road sections shall be evaluated following the Ministry of Transportation Inventory Manual for Municipal Roads (1991). The operational condition of all road sections shall be evaluated in accordance with Regulation 239/02, as amended.

Condition Assessment Cycle: There are two levels of condition assessment required for municipal roads; capital condition and operational condition

The capital condition assessment shall be reviewed on a 4 year cycle, either once every 4 years, or approximately ¼ of the system each year. If the system is reviewed annually, on a 4 year cycle, improvements undertaken in the other 3 quadrants have to be reviewed and the database updated also.

The operational conditional assessment shall be in accordance with the following regulations

- Municipal Act 2001, Section 44 (1) The municipality that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge. 2001, c. 25, s. 44 (1).
- Regulation 239/02 is a result of Section 44

**Note; As these regulations may be amended by the Province of Ontario from time to time, the municipality shall adhere to the regulatory requirements in effect when the assessments are undertaken.*

The database will also be updated annually to reflect additional sections that have been added to the system.

Level of Service (LOS): Level of Service for road assets have measurable condition and service level indicators. Therefore there are multiple LOS measures.

Operational LOS: Regulation 239/02 (As amended by regulations 23/10 and 47/13) is a measure of level of service from a service delivery perspective that is identifiable to the public. Meeting the regulation requirements is a risk management exercise for the Township.

Asset Management Policy - Roads

Condition LOS: The overall condition of the system shall be measured on an annual basis, based on the data in the database by System Adequacy (Target to be determined once database is reviewed and will be a pro-rata blend of former MTO system targets)

- Average Physical Condition (Structural Adequacy multiplied by 5)
- Percentage of Good to very Good roads (MPMP measure)

Asset Management Strategy: Preservation activities offer the best Return on Investment (ROI) for road assets. Annual programming will be optimized for preservation activities such as crack sealing, micro surfacing, single surface treatment and hot mix resurfacing (where no conflicts with other assets exist) and programming satisfied prior to advancing projects with lesser ROI. In general the AMP and annual programming for roads assets shall follow the following process

- Project and treatment identification through condition evaluation
- Annual Calculation of updated replacement and improvement costs based on current unit costing
- Identification of funding requirements for current year programming to meet LOS –capital and maintenance
- Annual Integration with the financial plan
- Program optimization based on current condition data
 - Road sections at the appropriate condition for preservation activities will be optimized and prioritized
- Remaining available funding shall be directed to other road related projects and programs

Projects that may appear to be appropriate for preservation activities shall be vetted through a cross asset integration process to determine conflicts with other assets or other requirements.

All road projects will be vetted through a cross asset integration process that includes any Master Plans prior to being committed to the programming.

It is recognized that where it is anticipated that other related assets will likely require significant improvement within the plan horizon a ***Holding Strategy**** or treatment may be selected to ensure least aggregate cost expenditure while ensuring continuity of service a specific road asset.

Financial Strategy: AMP financial strategies shall be fully integrated with the Asset Management Strategy and shall include Capital and Operating costs. The financial strategy shall be developed such that the funding shall be sufficient, as a minimum, to sustain the asset or asset group at its current LOS and ideally funded at a level to improve the asset group condition to the target LOS.

Ideally the AMP financing strategy should consider inflation and discount rates over the time of the plan. However, this may not be practical given the volatility of certain product groups over much shorter periods. Plan updates shall be in current dollars using current unit costs. Annual Updates shall

**Holding Strategy* – a treatment or solution selected that is recognized as not being the final solution, but a solution that will defer the needs on one asset to meet the life cycle of other related assets

Asset Management Policy - Roads

- Identify Funding shortfalls to Council to meet LOS
- Review alternate funding opportunities / resources
- The financial plan shall include annual forecasts for
 - Non-infrastructure solutions
 - Maintenance Activities
 - Renewal / Rehabilitation Activities
 - Replacement Activities
 - Expansion Activities

Budget adjustments to the plan shall account for

- Increases in plant (additional road sections)
- General inflationary increases
- Exceptional inflationary increases for specific product groups that will affect

Funding Sources: AMP's shall identify funding sources for each identified project and shall consider the following funding sources;

- Levy Supported Operating Budget
- Rate Supported Operating Budget
- Levy Supported Capital Reserve
- Rate Supported Capital Reserve
- Federal and Provincial Conditional Grants
- Gas Tax
- Debt Financing
- Development Charges
- Other

Plan Maintenance Continuity and Currency: The AMP's shall be updated on an annual basis to account for changes in

- Quantity of the asset or asset group (Expansion / Reduction)
- Inflationary changes
- Specific unit cost changes beyond inflation that affect negatively affect programming and have a negative impact on the average condition of an asset group or groups.
- Regulatory changes
- Asset group constitution change
- Improvements to the Asset group

Innovation:

Township of Scugog is committed to research and review of new technologies for usage by the Township. Trial projects and technologies are to be reviewed on a project specific basis and reported to council before and after trial.

Asset Management Policy - Roads



Public Notification:

Township of Scugog will provide notification of its' asset management policy in a public forum either collectively for all assets, by asset group or by program group.

Township of Scugog Asset Management Policy for Bridges and Culverts

Scope: This policy is intended to address the bridge and culvert assets owned by Township of Scugog with a span of 3 metres or greater.

Asset Data Storage: Bridge and Culvert asset data will be stored in the corporate asset management software. Updated data will be shared/provided to the Ontario Good Roads Association (OGRA) Municipal Data Works (MDW) in the interests ensuring that OGRA has current data to continue representing the collective interests of municipalities and furthering the development of asset management and potential funding opportunities. The data may be shared with other organizational groups as deemed appropriate by the municipality.

Asset Verification: The verification and condition of each bridge and culvert asset shall be field audited to verify that the asset(s) is still retained by the Township and that it has not been disposed or replaced. The initial verification of the entire asset group is required only once. Conformity with other requirements of the policy will ensure that the bridge and culvert asset group as a whole will remain current.

Condition Assessment Methodology: The condition of all bridges and culverts with a span of 3m or greater shall be evaluated following the Ministry of Transportation Ontario Structure Inspection Manual (OSIM) or Municipal Bridge Appraisal Data Entry System (MBADES or Municipal Bridge Appraisal Manual.)

Condition Assessment Cycle: : There are two levels of condition assessment required for municipal structures; capital/structural condition and operational condition

Capital/ Structural condition shall be inspected on a 2 year cycle, in accordance with the following regulations:

- 104/97, 472/10 Standards for Bridges
- Regulation 103/97 Standard to determine Allowable Gross Weight for bridges and 160/02, 278/06 and 472/10 (Amending 104/97)

Operational Condition shall be inspected in accordance with the following:

- Municipal Act 2001, Section 44 (1) The municipality that has jurisdiction over a highway or bridge shall keep it in a state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge. 2001, c. 25, s. 44 (1).

Regulation 239/02 is a result of Section 44

**Note: As these regulations may be amended by the Province of Ontario from time to time, the municipality shall adhere to the regulatory requirements in effect when the assessments are undertaken.*

The database will also be updated annually to reflect additional bridges and culverts that have been added to the system or improved.

Level of Service (LOS): Level of Service for bridge and culvert assets have measurable condition and service level indicators. Therefore there are multiple LOS measures.

Operational LOS: Regulation 239/02 (As amended by regulations 23/10 and 47/13) is a measure of level of service from a service delivery perspective that is identifiable to the public. Meeting the regulation requirements is a risk management exercise for the Township.

Condition LOS: The overall condition of the system shall be measured on an annual basis, based on the data in the database by

- Percentage of structures in Good to Very Good condition (MPMP measure)
- No load restricted structures that impede emergency service delivery.

Asset Management Strategy: Preservation activities offer the best Return on Investment (ROI) for structure assets. Annual programming will be optimized for preservation activities such as crack sealing water proofing and hot mix resurfacing (where no conflicts with other assets exist) and programming satisfied prior to advancing projects with lesser ROI. In general the AMP and annual programming for bridge and culvert assets shall follow the following process

- Project and treatment identification through condition evaluation
- Annual Calculation of updated replacement and improvement costs based on current unit costing
- Identification of funding requirements for current year programming to meet LOS –capital and operating
- Annual Integration with the financial plan
- Program optimization based on current condition data
 - Bridge and Culvert assets at the appropriate condition for preservation activities will be optimized and prioritized
- Remaining available funding shall be directed to other structure related projects and programs or retained in the capital reserve

Projects that may appear to be appropriate for preservation activities shall be vetted through a cross asset integration process to determine conflicts with other assets or other requirements.

All bridge and culvert projects will be vetted through a cross asset integration process that includes any Master Plans prior to being committed to the programming.

It is recognized that where it is anticipated that other related assets will likely require significant improvement within the plan horizon a **Holding Strategy** or treatment may be selected to ensure least aggregate cost expenditure while ensuring continuity of service a specific bridge or culvert asset.

Financial Strategy: AMP financial strategies shall be fully integrated with the Asset Management Strategy and shall include Capital and Operating costs. The financial strategy shall be developed such that the funding shall be sufficient, as a minimum, to sustain the asset or asset group at its current LOS and ideally funded at a level to improve the asset group condition to the target LOS.

Ideally the AMP financing strategy should consider inflation and discount rates over the time of the plan. However, this may not be practical given the volatility of certain product groups over much shorter periods. Plan updates shall be in current dollars using current unit costs. Annual Updates shall

- Identify Funding shortfalls to Council to meet LOS
- Review alternate funding opportunities / resources
- The financial plan shall include annual forecasts for
 - Non-infrastructure solutions
 - Maintenance Activities
 - Renewal / Rehabilitation Activities
 - Replacement Activities
 - Expansion Activities

Budget adjustments to the plan shall account for

- Increases in plant (additional road sections)
- General inflationary increases
- Exceptional inflationary increases for specific product groups that will affect

Funding Sources: AMP's shall identify finding sources for each identified project and shall consider the following funding sources;

- Levy Supported Operating Budget
- Rate Supported Operating Budget
- Levy Supported Capital Reserve
- Rate Supported Capital Reserve
- Federal and Provincial Conditional Grants
- Gas Tax
- Debt Financing
- Development Charges
- Other

Plan Maintenance Continuity and Currency: The AMP's shall be updated on an annual basis to account for changes in

- Quantity of the asset or asset group (Expansion / Reduction)
- Inflationary changes
- Specific unit cost changes beyond inflation that affect negatively affect programming and have a negative impact on the average condition of an asset group or groups.
- Regulatory changes
- Asset group constitution change
- Improvements to the Asset group

Innovation:

Township of Scugog is committed to research and review of new technologies for usage by the Township. Trial projects and technologies are to be reviewed on a project specific basis and reported to council before and after trial.

Public Notification:

Township of Scugog will provide notification of its' asset management policy in a public forum either collectively for all assets, by asset group or by program group.

Appendix B: Inventory Manual Methodology Overview

Asset Condition Rating Methodology

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The road section reviews follow the methodology of the Ministry of Transportation Inventory Manual for Municipal Roads, 1991.

Inventory Manual History

From the 1960's until the mid-1990's, the Ministry of Transportation (MTO) required municipalities to regularly update the condition ratings of their road systems in a number of key areas. The process was originally created by the MTO, as a means to distribute conditional funding, on an equitable basis, between municipalities. The reports were referred to as a 'Road Need Study' (RNS) and were required in order to receive a conditional grant to subsidize the municipal road programs. After the introduction in the 1960's by the MTO the methodology evolved into the current format by the late 1970's. The most current version of the Inventory Manual is dated 1991, and is the methodology used for this report. The practice was discontinued by a number of municipalities, when conditional funding for roads was eliminated in the mid 1990's.

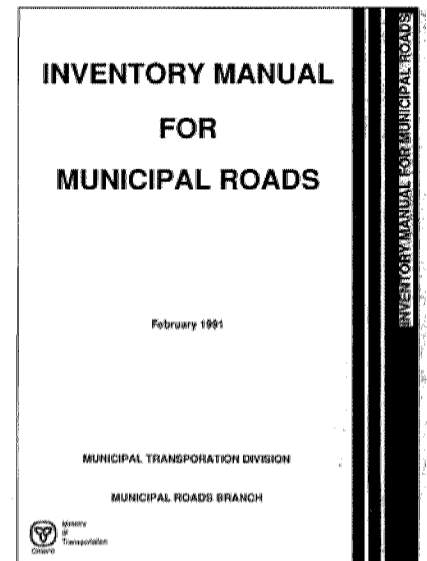
Inventory Manual Overview

The Inventory Manual Methodology is a sound, consistent, asset management practice that still works well today, and in view of the increasing demands on efficiency and asset management, represents a sound asset management that should be repeated on a cyclical basis. The road section review identifies the condition of each road asset by its time of need and recommended rehabilitation strategy.

The State of the Infrastructure Report summarizes the road system survey conducted or provided and provides an overview of the overall condition of the road system by road section, including such factors as structural adequacy, drainage, and surface condition. The study also provides an indication of apparent deficiencies in horizontal and vertical alignment elements, as per the Ministry of Transportation's manual, "Geometric Design Standards for Ontario Highways".

The report provides an overview of the physical and financial needs of the road system, which may be used for programming and budgeting. However, once a road section reaches the project design stage, further detailed review, investigation, and design will be required to address the specific requirements of the project.

Asset Management by its' very nature is holistic. Managing a road network based solely on pavement condition would be critically deficient in scope in terms of the information required to make an informed decision as to the improvements required on a road section.



The *Inventory Manual* offers a holistic review of each road section, developing a Time of Need (TON) or an Adequate rating in six areas that are critical to municipal decision making:

- Geometrics
- Surface Type
- Surface Width
- Capacity
- Structural Adequacy
- Drainage

Evaluations of each road section were completed generally in accordance with the MTO's *Inventory Manual for Municipal Roads* (1991). Data collected was entered directly into WorkTech's Asset Foundation software. Condition ratings, Time of Need, Priority Ratings, and associated costs were then calculated by the software, in accordance with the *Inventory Manual*. Unit costs for construction are typically provided by municipal staff.

Road sections should be reasonably consistent throughout their length, according to roadside environment, surface type, condition, cross section, speed limit, or a combination of these factors. As an example, section changes should occur as surface type, surface condition, cross-section, or speed limit changes.

The Condition Ratings, developed through the scoring in the *Inventory Manual*, classify roads as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction. The Time of Need is a prediction of the time until the road requires reconstruction, not the time frame until action is required. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible, to further defer the need to reconstruct.

Field data is obtained through a visual examination of the road system and includes: structural adequacy, level of service, maintenance demand, horizontal and vertical alignment, surface and shoulder width, surface condition, and drainage. The Condition Rating is calculated based upon a combination of other calculations and data.

To best utilize the database information and modern asset management concepts, it has to be understood that the Time of Need (TON) ratings are the estimated time before the road would require reconstruction. NOW needs are still roads that require reconstruction; however, it is not intended that '1 to 5' and '6 to 10' year needs are to be acted on in that timeframe. The '1 to 5' and '6 to 10' year needs are current candidates for resurfacing treatments that will elevate their structural status to 'ADEQ', and offer the greatest return on investment for a road authority(notwithstanding a drainage or capacity need, etc.).

'NOW' Needs

'NOW' needs represent the backlog of work required on the road system. A 'NOW' need is not necessarily the highest priority from asset management or return on investment perspectives. Construction improvements identified within this time period are representative of roads that have little or no service life left and are in poor condition. F Theoretically a resurfacing strategy is never a 'NOW' need, with the exceptions of a PR1 or PR2 treatment recommendation (Pulverize and resurface one or two lifts of asphalt) and where the surface type is inadequate for the traffic volume.

If a road with an improvement recommendation of "resurface" deteriorates too far, it becomes a 'NOW' construction need. A 'NOW' need rating may be triggered by substandard ratings in any of the Structural Adequacy, Surface Type, Surface Width, Capacity, Drainage, or Geometrics data fields.



'1 to 5' Year Needs

'1 to 5' Identifies road sections where reconstruction is anticipated within the next five years, based upon a review of their current condition. These roads can be good candidates for resurfacing treatments that would extend the life of the road (depending on any other deficiencies), thus deferring the need to reconstruct.



'6 to 10' Year Needs

'6 to 10' Identifies road sections where reconstruction improvements are anticipated within six to ten years, based upon a review of their current condition. These roads can be good candidates for resurfacing treatments that would extend the life of the road (depending on any other deficiencies), thus deferring the need to reconstruct.



'ADEQ'

An 'ADEQ' rating encompasses a wide range of conditions that include the following:

- Roads with a traffic volume of less than 50 vehicles per day will be deemed adequate, and deficiencies on those roads are to be corrected with the maintenance budgets
- Gravel Roads with a structural adequacy rating that is not a 'NOW' need (more than 25% distress) is adequate; there is no further differentiation by time period
- Roads that do not require improvement other than maintenance



INVENTORY MANUAL TREATMENTS

Table A.1: Road Improvement Types

Code	Description
R1	Basic Resurfacing – Single Lift
R2	Basic Resurfacing – Double Lift
RM	Major Resurfacing
PR1	Pulverizing and Resurfacing – Single Lift
PR2	Pulverizing and Resurfacing – Double Lift
BS	Base and Surface Tolerable – Tolerable standard for lower volume roads – Rural and Semi-Urban Cross sections only
RW	Resurface and Widen
REC	Reconstruction
RNS	Reconstruction Nominal Storm Sewers (Urban: no new sewer, adjust manholes, catchbasins, add sub-drain, remove and replace curb and gutter, granular, and hot mix)
RSS	Reconstruction including Installation of Storm Sewers (New storm sewers and manholes in addition to the above)
NC	Proposed Road Construction
SRR	Storm Sewer Installation and Road Reinstatement

Types of Improvements

For each Type of Improvement (**Item 104**), there are a number of specific road improvements that are included in the total cost relative to the Roadside Environment (**Item 32**) and the Design Class (**Item 105**). The computer will check a number of Items on the appraisal sheet in order to select the appropriate factors and cross section standards and then calculate the Bench Mark Cost. For example, a Resurfacing and Widening improvement coded under Item 104 is a significantly different road cross section and cost when applied to a rural road vs. an urban arterial. The computer will make all of the necessary checks to arrive at the recommended improvement cost.

Described in the following pages are the road improvements and associated construction activities costed for each Type of Improvement listed under Item 104. Please note, that the Codes (**CO**) – Carry Over, (**SR**) – Spot Road, (**SI**) – Spot Intersection and (**SD**) – Spot Drainage are direct cost inputs and **are not** included in the Bench Mark Cost system.

(R1) - BASIC RESURFACING

(Single Lift of Hot Mix – 50 mm)

Rural and Semi-Urban Roads (Cross Section A)

- (a) Hot mix padding for 20% of area to be resurfaced
- (b) Single lift of hot mix (50 mm)
- (c) Granular material to raise shoulders to new surface grade

Urban Roads – Granular Base (Cross Section B-1)

– Concrete Base (Cross Section C-1)

- (a) Minor base repairs for 10% of area to be resurfaced
- (b) Hot mix padding for 20% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Planning 1.0m of existing pavement along both curbs
- (e) Adjust manholes and catch basins to new surface grade
- (f) Single lift of hot mix (50 mm)

(R2) - BASIC RESURFACING

(Double Lift of Hot Mix – 100 mm)

Rural and Semi-Urban Roads (Cross Section A)

- (a) Hot mix padding for 20% of area to be resurfaced
- (b) Double lift of hot mix (100 mm)
- (c) Granular materials to raise shoulder to new surface grade

Urban Roads – Granular Base (Cross Section B-1)

– Concrete Base (Cross Section C-1)

- (a) Minor base repairs for 10% of area to be resurfaced
- (b) Hot mix padding for 20% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Planning 1.0 m of existing pavement along both curbs
- (e) Adjust manholes and catch basins to new surface grade
- (f) Double lift of hot mix (100 mm)

(RM) - MAJOR RESURFACING

(Double Lift of Hot Mix – 100 mm)

Urban Roads (Arterials and Collectors) – Granular Base (Cross Section B-1)

– Concrete Base (Cross Section C-1)

- (a) Base repairs for 50% of area to be resurfaced
- (b) Planning for 50% of area to be resurfaced
- (c) Curb removal and replacement on both sides for 50% of section length
- (d) Adjust manholes and catch basins to new surface grade
- (e) Double lift of hot mix (100 mm)

(PR1) - PULVERIZING AND RESURFACING

(Single lift of Hot Mix – 50 mm)

Rural Roads (Cross Section A)

- (a) Pulverize existing hard top surface
- (b) Single lift of hot mix (50 mm)
- (c) Granular material to raise shoulders to new surface grade

(PR2) - PULVERIZING AND RESURFACING (Double Lift of Hot Mix – 100 mm)

Rural Roads (Cross Section A)

- (a) Pulverize existing hard top surface
- (b) Double lift of hot mix (100 mm)
- (c) Granular material to raise shoulders to new surface grade

(BS) - BASE AND SURFACE

Rural Roads – Tolerable Standard (50 to 100 AADT) (Cross Section D)

- (a) Granular material for base
- (b) Granular material for loose top surface
- (c) Minimal shoulder widening
- (d) Minor Ditching

Rural Roads – Design Standard (200 to 399 AADT) (Cross Section D)

- (a) Placing granular material
- (b) Minimal shoulder widening
- (c) Double surface treatment
- (d) Minor ditching

Rural Roads – Design Standard (400 plus AADT) (Cross Section D)

and

Semi-Urban Roads – Design Standard (Cross Section D)

- (a) Placing granular material
- (b) Minimal shoulder widening
- (c) Hot mix (50/100 mm, see table F-1)
- (d) Minor ditching

(RW) - RESURFACE AND WIDEN

Rural Roads – Tolerable Standard (50 to 199 AADT) (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base
- (d) Granular material for loose top surface

Rural Roads – Design Standard (200 to 399 AADT) (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base
- (d) Double surface treatment

Rural Road – Design Standard (400 plus AADT) (Cross Section E)
and

Semi-Urban Roads – Design Standard (Cross Section E)

- (a) Excavating for widening
- (b) Ditching and side culvert replacement
- (c) Granular material for widening base
- (d) Base Course of hot mix for widening
- (e) Hot mix Padding for 20% of existing surface area
- (f) Single lift of hot mix (50 mm)

Urban Roads – Design Standard – Granular Base (Cross Section F)

- (a) Excavating for widening
- (b) Curb and Gutter removal
- (c) Catch Basin removal
- (d) Base repair 10% of existing surface area
- (e) Granular material for widening
- (f) Place catch basins and leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Base course of hot mix for widening
- (j) Hot mix padding for 20% of existing surface area
- (k) Adjust manholes to new surface grade
- (l) Single lift of hot mix (50 mm) curb to curb

Urban Roads – Design Standard – Concrete Base (Cross section G)

- (a) Excavating for widening
- (b) Curb and gutter removal
- (c) Catch basin removal
- (d) Base repair for 10% of existing surface area
- (e) Place new catch basins and leads
- (f) Granular material for widening
- (g) Concrete base for widening
- (h) New curb and gutter
- (i) New subdrains
- (j) Base course of hot mix for widening
- (k) Hot mix padding for 20% of existing surface area
- (l) Adjust manholes to new surface grade
- (m) Single lift of hot mix (50 mm) curb to curb

(REC) - RECONSTRUCTION (RURAL and SEMI-URBAN)

Rural Roads – Design Standard (200 to 399 AADT) (Cross Section H)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular material
- (e) Double surface treatment

Rural Roads – Design Standard (400 plus AADT) Cross Section H)

and

Semi-Urban Roads – Design Standard (Cross Section H)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular material
- (e) Hot mix (50/100 mm, see Table F-1)

Rural and Semi-Urban Roads – Design Standard (Concrete Surface)

(Cross Section P)

- (a) Excavate base material
- (b) Ditching and side culvert replacement
- (c) Grading
- (d) Granular Material
- (e) Concrete base and surface

(RNS) - RECONSTRUCTION NOMINAL STORM SEWERS (URBAN)

Urban Roads – Design Standard – Granular Base (Cross Section I)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) New curb and gutter
- (e) New sub-drains
- (f) Adjust manholes and catch basins
- (g) Hot mix (50/100 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Base (Cross Section J)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) Concrete base
- (e) New curb and gutter
- (f) New sub-drains
- (g) Adjust manholes and catch basins
- (h) Hot mix (50/100 mm, see Table H-5)

Urban Roads – Design Standard – Concrete Surface (Cross Section O)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Granular base
- (d) Concrete base and surface
- (e) New curb and gutter
- (f) New sub-drains
- (g) Adjust manholes and catch basins

(RSS) - RECONSTRUCTION INCLUDING INSTALLATION OF STORM SEWERS

Urban Roads – Design Standard – Granular Base (Cross Section K)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base
- (j) Hot mix (100/150 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Base (Cross Section L)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base
- (j) Concrete base
- (k) Hot mix (50/100 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Surface (Cross Section Q)

- (a) Excavate base material
- (b) Curb and gutter removal
- (c) Storm sewer removal
- (d) Manhole and Catch Basin removal including leads
- (e) New storm sewers
- (f) New manhole and catch basins including leads
- (g) New curb and gutter
- (h) New sub-drains
- (i) Granular base
- (j) Concrete base and surface

(NC) - PROPOSED ROAD CONSTRUCTION

Rural Roads – Design Standard (200 – 399 AADT) (Cross Section H)

- (a) Grading
- (b) Ditching and cross culverts
- (c) Granular base
- (d) Double surface treatment

Rural Roads – Design Standard (400 plus AADT) (Cross Section H)

- (a) Grading
- (b) Ditching and cross culverts
- (c) Granular base
- (d) Hot mix (50.100 mm, see Table F-1)

Semi-Urban Roads

New Construction does not apply to semi-urban roads as there is no existing frontage development.

Urban Roads – Design Standard – Granular Base (Cross Section K)

- (a) Grading
- (b) Storm Sewers
- (c) Manholes and catch basins including leads
- (d) Curb and gutter
- (e) Sub-drains
- (f) Granular base
- (g) Hot mix (100 mm/150 mm, see Table F-1)

Urban Roads – Design Standard – Concrete Base (Cross Section L)

- (a) Grading
- (b) Storm Sewers
- (c) Manholes and catch basins including leads
- (d) Curb and gutter
- (e) Sub-drains
- (f) Granular base
- (g) Concrete base
- (h) Hot mix (50 mm/100 mm , see Table F-1)

(SRR) - STORM SEWER INSTALLATION AND ROAD REINSTATEMENT (URBAN AND SEMI-URBAN)

Urban and Semi-Urban Roads – Granular Base (Cross Section M)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewer including bedding
- (d) Granular materials in trench
- (e) Hot mix to restore surface grade (100/150 mm, see Table F-1)

Urban and Semi-Urban Roads – Concrete Base (Cross Section N)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewers including bedding
- (d) Granular material in trench
- (e) Concrete base for trenched area
- (f) Hot mix to restore surface grade (50/100 mm, See Table F-1)

Urban and Semi-Urban Roads – Concrete Surface (Cross Section R)

- (a) Trenching and removal of existing storm sewers
- (b) New manholes and adjust catch basin leads
- (c) New storm sewers including bedding
- (d) Granular material in trench
- (e) Concrete base and surface for trenched area

Appendix C: Pavement Structure and Defects

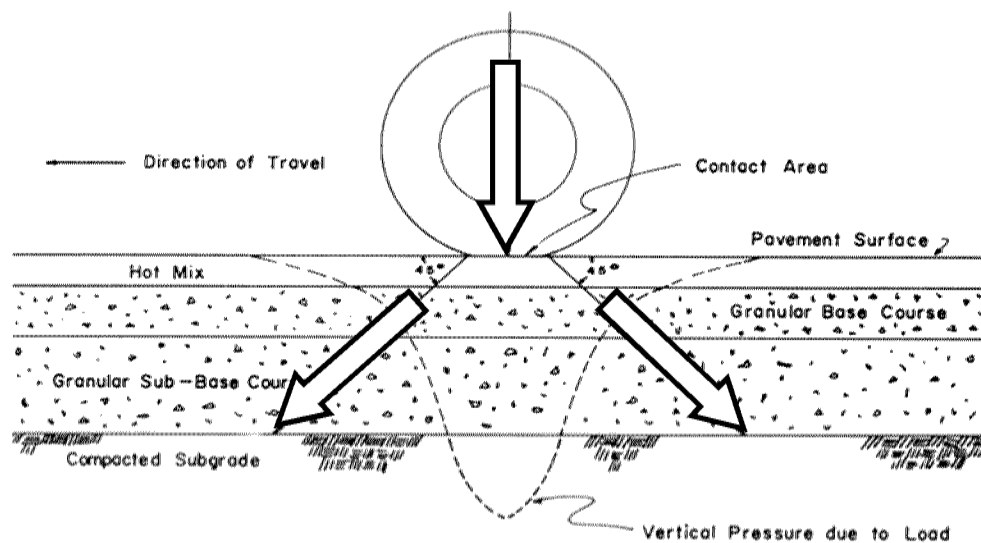
Pavement Structure

To assist in understanding the content and methodology of the report, the following sections provide an overview of how flexible and rigid pavement structures are designed and function. The majority of municipal roads would be described as having a flexible pavement structure. Hot mix asphalt, surface treatment, and gravel road surfaces are typical flexible pavement road structures. Other pavement structure types include rigid and composite, and are more typically found on 400 series highways, or on arterial roads of larger urban centres.

Flexible Pavement Road Structure

Load is applied to the pavement structure, and ultimately to the native sub-grade, via wheel loads of vehicles. The pavement structure between the native sub-grade and the load application point has to be designed such that the load that is transmitted to the sub-grade is not greater than the sub-grade's ability to support the load. The figure below shows a typical flexible pavement structure and how applied load dissipates.

Load Distribution through Pavement Structure



Depth Below Surface	Stress (psi)	Stress (Kpa)
At Surface	90	620.50
8" (200 mm) Below	11	75.84
11" (275 mm) Below	7	48.26
16" (400 mm) Below	4	27.58

Surface materials experience the highest loading at the point of contact with the vehicle's tire. Radial truck tires, running inflated from 110 psi to 120 psi, can have an impact 20 times higher at the surface, than at the compacted sub-grade. The loading actually occurs in three dimensions, in a conical fashion, dissipating both vertically and horizontally as it passes through the pavement structure. Loading

decreases exponentially as it passes through the road structure. Therefore, materials of lesser strength or lesser quality can be used deeper in the road structure.

The closer the road building materials are placed to the surface of the road, the higher the quality required. Similarly, the poorer the sub-grade or native material, the deeper/stronger the road structure has to be to carry the same loads.

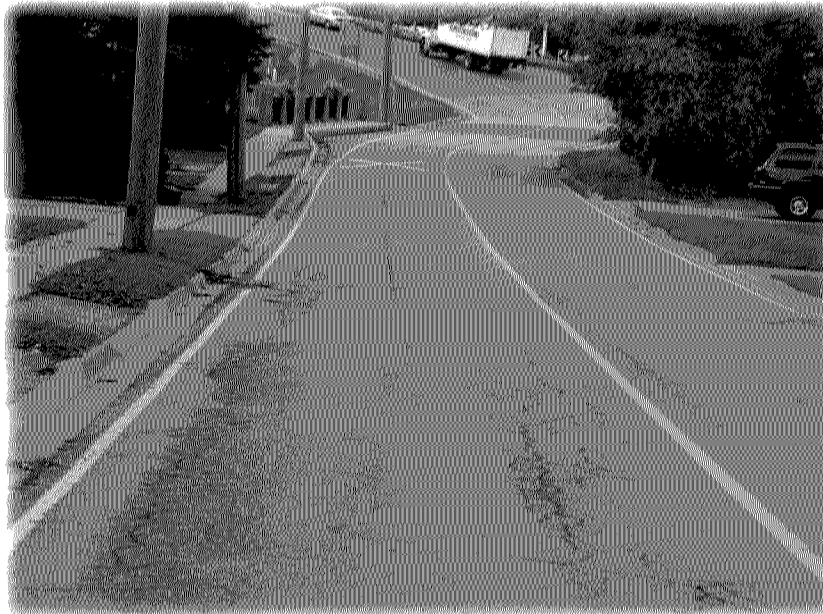
Traffic counts, and the percentage of trucks, are critical to structural design of the pavement. Depending upon the source, the effect of a single truck on the pavement structure can be equivalent to 2,000 to 8,000 passenger cars. The effect of farm machinery would be very similar to that of heavy trucks. However, the Highway Traffic does permit certain types of farm machinery and equipment to use the roads even during half load season, so this is an additional consideration when designing rural roads.

Pavement evaluation involves a review of each road section and an assessment of the type and extent of the distress(es) observed. Treatment recommendations are predicated by whether the cause of the major distress(es) is structural or non-structural.

Flexible pavements will have age-related distresses and wearing such as thermal cracking and oxidation. These distresses are non-structural; however, once a crack develops and water enters the pavement structure, deterioration will accelerate. Poor construction practices, quality control, or materials may produce other non-structural surface defects, such as segregation and raveling, which will also result in a reduced life expectancy of the surface asphalt.

Fatigue cracking indicates structural failure and can manifest itself in many forms, such as wheel path, alligator, and edge cracking. It can be localized or throughout a road section. When roads that have exhibited fatigue cracking are rehabilitated, there should be particular attention paid to the rehabilitation treatment, to ensure that the upgraded facility has sufficient structure.

Wheelpath Fatigue Cracking



Flexible Pavement Road Structure Design

There are a number of flexible pavement structural design methodologies and associated software. The simplest way to describe structural design may be the Granular Base Equivalency (GBE) Methodology. This GBE methodology is still used in Ontario, by a number of agencies, and is frequently used as a cross-check where more sophisticated analysis has been undertaken.

The measurement is unit-less and relates to the structural value of one millimetre of Granular 'A' material. The relationship of the typical road building materials is expressed in either of the two following ways:

- **1 mm of HMA = 2 mm of Granular A = 3 mm of Granular B**

Or

- **HMA = 2, Granular A = 1, Granular B = 0.67**

To gain some perspective on what this means in terms of typical construction activities, the following table indicates a typical subdivision road construction as expressed in GBE.

Granular Base Equivalency

Material	Example 1 Depth	Granular Base Equivalency	Example 2 Depth	Granular Base Equivalency
Hot Mix Asphalt (HMA)	100	200	150	300
Granular A	150	150	300	300
Granular B	300	200	0	0
TOTAL	550	550	450	600

When reconstruction and rehabilitation projects are undertaken, and use of alternate materials and/or road structure is contemplated, the GBE concept is important to bear in mind, as different treatments such as Expanded Asphalt and Cold in Place recycling also have a structural value. For design purposes, it may be prudent to use a conservative equivalency of 1.5 for these products (although, some sources indicate GBE's of up to 1.8).

As an example, if a 200 mm pavement is replaced with 150 mm of Expanded Asphalt or Cold in Place Recycling, with a 50 mm overlay of Hot Mix asphalt, a pavement structure with a GBE of 400 is replaced by a pavement structure with a GBE of 325; a significant difference. Premature failure will be the result of an under-designed pavement structure, wasting resources and available funding.

The purpose of this example is to illustrate the different structural values that products have. Expanded Asphalt and Cold in Place recycling are both excellent products to rehabilitate pavement structures.

The MTO's *Pavement Design and Rehabilitation Manual* is an excellent resource for use in pavement structure design and rehabilitation, and is available from the online MTO Catalog.

Thin Lift Pavements

Hot mix asphalt mixes are designed in Ontario either by the Marshall Method or the Superpave Method. Through time, this has resulted in a number of commonly used mixes that are typically sorted by size. One of the parameters used to describe that sizing is the Nominal Maximum Aggregate Size (NMAS).

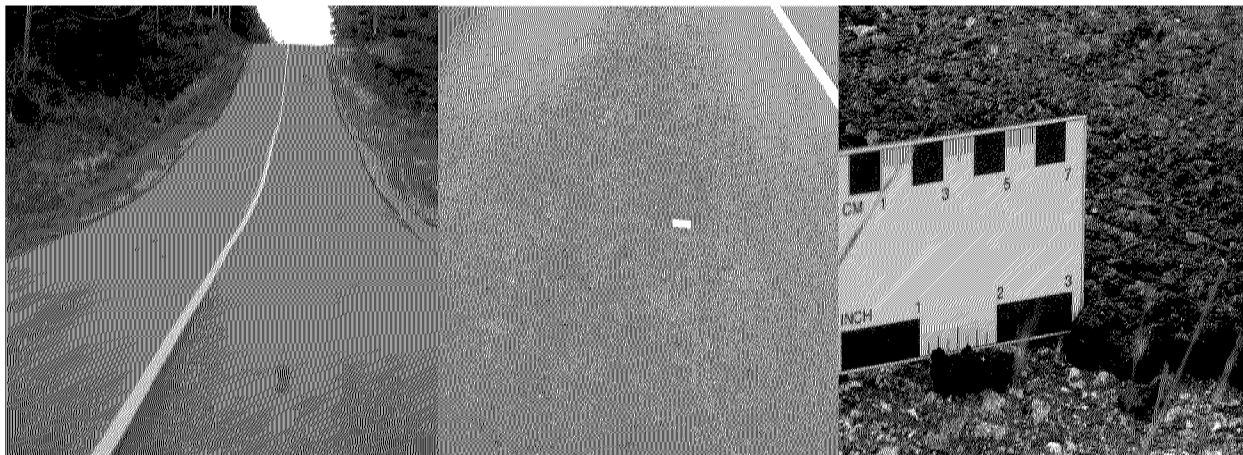
In the Marshall Mix Method, typical mix designations are HL1, HL2, HL3, HL4, and HL8. In the Superpave mix design methodology, mixes are designated by the NMAS.

The following table identifies the NMAS for the more commonly used mixes, and indicates recommended minimum lift thicknesses for them.

Recommended Minimum Lift Thicknesses

Mix Type	NMAS (mm)	Lift Thickness Range (mm)
SP 9.5	9.5	30 to 40
SP 12.5	12.5	40 to 50
SP 19	19.0	60 to 80
HL3	13.2	40 to 55
HL4	16.0	50 to 65
HL8	19.0	60 to 80

Thin Lift Pavement



Rigid Pavement Structure

Rigid Pavements are constructed of concrete, or concrete with an asphalt wearing surface. The fundamental difference between a flexible pavement and a rigid pavement is the method in which the load is transferred. Whereas the flexible pavement disperses load through the pavement structure in a conical fashion, with a higher point load directly beneath the loading point, the rigid pavement structure distributes that load in a beam-like fashion, more evenly across the pavement structure. Rigid pavements may have an exposed concrete wearing surface, or they may be covered with an asphaltic concrete wearing surface.

The resulting rigid pavement structure is usually thinner overall, when compared to a flexible pavement, designed to accommodate the same traffic loading. This does not necessarily translate into a reduced cost of construction. Any comparison of costs between flexible and rigid pavements should be on a life cycle basis, for the most accurate assessment.

Older concrete pavements were prone to failure at joints, as load transfer caused a slight movement in the concrete slab, and with the intrusion of water, a structural failure. Newer concrete pavements are designed with improved load transfer technology.

Pavement Distresses and Treatment Selection

Treatment recommendation is dependent upon the condition of the road section at the time of the review.

Treatment Selection – Critical Area Analysis

When using the Inventory Manual methodology all of the ‘holistic’ needs are considered in the recommendation. For example, a road may appear to require only a resurfacing, however, when the other critical areas are reviewed, there may be a capacity problem which would then result in a recommendation to resurface and widen (RW) that would address both the pavement condition and the need for additional lanes. Another example would be where the pavement is exhibiting some type of distress but there is also poor drainage. The recommendation would then be to reconstruct (REC if rural, RSS if urban).

Treatment Selection for Non-Structural Rehabilitation

Resurfacing recommendations are predicated upon the type and extent of distress noted. For example, all pavements will develop thermal/transverse cracking as they age. As the age of the pavement increases, the frequency of the cracking increases. If the spacing of the cracks is still greater than 10m, then the R1 – resurface with one lift of asphalt – treatment will typically be sufficient to restore the road as the treatment provides for overlay and base asphalt repair. However, if the frequency of transverse cracking, which may have become transverse alligator cracking if left unattended too long, then the recommendation will be more extensive, such as a PR2- Pulverize and resurface with 2 lifts of asphalt. The following illustrates transverse cracking.

Transverse /Thermal cracking



Treatment Selection for Structural Rehabilitation

Road sections exhibiting structural failure such as fatigue cracking require a more extensive rehabilitation to restore the performance of the road section. In simple terms, placing a single lift of asphalt over structurally failed asphalt will guarantee the same failure in a very short time period. Unless the single lift overlay is placed knowingly as a holding strategy, it should be avoided on structurally deficient pavements. For pavements that have failed structurally or have too much transverse cracking, the recommendation is typically PR2 as a minimum provided the drainage is adequate or requires only minor improvement.

Reflective Cracking

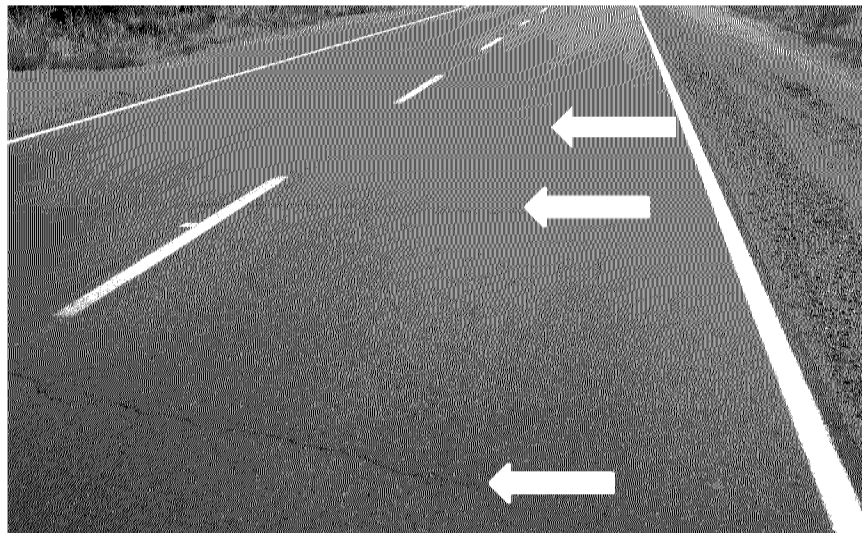
Paving over an active crack(s) will result in a crack(s) in the same location with 2 to 3 years. As a rule of thumb, the crack will migrate through at approximately 25mm per year. Therefore it would be anticipated that if a 50mm overlay is placed, then the cracking would reappear in approximately 2 years. This is not an efficient usage of available funding.

Structurally Failed Pavement



The above figure illustrates a pavement that has failed both structurally and has very frequent severe transverse cracks. Placement of a 50mm overlay over this type of pavement condition will result in rapid failure is not recommended. The figure below illustrates a newer pavement that already have very frequent transverse cracks appearing likely the result of paving over a failed pavement. The first transverse crack generally occurs in approximately 4 to 5 years and the cracks are 40m to 50m or more apart.

Reflective Transverse Cracking on Newer Pavement



Appendix D: Gravel Road Conversion

Gravel Road Conversion

Gravel Road Maintenance Overview

Gravel roads form a component of the road asset group for the municipality and should be managed as any other asset. Gravel roads tend to be the 'forgotten' asset.

One of the difficulties in determining the deterioration of a gravel road is that the wearing surface and the granular layers are one and the same, so the extent of deterioration may not be as obvious until the deterioration is significant. Appropriate gravel road maintenance can be deceptively expensive and frequently, budget analysis proves that the per-kilometre cost of gravel road maintenance is greater than the per-kilometre cost for hard top maintenance. This is further exacerbated as traffic volume on a gravel road increases.

Like other road assets, gravel roads have lifecycle maintenance and rehabilitation costs that should be addressed as part of any asset management plan. Life cycle costs include regular addition of gravel, dust control, grading and labour. Grading will typically include equipment costs for a motor grader. A Net Present Value (NPV) assessment comparing life cycle of a gravel surface vs. hard top surface would be a key element in determining the merit of converting a gravel road to hard top.

NPV Analysis Components

Process

Given the above noted, a Net Present Value (NPV) assessment of the gravel road, in comparison with a surface treated road section or other hard top surface, should be undertaken as it may be more cost-effective to convert/upgrade the gravel road to a surface treated road.

Road agencies in both Canada and the United States, have conducted studies that have generally indicated that, dependent upon local unit costs, gravel road conversion to hardtop, can be a cost-effective strategy. One source indicates that this may be effective management for roads with traffic volumes as low as 100 AADT.

It is preferable to address the cost comparisons over a period of time where the life cycles may conclude concurrently. For instance, if the gravel maintenance is on a three year basis and the surface treatment is seven, then the cycles coincide at 21 years. Total life cycle cost over that time period should be considered.

Gravel

This report provides an annual cost for maintenance costs for 75mm of additional gravel to be added every three years and does not include regular grading or dust control. This was a typical standard that was used in the past by many municipalities. Due to the natural life cycle wear and tear, maintenance and winter control activities, gravel roads require additional gravel on a regular basis to ensure continuing performance.

Equipment

As part of a holistic review of service delivery, consideration should be given to the equipment hourly rates and replacement. Accurate hourly rates are required to provide a true assessment. Equipment rates should include capital depreciation and operating costs.

One of the factors driving the overall cost is the equipment that is required to properly maintain a gravel road system- particularly graders. Part of the gravel road conversion analysis should include:

- Has the hourly rate for the equipment been calculated properly to include capital depreciation and maintenance costs?
A new grader will cost \$250,000 to \$300,000. At a 20-year life span, there is \$12,500 to \$15,000 in capital depreciation, alone, on the grader. What is the current rate for the grader? If there is not full cost recovery on the grader hourly rate, then the cost for gravel road maintenance is not accurate either.
- Is the grader used for any other purpose/activities?
- What is the length of the gravel road system? A commonly used length of gravel roads used to justify a grader is 75 kilometres.
- How many hours per year is the grader operated?
- Are there other pieces of equipment that could be used or rented to maintain the gravel roads?

Surface Treatment or other hard top

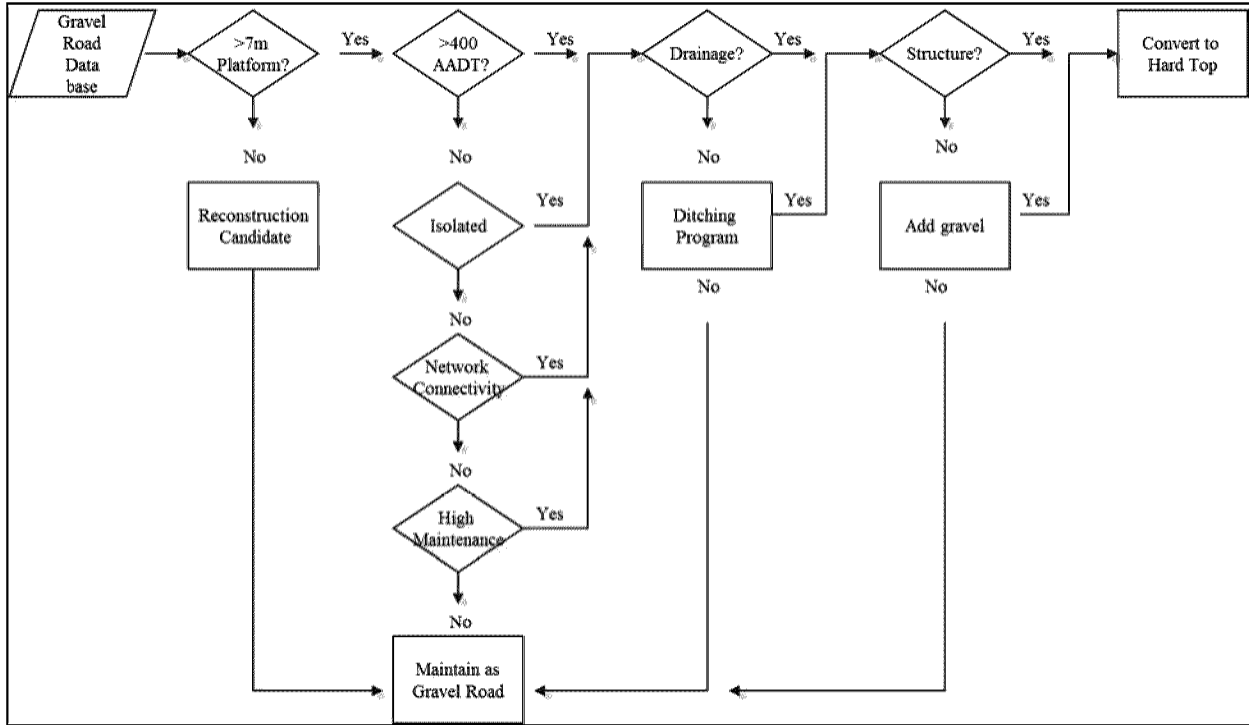
Whatever other surface type is being compared with the gravel road surface should include the same factors as for gravel so there is a 1:1 comparison.

Additional Factors and Considerations

If the argument for conversion may be made from a financial perspective, then there are additional factors that should be considered from physical and risk perspectives. Other factors for consideration include:

- Platform width
- Drainage
- Structural Adequacy
- Traffic Volume and Type

The figure below provides a graphical illustration of the different factors and decision flow that may be considered in developing a case to convert a gravel road to hard top.



Benefits to converting a gravel road include:

- Customer satisfaction
- Reduced maintenance costs for routine maintenance
- Reduced maintenance costs for winter maintenance
- Reduced complaints

Appendix E: Potential Substandard Alignment

Geometric Needs

Current Inspection - Rural Sections w/Needs Only

ID	Street Name	From Description	To Description	Length	Rside. Env.	AADT	Limit	Op. Speed	TON	H.Curve	H. SSD	V. Curve	V. SSD
1040	Ashbridge Road	Head Road	East End Turnaround	0.800	R	40	80	65	ADEQ	1	0	0	0
1050	Head Road	0.7 km North of Ashbridge Road	Ashbridge Road	0.700	R	240	80	65	ADEQ	0	0	0	1
1060	Head Road	Ma Brown's Road	0.7 km North of Ashbridge Road	1.480	R	180	80	75	ADEQ	1	0	0	0
1070	Ma Brown's Road	1.3 km East of 7-Island Road	Head Road	1.290	R	125	80	75	ADEQ	2	0	0	1
1080	Ma Brown's Road	7-Island Road	1.3 km East of 7-Island Road	1.300	R	147	80	75	ADEQ	1	0	0	0
10870	Scugog Line No 6	1.8 km East of Highway 7 & 12	Highway 7 & 12	1.800	R	705	80	80	ADEQ	0	0	0	2
110	Blue Mountain Road	Marsh Hill Road	23-Lake Ridge Road	3.520	R	90	80	75	ADEQ	0	0	0	4
1105	Pine Point Road	7-Island Road	2.0 km East of 7-Island Road	2.000	R	745	80	80	ADEQ	0	0	0	2
1110	Pine Point Road	2.0 km East of 7-Island Road	The Mississauga's Trail	1.250	R	638	80	80	ADEQ	0	0	0	1
1120	Pine Point Road	The Mississauga's Trail	Aldred Drive	1.130	R	523	80	80	ADEQ	1	0	0	0
1190	Demara Road	7-Island Road	The Mississauga's Trail	1.710	R	600	80	80	ADEQ	1	0	0	1
1200	Demara Road	The Mississauga's Trail	Aldred Drive	1.500	R	600	80	80	ADEQ	0	0	0	1
1280	Pogue Road	Carnegie Beach Road	1.6 km East of 7-Island Road	0.650	R	515	80	65	ADEQ	2	0	0	0
130	Blue Mountain Road	0.6 km East of Marsh Hill Road	East End	1.900	R	25	80	80	ADEQ	0	0	0	2
1330	Carnegie Beach Road	7-Island Road	Charles Street	1.270	R	86	80	80	ADEQ	0	0	0	1
1420	Boundary Road	East End Checkerboard	Fowler Line	0.800	R	10	80	70	ADEQ	0	0	0	3
1430	Fowler Line	Boundary Road	Mountjoy Road	1.410	R	120	80	65	ADEQ	2	0	0	3
1440	Byers Road	Cartwright West 1/4 Line	Old Scugog Road	2.690	R	95	80	75	ADEQ	0	0	0	3
1450	Byers Road	Old Scugog Road	57-Blackstock Road	0.850	R	88	80	80	ADEQ	0	0	0	1
1460	Mountjoy Road	57-Blackstock Road	Fowler Line	2.480	R	203	80	65	ADEQ	4	0	0	4
1470	Mountjoy Road	Fowler Line	Cartwright East 1/4 Line	1.160	R	108	80	75	ADEQ	1	0	0	3
1480	Cartwright East 1/4 Line	Mountjoy Road	Devitt's Road	1.430	R	94	80	80	ADEQ	1	0	0	1
1490	Devitt's Road	Cartwright East 1/4 Line	57-Blackstock Road	3.780	R	675	80	75	ADEQ	0	0	0	5
1500	Devitt's Road	Manvers/Scugog Townline Road	Cartwright East 1/4 Line	3.560	R	422	80	65	ADEQ	0	0	0	5
1510	Manvers/Scugog Townline Road	Clarington Boundary	Devitt's Road	2.910	R	148	80	65	ADEQ	4	0	0	7
1520	Manvers/Scugog Townline Road	Devitt's Road	McKee Road	1.430	R	275	80	80	ADEQ	0	0	0	3
1540	Manvers/Scugog Townline Road	Edgerton Road	Gray Road	0.330	R	203	80	80	ADEQ	1	0	0	0
1560	Bradburn Road	Cartwright West 1/4 Line	Old Scugog Road	2.670	R	275	80	75	ADEQ	0	0	1	2
1580	McKee Road	57-Blackstock Road	Cartwright East 1/4 Line	3.910	R	120	80	75	ADEQ	0	0	0	6
1590	McKee Road	Cartwright East 1/4 Line	Manvers/Scugog Townline Road	3.550	R	150	80	75	ADEQ	0	0	1	3
160	Scugog Line No 12	23-Lake Ridge Road	Marsh Hill Road	3.560	R	300	80	65	ADEQ	0	0	0	2
1600	Church Street	Cartwright West 1/4 Line	West End	1.100	R	90	80	65	ADEQ	0	0	0	1
1610	Church Street	0.6 km West of Old Scugog Road	Cartwright West 1/4 Line	2.120	R	350	80	65	ADEQ	0	0	1	3
1620	Edgerton Road	0.6 km East of McLaughlin Road	57-Blackstock Road	3.310	R	1,230	70	70	ADEQ	0	0	0	2
1640	Edgerton Road	Wilson Avenue	0.3 km E of Cartwright East 1/4 Line	2.660	R	442	70	65	ADEQ	0	0	0	5
1670	Jobb Road	57-Blackstock Road	McLaughlin Road	2.950	R	250	80	75	ADEQ	1	0	0	2
1680	Fallis Road	Cartwright East 1/4 Line	Mahood's Road	1.200	R	60	80	80	ADEQ	0	0	1	1
1690	Fallis Road	Mahood's Road	Wilson Avenue	1.760	R	30	80	80	ADEQ	0	0	0	1
170	Scugog Line No 12	Marsh Hill Road	Hwy 7 & 12	3.610	R	240	80	65	ADEQ	0	0	0	6

Geometric Needs

Current Inspection - Rural Sections w/Needs Only

ID	Street Name	From Description	To Description	Length	Rside. Env.	AADT	Limit	Op. Speed	TON	H.Curve	H. SSD	V. Curve	V. SSD
1710	Wilson Avenue	Edgerton Road	Fallis Road	1.440	R	82	80	80	ADEQ	0	0	0	1
1730	Cartwright West 1/4 Line	Byers Road	South End	1.000	R	30	80	75	ADEQ	0	0	0	2
1740	Cartwright West 1/4 Line	Byers Road	19-Shirley Road	1.430	R	80	80	75	ADEQ	1	0	0	2
1750	Cartwright West 1/4 Line	19-Shirley Road	Bradburn Road	1.470	R	813	80	75	ADEQ	0	0	1	2
1760	Cartwright West 1/4 Line	Bradburn Road	Church Street	1.410	R	910	80	80	ADEQ	0	0	0	1
1770	Cartwright West 1/4 Line	Church Street	Highway 7A	1.420	R	1,023	80	80	ADEQ	0	0	0	2
1780	Old Scugog Road	Boundary Road	Byers Road	1.390	R	594	80	80	ADEQ	0	0	0	3
1790	Old Scugog Road	Byers Road	.52km South of 19 Shirley Road	0.920	R	750	80	80	ADEQ	0	0	0	1
180	Scugog Line No 12	Hwy 7 & 12	Spadina Sideroad	1.480	R	158	80	80	ADEQ	0	0	0	1
1810	Old Scugog Road	Bradburn Road	300m North of Bradburn Road	0.300	R	1,140	80	80	ADEQ	0	0	0	1
1820	McLaughlin Road	Edgerton Road	Jobb Road	1.410	R	680	80	80	ADEQ	0	0	0	1
1890	Cartwright East 1/4 Line	Devitt's Road	McKee Road	1.440	R	300	80	65	ADEQ	0	0	0	3
1900	Cartwright East 1/4 Line	McKee Road	Edgerton Road	1.440	R	300	80	65	ADEQ	0	0	0	2
20	Victoria Corners Road	23-Lake Ridge Road	Sideroad 17	2.960	R	108	80	65	ADEQ	0	0	0	3
200	Scugog Line No 12	Spadina Sideroad	Old Simcoe Road	2.070	R	160	80	80	ADEQ	0	0	1	0
2000	Cartwright East 1/4 Line	Edgerton Road	Fallis Road	1.430	R	275	80	80	ADEQ	0	0	0	2
20000	Stephenson Point Road	7-Island Road	Platten Boulevard	0.560	R	1,731	80	80	ADEQ	1	0	0	0
2010	Cartwright East 1/4 Line	Fallis Road	Highway 7A	1.450	R	275	80	70	ADEQ	2	0	0	2
210	Scugog Line No 12	Old Simcoe Road	2-Simcoe Street	2.680	R	160	80	80	ADEQ	0	0	0	1
2160	Cedardale Road	Malcolm Road	57-Caesarea Road	3.060	R	167	80	80	ADEQ	0	0	0	2
2280	Prouitt Road	57-Caesarea Road	2.0 km East of 57-Caesarea Road	2.000	R	70	80	80	ADEQ	0	0	0	1
2330	Malcolm Road	Cedardale Road	Nesbitt Line	1.190	R	138	80	65	ADEQ	0	0	0	3
2380	Ashburn Road	Townline Road	0.4 km South of Scugog Line No 2	1.190	R	836	80	75	ADEQ	0	0	0	1
2430	Marsh Hill Road	0.4 km North of 21-Goodwood Road	Scugog Line No 6	1.110	R	650	80	80	ADEQ	0	0	0	2
250	Cragg Road	Marsh Hill Road	West End Turnaround	1.040	R	50	80	65	ADEQ	0	0	2	1
2520	Marsh Hill Road	Scugog Line No 8	Scugog Line No 9	1.460	R	240	80	80	ADEQ	1	0	0	2
2540	Marsh Hill Road	47-Highway 47	Cragg Road	1.400	R	233	70	70	ADEQ	0	1	0	0
2550	Marsh Hill Road	Cragg Road	200m South of 12 Scugog Line	1.380	R	146	70	65	ADEQ	0	0	0	1
2555	Marsh Hill Road	200m South of 12 Scugog Line	300m North of 12 Scugog Line	0.500	R	146	60	60	ADEQ	2	0	0	1
2560	Marsh Hill Road	300m North of 12 Scugog Line	Blue Mountain Road	1.050	R	100	70	65	ADEQ	0	0	0	1
2570	Marsh Hill Road	Blue Mountain Road	Scugog Line No 14	1.490	R	47	70	65	ADEQ	0	0	0	1
260	Cragg Road	0.6 km West of Hwy 7 & 12	Marsh Hill Road	2.770	R	121	80	80	ADEQ	0	0	0	1
2630	Old Simcoe Road	Scugog Line No 8	Whitfield Road	1.440	R	394	80	75	ADEQ	1	0	0	1
265	Cragg Road, Greenbank	850m West of Hwy 7/12	600m West of Hwy 7/12	0.250	R	121	50	50	ADEQ	0	0	0	1
2680	Dunward Road	Old Simcoe Road	West End	0.300	R	15	80	80	ADEQ	0	0	0	1
2700	Old Simcoe Road	6-Sainfield Road	Brock/Scugog Townline	1.470	R	200	80	75	ADEQ	0	0	0	3
290	Cragg Road	Till Sideroad	1.0 km West of Till Sideroad	1.000	R	164	80	80	ADEQ	0	0	0	2
30	Brock/1st Line	Hwy 7 & 12	West End	1.900	R	55	80	80	ADEQ	0	0	0	2
306	Clements Road	2-Simcoe Street	East End Turnaround	0.870	R	40	80	80	ADEQ	0	0	0	1
330	Scugog Line No 10	Highway 7 & 12	Till Sideroad	2.690	R	165	80	65	ADEQ	0	0	0	4

Geometric Needs

Current Inspection - Rural Sections w/Needs Only

ID	Street Name	From Description	To Description	Length	Rsd. Env.	AADT	Limit	Op. Speed	TON	H.Curve	H.SSD	V. Curve	V.SSD
340	Scugog Line No 9	Marsh Hill Road	23-Lake Ridge Road	3.590	R	150	80	80	ADEQ	0	0	0	4
350	Scugog Line No 9	Highway 7 & 12	Marsh Hill Road	3.570	R	150	80	65	ADEQ	0	0	0	5
370	Ward Road	23-Lake Ridge Road	East End Turnaround	0.500	R	60	80	80	ADEQ	0	0	2	1
380	Scugog Line No 8	8-Reach Street	Marsh Hill Road	1.740	R	50	80	75	ADEQ	0	0	0	1
390	Scugog Line No 8	Marsh Hill Road	Highway 7 & 12	3.510	R	43	80	75	ADEQ	0	0	0	2
40	Scugog Brock Townline	Hwy 7 & 12	Old Simcoe Road	3.660	R	112	80	80	ADEQ	0	0	0	2
410	Medd Road	23-Lake Ridge Road	2.1km East of 23 Lakeridge Road	2.100	R	401	80	80	ADEQ	0	0	0	3
415	Medd Road	2.1km East of 23 Lakeridge Road	8 Reach Street	1.300	R	400	80	80	ADEQ	1	0	0	0
420	Scugog Line No 6	Marsh Hill Road	23-Lake Ridge Road	3.610	R	250	80	70	ADEQ	0	0	0	6
440	Mast Road	Pine Gate Road	21-Goodwood Road	1.820	R	100	80	60	NOW	2	0	0	1
450	Pine Gate Road	Mast Road	West End Turnaround	1.100	R	35	80	60	NOW	0	0	0	3
460	Mast Road	Ashburn Road	Pine Gate Road	1.700	R	149	80	60	NOW	5	0	0	1
50	Scugog Brock Townline	Old Simcoe Road	2-Simcoe Street	3.410	R	84	80	75	ADEQ	0	0	0	2
50030	Byron Street	Palace Street	8-Reach Street	0.540	R	60	80	65	ADEQ	1	0	0	0
510	Scugog Line No 4	2-Simcoe Street	Old Simcoe Road	1.030	R	300	80	80	ADEQ	0	0	0	1
520	High Point Road	Smith Sideroad	Ashburn Road	2.940	R	51	80	65	ADEQ	2	0	0	4
530	Smith Sideroad	Scugog Line No 2	Scugog Line No 3	1.350	R	100	80	65	ADEQ	0	0	0	3
540	Gray Sideroad	Scugog Line No 3	Scugog Line No 4	1.620	R	75	80	75	ADEQ	1	0	0	1
550	Scugog Line No 3	Gray Sideroad	Hwy 7 & 12	1.160	R	79	80	75	ADEQ	1	0	0	2
560	Scugog Line No 3	Hwy 7 & 12	Old Simcoe Road	2.490	R	191	80	75	ADEQ	0	0	0	1
600	Scugog Line No 3	2.1 km East of 2-Simcoe Street	Sandy Road	0.580	R	140	80	80	ADEQ	0	0	0	2
610	Scugog Line No 3	Sandy Road	Graham Road	0.880	R	120	80	80	ADEQ	1	0	0	1
620	Graham Road	19-Shirley Road	Scugog Line No 3	0.920	R	92	80	80	ADEQ	1	0	0	0
630	Russell Road	19-Shirley Road	1.0 km South of 19-Shirley Road	1.000	R	173	80	80	ADEQ	0	0	0	1
640	Russell Road	1.0 km South of Shirley Road	Oshawa Boundary	0.490	R	173	80	50	NOW	0	0	0	4
660	Crows Pass	23-Lake Ridge Road	East End	0.490	R	40	80	40	NOW	1	0	1	0
680	Chalk Lake Road	Ashburn Road	1.25km West of Ashburn Road	1.250	R	170	60	60	ADEQ	0	0	0	1
70	Scugog Line No 14	23-Lake Ridge Road	Marsh Hill Road	2.990	R	330	80	75	ADEQ	0	0	0	3
760	Scugog Line No 2	Bryant Sideroad	Ashburn Road	1.620	R	86	80	80	ADEQ	0	0	0	4
770	Scugog Line No 2	0.4 km West of Smith Sideroad	Bryant Sideroad	0.710	R	300	80	80	ADEQ	0	0	0	3
790	Scugog Line No 2	Old Simcoe Road	Hwy 7 & 12	2.680	R	192	80	65	ADEQ	0	0	0	5
80	Scugog Line No 14	Marsh Hill Road	0.3 km West of Hwy 7 & 12	3.290	R	336	80	75	ADEQ	0	0	0	4
800	Town Line Road	Dagmar Road	23-Lake Ridge Road	0.400	R	870	60	60	ADEQ	0	0	0	1
820	Town Line Road	Heron Road	Grouse Court	0.830	R	960	60	60	ADEQ	0	0	0	1
830	Town Line Road	Ashburn Road	Heron Road	0.810	R	1,039	60	60	ADEQ	0	0	0	3
840	Town Line Road	Duff's Road	Ashburn Road	1.660	R	878	60	60	ADEQ	0	0	2	4
850	Bryant Sideroad	Townline Road	Scugog Line No 2	1.500	R	20	80	65	ADEQ	1	0	0	5
870	Mud Lake Sideroad	Townline Road	North End	0.770	R	20	80	65	ADEQ	0	0	0	1
880	Town Line Road	Hwy 7 & 12	Mud Lake Road	0.390	R	781	60	60	ADEQ	2	0	0	1
910	Coates Road West	Whitby/Oshawa Townline	Garrard Road	0.310	R	1,150	60	60	ADEQ	0	0	0	1
930	Coates Road West	Thornton Road North	Whitby/Oshawa Townline	0.510	R	1,164	50	50	ADEQ	0	0	0	1

Geometric Needs

Current Inspection - Rural Sections w/Needs Only

ID	Street Name	From Description	To Description	Length	Rsde. Env.	AADT	Limit	Op. Speed	TON	H.Curve	H.SSD	V. Curve	V.SSD
940	Coates Road West	1100 m West of 2-Simcoe Street North	Thornton Road	1.640	R	1,160	50	50	ADEQ	0	0	0	3
960	Coates Road East	Wilson Road North	2-Simcoe Street North	1.390	R	200	80	70	ADEQ	0	0	0	5
990	PortView Road	7-Island Road	0.8 km West of 7-Island Road	0.780	R	299	80	65	ADEQ	2	0	0	0
				<u>205.420</u>									

Appendix F: Deterioration Curve Detail

WorkTech Asset Classes and Deterioration Curves

Asset Classes

In order to utilize the Best Practice and Performance Modeling modules of WorkTech Asset Manager Foundation (WT), assets must be defined by an asset class. Table 1 identifies the road asset classes that have been developed for use in WT by 4 Roads Management Services Inc.

Table 1: Road Asset Classes

Asset Class	Subtype	Material	RDSE Envt	AADT Low	AADT High
A/C-R	All	A/C	R	1	100,000
A/C-S	All	A/C	S	1	100,000
A/C-U	All	A/C	U	1	100,000
CM1-R	All	C/M	R	1	3,000
CM1-S	All	C/M	S	1	3,000
CM1-U	All	C/M	U	1	3,000
CON-R	All	CON	R	1	100,000
CON-S	All	CON	S	1	100,000
CON-U	All	CON	U	1	100,000
GST1-R	All	G/S	R	1	10,000
GST1-S	All	G/S	S	1	10,000
HCB1-R	ART	HCB	R	20,000	100,000
HCB1-S	ART	HCB	S	20,000	100,000
HCB1-U	ART	HCB	U	20,000	100,000
HCB2-R	ART	HCB	R	10,000	20,000
HCB2-S	ART	HCB	S	10,000	20,000
HCB2-U	ART	HCB	U	10,000	20,000
HCB3-R	All	HCB	R	1,000	10,000
HCB3-S	All	HCB	S	1,000	10,000
HCB3-U	All	HCB	U	1,000	10,000
HCB4-R	All	HCB	R	1	1,000
HCB4-S	All	HCB	S	1	1,000
HCB4-U	All	HCB	U	1	1,000
ICB-S	All	ICB	S	1	3,000
ICB-U	All	ICB	U	1	3,000
ICB1-R	All	ICB	R	1	3,000
LCB1-R	All	LCB	R	1	2,000
LCB1-S	All	LCB	S	1	2,000
LCB1-U	All	LCB	U	1	2,000

Conventional wisdom has been to define road assets by their functional classes such as Arterial, Collector or Local and then further differentiate by usage, such as residential or commercial. From a performance modeling perspective, using the functional classification will only work to a point, as the traffic on a functional class will vary between agencies.

4 Roads believes that the performance/deterioration of a road section is more predictable based on surface type and traffic volume rather than by functional class. Based on that philosophy, Table 1 was created identifying Road Asset Classification by Surface Type, Traffic Volume and Roadside Environment. Roadside Environment has been added to permit the calculation of different replacement costs between rural and urban cross-sections.

Deterioration Curves

When using the Inventory Manual (IM) methodology, Structural Adequacy is a measurement of the percentage of the surface of the road that is exhibiting distress. The rater will consider the type of distress as well as the other critical areas (surface width, capacity, geometry, drainage and surface width) in order to provide a recommendation for an improvement. In the IM, any, or multiple of the critical areas, may produce a Time of Need (TON). The overall TON of the road section is the worst of all of the TON's. For example, if five of the TON's are ADEQ, and one is NOW, the section is a NOW need.

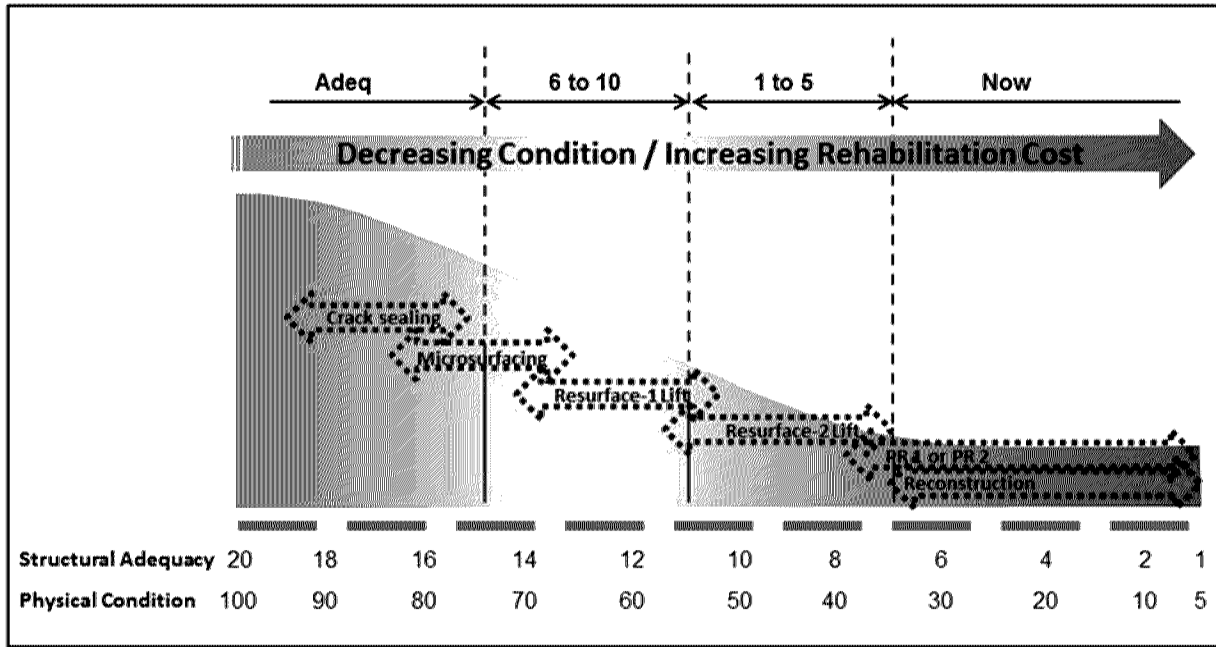
It would be possible, but very difficult, to develop performance models around all of the critical areas. So for the purposes of the performance modeling, Structural Adequacy (distress) has been selected to be the driver in the decisions with respect to the model.

In the early years of the model, if a project is selected that has an identified improvement type, that improvement will be used for the project in the year that it is selected. In the later years, presumably after all current deficiencies have been corrected the model will revert to the assigned asset class for deterioration and project selection based on estimated condition.

All deterioration curves relate to the 'Physical Condition' data field in WorkTech. Physical Condition is the Structural Adequacy multiplied by 5 to produce a score from 5 to 100. The Physical Condition deterioration curve is specific to the Inventory Manual and therefore the trigger points and definition of the curve will be different than other methodologies. It should be noted that different evaluation methodologies will produce varying deterioration curves and trigger points. Familiarity with the rating system being utilized is essential.

The deterioration curves are the same for each asset class regardless of roadside environment. For urban sections, the improvement is RSS- Reconstruction with Storm Sewers, rather than REC- Reconstruction Rural.

Figure 1: Physical Condition versus Improvement Selection



Where the MTO PCI / Inventory Manual Condition Rating format is being used, the PCI data is entered to produce a PCI score from different formulas that represent the defects and weightings by surface type. The PCI score is then used to approximate a Structural Adequacy score (and a Physical Condition). Table 2 identifies the approximations to convert PCI to Structural Adequacy and a Time of Need.

Table 2: PCI to Structural Adequacy Conversion

Time of Need	PCI	Structural Adequacy	Formula PCI to SA
NOW	1 to 55	1 to 7	IF PCI <=55 then, PCI / 8 = SA
1 to 5	56 to 75	8 to 11	IF PCI >55<=75 then, PCI / 7 =SA
6 to 10	76 to 85	12 to 14	IF PCI >75<=85 then, PCI / 6 =SA
ADEQ	86 to 100	15 to 20	IF PCI >85 then, PCI /5.4 =SA

Once a Structural Adequacy Score has been determined, the TON is also calculated. What this achieves is the detail of PCI data collection and the strength of the holistic evaluation of the Inventory Manual.

Improvement Types- Effect on the Asset

Appendix A of this report includes a summary of the improvement types that are included in the inventory Manual. In WorkTech there is no restriction on what may be developed as an improvement type for a road agency. However, regardless of the improvement types that are used the effect that the improvement has on the asset has to be understood in order to use performance modeling.

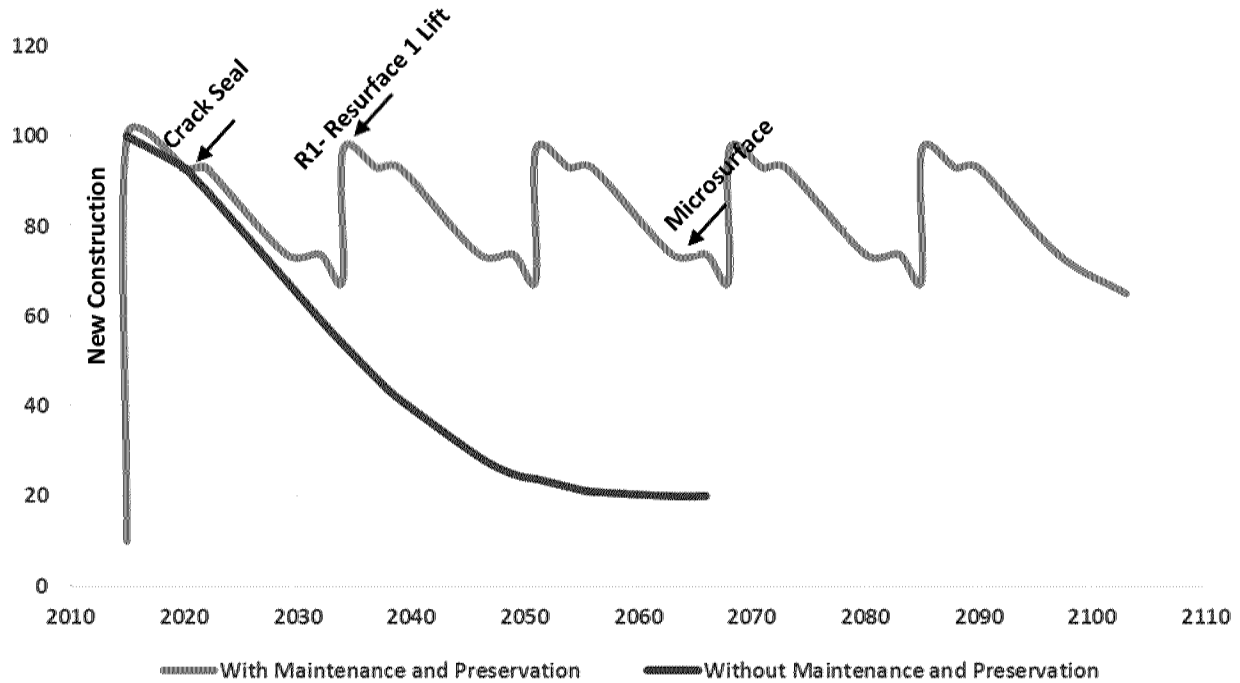
The following table identifies a number of improvement types and further identifies the effect that they have on a road asset. A similar approach may be taken with other assets.

Code	Description	Effect on the Asset
R1	Basic Resurfacing – Single Lift	Increase Physical Condition to 97
R2	Basic Resurfacing – Double Lift	Increase Physical Condition to 100
RM	Major Resurfacing	Increase Physical Condition to 100
PR1	Pulverizing and Resurfacing – Single Lift	Increase Physical Condition to 95
PR2	Pulverizing and Resurfacing – Double Lift	Increase Physical Condition to 100
BS	Base and Surface Tolerable – Tolerable standard for lower volume roads – Rural and Semi-Urban Cross sections only	Increase Physical Condition to 95
RW	Resurface and Widen	Increase Physical Condition to 97
REC	Reconstruction	Increase Physical Condition to 100
RNS	Reconstruction Nominal Storm Sewers (Urban: no new sewer, adjust manholes, catch basins, add sub-drain, remove and replace curb and gutter, granular, and hot mix)	Increase Physical Condition to 100
RSS	Reconstruction including Installation of Storm Sewers (New storm sewers and manholes in addition to the above)	Increase Physical Condition to 100
NC	Proposed Road Construction	Increase Physical Condition to 100
SRR	Storm Sewer Installation and Road Reinstatement	No effect
CRK	Crack Sealing	Hold Physical Condition for 2 Years
MICRO	Microsurfacing	Hold Physical Condition for 3 years
GRR	Gravel Road Resurfacing – add 75mm	Hold Physical Condition for 3 years
GRR2	Gravel Road Resurfacing - Add 150mm	Increase Physical Condition by 20

The effect that a treatment has on an asset is critical to the analysis. Inaccurate determination of the effect of a treatment on an asset will produce an inaccurate – and indefensible- result. The following chart is a comparison of the deterioration of a road section without any treatment applied versus a road section that has appropriate treatment at the optimal condition, producing a more cost effective life cycle.

Figure 2, shown below, illustrates several different aspects of performance model output including the effect of a treatment on an asset and the effect of multiple treatments undertaken at the optimal asset condition to produce a cost effective management strategy.

Figure 2: Performance Model – Effect of Treatment on Asset

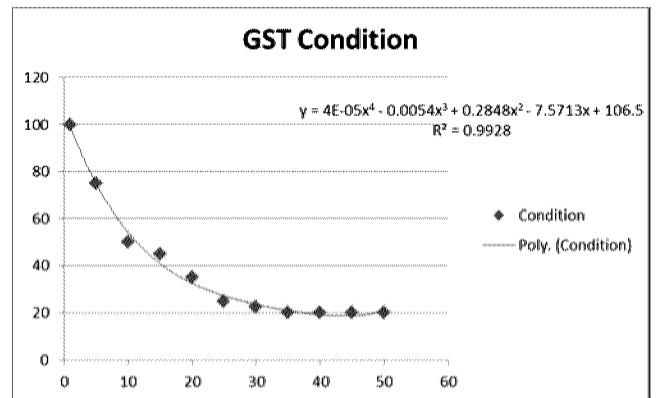


Deterioration Curves by Surface Type and Traffic Volume

The following pages includes tables and graphs indicating the anticipated performance of an appropriately constructed road asset and the condition triggers for treatments. The deterioration curves by asset class used in concert with the table indicating the treatment effect on the asset, and the agency's unit costs, will produce a performance model that demonstrates the effect on the system at various budget levels and produce a program based on input parameters.

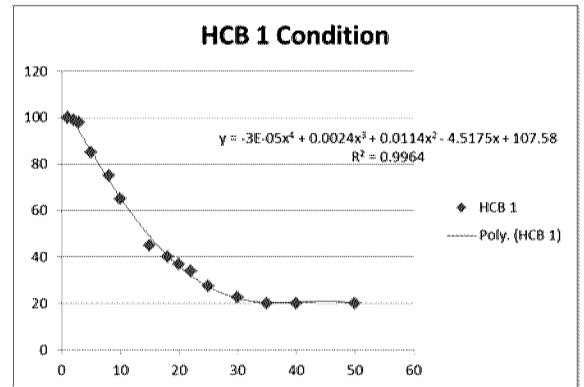
Gravel Roads- All Roadsides, all AADT

Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	92.45	NONE	No Improvement Required
3	86.21	GRR	75mm of Granular A
4	80.43	GRR	75mm of Granular A
5	75.11	GRR	75mm of Granular A
6	70.21	GRR	75mm of Granular A
7	65.7	GRR2	150mm of additional Gravel
8	61.55	GRR2	150mm of additional Gravel
9	57.75	GRR2	150mm of additional Gravel
10	54.27	GRR2	150mm of additional Gravel
11	51.07	GRR2	150mm of additional Gravel
12	48.15	GRR2	150mm of additional Gravel
13	45.48	GRR2	150mm of additional Gravel
14	43.04	GRR2	150mm of additional Gravel
15	40.81	GRR2	150mm of additional Gravel
16	38.77	GRR2	150mm of additional Gravel
17	36.9	GRR2	150mm of additional Gravel
18	35.2	GRR2	150mm of additional Gravel
19	33.63	REC	Reconstruction - Rural
20	32.19	REC	Reconstruction - Rural
21	30.86	REC	Reconstruction - Rural
22	29.64	REC	Reconstruction - Rural
23	28.51	REC	Reconstruction - Rural
24	27.45	REC	Reconstruction - Rural
25	26.47	REC	Reconstruction - Rural
30	22.28	REC	Reconstruction - Rural
35	18.88	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



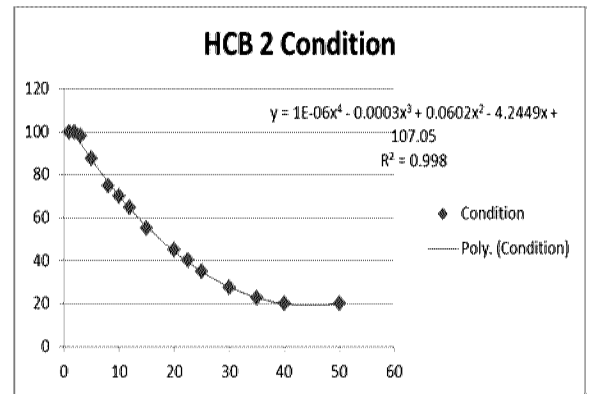
HCB1 All Roadsides- AADT > 20,000, assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.61	NONE	No Improvement Required
3	94.19	NONE	No Improvement Required
4	89.83	CRK	Crack Sealing
5	85.55	CRK	Crack Sealing
6	81.36	CRK	Crack Sealing
7	77.26	MICRO	Microsurfacing -Pavement Preservation
8	73.28	MICRO	Microsurfacing -Pavement Preservation
9	69.4	R1	Basic Resurfacing 1 - 50mm
10	65.65	R1	Basic Resurfacing 1 - 50mm
11	62.02	R1	Basic Resurfacing 1 - 50mm
12	58.54	R1	Basic Resurfacing 1 - 50mm
13	55.19	R2	Basic Resurfacing 2 - 100mm
14	52	R2	Basic Resurfacing 2 - 100mm
15	48.96	R2	Basic Resurfacing 2 - 100mm
16	46.08	R2	Basic Resurfacing 2 - 100mm
17	43.36	R2	Basic Resurfacing 2 - 100mm
18	40.81	R2	Basic Resurfacing 2 - 100mm
19	38.41	R2	Basic Resurfacing 2 - 100mm
20	36.19	REC	Reconstruction - Rural
22	32.24	REC	Reconstruction - Rural
23	30.51	REC	Reconstruction - Rural
24	28.95	REC	Reconstruction - Rural
25	27.55	REC	Reconstruction - Rural
26	26.3	REC	Reconstruction - Rural
27	25.21	REC	Reconstruction - Rural
28	24.27	REC	Reconstruction - Rural
29	23.47	REC	Reconstruction - Rural
30	22.82	REC	Reconstruction - Rural
35	21.31	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



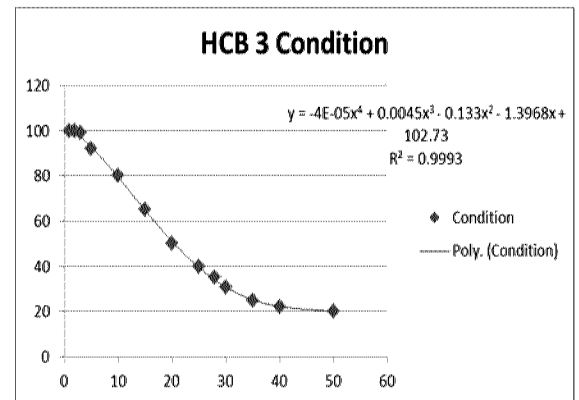
HCB 2 All Roadside- AADT >10,000 <20,000, Assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.79	NONE	No Improvement Required
3	94.85	NONE	No Improvement Required
4	91.01	CRK	Crack Sealing
5	87.29	CRK	Crack Sealing
6	83.68	CRK	Crack Sealing
7	80.18	CRK2	Crack Sealing
8	76.79	MICRO	Microsurfacing -Pavement Preservation
9	73.51	MICRO2	Microsurfacing -Pavement Preservation
10	70.33	R1	Basic Resurfacing 1 - 50mm
11	67.26	R1	Basic Resurfacing 1 - 50mm
12	64.28	R1	Basic Resurfacing 1 - 50mm
13	61.41	R1	Basic Resurfacing 1 - 50mm
14	58.63	R1	Basic Resurfacing 1 - 50mm
15	55.95	R2	Basic Resurfacing 2 - 100mm
16	53.38	R2	Basic Resurfacing 2 - 100mm
17	50.89	R2	Basic Resurfacing 2 - 100mm
18	48.5	R2	Basic Resurfacing 2 - 100mm
19	46.2	R2	Basic Resurfacing 2 - 100mm
20	43.99	R2	Basic Resurfacing 2 - 100mm
21	41.87	R2	Basic Resurfacing 2 - 100mm
22	39.84	R2	Basic Resurfacing 2 - 100mm
23	37.89	R2	Basic Resurfacing 2 - 100mm
24	36.03	R2	Basic Resurfacing 2 - 100mm
25	34.26	REC	Reconstruction - Rural
26	32.56	REC	Reconstruction - Rural
27	30.95	REC	Reconstruction - Rural
28	29.42	REC	Reconstruction - Rural
29	27.97	REC	Reconstruction - Rural
30	26.59	REC	Reconstruction - Rural
35	20.86	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



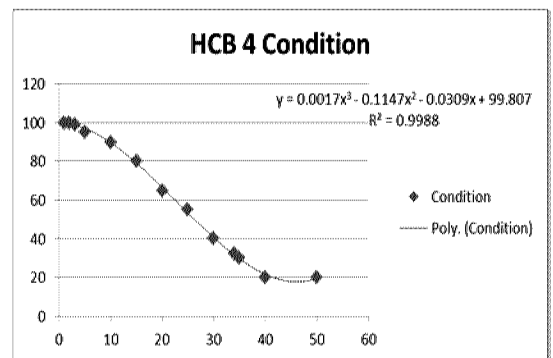
HC3 3 All Roadsides – AADT 1,000 < 10,000, Assumes 10% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	99.44	NONE	No Improvement Required
3	97.46	NONE	No Improvement Required
4	95.29	NONE	No Improvement Required
5	92.95	CRK	Crack Sealing
6	90.48	CRK	Crack Sealing
7	87.88	CRK2	Crack Sealing
8	85.18	CRK2	Crack Sealing
9	82.4	CRK2	Crack Sealing
10	79.56	MICRO	Microsurfacing -Pavement Preservation
11	76.67	MICRO	Microsurfacing -Pavement Preservation
12	73.76	MICRO2	Microsurfacing -Pavement Preservation
13	70.83	R1	Basic Resurfacing 1 - 50mm
14	67.91	R1	Basic Resurfacing 1 - 50mm
15	65.01	R1	Basic Resurfacing 1 - 50mm
16	62.14	R1	Basic Resurfacing 1 - 50mm
17	59.31	R1	Basic Resurfacing 1 - 50mm
18	56.54	R1	Basic Resurfacing 1 - 50mm
19	53.83	R2	Basic Resurfacing 2 - 100mm
20	51.19	R2	Basic Resurfacing 2 - 100mm
21	48.63	R2	Basic Resurfacing 2 - 100mm
22	46.17	R2	Basic Resurfacing 2 - 100mm
23	43.8	R2	Basic Resurfacing 2 - 100mm
24	41.53	R2	Basic Resurfacing 2 - 100mm
25	39.37	R2	Basic Resurfacing 2 - 100mm
26	37.31	R2	Basic Resurfacing 2 - 100mm
27	35.37	R2	Basic Resurfacing 2 - 100mm
28	33.54	REC	Reconstruction - Rural
29	31.82	REC	Reconstruction - Rural
30	30.22	REC	Reconstruction - Rural
35	23.83	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



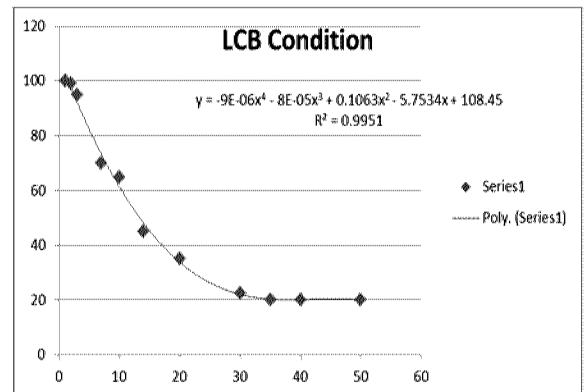
HCB 4 All Roadsides- AADT <1,000, Assumes 5% Commercial

>Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	99.44	NONE	No Improvement Required
3	97.46	NONE	No Improvement Required
4	95.29	NONE	No Improvement Required
5	92.95	CRK	Crack Sealing
6	90.48	CRK	Crack Sealing
7	87.88	CRK2	Crack Sealing
8	85.18	CRK2	Crack Sealing
9	82.4	CRK2	Crack Sealing
10	79.56	MICRO	Microsurfacing -Pavement Preservation
11	76.67	MICRO	Microsurfacing -Pavement Preservation
12	73.76	MICRO2	Microsurfacing -Pavement Preservation
13	70.83	R1	Basic Resurfacing 1 - 50mm
14	67.91	R1	Basic Resurfacing 1 - 50mm
15	65.01	R1	Basic Resurfacing 1 - 50mm
16	62.14	R1	Basic Resurfacing 1 - 50mm
17	59.31	R1	Basic Resurfacing 1 - 50mm
18	56.54	R1	Basic Resurfacing 1 - 50mm
19	53.83	R2	Basic Resurfacing 2 - 100mm
20	51.19	R2	Basic Resurfacing 2 - 100mm
21	48.63	R2	Basic Resurfacing 2 - 100mm
22	46.17	R2	Basic Resurfacing 2 - 100mm
23	43.8	R2	Basic Resurfacing 2 - 100mm
24	41.53	R2	Basic Resurfacing 2 - 100mm
25	39.37	R2	Basic Resurfacing 2 - 100mm
26	37.31	R2	Basic Resurfacing 2 - 100mm
27	35.37	R2	Basic Resurfacing 2 - 100mm
28	33.54	REC	Reconstruction - Rural
29	31.82	REC	Reconstruction - Rural
30	30.22	REC	Reconstruction - Rural
40	20	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



LCB All roadsides – All AADT's

Year	Condition	Improvement	Description
1	100	NONE	No Improvement Required
2	98.61	NONE	No Improvement Required
3	94.19	NONE	No Improvement Required
4	89.84	NONE	No Improvement Required
5	85.56	NONE	No Improvement Required
6	81.36	NONE	No Improvement Required
7	77.26	SST	Single Surface Treatment
8	73.28	SST	Single Surface Treatment
9	69.4	SST	Single Surface Treatment
10	65.65	SST	Single Surface Treatment
11	62.02	SST	Single Surface Treatment
12	58.54	SST	Single Surface Treatment
13	55.19	SST	Single Surface Treatment
14	52	SSTplus	SST plus Padding / geometric correction
15	48.96	SSTplus	SST plus Padding / geometric correction
16	46.08	SSTplus	SST plus Padding / geometric correction
17	43.36	SSTplus	SST plus Padding / geometric correction
18	40.81	SSTplus	SST plus Padding / geometric correction
19	38.41	SSTplus	SST plus Padding / geometric correction
20	36.19	REC	Reconstruction - Rural
21	34.13	REC	Reconstruction - Rural
22	32.24	REC	Reconstruction - Rural
23	30.51	REC	Reconstruction - Rural
24	28.95	REC	Reconstruction - Rural
25	27.55	REC	Reconstruction - Rural
30	22.82	REC	Reconstruction - Rural
35	21.31	REC	Reconstruction - Rural
40	21.92	REC	Reconstruction - Rural
45	20	REC	Reconstruction - Rural
50	20	REC	Reconstruction - Rural



Appendix G: 10 Year Program Based on Proposed Funding Level

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			Start Value	End Value
						Condit	Condit	Yrs	Condit	Condit	Yrs		
2014	10910	Queen Street	(to) Bigelow Street-to-2-Simcoe Street	CRK	\$ 480	85	85	2	\$ 203,505	\$ 203,505	\$ 203,505	\$ 203,505	
2014	40050	Old Scugog Road, Blackstock	(to) Church Street-to-0.1 km North of Church Street	CRK	\$ 400	85	85	2	\$ 149,782	\$ 149,782	\$ 149,782	\$ 149,782	
2014	10040	King Street	(to) Mikelen Drive-to-Old Simcoe Road	CRK	\$ 1,680	85	85	2	\$ 616,085	\$ 616,085	\$ 616,085	\$ 616,085	
2014	10620	Ash Street	(to) Victoria Street-to-Allan Street	CRK	\$ 480	85	85	2	\$ 176,024	\$ 176,024	\$ 176,024	\$ 176,024	
2014	10630	Ash Street	(to) Allan Street-to-Alma Street	CRK	\$ 600	85	85	2	\$ 220,030	\$ 220,030	\$ 220,030	\$ 220,030	
2014	11620	Old Rail Lane	(to) North Street-to-North End	CRK	\$ 760	85	85	2	\$ 278,705	\$ 278,705	\$ 278,705	\$ 278,705	
2014	10890	Queen Street	(to) Old Simcoe Road-to-Ottawa Street	CRK	\$ 1,320	90	90	2	\$ 626,648	\$ 626,648	\$ 626,648	\$ 626,648	
2014	10470	Vanedward Drive	(to) 2-Simcoe Street-to-East End Cul-de-sac	CRK	\$ 960	90	90	2	\$ 377,475	\$ 377,475	\$ 377,475	\$ 377,475	
2014	10430	Major Street	(to) Earl S Cuddie Boulevard-to-2-Simcoe Street	CRK	\$ 560	90	90	2	\$ 217,442	\$ 217,442	\$ 217,442	\$ 217,442	
2014	11010	North Street	(to) Perry Street-to-Water Street	CRK	\$ 960	90	90	2	\$ 372,758	\$ 372,758	\$ 372,758	\$ 372,758	
2014	11720	Casimir Street	(to) Perry Street-to-Water Street	CRK	\$ 1,020	95	95	2	\$ 375,955	\$ 375,955	\$ 375,955	\$ 375,955	
2014	840	Town Line Road	(to) Duff's Road-to-Ashburn Road	REC	\$ 143,213	25	100		\$ 343,396	\$ 1,373,582	\$ 343,396	\$ 1,373,582	
2014	11900	Coulter Street	(to) Coulcliff Street-to-2-Simcoe Street	CRK	\$ 1,640	85	85	2	\$ 720,117	\$ 720,117	\$ 720,117	\$ 720,117	
2014	12060	Cawkers Cove Road	(to) 0.8 km East of Stone Sound Road-to-North End	CRK	\$ 3,560	85	85	2	\$ 1,563,181	\$ 1,563,181	\$ 1,563,181	\$ 1,563,181	
2014	10120	Perryview Drive	(to) King Street-to-Greenway Boulevard	CRK	\$ 1,880	85	85	2	\$ 727,246	\$ 727,246	\$ 727,246	\$ 727,246	
2014	10570	Victoria Street	(to) Old Simcoe Road-to-Ash Street	CRK	\$ 1,600	85	85	2	\$ 599,126	\$ 599,126	\$ 599,126	\$ 599,126	
2014	40040	Old Scugog Road, Blackstock	(to) 0.1 km South of Church Street-to-Church Street	CRK	\$ 440	85	85	2	\$ 164,760	\$ 164,760	\$ 164,760	\$ 164,760	
2014	70050	River Street, Seagrave	(to) Nonquon River Bridge-to-Keene Street	CRK	\$ 520	85	85	2	\$ 194,716	\$ 194,716	\$ 194,716	\$ 194,716	
2014	10090	Mikelen Drive	(to) King Street-to-Old Simcoe Road	CRK	\$ 2,280	85	85	2	\$ 836,115	\$ 836,115	\$ 836,115	\$ 836,115	
2014	10400	Earl S Cuddie Boulevard	(to) King Avenue-to-Major Street	CRK	\$ 2,120	85	85	2	\$ 777,441	\$ 777,441	\$ 777,441	\$ 777,441	
2014	10600	Steinway Drive	(to) Ash Street-to-South End Turnaround	CRK	\$ 2,440	85	85	2	\$ 894,790	\$ 894,790	\$ 894,790	\$ 894,790	
2014	10700	Alma Street	(to) Pine Court-to-Ash Street	CRK	\$ 480	85	85	2	\$ 176,024	\$ 176,024	\$ 176,024	\$ 176,024	
2014	10720	Hyland Crescent	(to) Victoria Street-to-Victoria Street	CRK	\$ 1,320	85	85	2	\$ 484,067	\$ 484,067	\$ 484,067	\$ 484,067	
2014	10730	Amber Court	(to) Hyland Crescent-to-West End Cul-de-Sac	CRK	\$ 360	85	85	2	\$ 132,019	\$ 132,019	\$ 132,019	\$ 132,019	
2014	10760	Allan Street	(to) Sexton Street-to-Ash Street	CRK	\$ 1,520	85	85	2	\$ 557,410	\$ 557,410	\$ 557,410	\$ 557,410	
2014	11570	Curtis Street	(to) Water Street-to-East End	CRK	\$ 680	75	75	2	\$ 220,031	\$ 220,031	\$ 220,031	\$ 220,031	
2014	11970	Candlight Court	(to) South Garden Court-to-North End Cul-de-Sac	CRK	\$ 840	85	85	2	\$ 308,043	\$ 308,043	\$ 308,043	\$ 308,043	
2014	70130	Henrietta Street, Seagrave	(to) River Lake Road-to-Isabella Street	CRK	\$ 480	85	85	2	\$ 176,024	\$ 176,024	\$ 176,024	\$ 176,024	
2014	2210	Coleman Crescent	(to) View Lake Road-to-Cartwright/Manvers Boundary Road	CRK	\$ 1,080	80	80	2	\$ 164,259	\$ 164,259	\$ 164,259	\$ 164,259	
2014	40070	Old Scugog Road, Blackstock	(to) Alexander Street-to-57-Blackstock Road	CRK	\$ 3,600	85	85	2	\$ 494,437	\$ 494,437	\$ 494,437	\$ 494,437	
2014	10850	Heath Crescent	(to) Walsh Drive-to-Walsh Drive	CRK	\$ 1,120	80	80	2	\$ 462,858	\$ 462,858	\$ 462,858	\$ 462,858	
2014	2160	Cedarvale Road	(to) Malcolm Road-to-57-Caesarea Road	REC	\$ 218,059	40	100		\$ 528,274	\$ 1,320,686	\$ 528,274	\$ 1,320,686	
2014	1010	Ambleside Drive	(to) Gerron Road-to-North End Turnaround	CRK	\$ 3,600	80	80	2	\$ 430,098	\$ 430,098	\$ 430,098	\$ 430,098	
2014	10870	Scugog Line No 6	(to) 1.8km East of Highway 7 & 12-to-Highway 7 & 12	PR2	\$ 367,188	20	100		\$ 297,885	\$ 1,489,426	\$ 297,885	\$ 1,489,426	
2014	10490	Lakeview Drive	(to) East of Ridgeview Drive-to-East End Cul-de-sac	CRK	\$ 1,640	80	80	2	\$ 566,039	\$ 566,039	\$ 566,039	\$ 566,039	
2014	10765	Poplar Park Crescent	(to) Allan Street-to-Allan Street	CRK	\$ 1,040	80	80	2	\$ 358,951	\$ 358,951	\$ 358,951	\$ 358,951	
2014	10780	Arrow Street	(to) Lorne Street-to-Scugog Street	CRK	\$ 520	80	80	2	\$ 179,476	\$ 179,476	\$ 179,476	\$ 179,476	
2014	10790	Sexton Street	(to) Allan Street-to-North End Cul-de-sac	CRK	\$ 880	80	80	2	\$ 303,728	\$ 303,728	\$ 303,728	\$ 303,728	
2014	12070	Island View Court	(to) Cawkers Cove Road-to-South End Cul-de-Sac	CRK	\$ 1,320	80	80	2	\$ 455,592	\$ 455,592	\$ 455,592	\$ 455,592	
2014	10240	Old Simcoe Road	(to) Queen Street-to-MacDonald Street	R2	\$ 150,708	40	100		\$ 312,269	\$ 780,673	\$ 312,269	\$ 780,673	
2014	2215	Coleman Crescent	(to) 275m North of View Lake Road-to-70m West of Cartwright / Mar	CRK	\$ 1,800	80	80	2	\$ 188,689	\$ 188,689	\$ 188,689	\$ 188,689	

Township of Scugog 10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		End		Start Value	End Value
						Condit	Yrs	Condit	Yrs		
2014	11180	Lakeshore Drive	(to) Beech Street-to-Coulter Street	CRK	\$ 1,280	75	2	75	2	\$ 495,920	\$ 495,920
2014	10990	MacDonald Street	(to) Bigelow Street-to-2-Simcoe Street	R2	\$ 46,229	40	100	40	100	\$ 76,252	\$ 190,631
2014	10510	Ridgeview Drive	(to) Lakeview Drive-to-Orchard Road	CRK	\$ 1,080	75	2	75	2	\$ 349,460	\$ 349,460
2014	10520	Applewood Crescent	(to) Orchard Road-to-Orchard Road	CRK	\$ 1,200	75	2	75	2	\$ 388,289	\$ 388,289
2014	40010	Church Street, Blackstock	(to) Old Scugog Road-to-Greensboro Drive	CRK	\$ 800	75	2	75	2	\$ 258,860	\$ 258,860
2014	40020	Church Street	(to) 57-Blackstock Road-to-Old Scugog Road	CRK	\$ 1,920	85	2	85	2	\$ 259,785	\$ 259,785
2014	2060	Scugog Point Crescent	(to) Mabel's Road-to-Mabel's Road	CRK	\$ 2,760	85	2	85	2	\$ 370,142	\$ 370,142
2014	10115	Bonnie Brae Court	(to) Brae Valley Drive-to-East End Barricade	CRK	\$ 240	95	2	95	2	\$ 98,367	\$ 98,367
2014	60000	Cragg Road, Greenbank	(to) 0.3 km West of Hwy 7 & 12-to-0.6 km West of Hwy 7 & 12	CRK	\$ 1,200	85	2	85	2	\$ 156,629	\$ 156,629
2014	10140	Mead Drive	(to) Perryview Drive-to-West End Turnaround	CRK	\$ 240	90	2	90	2	\$ 93,190	\$ 93,190
					\$ 984,097						

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			Start Value	End Value
						Cond	Yrs	Hold	Cond	Yrs	Hold		
2015	40060	Old Scugog Road, Blackstock	(to) 0.1 km North of Church Street-to-Alexander Street	CRK	\$ 1,880	79.56	2	79.56	79.56	2	\$ 658,919	\$ 658,919	
2015	11980	Country Estates Drive	(to) 2-Simcoe Street-to-Waterbury Crescent	CRK	\$ 1,280	89.73	2	89.73	89.73	2	\$ 605,835	\$ 605,835	
2015	10180	Brandon Road	(to) Perryview Drive-to-North End Cul-de-Sac	CRK	\$ 1,120	89.73	2	89.73	89.73	2	\$ 519,154	\$ 519,154	
2015	11940	Commons Boulevard	(to) South Garden Court-to-Waterbury Crescent	CRK	\$ 1,200	89.73	2	89.73	89.73	2	\$ 556,236	\$ 556,236	
2015	11950	South Garden Court	(to) County Estates Drive-to-Waterbury Crescent	CRK	\$ 960	89.73	2	89.73	89.73	2	\$ 444,989	\$ 444,989	
2015	10110	Brae Valley Court	(to) Brae Valley Drive-to-West End Cul-de-Sac	CRK	\$ 800	89.73	2	89.73	89.73	2	\$ 309,700	\$ 309,700	
2015	10150	Calwell Drive	(to) Perryview Drive-to-Anders Drive	CRK	\$ 1,000	89.73	2	89.73	89.73	2	\$ 387,124	\$ 387,124	
2015	10160	Anders Drive	(to) Perryview Drive-to-Brandon Road	CRK	\$ 1,440	89.73	2	89.73	89.73	2	\$ 557,458	\$ 557,458	
2015	10170	Winchurch Drive	(to) Perryview Drive-to-Anders Drive	CRK	\$ 840	89.73	2	89.73	89.73	2	\$ 325,184	\$ 325,184	
2015	10410	Sadler Crescent	(to) Earl S Cuddie Boulevard-to-Earl S Cuddie Boulevard	CRK	\$ 1,160	89.73	2	89.73	89.73	2	\$ 449,064	\$ 449,064	
2015	11330	Cochrane Street	(to) MacDonald Street-to-Paxton Street	CRK	\$ 600	89.73	2	89.73	89.73	2	\$ 232,274	\$ 232,274	
2015	11920	Waterbury Crescent	(to) Coulter Street-to-Country Estates Drive	CRK	\$ 2,000	89.73	2	89.73	89.73	2	\$ 774,248	\$ 774,248	
2015	11930	Waterbury Crescent	(to) Country Estates Drive-to-South Garden Court	CRK	\$ 3,920	89.73	2	89.73	89.73	2	\$ 1,517,526	\$ 1,517,526	
2015	11960	South Garden Court	(to) Waterbury Crescent-to-Country Estates Drive	CRK	\$ 1,080	89.73	2	89.73	89.73	2	\$ 418,094	\$ 418,094	
2015	70120	Isabella Court, Seagrave	(to) Henrietta Street-to-North End Cul-de-Sac	CRK	\$ 920	89.73	2	89.73	89.73	2	\$ 356,154	\$ 356,154	
2015	11120	Bay Street	(to) Rosa Street-to-Cochrane Street	CRK	\$ 440	87.88	2	87.88	87.88	2	\$ 61,551	\$ 61,551	
2015	1420	Boundary Road	(to) East End Checkerboard-to-Fowler Line	GRR2	\$ 21,762	54.27	2	54.27	74.27	2	\$ 197,230	\$ 269,915	
2015	20020	Stephenson Point Road	(to) Pettit Drive-to-South End Cul-de-Sac	CRK	\$ 3,360	74.49	2	74.49	74.49	2	\$ 330,883	\$ 330,883	
2015	1850	Suggett Drive, Nestleton	(to) McLaughlin Road-to-Highway 7A	CRK	\$ 3,600	74.49	2	74.49	74.49	2	\$ 351,386	\$ 351,386	
2015	10880	Queen Street	(to) Scugog Street-to-Old Simcoe Road	R2	\$ 145,839	39.37	100	39.37	100	100	\$ 284,439	\$ 722,476	
2015	2380	Ashburn Road	(to) Townline Road-to-0.4 km South of Scugog Line No 2	PR2	\$ 246,765	24.06	100	24.06	100	100	\$ 236,913	\$ 984,676	
2015	10480	Lakeview Drive	(to) 2-Simcoe Street-to-East of Ridgeview Drive	R2	\$ 79,971	39.37	100	39.37	100	100	\$ 142,678	\$ 362,403	
2015	10640	Ash Street	(to) Alma Street-to-Scugog Street	R2	\$ 102,819	39.37	100	39.37	100	100	\$ 183,443	\$ 465,947	
2015	1280	Pogue Road	(to) Carnegie Beach Road-to-1.6 km East of 7-Island Road	PR2	\$ 138,944	10	100	10	100	100	\$ 43,143	\$ 431,432	
2015	30150	Centre Street, Caesarea	(to) Marina Drive-to-Pier Street	CRK	\$ 480	83.76	2	83.76	83.76	2	\$ 50,804	\$ 50,804	
2015	10500	Carnegie Street	(to) Scugog Street-to-Lakeview Drive	R2	\$ 131,586	39.37	100	39.37	100	100	\$ 224,208	\$ 569,490	
2015	11270	Rosa Street	(to) MacDonald Street-to-Paxton Street	R2	\$ 60,888	39.27	100	39.27	100	100	\$ 101,654	\$ 258,859	
2015	11410	Bigelow Street	(to) Bay Street-to-Kellett Street	R2	\$ 82,619	39.27	100	39.27	100	100	\$ 135,539	\$ 345,146	
2015	11870	Circle Drive	(to) Riverview Drive-to-Edinborough Avenue	CRK	\$ 1,280	89.73	2	89.73	89.73	2	\$ 154,522	\$ 154,522	
2015	12050	Cawkers Cove Road	(to) Stone Sound Road-to-0.8 km East of Stone Sound Road	CRK	\$ 3,720	89.73	2	89.73	89.73	2	\$ 445,181	\$ 445,181	
2015	70160	River Street, Seagrave	(to) 2-Simcoe Street-to-Sun Valley Road	CRK	\$ 840	89.73	2	89.73	89.73	2	\$ 97,885	\$ 97,885	
2015	10680	Alma Street	(to) Old Simcoe Road-to-Gibson Drive	PR2	\$ 20,964	20	100	20	100	100	\$ 11,947	\$ 59,736	
2015	11210	Beechcroft Place	(to) Beech Street-to-North End Cul-de-sac	CRK	\$ 280	94.55	2	94.55	94.55	2	\$ 35,926	\$ 35,926	
2015	12140	Framar Avenue	(to) Honey's Beach Road-to-West End	MICRO	\$ 1,218	74.49	3	74.49	74.49	3	\$ 38,917	\$ 38,917	
					\$ 1,067,575								

Township of Scugog 10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		End		Yrs Hold	Start Value	End Value
						Condit	Value	Condit	Value			
2016	1400	Boundary Road	(to) Old Scugog Road-to-West End Turnaround	CRK	\$ 840	81.56	\$ 227,745	81.56	2		\$ 227,745	\$ 227,745
2016	10260	Old Simcoe Road	(to) Bay Street-to-8-Reach Street	R2	\$ 200,007	37.32	\$ 315,662	100			\$ 315,662	\$ 845,825
2016	10530	Orchard Road	(to) Lakeview Drive-to-Lakeview Drive	R1	\$ 213,188	56.5	\$ 760,528	97			\$ 760,528	\$ 1,305,686
2016	10950	MacDonald Street	(to) Old Simcoe Road-to-Ottawa Street	R2	\$ 86,750	37.07	\$ 134,343	100			\$ 134,343	\$ 362,403
2016	900	Coates Road West	(to) Garrard Road-to-Hwy 7 & 12	PR2	\$ 88,323	36.19	\$ 131,761	100			\$ 131,761	\$ 364,082
2016	10255	Old Simcoe Road	(to) 75m North of Paxton Street-to-Bay Street	R2	\$ 104,439	37.32	\$ 157,831	100			\$ 157,831	\$ 422,913
2016	10970	MacDonald Street	(to) Rosa Street-to-Cochrane Street	R1	\$ 34,090	56.5	\$ 117,004	97			\$ 117,004	\$ 200,874
2016	60010	Cragg Road, Greenbank	(to) Hwy 7 & 12-to-0.3 km West of Hwy 7 & 12	R2	\$ 123,305	51.35	\$ 318,319	100			\$ 318,319	\$ 619,900
2016	20000	Stephenson Point Road	(to) 7-Island Road-to-Platten Boulevard	PR2	\$ 119,056	23.83	\$ 94,422	100			\$ 94,422	\$ 396,232
2016	11150	Kenny Court	(to) Rosa Street-to-West End Cul-de-sac	R2	\$ 49,506	46.33	\$ 103,939	100			\$ 103,939	\$ 224,345
2016	11380	Bigelow Street	(to) Queen Street-to-Paxton Street	R1	\$ 90,737	56.5	\$ 302,261	97			\$ 302,261	\$ 518,927
2016	40030	Old Scugog Road, Blackstock	(to) 0.4 km South of Church Street-to-0.1 km South of Church Street	R1	\$ 36,847	51.35	\$ 99,566	97			\$ 99,566	\$ 188,080
2016	1260	Pogue Road	(to) Fralick's Beach Road-to-7-Island Road	GRR2	\$ 7,660	45.48	\$ 27,154	65.48			\$ 27,154	\$ 39,095
					\$						\$	\$ 1,154,748

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			Start Value	End Value
						Conc	Yrs	Hold	Conc	Yrs	Hold		
2017	10300	Union Avenue	(to) Josephine Street-to-Major Street	CRK	\$ 2,240	92.95	92.95	2	\$ 921,017	\$ 921,017	\$ 921,017	\$ 921,017	
2017	10210	Old Simcoe Road	(to) Jeffrey Street-to-Victoria Street	CRK	\$ 1,520	92.95	92.95	2	\$ 622,404	\$ 622,404	\$ 622,404	\$ 622,404	
2017	10220	Old Simcoe Road	(to) Victoria Street-to-Scugog Street	CRK	\$ 1,880	92.95	92.95	2	\$ 769,816	\$ 769,816	\$ 769,816	\$ 769,816	
2017	10900	Queen Street	(to) Ottawa Street-to-Bigelow Street	CRK	\$ 1,520	92.95	92.95	2	\$ 622,404	\$ 622,404	\$ 622,404	\$ 622,404	
2017	10190	Old Simcoe Road	(to) 0.6 km North of Scugog Line No 4-to-King Street	CRK	\$ 3,240	92.95	92.95	2	\$ 1,299,292	\$ 1,299,292	\$ 1,299,292	\$ 1,299,292	
2017	70180	Limosano Street, Seagrave	(to) River Street-to-6-Saintfield Road	CRK	\$ 1,680	83.76	83.76	2	\$ 607,098	\$ 607,098	\$ 607,098	\$ 607,098	
2017	70190	Pardo Court, Seagrave	(to) Limosano Street-to-East End Cul-de-Sac	CRK	\$ 480	83.76	83.76	2	\$ 173,456	\$ 173,456	\$ 173,456	\$ 173,456	
2017	10580	Victoria Street	(to) Ash Street-to-Union Avenue	CRK	\$ 1,000	94.55	94.55	2	\$ 416,525	\$ 416,525	\$ 416,525	\$ 416,525	
2017	11800	Sherrington Drive	(to) 8-Reach Street-to-Roseborough Drive	CRK	\$ 2,800	94.55	94.55	2	\$ 1,166,270	\$ 1,166,270	\$ 1,166,270	\$ 1,166,270	
2017	10100	Brae Valley Drive	(to) Mikelen Drive-to-Brae Valley Court	CRK	\$ 760	94.55	94.55	2	\$ 310,018	\$ 310,018	\$ 310,018	\$ 310,018	
2017	10610	Louis Way	(to) Steinway Drive-to-East End Turnaround	CRK	\$ 440	94.55	94.55	2	\$ 179,484	\$ 179,484	\$ 179,484	\$ 179,484	
2017	10750	Pine Court	(to) Alma Street-to-North End Cul-de-sac	CRK	\$ 800	94.55	94.55	2	\$ 326,336	\$ 326,336	\$ 326,336	\$ 326,336	
2017	11790	Queensplate Drive	(to) Chimney Hill Way-to-Sherrington Drive	CRK	\$ 960	94.55	94.55	2	\$ 391,602	\$ 391,602	\$ 391,602	\$ 391,602	
2017	2620	Old Simcoe Road	(to) Scugog Line No 4-to-0.6 km North of Scugog Line No 4	CRK	\$ 2,400	87.88	87.88	2	\$ 454,185	\$ 454,185	\$ 454,185	\$ 454,185	
2017	2590	Old Simcoe Road	(to) Scugog Line No 2-to-0.8 km North of Scugog Line No 2	CRK	\$ 3,200	89.73	89.73	2	\$ 618,329	\$ 618,329	\$ 618,329	\$ 618,329	
2017	2600	Old Simcoe Road	(to) 0.8 km North of Scugog Line No 2-to-Scugog Line No 3	CRK	\$ 2,200	89.73	89.73	2	\$ 425,101	\$ 425,101	\$ 425,101	\$ 425,101	
2017	2610	Old Simcoe Road	(to) Scugog Line No 3-to-Scugog Line No 4	CRK	\$ 6,080	89.73	89.73	2	\$ 1,174,824	\$ 1,174,824	\$ 1,174,824	\$ 1,174,824	
2017	960	Coates Road East	(to) Wilson Road North-to-2-Simcoe Street North	SST	\$ 11,468	73.27	73.27	3	\$ 788,404	\$ 788,404	\$ 788,404	\$ 788,404	
2017	2410	Marsh Hill Road	(to) Scugog Line No 4-to-0.3 km South of 21-Goodwood Road	R1	\$ 137,724	62.02	97		\$ 616,337	\$ 616,337	\$ 616,337	\$ 616,337	
2017	11180	Lakeshore Drive	(to) Beech Street-to-Coulter Street	MICRO	\$ 6,134	74.48	74.48	3	\$ 492,481	\$ 492,481	\$ 492,481	\$ 492,481	
2017	2580	Old Simcoe Road	(to) 2-Simcoe Street-to-Scugog Line No 2	R2	\$ 228,376	34.97	100		\$ 314,505	\$ 314,505	\$ 314,505	\$ 314,505	
2017	11400	Bigelow Street	(to) Paxton Street-to-Bay Street	R2	\$ 128,059	39.27	100		\$ 210,085	\$ 210,085	\$ 210,085	\$ 210,085	
2017	10860	Walsh Drive	(to) Queen Street-to-Old Simcoe Road	R1	\$ 112,086	64.32	97		\$ 531,626	\$ 531,626	\$ 531,626	\$ 531,626	
2017	11570	Curtis Street	(to) Water Street-to-East End	MICRO	\$ 3,335	73.76	73.76	3	\$ 216,393	\$ 216,393	\$ 216,393	\$ 216,393	
2017	40010	Church Street, Blackstock	(to) Old Scugog Road-to-Greensboro Drive	MICRO	\$ 3,383	74.48	74.48	3	\$ 257,065	\$ 257,065	\$ 257,065	\$ 257,065	
2017	10980	MacDonald Street	(to) Cochrane Street-to-Bigelow Street	R2	\$ 44,651	43.91	100		\$ 83,354	\$ 83,354	\$ 83,354	\$ 83,354	
2017	70150	River Street, Seagrave	(to) Henrietta Street-to-2-Simcoe Street	R1	\$ 112,473	59.1	97		\$ 406,155	\$ 406,155	\$ 406,155	\$ 406,155	
2017	11260	Rosa Street	(to) Queen Street-to-MacDonald Street	R2	\$ 121,656	34.97	100		\$ 154,055	\$ 154,055	\$ 154,055	\$ 154,055	
2017	1370	The Mississauga's Trail	(to) 7-Island Road-to-0.2 km S of 7-Island Road	PR2	\$ 41,846	23.29	100		\$ 30,658	\$ 30,658	\$ 30,658	\$ 30,658	
2017	11860	Edinborough Avenue	(to) Riverview Drive-to-Old Simcoe Road	CRK	\$ 1,280	94.55	94.55	2	\$ 196,051	\$ 196,051	\$ 196,051	\$ 196,051	
2017	11880	Riverview Drive	(to) 2-Simcoe Street-to-North End Cul-de-sac	CRK	\$ 2,720	94.55	94.55	2	\$ 416,609	\$ 416,609	\$ 416,609	\$ 416,609	
2017	70140	River Street, Seagrave	(to) Keene Street-to-Henrietta Street	R1	\$ 31,765	64.32	97		\$ 136,009	\$ 136,009	\$ 136,009	\$ 136,009	
2017	450	Pine Gate Road	(to) Mast Road-to-West End Turnaround	GRR2	\$ 48,674	48.15	68.15		\$ 240,609	\$ 240,609	\$ 240,609	\$ 240,609	
2017	11530	Perry Street	(to) Queen Street-to-North Street	R2	\$ 65,027	43.8	100		\$ 113,070	\$ 113,070	\$ 113,070	\$ 113,070	
2017	10510	Ridgeview Drive	(to) Lakeview Drive-to-Orchard Road	MICRO	\$ 5,175	74.48	74.48	3	\$ 347,037	\$ 347,037	\$ 347,037	\$ 347,037	
2017	10520	Applewood Crescent	(to) Orchard Road-to-Orchard Road	MICRO	\$ 5,750	74.48	74.48	3	\$ 385,596	\$ 385,596	\$ 385,596	\$ 385,596	
2017	11360	Cochrane Street	(to) Bay Street-to-North End Cul-de-sac	R1	\$ 51,931	64.32	97		\$ 210,898	\$ 210,898	\$ 210,898	\$ 210,898	
2017	11990	Castle Harbour Drive	(to) 2-Simcoe Street-to-Cawkers Cove Road	CRK	\$ 1,840	94.55	94.55	2	\$ 240,151	\$ 240,151	\$ 240,151	\$ 240,151	
2017	10070	Oyler Drive	(to) 2-Simcoe Street-to-East End	PR2	\$ 24,577	20	100		\$ 12,254	\$ 12,254	\$ 12,254	\$ 12,254	
2017	730	Wyldewood Court	(to) Woodbridge Circle-to-East End Turnaround	PR2	\$ 10,833	20	100		\$ 5,148	\$ 5,148	\$ 5,148	\$ 5,148	
2017	12400	Easy Street	(to) Scugog Line No 6-to-North End	CRK	\$ 2,840	82	82	2	\$ 332,984	\$ 332,984	\$ 332,984	\$ 332,984	

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start Cond	End Cond	Yrs Hold	Start Value	End Value
2017	30250	Hiawatha Boulevard, Caesarea	(to) 57-Caesarea Road-to-South End	SST	\$ 3,086	73.28	73.28	3	\$ 77,722	\$ 77,722
2017	40190	Marlow Street, Blackstock	(to) Crestview Avenue-to-North End	SST	\$ 1,474	62.02	62.02	3	\$ 25,542	\$ 25,542
					\$ 1,241,363					

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			
						Cond	Yrs	Hold	Cond	Yrs	Hold	
2018	10020	Rose Street, Prince Albert	(to) Highway 7A-to-King Street	CRK	\$ 600	92.95	2	\$ 240,609	92.95	2	\$ 240,609	
2018	10030	King Street	(to) Rose Street-to-Mikelen Drive	CRK	\$ 6,400	92.95	2	\$ 1,618,982	92.95	2	\$ 1,618,982	
2018	10065	King Street	(to) 220m East of Union Avenue-to-2 Simcoe Street	CRK	\$ 2,920	92.95	2	\$ 738,661	92.95	2	\$ 738,661	
2018	1410	Boundary Road	(to) 57-Blackstock Road-to-Old Scugog Road	CRK	\$ 1,980	81.56	2	\$ 445,840	81.56	2	\$ 445,840	
2018	10530	Orchard Road	(to) Lakeview Drive-to-Lakeview Drive	CRK	\$ 3,120	95.86	2	\$ 1,290,341	95.86	2	\$ 1,290,341	
2018	10970	MacDonald Street	(to) Rosa Street-to-Cochrane Street	CRK	\$ 480	95.86	2	\$ 198,514	95.86	2	\$ 198,514	
2018	11380	Bigelow Street	(to) Queen Street-to-Paxton Street	CRK	\$ 1,240	95.86	2	\$ 512,828	95.86	2	\$ 512,828	
2018	1420	Boundary Road	(to) East End Checkerboard-to-Fowler Line	GRR2	\$ 21,762	65.7	2	\$ 238,770	85.7	2	\$ 311,454	
2018	11110	Bay Street	(to) Old Simcoe Road-to-Rosa Street	CRK	\$ 1,040	92.95	2	\$ 153,878	92.95	2	\$ 153,878	
2018	11130	Bay Street	(to) Cochrane Street-to-Bigelow Street	CRK	\$ 440	92.95	2	\$ 65,102	92.95	2	\$ 65,102	
2018	12300	Reach Industrial Park Road	(to) 8-Reach Street-to-South End Turnaround	CRK	\$ 2,080	92.95	2	\$ 264,390	92.95	2	\$ 264,390	
2018	2660	Old Simcoe Road	(to) Cragg Road-to-Scugog Line No 12	GRR2	\$ 89,224	65.7	2	\$ 762,894	85.7	2	\$ 995,130	
2018	10840	Chester Crescent	(to) Walsh Drive-to-Walsh Drive	R1	\$ 149,492	61.71	2	\$ 596,370	97	2	\$ 937,416	
2018	10540	Blossom Court	(to) Orchard Road-to-West End Cul-de-sac	R1	\$ 60,130	61.71	2	\$ 234,288	97	2	\$ 368,270	
2018	12080	Clyde Court	(to) Cawkers Cove Road-to-North End	R1	\$ 158,525	61.71	2	\$ 617,669	97	2	\$ 970,894	
2018	10270	Old Simcoe Road	(to) 8-Reach Street-to-Edinborough Avenue	R1	\$ 86,757	59.32	2	\$ 303,136	97	2	\$ 495,688	
2018	11190	Kent Street	(to) 0.1 km North of Beech Street-to-Lakeshore Drive	R1	\$ 68,868	61.71	2	\$ 266,237	97	2	\$ 418,489	
2018	11750	Mary Street	(to) Perry Street-to-Water Street	R1	\$ 52,322	59.32	2	\$ 178,435	97	2	\$ 291,777	
2018	10920	Queen Street	(to) 2-Simcoe Street-to-Perry Street	R1	\$ 109,904	59.32	2	\$ 363,426	97	2	\$ 594,273	
2018	10930	Queen Street	(to) Perry Street-to-Water Street	R1	\$ 69,199	59.32	2	\$ 228,823	97	2	\$ 374,172	
2018	20010	Stephenson Point Road	(to) Platten Boulevard-to-Pettet Drive	PR2	\$ 107,350	28.95	2	\$ 96,105	100	2	\$ 331,968	
2018	11590	Water Street	(to) Mary Street-to-Queen Street	R1	\$ 53,275	59.32	2	\$ 171,846	97	2	\$ 281,002	
2018	700	Mansfield Park Court	(to) Middle March Road-to-Mansfield Park Court	PR2	\$ 133,148	20	2	\$ 73,143	100	2	\$ 365,714	
2018	100	Jacobsen Blvd, Saintfield	(to) Scugog Line No 14-to-Hwy 7 & 12	PR2	\$ 86,127	10	2	\$ 20,444	100	2	\$ 204,443	
2018	40030	Old Scugog Road, Blackstock	(to) 0.4 km South of Church Street-to-0.1 km South of Church Street	CRK	\$ 1,200	95.86	2	\$ 185,870	95.86	2	\$ 185,870	
2018	720	Lauren Road	(to) Middle March Road-to-North End Turnaround	PR2	\$ 45,500	15	2	\$ 16,216	100	2	\$ 108,107	
2018	30190	42nd Street	(to) First Street-to-Pleasant View Street	R1	\$ 9,269	58.54	2	\$ 25,400	97	2	\$ 42,087	
2018	70080	Coryell Street, Seagrave	(to) Coryell Street-to-Isabella Street	SST	\$ 2,426	77.26	3	\$ 67,212	77.26	3	\$ 67,212	
2018	11670	Eigin Street	(to) Caleb Street-to-Ella Street	CRK	\$ 440	97	2	\$ 51,440	97	2	\$ 51,440	
2018	20002	Stephenson Point stub	(to) Stephenson Point Road-to-East end	SST	\$ 2,269	77.26	3	\$ 46,926	77.26	3	\$ 46,926	
					\$				\$			
									\$ 1,327,487			

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			Start Value	End Value
						Conc	Yrs	Hold	Conc	Yrs	Hold		
2019	10240	Old Simcoe Road	(to) Queen Street-to-MacDonald Street	CRK	\$ 1,480	92.95	92.95	2	\$ 725,636	\$ 725,636			
2019	10860	Walsh Drive	(to) Queen Street-to-Old Simcoe Road	CRK	\$ 1,600	95.86	95.86	2	\$ 792,315	\$ 792,315			
2019	70140	River Street, Seagrave	(to) Keene Street-to-Henrietta Street	CRK	\$ 480	95.86	95.86	2	\$ 202,702	\$ 202,702			
2019	70150	River Street, Seagrave	(to) Henrietta Street-to-2-Simcoe Street	CRK	\$ 1,560	95.86	95.86	2	\$ 658,782	\$ 658,782			
2019	11360	Cochrane Street	(to) Bay Street-to-North End Cul-de-sac	CRK	\$ 760	95.86	95.86	2	\$ 314,313	\$ 314,313			
2019	10990	MacDonald Street	(to) Bigelow Street-to-2-Simcoe Street	CRK	\$ 440	97	97	2	\$ 184,912	\$ 184,912			
2019	40060	Old Scugog Road, Blackstock	(to) 0.1 km North of Church Street-to-Alexander Street	MICRO	\$ 7,949	73.76	73.76	3	\$ 610,883	\$ 610,883			
2019	10850	Heath Crescent	(to) Walsh Drive-to-Walsh Drive	MICRO	\$ 5,367	74.48	74.48	3	\$ 430,921	\$ 430,921			
2019	450	Pine Gate Road	(to) Mast Road-to-West End Turnaround	GRR2	\$ 48,674	65.7	85.7		\$ 328,308	\$ 428,250			
2019	10870	Scugog Line No 6	(to) 1.8km East of Highway 7 & 12-to-Highway 7 & 12	CRK	\$ 7,200	97	97	2	\$ 1,444,743	\$ 1,444,743			
2019	10130	Greenway Boulevard	(to) 2-Simcoe Street-to-Perryview Drive	R1	\$ 96,855	59.1	97		\$ 322,755	\$ 529,733			
2019	10490	Lakeview Drive	(to) East of Ridgeview Drive-to-East End Cul-de-sac	MICRO	\$ 7,859	74.48	74.48	3	\$ 526,983	\$ 526,983			
2019	10765	Poplar Park Crescent	(to) Allan Street-to-Allan Street	MICRO	\$ 4,984	74.48	74.48	3	\$ 334,184	\$ 334,184			
2019	10780	Arrow Street	(to) Lorne Street-to-Scugog Street	MICRO	\$ 2,492	74.48	74.48	3	\$ 167,092	\$ 167,092			
2019	10790	Sexton Street	(to) Allan Street-to-North End Cul-de-sac	MICRO	\$ 4,217	74.48	74.48	3	\$ 282,771	\$ 282,771			
2019	12070	Island View Court	(to) Cawkers Cove Road-to-South End Cul-de-Sac	MICRO	\$ 6,325	74.48	74.48	3	\$ 424,156	\$ 424,156			
2019	40080	Greensboro Drive, Blackstock	(to) 0.5 km South of Old Scugog Road-to-Church Street	R1	\$ 84,792	48.82	97		\$ 177,522	\$ 297,530			
2019	740	Wintergreen Court	(to) Woodbridge Circle-to-South End Turnaround	PR2	\$ 107,409	23.85	100		\$ 70,961	\$ 223,141			
2019	40170	Crestview Avenue, Blackstock	(to) Sunrise Drive-to-57-Blackstock Road	PR2	\$ 83,713	22.17	100		\$ 49,470	\$ 223,141			
2019	10710	Maple Street	(to) Alma Street-to-Victoria Street	PR2	\$ 53,157	15	100		\$ 18,984	\$ 126,560			
2019	60070	Eastside Street, Greenbank	(to) Murray Street-to-Ianson Drive	PR2	\$ 85,359	10	100		\$ 19,205	\$ 192,052			
2019	360	Strattonville Crescent	(to) 23-Lake Ridge Road-to-23-Lake Ridge Road	PR2	\$ 100,055	27.75	100		\$ 74,595	\$ 268,811			
2019	40090	Greensboro Drive, Blackstock	(to) 0.15 km South of Old Scugog Road-to-0.5 km South of Old Scugo	PR2	\$ 81,616	15	100		\$ 28,498	\$ 189,987			
2019	12010	Castle Harbour Drive	(to) Stone Sound Road-to-Cawkers Cove Road	PR2	\$ 80,016	15	100		\$ 27,762	\$ 185,082			
2019	20050	Pete Street	(to) Percy Crescent-to-Percy Crescent	PR2	\$ 19,227	22.17	100		\$ 10,688	\$ 48,210			
2019	12020	Cawkers Cove Road	(to) Castle Harbour Drive-to-Stone Sound Road	PR2	\$ 161,672	15	100		\$ 56,015	\$ 373,434			
2019	750	Woodbridge Circle	(to) Middle March Road-to-Woodbridge Circle	PR2	\$ 176,778	31.1	100		\$ 152,292	\$ 489,685			
2019	910	Coates Road West	(to) Whitby/Oshawa Townline-to-Garrard Road	PR2	\$ 62,971	55.19	100		\$ 141,569	\$ 256,512			
2019	2415	Marsh Hill Road, Utica	(to) 0.3 km South of 21-Goodwood Road-to-21-Goodwood Road	R1	\$ 38,161	55.19	97		\$ 91,421	\$ 160,679			
2019	1140	Aldred Drive	(to) 0.5 km South of Demara Road-to-0.8 km South of Demara Road	PR2	\$ 59,709	20	100		\$ 28,926	\$ 144,629			
2019	50000	Ashton Lane, Epsom	(to) Marsh Hill Road-to-East End Cul-de-Sac	R1	\$ 22,080	53.91	97		\$ 50,408	\$ 90,699			
					\$ 1,414,957								

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End			Start Value	End Value
						Conc	Yrs	Hold	Conc	Yrs	Hold		
2020	10060	King Street	(to) Union Street-to-220m East of Union Avenue	CRK	\$ 880	92.95	92.95	2	\$ 431,459	\$ 431,459			
2020	11040	Paxton Street	(to) Cochrane Street-to-Bigelow Street	CRK	\$ 480	92.95	92.95	2	\$ 230,479	\$ 230,479			
2020	11050	Paxton Street	(to) Bigelow Street-to-2-Simcoe Street	CRK	\$ 440	92.95	92.95	2	\$ 211,273	\$ 211,273			
2020	11600	Water Street	(to) Queen Street-to-North Street	CRK	\$ 480	92.95	92.95	2	\$ 207,919	\$ 207,919			
2020	10940	Queen Street	(to) Water Street-to-East End	CRK	\$ 120	97	97	2	\$ 117,290	\$ 117,290			
2020	11460	John Street	(to) Mary Street-to-Queen Street	CRK	\$ 480	92.95	92.95	2	\$ 198,986	\$ 198,986			
2020	10250	Old Simcoe Road	(to) MacDonald Street-to-75m North of Paxton Street	CRK	\$ 920	92.95	92.95	2	\$ 376,718	\$ 376,718			
2020	10880	Queen Street	(to) Scugog Street-to-Old Simcoe Road	CRK	\$ 1,640	92.95	92.95	2	\$ 671,541	\$ 671,541			
2020	10050	King Street	(to) Old Simcoe Road-to-Union Street	CRK	\$ 1,080	92.95	92.95	2	\$ 433,098	\$ 433,098			
2020	10480	Lakeview Drive	(to) 2-Simcoe Street-to-East of Ridgeview Drive	CRK	\$ 840	92.95	92.95	2	\$ 336,854	\$ 336,854			
2020	10500	Carnegie Street	(to) Scugog Street-to-Lakeview Drive	CRK	\$ 1,320	92.95	92.95	2	\$ 529,341	\$ 529,341			
2020	10640	Ash Street	(to) Alma Street-to-Scugog Street	CRK	\$ 1,080	92.95	92.95	2	\$ 433,098	\$ 433,098			
2020	11020	Paxton Street	(to) Old Simcoe Road-to-Rosa Street	CRK	\$ 1,320	92.95	92.95	2	\$ 529,341	\$ 529,341			
2020	11030	Paxton Street	(to) Rosa Street-to-Cochrane Street	CRK	\$ 440	92.95	92.95	2	\$ 176,447	\$ 176,447			
2020	11440	John Street	(to) Shanly Street-to-Casimir Street	CRK	\$ 480	92.95	92.95	2	\$ 192,487	\$ 192,487			
2020	11450	John Street	(to) Casimir Street-to-Mary Street	CRK	\$ 480	92.95	92.95	2	\$ 192,487	\$ 192,487			
2020	11655	Wilbur Avenue	(to) Shanly Street-to-John Street	CRK	\$ 320	92.95	92.95	2	\$ 128,325	\$ 128,325			
2020	11730	Mary Street	(to) 2-Simcoe Street-to-John Street	CRK	\$ 560	92.95	92.95	2	\$ 224,569	\$ 224,569			
2020	11740	Mary Street	(to) John Street-to-Perry Street	CRK	\$ 600	92.95	92.95	2	\$ 240,609	\$ 240,609			
2020	11760	Wilbur Avenue	(to) Scugog Street-to-Shanly Street	CRK	\$ 440	92.95	92.95	2	\$ 176,447	\$ 176,447			
2020	11780	Chimney Hill Way	(to) Old Simcoe Road-to-Queensplate Drive	CRK	\$ 480	97	97	2	\$ 231,388	\$ 231,388			
2020	10540	Blossom Court	(to) Orchard Road-to-West End Cul-de-sac	CRK	\$ 880	95.86	95.86	2	\$ 363,942	\$ 363,942			
2020	10840	Chester Crescent	(to) Walsh Drive-to-Walsh Drive	CRK	\$ 2,240	95.86	95.86	2	\$ 926,399	\$ 926,399			
2020	11190	Kent Street	(to) 0.1 km North of Beech Street-to-Lakeshore Drive	CRK	\$ 1,000	95.86	95.86	2	\$ 413,571	\$ 413,571			
2020	12080	Clyde Court	(to) Cawkers Cove Road-to-North End	CRK	\$ 2,320	95.86	95.86	2	\$ 959,484	\$ 959,484			
2020	11785	Chimney Hill Way	(to) Sherrington Drive-to-Queensplate Drive	CRK	\$ 720	97	97	2	\$ 307,668	\$ 307,668			
2020	10390	Robin Trail	(to) Union Avenue-to-East End Turnaround	CRK	\$ 680	97	97	2	\$ 284,573	\$ 284,573			
2020	10590	Ash Street	(to) Victoria Street-to-Steinway Drive	CRK	\$ 480	97	97	2	\$ 200,874	\$ 200,874			
2020	11270	Rosa Street	(to) MacDonald Street-to-Paxton Street	CRK	\$ 600	97	97	2	\$ 251,093	\$ 251,093			
2020	11410	Bigelow Street	(to) Bay Street-to-Kellett Street	CRK	\$ 800	97	97	2	\$ 334,792	\$ 334,792			
2020	11430	John Street	(to) Scugog Street-to-Shanly Street	CRK	\$ 440	97	97	2	\$ 184,135	\$ 184,135			
2020	11810	Gatwick Way	(to) Roseborough Drive-to-Sherrington Drive	CRK	\$ 360	97	97	2	\$ 150,657	\$ 150,657			
2020	11820	Roseborough Court	(to) Gatwick Way-to-North End Turnaround	CRK	\$ 1,280	97	97	2	\$ 535,666	\$ 535,666			
2020	11830	Fifeshier Court	(to) Roseborough Drive-to-West End Turnaround	CRK	\$ 360	97	97	2	\$ 150,657	\$ 150,657			
2020	11840	Roseborough Drive	(to) Sherrington Drive-to-Gatwick Way	CRK	\$ 960	97	97	2	\$ 401,750	\$ 401,750			
2020	11910	Coucliff Street	(to) Coulter Street-to-North End Turnaround	CRK	\$ 1,320	97	97	2	\$ 552,405	\$ 552,405			
2020	10875	6 Scugog Line	(to) 1.8km East of Highway 7 & 12-to-Highway 7A	CRK	\$ 2,360	92.95	92.95	2	\$ 313,655	\$ 313,655			
2020	12150	North Port Road	(to) 8-Reach Street-to-Taylor Boulevard	CRK	\$ 3,320	92.95	92.95	2	\$ 429,701	\$ 429,701			
2020	40050	Old Scugog Road, Blackstock	(to) Church Street-to-0.1 km North of Church Street	MICRO	\$ 1,691	73.76	73.76	3	\$ 129,975	\$ 129,975			
2020	10040	King Street	(to) Mikelen Drive-to-Old Simcoe Road	MICRO	\$ 7,861	73.76	73.76	3	\$ 534,617	\$ 534,617			
2020	10620	Ash Street	(to) Victoria Street-to-Allan Street	MICRO	\$ 2,300	73.76	73.76	3	\$ 152,747	\$ 152,747			

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		End		Yrs	Hold	Start Value	End Value
						Cond	Conc	Cond	Conc				
2020	10630	Ash Street	(to) Allan Street-to-Alma Street	MICRO	\$ 2,875	73.76	73.76	73.76	73.76	3		\$ 190,934	\$ 190,934
2020	11620	Old Rail Lane	(to) North Street-to-North End	MICRO	\$ 3,642	73.76	73.76	73.76	73.76	3		\$ 241,850	\$ 241,850
2020	10910	Queen Street	(to) Bigelow Street-to-2-Simcoe Street	MICRO	\$ 3,572	73.76	73.76	73.76	73.76	3		\$ 176,595	\$ 176,595
2020	70000	Bruce Road	(to) 2-Simcoe Street-to-East End	PR2	\$ 31,728	21.61	100	100	100			\$ 16,831	\$ 77,883
2020	11170	Edgewood Crescent	(to) Aldred Drive-to-Davidge Drive	PR2	\$ 153,450	23.29	100	100	100			\$ 88,290	\$ 379,089
2020	1400	Boundary Road	(to) Old Scugog Road-to-West End Turnaround	MICRO	\$ 3,552	76.92	76.92	76.92	76.92	3		\$ 214,788	\$ 214,788
2020	60080	Ianson Drive, Greenbank	(to) Murray Street-to-East End Turnaround	PR2	\$ 196,800	15	100	100	100			\$ 66,418	\$ 442,786
2020	1280	Pogue Road	(to) Carnegie Beach Road-to-1.6 km East of 7-Island Road	CRK	\$ 2,600	97	97	97	97	2		\$ 418,489	\$ 418,489
2020	20040	Percy Crescent	(to) Platten Boulevard-to-Pete Street	PR2	\$ 60,201	21.61	100	100	100			\$ 31,127	\$ 144,039
2020	40160	Crestview Avenue, Blackstock	(to) Old Scugog Road-to-Sunrise Drive	PR2	\$ 53,460	28.95	100	100	100			\$ 40,214	\$ 138,909
2020	410	Medd Road	(to) 23-Lake Ridge Road-to-2.1km East of 23 Lakeridge Road	SST	\$ 34,650	77.27	77.27	77.27	77.27	3		\$ 1,256,139	\$ 1,256,139
2020	60030	Pearl Drive, Greenbank	(to) Couves Lane-to-Cragg Road	PR2	\$ 124,551	20	100	100	100			\$ 58,687	\$ 293,433
2020	60040	Couves Lane, Greenbank	(to) Hwy 7 & 12-to-West End	PR2	\$ 50,257	20	100	100	100			\$ 23,681	\$ 118,403
2020	2320	Maicolm Road	(to) John's Road-to-Cedarvale Road	GRR2	\$ 37,024	48.15	68.15	68.15	68.15			\$ 146,735	\$ 207,684
2020	1890	Cartwright East 1/4 Line	(to) Devitt's Road-to-McKee Road	BS	\$ 431,658	23.79	95	95	95			\$ 265,195	\$ 1,058,994
2020	1180	Davidge Drive	(to) Chandler Drive-to-Edgewood Crescent	PR2	\$ 149,526	26.29	100	100	100			\$ 95,676	\$ 363,926
2020	40110	Meadowcrest Lane, Blackstock	(to) Old Scugog Road-to-Greensboro Drive	PR2	\$ 25,651	21.31	100	100	100			\$ 12,724	\$ 59,710
2020	70010	Meadow Green Court	(to) Bruce Road-to-North End Turnaround	PR2	\$ 91,779	21.61	100	100	100			\$ 46,100	\$ 213,327
2020	10680	Alma Street	(to) Old Simcoe Road-to-Gibson Drive	CRK	\$ 400	97	97	97	97	2		\$ 57,944	\$ 57,944
2020	12040	Stone Sound Road	(to) 2-Simcoe Street-to-Cawkers Cove Road	CRK	\$ 840	97	97	97	97	2		\$ 112,475	\$ 112,475
											\$ 1,505,068		

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		Hold	Start Value	End Value
						Cond	Yrs			
2021	11590	Water Street	(to) Mary Street-to-Queen Street	CRK	\$ 480	92.95	92.95	2	\$ 269,270	\$ 269,270
2021	10920	Queen Street	(to) 2-Simcoe Street-to-Perry Street	CRK	\$ 1,080	92.95	92.95	2	\$ 569,461	\$ 569,461
2021	10930	Queen Street	(to) Perry Street-to-Water Street	CRK	\$ 680	92.95	92.95	2	\$ 358,549	\$ 358,549
2021	11750	Mary Street	(to) Perry Street-to-Water Street	CRK	\$ 680	92.95	92.95	2	\$ 279,595	\$ 279,595
2021	10255	Old Simcoe Road	(to) 7.5m North of Paxton Street-to-Bay Street	CRK	\$ 960	92.95	92.95	2	\$ 393,098	\$ 393,098
2021	10260	Old Simcoe Road	(to) Bay Street-to-8-Reach Street	CRK	\$ 1,920	92.95	92.95	2	\$ 786,194	\$ 786,194
2021	10270	Old Simcoe Road	(to) 8-Reach Street-to-Edinborough Avenue	CRK	\$ 1,160	92.95	92.95	2	\$ 474,992	\$ 474,992
2021	10130	Greenway Boulevard	(to) 2-Simcoe Street-to-Perryview Drive	CRK	\$ 1,200	95.86	95.86	2	\$ 523,508	\$ 523,508
2021	60010	Cragg Road, Greenbank	(to) Hwy 7 & 12-to-0.3 km West of Hwy 7 & 12	CRK	\$ 1,200	97	97	2	\$ 601,303	\$ 601,303
2021	10950	MacDonald Street	(to) Old Simcoe Road-to-Ottawa Street	CRK	\$ 840	97	97	2	\$ 351,531	\$ 351,531
2021	11150	Kenny Court	(to) Rosa Street-to-West End Cul-de-sac	CRK	\$ 520	97	97	2	\$ 217,615	\$ 217,615
2021	20000	Stephenson Point Road	(to) 7-Island Road-to-Platten Boulevard	CRK	\$ 2,240	92.95	92.95	2	\$ 368,298	\$ 368,298
2021	840	Town Line Road	(to) Duff's Road-to-Ashburn Road	SST	\$ 14,836	77.27	77.27	3	\$ 1,061,367	\$ 1,061,367
2021	12060	Cawkers Cove Road	(to) 0.8 km East of Stone Sound Road-to-North End	MICRO	\$ 17,059	74.48	74.48	3	\$ 1,369,714	\$ 1,369,714
2021	11900	Coulter Street	(to) Coulcliff Street-to-2-Simcoe Street	MICRO	\$ 8,044	74.48	74.48	3	\$ 630,992	\$ 630,992
2021	70050	River Street, Seagrave	(to) Nonquon River Bridge-to-Keene Street	MICRO	\$ 2,228	74.48	74.48	3	\$ 170,617	\$ 170,617
2021	10570	Victoria Street	(to) Old Simcoe Road-to-Ash Street	MICRO	\$ 7,667	74.48	74.48	3	\$ 524,975	\$ 524,975
2021	10090	Mikelen Drive	(to) King Street-to-Old Simcoe Road	MICRO	\$ 10,925	74.48	74.48	3	\$ 732,634	\$ 732,634
2021	10400	Earl S Cuddie Boulevard	(to) Union Avenue-to-Major Street	MICRO	\$ 10,159	74.48	74.48	3	\$ 681,221	\$ 681,221
2021	10600	Steinway Drive	(to) Ash Street-to-South End Turnaround	MICRO	\$ 11,692	74.48	74.48	3	\$ 784,046	\$ 784,046
2021	10700	Alma Street	(to) Pine Court-to-Ash Street	MICRO	\$ 2,300	74.48	74.48	3	\$ 154,238	\$ 154,238
2021	10720	Hyland Crescent	(to) Victoria Street-to-Victoria Street	MICRO	\$ 6,325	74.48	74.48	3	\$ 424,156	\$ 424,156
2021	10730	Amber Court	(to) Hyland Crescent-to-West End Cul-de-Sac	MICRO	\$ 1,725	74.48	74.48	3	\$ 115,679	\$ 115,679
2021	10760	Allan Street	(to) Sexton Street-to-Ash Street	MICRO	\$ 7,284	74.48	74.48	3	\$ 488,423	\$ 488,423
2021	70130	Henrietta Street, Seagrave	(to) River Street-to-Isabella Street	MICRO	\$ 2,300	74.48	74.48	3	\$ 154,238	\$ 154,238
2021	11970	Candelight Court	(to) South Garden Court-to-North End Cul-de-Sac	MICRO	\$ 4,073	74.48	74.48	3	\$ 269,918	\$ 269,918
2021	40040	Old Scugog Road, Blackstock	(to) 0.1 km South of Church Street-to-Church Street	MICRO	\$ 2,481	74.48	74.48	3	\$ 144,368	\$ 144,368
2021	2425	Christie Crescent, Utica	(to) 21-Goodwood Road-to-East End Cul-de-Sac	R1	\$ 52,457	53.91	97		\$ 118,676	\$ 213,533
2021	11850	Carlan Drive	(to) 8-Reach Street-to-Old Simcoe Road	R1	\$ 52,910	53.91	97		\$ 117,054	\$ 210,614
2021	2160	Cedardale Road	(to) Malcolm Road-to-57-Caesarea Road	GRR2	\$ 170,919	65.7	85.7		\$ 867,691	\$ 1,131,828
2021	780	Scugog Line No 2	(to) Hwy 7 & 12-to-0.4 km West of Smith Sideroad	BS	\$ 531,247	22.85	95		\$ 313,286	\$ 1,302,501
2021	10370	Josephine Street	(to) Hurd Street-to-Josephine Street	PR2	\$ 63,042	27.75	100		\$ 44,148	\$ 159,092
2021	10120	Perryview Drive	(to) King Street-to-Greenway Boulevard	MICRO	\$ 11,446	74.48	74.48	3	\$ 637,238	\$ 637,238
2021	12140	Framar Avenue	(to) Honey's Beach Road-to-West End	R1	\$ 9,274	66.91	97		\$ 34,956	\$ 50,677
2021	60060	Murray Street, Greenbank	(to) Ianston Drive-to-Eastside Street	PR2	\$ 28,453	20	100		\$ 12,803	\$ 64,017
2021	60090	Howsam Street, Greenbank	(to) Ianston Drive-to-Cragg Road	PR2	\$ 28,453	20	100		\$ 12,803	\$ 64,017
2021	12030	Stone Sound Road	(to) Castle Harbour Drive-to-Cawkers Cove Road	CRK	\$ 2,480	95.86	95.86	2	\$ 325,391	\$ 325,391
2021	12110	Whitfield Road	(to) 2-Simcoe Street-to-Indian Way	PR2	\$ 199,841	48.96	100		\$ 342,764	\$ 700,089
2021	1260	Pogue Road	(to) Fralick's Beach Road-to-7-Island Road	GRR2	\$ 7,660	51.07	71.07		\$ 30,491	\$ 42,432
2021	10740	Gibson Drive	(to) Alma Street-to-North End Cul-de-sac	PR2	\$ 24,861	27.75	100		\$ 16,676	\$ 60,094
2021	2210	Coleman Crescent	(to) View Lake Road-to-Cartwright/Manvers Boundary Road	R1	\$ 34,713	69.47	97		\$ 142,639	\$ 199,164

Township of Scugog 10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start			End		
						Conc	Yrs	Hold	Conc	Yrs	Hold
2021	10560	Victoria Street	(to) Alma Street-to-Old Simcoe Road	PR2	\$ 47,557	27.75	100	\$ 31,143	\$ 112,227		
2021	60050	Jack St, Greenbank	(to) Hwy 7 & 12-to-Ianson Drive	PR2	\$ 19,362	21.06	100	\$ 8,988	\$ 42,678		
2021	2500	Marsh Hill Road, Epsom	(to) 0.8 km South of 8-Reach Street-to-8-Reach Street	PR2	\$ 172,042	27.55	100	\$ 111,402	\$ 404,362		
2021	40080	Greensboro Drive, Blackstock	(to) 0.5 km South of Old Scugog Road-to-Church Street	CRK	\$ 2,800	95.86	95.86	\$ 348,571	\$ 348,571		
2021	50000	Ashton Lane, Epsom	(to) Marsh Hill Road-to-East End Cul-de-Sac	CRK	\$ 720	95.86	95.86	\$ 89,633	\$ 89,633		
2021	2440	Marsh Hill Road	(to) Scugog Line No 6-to-0.8 km South of 8-Reach Street	SST	\$ 10,725	62.02	62.02	\$ 307,914	\$ 307,914		
2021	11120	Bay Street	(to) Rosa Street-to-Cochrane Street	MICRO	\$ 1,736	76.67	76.67	\$ 53,700	\$ 53,700		
2021	30150	Centre Street, Caesarea	(to) Marina Drive-to-Pier Street	MICRO	\$ 1,759	74.49	74.49	\$ 45,181	\$ 45,181		
					\$ 1,596,515						

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		End		Start Value	End Value
						Cond	Yrs	Cond	Yrs		
2022	11530	Perry Street	(to) Queen Street-to-North Street	CRK	\$ 480	92.95	2	92.95	2	\$ 239,951	\$ 239,951
2022	11260	Rosa Street	(to) Queen Street-to-MacDonald Street	CRK	\$ 880	97	2	97	2	\$ 427,318	\$ 427,318
2022	10980	MacDonald Street	(to) Cochrane Street-to-Bigelow Street	CRK	\$ 440	97	2	97	2	\$ 184,135	\$ 184,135
2022	11400	Bigelow Street	(to) Paxton Street-to-Bay Street	CRK	\$ 1,240	97	2	97	2	\$ 518,927	\$ 518,927
2022	10890	Queen Street	(to) Old Simcoe Road-to-Ottawa Street	MICRO	\$ 5,804	73.76	3	73.76	3	\$ 513,573	\$ 513,573
2022	11010	North Street	(to) Perry Street-to-Water Street	MICRO	\$ 3,843	73.76	3	73.76	3	\$ 305,495	\$ 305,495
2022	10430	Major Street	(to) Earl's Cuddie Boulevard-to-2-Simcoe Street	MICRO	\$ 2,683	73.76	3	73.76	3	\$ 178,206	\$ 178,206
2022	2580	Old Simcoe Road	(to) 2-Simcoe Street-to-Scugog Line No 2	CRK	\$ 4,080	97	2	97	2	\$ 872,376	\$ 872,376
2022	10470	Vanedward Drive	(to) 2-Simcoe Street-to-East End Cul-de-sac	MICRO	\$ 5,304	73.76	3	73.76	3	\$ 309,362	\$ 309,362
2022	2120	View Lake Road	(to) 0.2 km North of Colwell Circle-to-0.6 km North of Colwell Circle	GRR2	\$ 24,664	65.7	3	85.7	3	\$ 152,551	\$ 198,990
2022	70030	Bank Road	(to) Bank Road-to-Kawartha Boundary	SST	\$ 1,044	77.26	3	77.26	3	\$ 44,544	\$ 44,544
2022	2320	Malcolm Road	(to) John's Road-to-Cedarvale Road	GRR2	\$ 37,024	65.7	3	85.7	3	\$ 200,217	\$ 261,166
2022	11180	Lakeshore Drive	(to) Beech Street-to-Coulter Street	R1	\$ 102,178	69.47	2	97	2	\$ 459,354	\$ 641,389
2022	1370	The Mississauga's Trail	(to) 7-Island Road-to-0.2 km S of 7-Island Road	CRK	\$ 800	97	2	97	2	\$ 127,685	\$ 127,685
2022	2380	Ashburn Road	(to) Townline Road-to-0.4 km South of Scugog Line No 2	SST	\$ 21,271	77.27	3	77.27	3	\$ 760,859	\$ 760,859
2022	40010	Church Street, Blackstock	(to) Old Scugog Road-to-Greensboro Drive	R1	\$ 57,663	69.47	2	97	2	\$ 239,773	\$ 334,792
2022	11570	Curtis Street	(to) Water Street-to-East End	R1	\$ 53,391	67.92	2	97	2	\$ 199,260	\$ 284,573
2022	2000	Cartwright East 1/4 Line	(to) Edgerton Road-to-Fallis Road	BS	\$ 359,486	26.61	2	95	2	\$ 241,968	\$ 863,847
2022	2010	Cartwright East 1/4 Line	(to) Fallis Road-to-Highway 7A	BS	\$ 364,514	26.61	2	95	2	\$ 245,352	\$ 875,929
2022	290	Cragg Road	(to) Till Sideroad-to-1.0 km West of Till Sideroad	BS	\$ 228,233	20	2	95	2	\$ 105,084	\$ 499,151
2022	1010	Ambleside Drive	(to) Garrow Road-to-North End Turnaround	R1	\$ 103,771	66.91	2	97	2	\$ 359,723	\$ 521,493
2022	40070	Old Scugog Road, Blackstock	(to) Alexander Street-to-57-Blackstock Road	R1	\$ 110,118	67.92	2	97	2	\$ 395,084	\$ 564,239
2022	10510	Ridgeview Drive	(to) Lakeview Drive-to-Orchard Road	R1	\$ 83,639	69.47	2	97	2	\$ 323,693	\$ 451,969
2022	10520	Applewood Crescent	(to) Orchard Road-to-Orchard Road	R1	\$ 92,932	69.47	2	97	2	\$ 359,659	\$ 502,186
2022	1320	Crozier Lane	(to) 7-Island Road-to-North End	GRR2	\$ 10,591	48.15	2	68.15	2	\$ 35,935	\$ 50,862
2022	10070	Oyler Drive	(to) 2-Simcoe Street-to-East End	CRK	\$ 440	97	2	97	2	\$ 59,430	\$ 59,430
2022	1410	Boundary Road	(to) 57-Blackstock Road-to-Old Scugog Road	MICRO	\$ 8,372	76.92	3	76.92	3	\$ 420,475	\$ 420,475
2022	730	Wyldewood Court	(to) Woodbridge Circle-to-East End Turnaround	CRK	\$ 200	97	2	97	2	\$ 24,968	\$ 24,968
\$ 1,685,085											

Township of Scugog

10 Year Performance Model -Proposed Budget -Best ROI

Year	Asset ID	Street Name	Description	Improvement	Cost	Start		End		Start Value	End Value
						Conc	Yrs	Conc	Yrs		
2023	1420	Boundary Road	(to) East End Checkerboard-to-Fowler Line	GRR2	\$ 21,762	65.7	85.7	\$ 238,770	\$ 311,454		
2023	900	Coates Road West	(to) Garrard Road-to-Hwy 7 & 12	SST	\$ 3,630	77.27	77.27	\$ 281,326	\$ 281,326		
2023	2660	Old Simcoe Road	(to) Cragg Road-to-Scugog Line No 12	GRR2	\$ 89,224	65.7	85.7	\$ 762,894	\$ 995,130		
2023	2210	Coleman Crescent	(to) View Lake Road-to-Cartwright/Manvers Boundary Road	CRK	\$ 1,080	95.86	95.86	\$ 196,824	\$ 196,824		
2023	70180	Limosano Street, Seagrave	(to) River Street-to-6-Saintfield Road	MICRO	\$ 7,577	74.48	74.48	\$ 539,836	\$ 539,836		
2023	70190	Pardo Court, Seagrave	(to) Limosano Street-to-East End Cul-de-Sac	MICRO	\$ 2,165	74.48	74.48	\$ 154,238	\$ 154,238		
2023	12140	Framar Avenue	(to) Honey's Beach Road-to-West End	CRK	\$ 360	95.86	95.86	\$ 50,081	\$ 50,081		
2023	11850	Carlan Drive	(to) 8-Reach Street-to-Old Simcoe Road	CRK	\$ 1,600	95.86	95.86	\$ 208,139	\$ 208,139		
2023	20020	Stephenson Point Road	(to) Pettet Drive-to-South End Cul-de-Sac	R1	\$ 101,056	59.1	97	\$ 262,521	\$ 430,872		
2023	700	Mansfield Park Court	(to) Middle March Road-to-Mansfield Park Court	CRK	\$ 2,360	97	97	\$ 354,743	\$ 354,743		
2023	1850	Suggett Drive, Nestleton	(to) McLaughlin Road-to-Highway 7A	R1	\$ 108,402	59.1	97	\$ 278,788	\$ 457,570		
2023	2410	Marsh Hill Road	(to) Scugog Line No 4-to-0.3 km South of 21-Goodwood Road	SST	\$ 22,894	77.27	77.27	\$ 767,887	\$ 767,887		
2023	2425	Christie Crescent, Utica	(to) 21-Goodwood Road-to-East End Cul-de-Sac	CRK	\$ 1,680	95.86	95.86	\$ 211,023	\$ 211,023		
2023	790	Scugog Line No 2	(to) Old Simcoe Road-to-Hwy 7 & 12	BS	\$ 611,665	21.82	95	\$ 307,254	\$ 1,337,724		
2023	10660	Alma Street	(to) Maple Street-to-Victoria Street	PR2	\$ 98,207	31.1	100	\$ 71,723	\$ 230,620		
2023	1820	McLaughlin Road	(to) Edgerton Road-to-Jobb Road	BS	\$ 510,837	23.79	95	\$ 277,562	\$ 1,108,381		
2023	40100	Greensboro Drive, Blackstock	(to) Old Scugog Road-to-0.15 km South of Old Scugog Road	PR2	\$ 36,292	31.1	100	\$ 26,194	\$ 84,225		
2023	980	Readers Road	(to) 0.2 km East of Highway 7-to-East End Turnaround	GRR2	\$ 28,980	36.9	56.9	\$ 78,786	\$ 121,488		
2023	2215	Coleman Crescent	(to) 275m North of View Lake Road-to-70m West of Cartwright / Mar R1	CRK	\$ 52,488	64.32	97	\$ 151,706	\$ 228,785		
2023	2620	Old Simcoe Road	(to) Scugog Line No 4-to-0.6 km North of Scugog Line No 4	MICRO	\$ 9,471	76.67	76.67	\$ 396,249	\$ 396,249		
2023	70170	River Street, Seagrave	(to) Sun Valley Road-to-North End	REC	\$ 43,809	20.64	100	\$ 18,084	\$ 87,618		
2023	1790	Old Scugog Road	(to) Byers Road-to-.52km South of 19 Shirley Road	SST	\$ 16,445	55.19	55.19	\$ 420,141	\$ 420,141		
2023	1814	Old Scugog Road	(to) 750m North of Bradburn Road-to-1km North of Bradburn Road	/SST	\$ 4,469	73.27	73.27	\$ 124,504	\$ 124,504		
2023	720	Lauren Road	(to) Middle March Road-to-North End Turnaround	CRK	\$ 840	97	97	\$ 104,864	\$ 104,864		
2023	100	Jacobsen Blvd, Saintfield	(to) Scugog Line No 14-to-Hwy 7 & 12	CRK	\$ 1,680	97	97	\$ 198,310	\$ 198,310		
					\$ 1,778,973						

Appendix H: Critical Deficiencies by Asset ID - Roads

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
10	Victoria Corners Road	23-Lake Ridge Road	Uxbridge Townline	0.600	251	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
100	Jacobson Blvd, Sainfield	Scugg Line No 14	Hwy 7 & 12	0.420	90	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1000	Portview Road	0.8 km West of 7-Island Road	Gerrrow Road	0.750	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10000	King Street, Prince Albert	Rose Street	West End	0.340	75	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
10010	Brook Street, Prince Albert	Highway 7 & 12	Highway 7A	0.270	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10020	Rose Street, Prince Albert	Highway 7A	King Street	0.150	2000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
10030	King Street	Rose Street	Mikelen Drive	1.600	2000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
10040	King Street	Mikelen Drive	Old Simcoe Road	0.420	1,972	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10050	King Street	Old Simcoe Road	Union Street	0.270	2,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10060	King Street	Union Street	220m East of Union Avenue	0.220	1,930	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10065	King Street	220m East of Union Avenue	2 Simcoe Street	0.730	2,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SR	ADEQ
10070	Oyler Drive	2-Simcoe Street	East End	0.110	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
10090	Mikelen Drive	King Street	Old Simcoe Road	0.570	500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1010	Ambleside Drive	Gerrrow Road	North End Turnaround	0.900	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10100	Brae Valley Drive	Mikelen Drive	Brae Valley Court	0.190	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10110	Brae Valley Court	Brae Valley Drive	West End Cul-de-Sac	0.200	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10115	Bonnie Brae Court	Brae Valley Drive	East End Barricade	0.060	50	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10120	Perryview Drive	King Street	Greenway Boulevard	0.470	512	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10130	Greenway Boulevard	2-Simcoe Street	Perryview Drive	0.300	561	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10140	Mead Drive	Perryview Drive	West End Turnaround	0.060	60	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10150	Calwell Drive	Perryview Drive	Anders Drive	0.250	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10160	Anders Drive	Perryview Drive	Brandon Road	0.360	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10170	Winchurch Drive	Perryview Drive	Anders Drive	0.210	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10180	Brandon Road	Perryview Drive	North End Cul-de-Sac	0.280	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10190	Old Simcoe Road	0.6 km North of Scugg Line No 4	King Street	0.810	1,430	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1020	Gerrrow Road	Portview Road	7-Island Road	0.600	382	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10200	Old Simcoe Road	King Street	Jeffrey Street	0.710	1,605	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10210	Old Simcoe Road	Jeffrey Street	Victoria Street	0.380	2,275	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10220	Old Simcoe Road	Victoria Street	Scugg Street	0.470	2,275	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10230	Old Simcoe Road	Scugg Street	Queen Street	0.190	3,610	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10240	Old Simcoe Road	Queen Street	MacDonald Street	0.370	6,300	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10250	Old Simcoe Road	MacDonald Street	75m North of Paxton Street	0.230	6,172	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10255	Old Simcoe Road	75m North of Paxton Street	Bay Street	0.240	6,300	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10260	Old Simcoe Road	Bay Street	8-Reach Street	0.480	6,221	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10270	Old Simcoe Road	8-Reach Street	Edinburgh Avenue	0.290	1,871	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10280	Old Simcoe Road	Edinburgh Avenue	Scugg Line 8	1.170	1,132	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10290	Union Avenue	King Street	Josephine Street	0.630	944	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1030	Head Road	Ashbridge Road	7-Island Road	1.170	267	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10300	Union Avenue	Josephine Street	Major Street	0.560	1,387	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10310	Union Avenue	Major Street	2-Simcoe Street	0.510	1,082	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
10320	Jeffrey Street	King Street	Barber Street	0.310	348	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
10330	Jeffrey Street	Barber Street	Old Simcoe Road	0.380	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10340	Hurd Street	Union Avenue	Barber Street	0.310	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10350	Barber Street	Old Simcoe Road	Jeffrey Street	0.110	300	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10360	Barber Street	Jeffrey Street	Hurd Street	0.100	300	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	RSS	1-5
10370	Josephine Street	Hurd Street	Josephine Street	0.330	300	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
10380	Josephine Street	Josephine Street	Union Avenue	0.150	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10390	Robin Trail	Union Avenue	East End Turnaround	0.170	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1040	Ashbridge Road	Head Road	East End Turnaround	0.800	40	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
10400	Earl S Cuddie Boulevard	Union Avenue	Major Street	0.530	266	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10410	Sadler Crescent	Earl S Cuddie Boulevard	Earl S Cuddie Boulevard	0.290	175	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10420	Major Street	Union Avenue	Earl S Cuddie Boulevard	0.170	665	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10430	Major Street	Earl S Cuddie Boulevard	2-Simcoe Street	0.140	1,063	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10440	Alva Street	Major Street	2-Simcoe Street	0.230	177	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10450	Sexton Street	Union Avenue	Alva Street	0.120	207	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
10460	May Street	Union Avenue	2-Simcoe Street	0.110	100	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
10470	Vanedward Drive	2-Simcoe Street	East End Cul-de-sac	0.240	2,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10480	Lakeview Drive	2-Simcoe Street	East of Ridgeview Drive	0.210	1,159	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10490	Lakeview Drive	East of Ridgeview Drive	East End Cul-de-sac	0.410	500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1050	Head Road	0.7 km North of Ashbridge Road	Ashbridge Road	0.700	240	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10500	Carnegie Street	Scugog Street	Lakeview Drive	0.330	1,200	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10510	Ridgeview Drive	Lakeview Drive	Orchard Road	0.270	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10520	Applewood Crescent	Orchard Road	Orchard Road	0.300	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10530	Orchard Road	Lakeview Drive	Lakeview Drive	0.780	800	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10540	Blossom Court	Orchard Road	West End Cul-de-sac	0.220	200	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10550	High Street	Scugog Street	South End	0.060	500	ADEQ	NOW	ADEQ	ADEQ	ADEQ	NOW	REC	NOW
10560	Victoria Street	Alma Street	Old Simcoe Road	0.220	255	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
10570	Victoria Street	Old Simcoe Road	Ash Street	0.400	959	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10580	Victoria Street	Ash Street	Union Avenue	0.250	756	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10590	Ash Street	Victoria Street	Steinway Drive	0.120	500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1060	Head Road	Ma Brown's Road	0.7 km North of Ashbridge Road	1.480	180	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
10600	Steinway Drive	Ash Street	South End Turnaround	0.610	400	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10610	Louis Way	Steinway Drive	East End Turnaround	0.110	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10620	Ash Street	Victoria Street	Allan Street	0.120	1,100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10630	Ash Street	Allan Street	Alma Street	0.150	1,100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10640	Ash Street	Alma Street	Scugog Street	0.270	1,046	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10650	Alma Court	Victoria Street	South End Turnaround	0.240	100	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10660	Alma Street	Maple Street	Victoria Street	0.440	200	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
10670	Alma Street	Maple Street	Old Simcoe Road	0.110	418	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10680	Alma Street	Old Simcoe Road	Gibson Drive	0.100	423	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
10690	Alma Street	Gibson Drive	Pine Court	0.120	425	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1070	Ma Brown's Road	1.3 km East of 7-Island Road	Head Road	1.290	125	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
10700	Alma Street	Pine Court	Ash Street	0.120	425	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
10710	Maple Street	Alma Street	Victoria Street	0.260	200	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
10720	Hyland Crescent	Victoria Street	Victoria Street	0.330	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10730	Amber Court	Hyland Crescent	West End Cul-de-Sac	0.090	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10740	Gibson Drive	Alma Street	North End Cul-de-sac	0.120	120	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
10750	Pine Court	Alma Street	North End Cul-de-sac	0.200	120	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10760	Allan Street	Sexton Street	Ash Street	0.380	850	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10765	Poplar Park Crescent	Allan Street	Allan Street	0.260	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10770	Allan Street	Sexton Street	Lorne Street	0.200	600	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10780	Arrow Street	Lorne Street	Scugog Street	0.130	841	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10790	Sexton Street	Allan Street	North End Cul-de-sac	0.220	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1080	Ma Brown's Road	7-Island Road	1.3 km East of 7-Island Road	1.300	147	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10800	Sexton Street	Union Avenue	Allan Street	0.120	355	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
10810	Lorne Street	Arrow Street	Sexton Street	0.150	350	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	RNS	1-5
10820	Lorne Street	Union Avenue	Arrow Street	0.150	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10840	Chester Crescent	Walsh Drive	Walsh Drive	0.560	311	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10850	Health Crescent	Walsh Drive	Walsh Drive	0.280	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10860	Walsh Drive	Queen Street	Queen Street	0.400	481	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10870	Scugog Line No 6	1.8km East of Highway 7 & 12	Highway 7 & 12	1.800	705	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
10875	6 Scugog Line	1.8km East of Highway 7 & 12	Highway 7A	0.590	1,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10880	Queen Street	Scugog Street	Old Simcoe Road	0.410	3,705	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10890	Queen Street	Old Simcoe Road	Ottawa Street	0.330	4,022	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1090	Spring Boulevard	7-Island Road	0.3 km North of 7-Island Road	0.300	225	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
10900	Queen Street	Ottawa Street	Bigelow Street	0.380	4,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10910	Queen Street	Bigelow Street	2-Simcoe Street	0.120	4,550	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
10920	Queen Street	2-Simcoe Street	Perry Street	0.270	5,284	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10930	Queen Street	Perry Street	Water Street	0.170	5,395	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10940	Queen Street	Water Street	East End	0.060	500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
10950	MacDonald Street	Old Simcoe Road	Ottawa Street	0.210	710	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10960	MacDonald Street	Ottawa Street	Rosa Street	0.150	710	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
10970	MacDonald Street	Rosa Street	Cochrane Street	0.120	710	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
10980	MacDonald Street	Cochrane Street	Bigelow Street	0.110	710	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
10990	MacDonald Street	Bigelow Street	2-Simcoe Street	0.110	711	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
110	Blue Mountain Road	Marsh Hill Road	23-Lake Ridge Road	3.520	90	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1100	Spring Boulevard	0.3 km North of 7-Island Road	North End	0.780	225	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	REC	NOW
11000	North Street	2-Simcoe Street	Perry Street	0.200	3,500	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
11010	North Street	Perry Street	Water Street	0.240	3,130	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11020	Paxton Street	Old Simcoe Road	Rosa Street	0.330	7,396	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11030	Paxton Street	Rosa Street	Cochrane Street	0.110	2,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11040	Paxton Street	Cochrane Street	Bigelow Street	0.120	2,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1105	Pine Point Road	7-Island Road	2.0 km East of 7-Island Road	2.000	745	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
11050	Paxton Street	Bigelow Street	2-Simcoe Street	0.110	1,882	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11060	Paxton Street	2-Simcoe Street	Perry Street	0.090	2,000	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
11070	Balsam Street	Old Simcoe Road	Rosa Street	0.280	172	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11080	Balsam Street	Rosa Street	Cochrane Street	0.100	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11090	Balsam Street	Cochrane Street	Bigelow Street	0.110	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1110	Pine Point Road	2.0 km East of 7-Island Road	The Mississauga's Trail	1.250	638	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11100	Balsam Street	Bigelow Street	2-Simcoe Street	0.120	393	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11110	Bay Street	Old Simcoe Road	Rosa Street	0.260	1,173	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
11120	Bay Street	Rosa Street	Cochrane Street	0.110	1,173	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
11130	Bay Street	Cochrane Street	Bigelow Street	0.110	1,250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
11140	Bay Street	Bigelow Street	2-Simcoe Street	0.120	1,393	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11150	Kenny Court	Rosa Street	West End Cul-de-sac	0.130	150	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11160	Kellett Street	Bigelow Street	2-Simcoe Street	0.120	322	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
11170	Beech Street	2-Simcoe Street	Lakeshore Drive	0.260	440	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11180	Lakeshore Drive	Beech Street	Coulter Street	0.320	325	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11190	Kent Street	0.1 km North of Beech Street	Lakeshore Drive	0.250	250	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1120	Pine Point Road	The Mississauga's Trail	Aldred Drive	1.130	523	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
11200	Kent Street	Beech Street	0.1 km North of Beech Street	0.120	250	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11210	Beechcroft Place	Beech Street	North End Cul-de-sac	0.070	50	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11220	Silver Street	Queen Street	North End Checkerboard	0.110	50	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	REC	6-10
11230	Ottawa Street	Scugg Street	Queen Street	0.280	481	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
11240	Ottawa Street	Queen Street	MacDonald Street	0.270	507	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
11250	Ella Street	Scugg Street	Queen Street	0.330	368	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
11260	Rosa Street	Queen Street	MacDonald Street	0.220	416	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11270	Rosa Street	MacDonald Street	Paxton Street	0.150	420	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11280	Rosa Street	Paxton Street	Balsam Street	0.150	433	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
11290	Rosa Street	Balsam Street	Bay Street	0.170	347	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1130	Aldred Drive	0.8 km South of Demara Road	Pine Point Road	0.710	520	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11300	Rosa Street	Bay Street	North End	0.210	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11310	Caleb Street	Scugg Street	Queen Street	0.360	210	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11320	Cochrane Street	Queen Street	MacDonald Street	0.200	232	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	RSS	1-5
11330	Cochrane Street	MacDonald Street	Paxton Street	0.150	231	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11340	Cochrane Street	Paxton Street	Balsam Street	0.150	200	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
11350	Cochrane Street	Balsam Street	Bay Street	0.150	155	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
11360	Cochrane Street	Bay Street	North End Cul-de-sac	0.190	150	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
11370	Crandle Street	Scugg Street	Queen Street	0.400	290	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11380	Bigelow Street	Queen Street	Paxton Street	0.310	217	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1140	Aldred Drive	0.5 km South of Demara Road	0.8 km South of Demara Road	0.300	350	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
11400	Bigelow Street	Paxton Street	Bay Street	0.310	212	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11410	Bigelow Street	Bay Street	Kellett Street	0.200	250	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11420	Bigelow Street	Kellett Street	8-Reach Street	0.250	262	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11430	John Street	Scugg Street	Shanly Street	0.110	547	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11440	John Street	Shanly Street	Casimir Street	0.120	1,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11450	John Street	Casimir Street	Mary Street	0.120	1,250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
11460	John Street	Mary Street	Queen Street	0.120	1,555	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11470	John Street	Queen Street	North Street	0.110	2,000	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
11480	John Street	North Street	Perry Street	0.140	2,000	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	REC	6-10
11490	Perry Street	Scugg Street	Shanly Street	0.150	1,545	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
1150	Aldred Drive	Demara Road	0.5 km South of Demara Road	0.500	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11500	Perry Street	Shanly Street	Casimir Street	0.120	1,700	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
11510	Perry Street	Casimir Street	Mary Street	0.120	1,700	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11520	Perry Street	Mary Street	Queen Street	0.120	1,912	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	RSS	6-10
11530	Perry Street	Queen Street	North Street	0.120	2,170	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
11540	Perry Street	North Street	John Street	0.170	3,500	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
11550	Perry Street	John Street	2-Simcoe Street	0.130	4,443	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
11560	Water Street	Scugg Street	Casimir Street	0.310	6,028	1-5	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	RW	1-5
11570	Curtis Street	Water Street	East End	0.170	2,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11580	Water Street	Casimir Street	Mary Street	0.120	6,500	1-5	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	RW	1-5
11590	Water Street	Mary Street	Queen Street	0.120	7,053	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
1160	Aldred Drive	Demara Road	Edgewood Crescent	0.920	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11600	Water Street	Queen Street	North Street	0.120	3,547	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11610	Water Street	North Street	North End	0.100	500	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	RSS	1-5
11620	Old Rail Lane	North Street	North End	0.190	1,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11630	Clark Street	Caleb Street	Crandle Street	0.110	100	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11640	Clark Street	Crandle Street	2-Simcoe Street	0.120	250	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11650	Shanly Street	2-Simcoe Street	John Street	0.190	800	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11655	Wilbur Avenue	Shanly Street	John Street	0.080	1,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11660	Shanly Street	John Street	Perry Street	0.150	500	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11670	Elgin Street	Caleb Street	Ella Street	0.110	180	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
11680	Elgin Street	Crandle Street	Caleb Street	0.110	200	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11690	Elgin Street	2-Simcoe Street	Crandle Street	0.120	200	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
1170	Edgewood Crescent	Aldred Drive	Davidge Drive	0.750	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
11700	Casimir Street	2-Simcoe Street	John Street	0.160	1,000	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11710	Casimir Street	John Street	Perry Street	0.150	1,046	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
11720	Casimir Street	Perry Street	Water Street	0.170	1,745	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11730	Mary Street	2-Simcoe Street	John Street	0.140	1,300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11740	Mary Street	John Street	Perry Street	0.150	1,381	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11750	Mary Street	Perry Street	Water Street	0.170	1,500	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
11760	Wilbur Avenue	Scugg Street	Shanly Street	0.110	1,500	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11780	Chimney Hill Way	Old Simcoe Road	Queensplate Drive	0.120	691	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11785	Chimney Hill Way	Sherrington Drive	Queensplate Drive	0.180	600	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11790	Queensplate Drive	Chimney Hill Way	Sherrington Drive	0.240	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1180	Davidge Drive	Chandler Drive	Edgewood Crescent	0.720	250	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
11800	Sherrington Drive	8-Reach Street	Roseborough Drive	0.700	392	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11810	Gatwick Way	Roseborough Drive	Sherrington Drive	0.090	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11820	Roseborough Court	Gatwick Way	North End Turnaround	0.320	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
11830	Fifisher Court	Roseborough Drive	West End Turnaround	0.090	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11840	Roseborough Drive	Sherrington Drive	Gatwick Way	0.240	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11850	Carlan Drive	8-Reach Street	Old Simcoe Road	0.400	98	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
11860	Edinborough Avenue	Riverview Drive	Old Simcoe Road	0.320	206	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11870	Circle Drive	Riverview Drive	Edinborough Avenue	0.320	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11880	Riverview Drive	2-Simcoe Street	North End Cul-de-sac	0.680	332	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1190	Demara Road	7-Island Road	The Mississauga's Trail	1.710	600	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
11900	Coulter Street	Coulcliff Street	2-Simcoe Street	0.410	860	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11910	Coulcliff Street	Coulter Street	North End Turnaround	0.330	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
11920	Waterbury Crescent	Coulter Street	Country Estates Drive	0.500	422	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11930	Waterbury Crescent	Country Estates Drive	South Garden Court	0.980	400	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11940	Commons Boulevard	South Garden Court	Waterbury Crescent	0.300	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11950	South Garden Court	County Estates Drive	Waterbury Crescent	0.240	450	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11960	South Garden Court	Waterbury Crescent	Country Estates Drive	0.270	450	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11970	Candlight Court	South Garden Court	North End Cul-de-Sac	0.210	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11980	Country Estates Drive	2-Simcoe Street	Waterbury Crescent	0.320	534	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
11985	Scugg Line No.8	Old Simcoe Road	2-Simcoe Street	0.130	907	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
11990	Castle Harbour Drive	2-Simcoe Street	Cawkers Cove Road	0.460	802	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
120	Blue Mountain Road	Marsh Hill Road	0.6 km East of Marsh Hill Road	0.600	55	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1200	Demara Road	The Mississauga's Trail	Aldred Drive	1.500	600	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
12000	Castle Harbour Drive	Cawkers Cove Road	Stone Sound Road	0.560	600	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
12010	Castle Harbour Drive	Stone Sound Road	Cawkers Cove Road	0.350	500	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
12020	Cawkers Cove Road	Castle Harbour Drive	Stone Sound Road	0.700	200	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
12030	Stone Sound Road	Castle Harbour Drive	Cawkers Cove Road	0.620	450	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
12040	Stone Sound Road	2-Simcoe Street	Cawkers Cove Road	0.210	559	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
12050	Cawkers Cove Road	Stone Sound Road	0.8 km East of Stone Sound Road	0.930	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
12060	Cawkers Cove Road	0.8 km East of Stone Sound Road	North End	0.890	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
12070	Island View Court	Cawkers Cove Road	South End Cul-de-Sac	0.330	60	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
12080	Clyde Court	Cawkers Cove Road	North End	0.580	50	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
12090	Indian Way	Clyde Court	0.3 km North of Clyde Court	0.330	50	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	RNS	NOW
1210	Seven Mile Island Road	7-Island Road	West End Turnaround	0.930	20	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
12100	Indian Way	0.3 km North of Clyde Court	Whitfield Road	0.280	49	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
12110	Whitfield Road	2-Simcoe Street	Indian Way	1.030	473	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
12120	Whitfield Road	Indian Way	East End	0.620	473	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
12130	Honey's Beach Road	Whitfield Road	South End	0.480	473	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
12140	Framar Avenue	Honey's Beach Road	West End	0.090	15	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
12150	North Port Road	8-Reach Street	Taylor Boulevard	0.830	1,000	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
12160	Taylor Boulevard	North Port Road	East End Turnaround	0.380	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1220	Chandler Drive	7-Island Road	The Mississauga's Trail	0.900	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1230	Chandler Drive	The Mississauga's Trail	Davidge Drive	1.530	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
12300	Reach Industrial Park Road	8-Reach Street	South End Turnaround	0.520	1,000	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
1240	Chandler Drive	Davidge Drive	East End	0.380	50	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
12400	Easy Street	Scugog Line No 6	North End	0.710	475	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1250	Canal Street	Chandler Drive	South End	0.110	50	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1260	Pogue Road	Fralick's Beach Road	7-Island Road	0.160	20	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
1270	Pogue Road	1.6 km East of 7-Island Road	7-Island Road	1.620	460	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1280	Pogue Road	Carnegie Beach Road	1.6 km East of 7-Island Road	0.660	515	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1290	Carnegie Beach Road	Charles Street	South End	1.350	515	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
130	Blue Mountain Road	0.6 km East of Marsh Hill Road	East End	1.900	25	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
1300	Charles Street	Carnegie Beach Road	North End	0.110	20	ADEQ	1-5	ADEQ	NOW	ADEQ	NOW	NONE<	ADEQ
1310	Hood Drive	Fralick's Beach Road	7-Island Road	1.480	502	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
1320	Crozier Lane	7-Island Road	North End	0.200	55	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1330	Carnegie Beach Road	7-Island Road	Charles Street	1.270	86	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1340	The Mississauga's Trail	Demara Road	Pine Point Road	1.400	43	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1350	The Mississauga's Trail	Chandler Drive	Demara Road	1.440	55	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1360	The Mississauga's Trail	0.2 km S of 7-Island Road	Chandler Drive	1.070	104	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
1370	The Mississauga's Trail	7-Island Road	0.2 km S of 7-Island Road	0.200	700	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
1380	Fralick's Beach Road	7-Island Road	Hood Drive	1.600	864	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
1390	Fralick's Beach Road	Hood Drive	North End Turnaround	1.900	74	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
140	Blue Mountain Road	Hwy 7 & 12	East End	1.450	35	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1400	Boundary Road	Old Scugog Road	West End Turnaround	0.420	42	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
1410	Boundary Road	57-Blackstock Road	Old Scugog Road	0.990	201	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1420	Boundary Road	East End Checkerboard	Fowler Line	0.800	10	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
1430	Fowler Line	Boundary Road	Mounjoy Road	1.410	120	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1440	Byers Road	Cartwright West 1/4 Line	Old Scugog Road	2.690	95	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1450	Byers Road	Old Scugog Road	57-Blackstock Road	0.650	88	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1460	Mounjoy Road	57-Blackstock Road	Fowler Line	2.480	203	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1470	Mounjoy Road	Fowler Line	Cartwright East 1/4 Line	1.160	108	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1480	Cartwright East 1/4 Line	Mounjoy Road	Devitt's Road	1.430	94	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1490	Devitt's Road	Cartwright East 1/4 Line	57-Blackstock Road	3.780	675	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
1500	Devitt's Road	Manvers/Scugog Townline Road	Cartwright East 1/4 Line	3.560	422	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	BS	6-10
1510	Manvers/Scugog Townline Road	Clarrington Boundary	Devitt's Road	2.910	148	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1520	Manvers/Scugog Townline Road	Devitt's Road	McKee Road	1.430	275	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
1530	Manvers/Scugog Townline Road	McKee Road	Edgerton Road	1.420	275	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1540	Manvers/Scugog Townline Road	Edgerton Road	Gray Road	0.330	203	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1550	Bradburn Road	Cartwright West 1/4 Line	West End Checkerboard	0.500	30	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1560	Bradburn Road	Cartwright West 1/4 Line	Old Scugog Road	2.670	275	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
1570	Bradburn Road	Old Scugog Road	57-Blackstock Road	0.500	36	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1580	McKee Road	57-Blackstock Road	Cartwright East 1/4 Line	3.910	120	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
1590	McKee Road	Cartwright East 1/4 Line	Manvers/Scugog Townline Road	3.550	150	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1600	Scugog Line No 12	23-Lake Ridge Road	Marsh Hill Road	3.560	300	ADEQ	NOW	ADEQ	ADEQ	ADEQ	ADEQ	REC	NOW
1600	Church Street	Cartwright West 1/4 Line	West End	1.100	90	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1610	Church Street	0.6 km West of Old Scugog Road	Cartwright West 1/4 Line	2.120	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1620	Edgerton Road	0.6 km East of McLaughlin Road	57-Blackstock Road	3.310	1,230	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
1630	Edgerton Road, Cadmus	0.3 km East of Cartwright East 1/4 Line	0.6 km East of McLaughlin Road	0.910	950	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1640	Edgerton Road	Wilson Avenue	0.3 km E of Cartwright East 1/4 Line	2.660	442	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1650	Edgerton Road	Manvers/Scugog Townline Road	Wilson Avenue	0.600	400	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
1670	Jobb Road	57-Blackstock Road	McLaughlin Road	2.950	250	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1680	Fallis Road	Cartwright East 1/4 Line	Mahood's Road	1.200	60	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1690	Fallis Road	Mahood's Road	Wilson Avenue	1.760	30	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1700	Scugog Line No 12	Marsh Hill Road	Hwy 7 & 12	3.610	240	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1700	Mahood's Road	Fallis Road	North End	0.200	10	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	NONE<	ADEQ
1710	Wilson Avenue	Edgerton Road	Fallis Road	1.440	82	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1720	Wilson Avenue	Fallis Road	Highway 7A	1.440	56	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1730	Cartwright West 1/4 Line	Byers Road	South End	1.000	30	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
1740	Cartwright West 1/4 Line	Byers Road	19-Shirley Road	1.430	80	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
1750	Cartwright West 1/4 Line	19-Shirley Road	Bradburn Road	1.470	813	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1760	Cartwright West 1/4 Line	Bradburn Road	Church Street	1.410	910	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
1770	Cartwright West 1/4 Line	Church Street	Highway 7A	1.420	1,023	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1780	Old Scugog Road	Boundary Road	Byers Road	1.390	594	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1790	Old Scugog Road	Byers Road	.52km South of 19 Shirley Road	0.920	750	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1795	Old Scugog Road	.52km South of 19 Shirley Road	19 Shirley Road	0.520	750	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	BS	6-10
1800	Scugog Line No 12	Hwy 7 & 12	Spadina Sideroad	1.480	168	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
1800	Old Scugog Road	19-Shirley Road	Bradburn Road	1.450	813	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
1810	Old Scugog Road	Bradburn Road	300m North of Bradburn Road	0.300	1,140	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1812	Old Scugog Road	300m North of Bradburn Road	750m North of Bradburn Road	0.450	1,140	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
1814	Old Scugog Road	750m North of Bradburn Road	1km North of Bradburn Road / South Limit Blackstock	0.250	1,140	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
1820	McLaughlin Road	Edgerton Road	Jobb Road	1.410	680	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1830	McLaughlin Road	Jobb Road	0.2km South of Suggitt Drive	0.870	720	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
1840	McLaughlin Road	0.2 km South of Suggitt Drive	Highway 7A	0.570	750	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1850	Suggitt Drive, Nestleton	McLaughlin Road	Highway 7A	0.900	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
1860	Nestleton Road, Nestleton	Highway 7A	0.5 km North of Highway 7A	0.500	1,130	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
1870	Nestleton Road	0.5 km North of Highway 7A	0.3 km North of Malcolm Road	1.240	1,300	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
1880	Nestleton Road	0.3 km North of Malcolm Road	57-Caesarea Road	1.140	1,100	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
1890	Cartwright East 1/4 Line	Devitt's Road	McKee Road	1.440	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
1900	Cartwright East 1/4 Line	McKee Road	Edgerton Road	1.440	300	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	BS	6-10
2000	Victoria Corners Road	23-Lake Ridge Road	Sideroad 17	2.960	108	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2000	Scugog Line No 12	Spadina Sideroad	Old Simcoe Road	2.070	160	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10

Critical Deficiencies

Current Inspection Batch

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2000	Cartwright East 1/4 Line	Edgerton Road	Fallis Road	1.430	275	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
20000	Stephenson Point Road	7-Island Road	Platten Boulevard	0.560	1,731	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
20002	Stephenson Point stub	Stephenson Point Road	East End	0.110	20	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
20010	Stephenson Point Road	Platten Boulevard	Pellet Drive	0.480	384	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
20020	Stephenson Point Road	Pellet Drive	South End Cul-de-Sac	0.840	180	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
20030	Pellet Drive	Stephenson Point Road	North End	0.460	180	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
20040	Percy Crescent	Platten Boulevard	Pete Street	0.270	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
20045	Percy Crescent	Pete Street	Pete Street	0.500	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
20050	Pete Street	Percy Crescent	Percy Crescent	0.100	100	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
20060	Percy Crescent	Pete Street	Platten Boulevard	0.230	250	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
20070	Platten Boulevard	Stephenson Point Road	Percy Crescent North	0.580	1,338	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
20080	Platten Boulevard	Percy Crescent North	Lakeside Beach Road	0.460	974	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
20090	Lakeside Beach Road	Platten Boulevard	South End	0.290	100	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2010	Cartwright East 1/4 Line	Fallis Road	Highway 7A	1.450	275	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
20100	Platten Boulevard	Lakeside Beach Road	North End	0.460	200	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2020	Scugog Point Road	57-Caesarea Road	Mabel's Road	0.900	729	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2030	Scugog Point Road	Mabel's Road	Johnstone Lane	0.660	389	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
2040	Armstrong Avenue	Scugog Point Road	East End	0.350	50	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2050	Mabel's Road	Scugog Point Road	West End	0.760	375	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2060	Scugog Point Crescent	Mabel's Road	Mabel's Road	0.690	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
2070	Prosser Avenue	Scugog Point Road	Morris Lane	0.160	50	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2080	Marguerite Avenue	Scugog Point Road	Morris Lane	0.080	20	ADEQ	NOW	ADEQ	NOW	NOW	NOW	NONE<	ADEQ
2090	Mabel's Road	Scugog Point Road	St. Christopher's Beach Road	1.030	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
210	Scugog Line No 12	Old Simcoe Road	2-Simcoe Street	2.680	160	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5
2100	St. Christopher's Beach Road	57-Caesarea Road	Colwell Circle	1.240	135	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	REC	6-10
2110	Colwell Circle	St. Christopher's Beach Road	St. Christopher's Beach Road	0.700	50	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2120	View Lake Road	0.2 km North of Colwell Circle	0.6 km North of Colwell Circle	0.400	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	NOW
2130	View Lake Road	0.6 km North of Colwell Circle	East End	0.280	50	ADEQ	NOW	ADEQ	NOW	NOW	NOW	NONE<	NOW
2140	St. Christopher's Beach Road	Colwell Circle	0.2 km North of Colwell Circle	0.200	100	ADEQ	6-10	ADEQ	NOW	NOW	ADEQ	REC	NOW
2150	John's Road	Highway 7A	Malcolm Road	1.430	158	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2160	Cedardale Road	Malcolm Road	57-Caesarea Road	3.060	167	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5
2170	View Lake Road	57-Caesarea Road	1.2 km North of 57-Caesarea Road	1.270	126	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2180	Washago Bay Lane	View Lake Road	West End	0.800	75	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2190	View Lake Road	View Lake Road	120m East of View Lake Road	0.120	209	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2195	View Lake Road	120m East of View Lake Road	57 Regional Road 57	1.200	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
220	Puckrin Drive	2-Simcoe Street	Brunon Avenue	0.900	1,646	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
2200	Birch Island Road	View Lake Road	Birch Island	0.210	100	ADEQ	NOW	ADEQ	NOW	NOW	NOW	REC	NOW
2210	Coleman Crescent	View Lake Road	Cartwright/Manvers Boundary Road	0.270	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
2215	Coleman Crescent	275m North of View Lake Road	70m West of Cartwright / Manvers Boundary	0.450	150	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
2218	Coleman Crescent	70m West of Cartwright / Manvers Boundary	Cartwright/Manvers Boundary Road	0.070	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2220	Cartwright/Manvers Boundary Road	57-Caesarea Road	Magill Drive	0.340	150	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2230	Nesbitt Line	Highway 7A	Malcolm Road	1.320	163	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2240	Nesbitt Line	Malcolm Road	St. Alban Road	1.700	213	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2250	Nesbitt Line	St. Alban Road	North End	1.460	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2260	Beacock Road	57-Caesarea Road	West End	1.950	100	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2270	Proult Road	57-Caesarea Road	West End	0.610	30	ADEQ	1-5	ADEQ	NOW	NOW	ADEQ	NONE<	ADEQ
2280	Proult Road	57-Caesarea Road	2.0 km East of 57-Caesarea Road	2.000	70	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2290	Proult Road	2.0 km East of 57-Caesarea Road	Nestleton Road	0.370	70	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
230	Brunon Avenue	South End	Puckrin Drive	0.570	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2300	Malcolm Road	Nestleton Road	0.5 km East of Nestleton Road	0.500	80	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2310	Malcolm Road	0.5 km East of Nestleton Road	Johns Road	2.450	79	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
2320	Malcolm Road	John's Road	Cedardale Road	0.580	178	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
2330	Malcolm Road	Cedardale Road	Nesbitt Line	1.190	138	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
2340	Williams Point Road	57-Caesarea Road	0.6 km North of 57-Caesarea Road	0.600	476	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2350	Williams Point Road	0.6 km North of 57-Caesarea Road	Jack Rabbitt Run	0.980	450	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
2360	Shady Acres Avenue	Jack Rabbitt Run	North End	0.120	80	ADEQ	NOW	ADEQ	NOW	ADEQ	NOW	REC	NOW
2370	Jack Rabbit Run	Williams Point Road	North End	0.630	300	ADEQ	NOW	ADEQ	NOW	ADEQ	NOW	REC	NOW
2380	Ashburn Road	Townline Road	0.4 km South of Scugog Line No 2	1.190	836	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
2390	Ashburn Road	0.4 km South of Scugog Line No 2	High Point Road	1.820	791	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
240	Brunon Avenue	Puckrin Drive	North End	0.930	150	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2400	Ashburn Road	High Point Road	Scugog Line No 4	2.020	680	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2410	Marsh Hill Road	Scugog Line No 4	0.3 km South of 21-Goodwood Road	1.110	609	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
2415	Marsh Hill Road, Utica	0.3 km South of 21-Goodwood Road	21-Goodwood Road	0.300	625	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
2420	Marsh Hill Road, Utica	21-Goodwood Road	0.4 km North of 21-Goodwood Road	0.400	750	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2425	Christie Crescent, Utica	21-Goodwood Road	East End Cul-de-Sac	0.420	130	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
2430	Marsh Hill Road	0.4 km North of 21-Goodwood Road	Scugog Line No 6	1.110	650	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2440	Marsh Hill Road	Scugog Line No 6	0.8 km South of 8-Reach Street	0.600	663	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
250	Cragg Road	Marsh Hill Road	West End Turnaround	1.040	50	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2500	Marsh Hill Road, Epsom	0.8 km South of 8-Reach Street	8-Reach Street	0.800	663	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
2510	Marsh Hill Road	0.7 km North of 8-Reach Street	Scugog Road No 8	0.710	400	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	BS	1-5
2520	Marsh Hill Road	Scugog Line No 8	Scugog Line No 9	1.460	240	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
2530	Marsh Hill Road	Scugog Line No 9	47-Highway 47	1.410	134	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2540	Marsh Hill Road	47-Highway 47	Cragg Road	1.400	233	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
2650	Marsh Hill Road	Cragg Road	200m South of 12 Scugog Line	1.380	146	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2655	Marsh Hill Road	200m South of 12 Scugog Line	300m North of 12 Scugog Line	0.500	146	ADEQ	NOW	ADEQ	ADEQ	ADEQ	ADEQ	REC	NOW
2660	Marsh Hill Road	300m North of 12 Scugog Line	Blue Mountain Road	1.050	100	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2670	Marsh Hill Road	Blue Mountain Road	Scugog Line No 14	1.490	47	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
2680	Old Simcoe Road	2-Simcoe Street	Scugog Line No 2	1.020	732	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
2690	Old Simcoe Road	Scugog Line No 2	0.8 km North of Scugog Line No 2	0.800	825	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
260	Cragg Road	0.6 km West of Hwy 7 & 12	Marsh Hill Road	2.770	121	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2600	Old Simcoe Road	0.8 km North of Scugog Line No 2	Scugog Line No 3	0.550	825	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2610	Old Simcoe Road	Scugog Line No 3	Scugog Line No 4	1.520	900	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2620	Old Simcoe Road	Scugog Line No 4	0.6 km North of Scugog Line No 4	0.600	1,060	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2630	Old Simcoe Road	Scugog Line No 8	Whitfield Road	1.440	394	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2635	Whitfield Road	2-Simcoe Street	Old Simcoe Road	0.610	225	ADEQ	1-5	ADEQ	NOW	NOW	ADEQ	REC	NOW
2640	Old Simcoe Road	Whitfield Road	Scugog Line No 10	1.450	375	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
265	Cragg Road, Greenbank	850m West of Hwy 7/12	600m West of Hwy 7/12	0.250	121	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
2650	Old Simcoe Road	Scugog Line No 10	Cragg Road	1.440	347	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
2660	Old Simcoe Road	Cragg Road	Scugog Line No 12	1.500	300	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
2670	Old Simcoe Road	Scugog Line No 12	Dunward Road	1.370	250	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
2680	Dunward Road	Old Simcoe Road	West End	0.300	15	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
2690	Old Simcoe Road	Dunward Road	6-Saintfield Road	1.490	223	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
270	Cragg Road	1.0 km West of Till Sideroad	0.8 km East of Hwy 7 & 12	0.890	164	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
2700	Old Simcoe Road	6-Saintfield Road	Brock/Scugog Townline	1.470	200	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
280	Spadina Sideroad	Cragg Road	Scugog Line No 12	1.520	20	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
290	Cragg Road	Till Sideroad	1.0 km West of Till Sideroad	1.000	164	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
30	Brock/1st Line	Hwy 7 & 12	West End	1.900	55	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	REC	NOW
300	Cragg Road	Old Simcoe Road	Till Sideroad	0.910	200	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
30000	Cedar Grove Drive, Caesarea	Pier Street	Cedar Grove Drive South	0.340	990	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5
30010	Cedargrove Drive, Caesarea	Manor Road	Cedargrove Drive West	0.870	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30020	Manor Road, Caesarea	Summit Drive	Cedargrove Drive	0.080	50	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30030	Sunset Boulevard, Caesarea	Cedargrove Drive	Summit Drive	0.080	50	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30040	Park Hill Avenue, Caesarea	Summit Drive	Bayview Crescent	0.100	50	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
30050	Bayview Crescent, Caesarea	Park Hill Avenue	South End	0.130	50	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30060	Summit Drive, Caesarea	Park Hill Avenue	South End Turnaround	0.540	150	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
30070	Summit Drive, Caesarea	Cedar Grove Drive	Park Hill Avenue	0.970	250	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
30080	Henon Street, Caesarea	Marina Drive	57-Caesarea Road	0.100	50	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30090	Marina Drive, Caesarea	Cedargrove Drive	Heron Street	0.190	50	ADEQ	1-5	ADEQ	NOW	NOW	ADEQ	REC	NOW
30100	Marina Drive, Caesarea	Cedar Grove Drive	Centre Street	0.150	500	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
30105	Pulsey Drive, Caesarea	Marina Drive	West End	0.250	100	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
30110	Marina Drive, Caesarea	Centre Street	North End	0.160	200	ADEQ	NOW	ADEQ	ADEQ	ADEQ	ADEQ	REC	NOW
30120	Angle Street	John Street	Centre Line	0.140	70	ADEQ	NOW	ADEQ	NOW	NOW	NOW	RSS	NOW
30130	Centre Line	Angle Street	West End	0.030	70	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	RSS	NOW
30140	Centre Line	John Street	Angle Street	0.140	140	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	RSS	NOW
30150	Centre Street, Caesarea	Marina Drive	Pier Street	0.120	250	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
30160	Centre Street, Caesarea	Pier Street	Park Street	0.530	250	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
30170	Pier Street, Caesarea	57-Caesarea Road	North End	0.300	392	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
30180	Pine Street, Caesarea	Centre Street	North End	0.130	50	ADEQ	6-10	ADEQ	NOW	NOW	ADEQ	REC	NOW
30190	42nd Street	First Street	Pleasant View Street	0.090	50	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
30200	Rowan Avenue, Caesarea	Pleasant View Avenue	Park Street	0.160	80	ADEQ	1-5	ADEQ	6-10	ADEQ	ADEQ	REC	1-5
30210	First Street, Caesarea	57-Caesarea Road	42nd Street	0.230	120	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
30220	Pleasant View Avenue, Caesarea	57-Caesarea Road	Rowan Avenue	0.290	120	ADEQ	NOW	ADEQ	1-5	ADEQ	ADEQ	REC	NOW
30230	Lake View Street, Caesarea	57-Caesarea Road	Rowan Avenue	0.250	120	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
30240	Park Street, Caesarea	57-Caesarea Road	Centre Street, Caesarea	0.150	120	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
30250	Hiawatha Boulevard, Caesarea	57-Caesarea Road	South End	0.220	70	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
304	Clements Road	2-Simcoe Street	West End	0.550	15	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
306	Clements Road	2-Simcoe Street	East End Turnaround	0.870	40	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
310	Till Sideroad	Scugog Line No 10	Cragg Road	1.410	100	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
320	Scugog Line No 10	Till Sideroad	Old Simcoe Road	0.900	200	ADEQ	NOW	ADEQ	ADEQ	ADEQ	ADEQ	REC	NOW
324	Harper Road	2-Simcoe Street	West End Turnaround	0.730	55	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5
326	Harper Road	2-Simcoe Street	East End	0.990	50	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
328	Ganton Road	23-Lake Ridge Road	East End Turnaround	0.410	30	ADEQ	ADEQ	NOW	NOW	ADEQ	ADEQ	NONE<	ADEQ
330	Scugog Line No 10	Highway 7 & 12	Till Sideroad	2.690	165	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	REC	1-5
340	Scugog Line No 9	Marsh Hill Road	23-Lake Ridge Road	3.590	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
350	Scugog Line No 9	Highway 7 & 12	Marsh Hill Road	3.570	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
360	Straitville Crescent	23-Lake Ridge Road	23-Lake Ridge Road	0.450	90	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
370	Ward Road	8-Reach Street	East End Turnaround	0.500	60	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	BS	1-5
375	Scugog Line No 8	8-Reach Street	West End	0.200	10	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
380	Scugog Line No 8	8-Reach Street	Marsh Hill Road	1.740	50	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
390	Scugog Line No 8	Marsh Hill Road	Highway 7 & 12	3.510	43	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
40	Scugog Brock Townline	Hwy 7 & 12	Old Simcoe Road	3.660	112	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
400	Scugog Line No 8	Highway 7 & 12	Old Simcoe Road	3.500	73	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
40000	Church Street, Blackstock	Greensboro Drive	West Limit of Blackstock	0.400	348	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	RSS	6-10
40010	Church Street, Blackstock	Old Scugog Road	Greensboro Drive	0.200	478	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
40020	Church Street	57-Blackstock Road	Old Scugog Road	0.480	630	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
40030	Old Scugog Road, Blackstock	0.4 km South of Church Street	0.1 km South of Church Street	0.300	871	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	R1	1-5
40040	Old Scugog Road, Blackstock	0.1 km South of Church Street	Church Street	0.110	875	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
40050	Old Scugog Road, Blackstock	Church Street	0.1 km North of Church Street	0.100	1,443	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
40060	Old Scugog Road, Blackstock	0.1 km North of Church Street	Alexander Street	0.470	1,625	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
40070	Old Scugog Road, Blackstock	Alexander Street	57-Blackstock Road	0.900	1,825	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
40080	Greensboro Drive, Blackstock	0.5 km South of Old Scugog Road	Church Street	0.700	212	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
40090	Greensboro Drive, Blackstock	0.15 km South of Old Scugog Road	0.5 km South of Old Scugog Road	0.350	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
40100	Greensboro Drive, Blackstock	Old Scugog Road	0.15 km South of Old Scugog Road	0.150	300	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
40110	Meadowrest Lane, Blackstock	Old Scugog Road	Greensboro Drive	0.110	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
40120	Alexander Street, Blackstock	Mason Street	Old Scugog Road	0.180	250	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
40130	Mason Street, Blackstock	Mason Street	Alexander Street	0.140	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
40140	Venning Court, Blackstock	Mason Street	East End Cul-de-Sac	0.130	50	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
40150	Mason Street, Blackstock	Old Scugog Road	Mason Street	0.180	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
40160	Crestview Avenue, Blackstock	Old Scugog Road	Sunrise Drive	0.190	750	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
40170	Crestview Avenue, Blackstock	Sunrise Drive	57-Blackstock Road	0.340	439	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
40180	Sunrise Court, Blackstock	Crestview Avenue	North End Cul-de-Sac	0.120	60	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
40190	Marlow Street, Blackstock	Crestview Avenue	North End	0.080	25	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	NONE<	ADEQ
40200	Sunrise Drive, Blackstock	Crestview Avenue	Crestview Avenue	0.830	500	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
40210	Trewin Court, Blackstock	Sunrise Drive	West End Cul-de-Sac	0.050	50	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
40230	Donelda Court, Blackstock	Sunrise Drive	North End Cul-de-Sac	0.200	120	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
410	Medd Road	23-Lake Ridge Road	2.1km East of 23 Lakeridge Road	2.100	401	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	SD	ADEQ
415	Medd Road	2.1km East of 23 Lakeridge Road	8 Reach Street	1.300	400	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
420	Scugog Line No 6	Marsh Hill Road	23-Lake Ridge Road	3.610	250	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
430	Scugog Line No 6	Highway 7 & 12	Marsh Hill Road	3.600	382	ADEQ	NOW	NOW	1-5	ADEQ	ADEQ	REC	NOW
440	Mast Road	Pine Gate Road	21-Goodwood Road	1.820	100	ADEQ	1-5	NOW	NOW	NOW	ADEQ	REC	NOW
450	Pine Gate Road	Mast Road	West End Turnaround	1.100	35	ADEQ	NOW	NOW	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
460	Mast Road	Ashburn Road	Pine Gate Road	1.700	149	ADEQ	1-5	NOW	NOW	ADEQ	ADEQ	REC	NOW
470	Scugog Line No 4	Gray Sideroad	Marsh Hill Road	2.370	379	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
480	Gray Sideroad	Scugog Line No 4	21-Goodwood Road	1.410	75	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
490	Scugog Line No 4	Hwy 7 & 12	Gray Sideroad	1.190	420	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
500	Scugog Brock Townline	Old Simcoe Road	2-Simcoe Street	3.410	84	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
500	Scugog Line No 4	Old Simcoe Road	Hwy 7 & 12	2.460	299	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
50000	Ashton Lane, Epsom	Marsh Hill Road	East End Cul-de-Sac	0.180	90	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
50010	Marsh Hill Road, Epsom	8-Reach Street	0.7 km North of 8-Reach Street	0.700	445	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	RSS	1-5
50020	Byron Street, Epsom	Marsh Hill Road	Palace Street	0.130	90	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	REC	6-10
50030	Byron Street	Palace Street	8-Reach Street	0.540	60	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
50040	Palace Street	Byron Street	0.15 km South of Byron Street	0.150	70	ADEQ	1-5	ADEQ	ADEQ	ADEQ	ADEQ	RSS	1-5
50050	Palace Street	0.15 km South of Byron Street	South End	0.140	25	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
510	Scugog Line No 4	2-Simcoe Street	Old Simcoe Road	1.030	300	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
520	High Point Road	Smith Sideroad	Ashburn Road	2.940	51	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
530	Smith Sideroad	Scugog Line No 2	Scugog Line No 3	1.350	100	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
540	Gray Sideroad	Scugog Line No 3	Scugog Line No 4	1.620	75	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
550	Scugog Line No 3	Gray Sideroad	Hwy 7 & 12	1.160	79	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
560	Scugog Line No 3	Hwy 7 & 12	Old Simcoe Road	2.490	191	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
570	Scugog Line No 3	Old Simcoe Road	2-Simcoe Street	1.150	224	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
580	Scugog Line No 3	2-Simcoe Street	1.0 km East of 2-Simcoe Street	1.000	163	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
590	Scugog Line No 3	1.0 km East of 2-Simcoe Street	2.1 km East of 2-Simcoe Street	1.100	150	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
60	Scugog Line No 14	23-Lake Ridge Road	West End	0.200	10	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	NONE<	ADEQ
600	Scugog Line No 3	2.1 km East of 2-Simcoe Street	Sandy Road	0.580	140	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
60000	Cragg Road, Greenbank	0.3 km West of Hwy 7 & 12	0.6 km West of Hwy 7 & 12	0.300	300	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	CRK	6-10
60010	Cragg Road, Greenbank	Hwy 7 & 12	0.3 km West of Hwy 7 & 12	0.300	406	ADEQ	ADEQ	ADEQ	1-5	ADEQ	ADEQ	R2	1-5
60015	Greenbank Avenue, Greenbank	Cragg Road	North End	0.200	80	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
60020	Cragg Road, Greenbank	0.8 km East of Hwy 7 & 12	Hwy 7 & 12	0.800	539	ADEQ	1-5	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
60030	Pearl Drive, Greenbank	Couves Lane	Cragg Road	0.570	114	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60040	Couves Lane, Greenbank	Hwy 7 & 12	West End	0.230	150	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60050	Jack St, Greenbank	Hwy 7 & 12	Ianson Drive	0.080	394	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60060	Murray Street, Greenbank	Ianson Drive	Eastside Street	0.120	100	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60070	Eastside Street, Greenbank	Murray Street	Ianson Drive	0.360	80	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60080	Ianson Drive, Greenbank	Murray Street	East End Turnaround	0.830	295	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
60090	Howsam Street, Greenbank	Ianson Drive	Cragg Road	0.120	136	ADEQ	ADEQ	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
610	Scugog Line No 3	Sandy Road	Graham Road	0.880	120	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
620	Graham Road	19-Shirley Road	Scugog Line No 3	0.920	92	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
630	Russell Road	19-Shirley Road	1.0 km South of 19-Shirley Road	1.000	173	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
640	Russell Road	1.0 km South of Shirley Road	Oshawa Boundary	0.490	173	ADEQ	NOW	NOW	ADEQ	ADEQ	ADEQ	REC	NOW
650	Sandy Road	Scugog Line No 3	19-Shirley Road	1.350	10	ADEQ	ADEQ	ADEQ	NOW	NOW	ADEQ	NONE<	ADEQ
660	Crows Pass	23-Lake Ridge Road	East End	0.490	40	ADEQ	NOW	NOW	NOW	NOW	ADEQ	NONE<	ADEQ
670	Chalk Lake Road	1.25 km West of Ashburn Road	23-Lake Ridge Road	2.170	169	ADEQ	NOW	ADEQ	NOW	NOW	ADEQ	REC	NOW
680	Chalk Lake Road	Ashburn Road	1.25 km West of Ashburn Road	1.250	170	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
690	Middle March Road	Ashburn Road	0.9 km West of Ashburn Road	0.970	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
70	Scugog Line No 14	23-Lake Ridge Road	Marsh Hill Road	2.990	330	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
700	Mansfield Park Court	Middle March Road	Mansfield Park Court	0.590	80	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
70000	Bruce Road	2-Simcoe Street	East End	0.160	90	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
70010	Meadow Green Court	Bruce Road	North End Turnaround	0.430	60	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
70020	Bank Road	2-Simcoe Street	Kawartha Lakes Boundary	0.300	100	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
70030	Bank Road	Bank Road	Kawartha Boundary	0.110	60	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
70040	River Street, Seagrave	2-Simcoe Street	Nonquon River Bridge	0.940	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
70050	River Street, Seagrave	Nonquon River Bridge	Keene Street	0.130	400	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
70060	Keene Street, Seagrave	River Street	Isabella Street	0.140	150	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
70070	Coryell Street, Seagrave	River Street	Coryell Street	0.150	400	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	BS	6-10
70080	Coryell Street, Seagrave	Coryell Street	Isabella Street	0.140	400	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
70090	Coryell Street, Seagrave	Isabella Street	0.35km N of Isabella Street	0.350	598	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
70100	Coryell Street, Seagrave	0.3 km N of Isabella Street	6-Sainfield Road	0.400	600	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	SD	6-10
70110	Isabella Street, Seagrave	Coryell Street	Henrietta Street	0.260	150	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	RSS	NOW
70120	Isabella Court, Seagrave	Henrietta Street	North End Cul-de-Sac	0.230	70	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
70130	Henrietta Street, Seagrave	River Street	Isabella Street	0.120	90	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
70140	River Street, Seagrave	Keene Street	Henrietta Street	0.120	400	ADEQ	ADEQ	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
70150	River Street, Seagrave	Henrietta Street	2-Simcoe Street	0.390	356	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	R1	6-10
70160	River Street, Seagrave	2-Simcoe Street	Sun Valley Road	0.210	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	CRK	ADEQ
70170	River Street, Seagrave	Sun Valley Road	North End	0.180	20	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
70180	Limosano Street, Seagrave	River Street	6-Sainfield Road	0.420	90	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
70190	Pardo Court, Seagrave	Limosano Street	East End Cul-de-Sac	0.120	50	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
710	Middle March Road	0.9 km West of Ashburn Road	Woodbridge Circle	0.550	400	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
720	Lauren Road	Middle March Road	North End Turnaround	0.210	50	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
730	Wyldewood Court	Woodbridge Circle	East End Turnaround	0.050	50	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
740	Wintergreen Court	Woodbridge Circle	South End Turnaround	0.480	50	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	PR2	NOW
750	Woodbridge Circle	Middle March Road	Woodbridge Circle	0.790	400	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
760	Scugog Line No 2	Bryant Sideroad	Ashburn Road	1.620	86	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
770	Scugog Line No 2	0.4 km West of Smith Sideroad	Bryant Sideroad	0.710	300	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
780	Scugog Line No 2	Hwy 7 & 12	0.4 km West of Smith Sideroad	1.590	301	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
790	Scugog Line No 2	Old Simcoe Road	Hwy 7 & 12	2.680	192	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	BS	NOW
80	Scugog Line No 14	Marsh Hill Road	0.3 km West of Hwy 7 & 12	3.290	336	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
800	Town Line Road	Dagmar Road	23-Lake Ridge Road	0.400	870	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
810	Town Line Road	Grouse Court	Dagmar Road	1.630	870	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
820	Town Line Road	Heron Road	Grouse Court	0.830	950	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
830	Town Line Road	Ashburn Road	Heron Road	0.810	1,039	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
840	Town Line Road	Duff's Road	Ashburn Road	1.660	878	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
850	Bryant Sideroad	Townline Road	Scougog Line No 2	1.500	20	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
860	Town Line Road	Mud Lake Road	Duff's Road	0.770	781	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
870	Mud Lake Sideroad	Townline Road	North End	0.770	20	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
880	Town Line Road	Hwy 7 & 12	Mud Lake Road	0.390	781	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
90	Scugog Line No 14, Sainfield	0.4km West of Hwy 7 & 12	Hwy 7 & 12	0.400	350	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
900	Coates Road West	Garrard Road	Hwy 7 & 12	0.440	1,087	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	PR2	1-5
910	Coates Road West	Whitby/Oshawa Townline	Garrard Road	0.310	1,150	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	PR2	6-10
920	Diamond Sideroad	Coates Road West	Scougog Line No 2	1.480	25	ADEQ	NOW	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
930	Coates Road West	Thornton Road North	Whitby/Oshawa Townline	0.510	1,164	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5
940	Coates Road West	1100 m West of 2-Simcoe Street North	Thornton Road	1.640	1,160	ADEQ	6-10	ADEQ	6-10	ADEQ	ADEQ	REC	6-10
950	Coates Road West	2-Simcoe Street North	1100 m West of Simcoe Street North	1.100	1,160	ADEQ	6-10	ADEQ	1-5	ADEQ	ADEQ	REC	1-5

Critical Deficiencies

Current Inspection Batch

ID	Street Name	From Description	To Description	Length	AADT	Cap.	Drain	Geo	SA	Width	Type	Imp	Overall TON
960	Coates Road East	Wilson Road North	2-Simcoe Street North	1.390	200	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	NONE	ADEQ
970	Readers Road	Highway 7	0.2 km East of Highway 7	0.200	40	ADEQ	6-10	ADEQ	NOW	ADEQ	ADEQ	NONE<	ADEQ
980	Readers Road	0.2 km East of Highway 7	East End Turnaround	0.470	40	ADEQ	6-10	ADEQ	ADEQ	ADEQ	ADEQ	NONE<	ADEQ
990	Portview Road	7-Island Road	0.8 km West of 7-Island Road	0.780	299	ADEQ	1-5	ADEQ	NOW	ADEQ	ADEQ	REC	NOW
				<u>432.260</u>									

Appendix I: Road Needs Sorted By Time of Need and Improvement ID

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
RW										
0.00	11560	Water Street	Scugog Street	Casimir Street	6,028	0.310	1-5	Const	RW	283,724.77
0.00	11580	Water Street	Casimir Street	Mary Street	6,500	0.120	1-5	Const	RW	114,835.33
					0.430					398,560.10
RSS										
25.00	10670	Alma Street	Maple Street	Old Simcoe Road	418	0.110	NOW	Const	RSS	221,052.17
25.00	30120	Angle Street	John Street	Centre Line	70	0.140	NOW	Const	RSS	204,077.97
26.00	40140	Venning Court, Blackstock	Mason Street	East End Cul-de-Sac	50	0.130	NOW	Const	RSS	216,964.91
26.00	10440	Alva Street	Major Street	2-Simcoe Street	177	0.230	NOW	Const	RSS	383,861.00
27.00	11310	Caleb Street	Scugog Street	Queen Street	210	0.360	NOW	Const	RSS	600,825.90
27.00	11630	Clark Street	Caleb Street	Crandle Street	100	0.110	NOW	Const	RSS	183,585.70
28.00	11690	Elgin Street	2-Simcoe Street	Crandle Street	200	0.120	NOW	Const	RSS	200,275.30
28.00	11420	Bigelow Street	Kelleit Street	8-Reach Street	262	0.250	NOW	Const	RSS	417,240.21
28.00	11200	Kent Street	Beech Street	0.1 km North of Beech Street	250	0.120	NOW	Const	RSS	200,275.30
28.00	30140	Centre Line	John Street	Angle Street	140	0.140	NOW	Const	RSS	204,077.97
29.00	30130	Centre Line	Angle Street	West End	70	0.030	NOW	Const	RSS	52,655.69
29.00	11650	Shanly Street	2-Simcoe Street	John Street	800	0.190	NOW	Const	RSS	317,102.56
30.00	11370	Crandle Street	Scugog Street	Queen Street	290	0.400	NOW	Const	RSS	667,584.33
30.00	10350	Barber Street	Old Simcoe Road	Jeffrey Street	300	0.110	NOW	Const	RSS	183,585.70
31.00	11080	Balsam Street	Rosa Street	Cochrane Street	350	0.100	NOW	Const	RSS	166,896.08
32.00	10320	Jeffrey Street	King Street	Barber Street	348	0.310	NOW	Const	RSS	517,377.86
32.00	11510	Perry Street	Casimir Street	Mary Street	1,700	0.120	NOW	Const	RSS	200,275.30
32.00	10770	Allan Street	Sexton Street	Lorne Street	600	0.200	NOW	Const	RSS	333,792.17
32.00	11680	Elgin Street	Crandle Street	Caleb Street	200	0.110	NOW	Const	RSS	183,585.70
33.00	11640	Clark Street	Crandle Street	2-Simcoe Street	250	0.120	NOW	Const	RSS	200,275.30
33.00	10960	MacDonald Street	Ottawa Street	Rosa Street	710	0.150	NOW	Const	RSS	301,434.77
33.00	40120	Alexander Street, Blackstock	Mason Street	Old Scugog Road	250	0.180	NOW	Const	RSS	300,412.95
34.00	40130	Mason Street, Blackstock	Mason Street	Alexander Street	150	0.140	NOW	Const	RSS	233,654.52
34.00	2290	Prout Road	2.0 km East of 57-Caesarea Road	Nestleton Road	70	0.370	NOW	Const	RSS	617,515.51
34.00	11170	Beech Street	2-Simcoe Street	Lakeshore Drive	440	0.260	NOW	Const	RSS	433,929.81
34.00	10330	Jeffrey Street	Barber Street	Old Simcoe Road	350	0.380	NOW	Const	RSS	634,205.11
36.00	11300	Rosa Street	Bay Street	North End	350	0.210	NOW	Const	RSS	350,481.78
36.00	11660	Shanly Street	John Street	Perry Street	500	0.150	NOW	Const	RSS	250,344.13
38.00	11060	Paxton Street	2-Simcoe Street	Perry Street	2,000	0.090	NOW	Const	RSS	150,206.48
38.00	10820	Lorne Street	Union Avenue	Arrow Street	350	0.150	NOW	Const	RSS	250,344.13
38.00	10420	Major Street	Union Avenue	Earl S Cuddle Boulevard	665	0.170	NOW	Const	RSS	461,050.44
38.00	11090	Balsam Street	Cochrane Street	Bigelow Street	350	0.110	NOW	Const	RSS	221,052.17
39.00	10340	Hurd Street	Union Avenue	Barber Street	300	0.310	NOW	Const	RSS	517,377.86
40.00	11100	Balsam Street	Bigelow Street	2-Simcoe Street	393	0.120	NOW	Const	RSS	241,147.81
40.00	70060	Keene Street, Seagrave	River Street	Isabella Street	150	0.140	NOW	Const	RSS	233,654.52
40.00	70110	Isabella Street, Seagrave	Coryell Street	Henrietta Street	150	0.260	NOW	Const	RSS	433,929.81
40.00	40150	Mason Street, Blackstock	Old Scugog Road	Mason Street	150	0.180	NOW	Const	RSS	300,412.95

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
42.00	10200	Old Simcoe Road	King Street	Jeffrey Street	1,605	0.710	NOW	Const	RSS	1,209,961.41
42.00	11710	Casimir Street	John Street	Perry Street	1,046	0.150	NOW	Const	RSS	250,344.13
44.00	10290	Union Avenue	King Street	Josephine Street	944	0.630	NOW	Const	RSS	1,292,735.43
46.00	11700	Casimir Street	2-Simcoe Street	John Street	1,000	0.160	NOW	Const	RSS	267,033.73
54.00	11140	Bay Street	Bigelow Street	2-Simcoe Street	1,393	0.120	NOW	Const	RSS	241,147.81
62.00	10230	Old Simcoe Road	Scugog Street	Queen Street	3,610	0.190	NOW	Const	RSS	323,792.49
8.00	11350	Cochrane Street	Balsam Street	Bay Street	155	0.150	6-10	Const	RSS	250,344.13
9.00	11340	Cochrane Street	Paxton Street	Balsam Street	200	0.150	6-10	Const	RSS	250,344.13
15.00	40000	Church Street, Blackstock	Greensboro Drive	West Limit of Blackstock	348	0.400	6-10	Const	RSS	667,584.33
17.00	11250	Ella Street	Scugog Street	Queen Street	368	0.330	6-10	Const	RSS	663,156.48
22.00	11550	Perry Street	John Street	2-Simcoe Street	4,443	0.130	6-10	Const	RSS	216,964.91
22.00	11520	Perry Street	Mary Street	Queen Street	1,912	0.120	6-10	Const	RSS	228,932.06
24.00	11000	North Street	2-Simcoe Street	Perry Street	3,500	0.200	6-10	Const	RSS	333,792.17
32.00	11490	Perry Street	Scugog Street	Shanly Street	1,545	0.150	6-10	Const	RSS	301,434.77
14.00	11320	Cochrane Street	Queen Street	MacDonald Street	232	0.200	1-5	Const	RSS	401,913.02
14.00	50040	Palace Street	Byron Street	0.15 km South of Byron Street	70	0.150	1-5	Const	RSS	250,344.13
15.00	11610	Water Street	North Street	North End	500	0.100	1-5	Const	RSS	170,417.10
15.00	10460	May Street	Union Avenue	2-Simcoe Street	100	0.110	1-5	Const	RSS	183,585.70
26.00	10450	Sexton Street	Union Avenue	Alva Street	207	0.120	1-5	Const	RSS	200,275.30
26.00	1630	Edgerton Road, Cadmus	0.3 km East of Cartwright East 1/4 Line	0.6 km East of McLaughlin Road	950	0.910	1-5	Const	RSS	1,828,704.23
26.00	1840	McLaughlin Road	0.2 km South of Suggitt Drive	Highway 7A	750	0.570	1-5	Const	RSS	634,236.83
27.00	50010	Marsh Hill Road, Epsom	8-Reach Street	0.7 km North of 8-Reach Street	445	0.700	1-5	Const	RSS	1,168,272.58
28.00	10360	Barber Street	Jeffrey Street	Hurd Street	300	0.100	1-5	Const	RSS	166,896.08
28.00	11280	Rosa Street	Paxton Street	Balsam Street	433	0.150	1-5	Const	RSS	250,344.13
28.00	11290	Rosa Street	Balsam Street	Bay Street	347	0.170	1-5	Const	RSS	283,723.35
29.00	11240	Ottawa Street	Queen Street	MacDonald Street	507	0.270	1-5	Const	RSS	450,619.43
32.00	11500	Perry Street	Shanly Street	Casimir Street	1,700	0.120	1-5	Const	RSS	200,275.30
35.00	10310	Union Avenue	Major Street	2-Simcoe Street	1,082	0.510	1-5	Const	RSS	869,127.21
37.00	1860	Nestleton Road, Nestleton	Highway 7A	0.5 km North of Highway 7A	1,130	0.500	1-5	Const	RSS	834,480.41
41.00	11470	John Street	Queen Street	North Street	2,000	0.110	1-5	Const	RSS	183,585.70
43.00	11540	Perry Street	North Street	John Street	3,500	0.170	1-5	Const	RSS	283,723.35
						15.320				26,444,613.70
RNS	11.00	12090	Indian Way	Clyde Court	50	0.330	NOW	Const	RNS	322,290.54
	19.00	10810	Lorne Street	Arrow Street	350	0.150	1-5	Const	RNS	146,495.70
						0.480				468,786.24
REC	18.00	310	Till Sideroad	Scugog Line No 10	100	1.410	NOW	Const	REC	526,154.05
	18.00	50	Scugog Brook Townline	Old Simcoe Road	84	3.410	NOW	Const	REC	1,549,096.16
	20.00	1100	Spring Boulevard	0.3 km North of 7-Island Road	225	0.780	NOW	Const	REC	376,036.07
	22.00	10650	Alma Court	Victoria Street	100	0.240	NOW	Const	REC	125,792.60

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
22.00	2550	Marsh Hill Road	Cragg Road	200m South of 12 Scougog Line	146	1.380	NOW	Const	REC	626,906.95
22.00	500	Scougog Line No 4	Old Simcoe Road	Hwy 7 & 12	299	2.460	NOW	Const	REC	1,564,272.92
22.00	570	Scougog Line No 3	Old Simcoe Road	2-Simcoe Street	224	1.150	NOW	Const	REC	731,265.80
22.00	30110	Marina Drive, Caesarea	Centre Street	North End	200	0.160	NOW	Const	REC	77,135.60
23.00	610	Scougog Line No 3	Sandy Road	Graham Road	120	0.880	NOW	Const	REC	399,766.75
23.00	530	Smith Sideroad	Scougog Line No 2	Scougog Line No 3	100	1.350	NOW	Const	REC	613,278.54
23.00	1350	The Mississauga's Trail	Chandler Drive	Demara Road	55	1.440	NOW	Const	REC	537,348.82
23.00	1440	Byers Road	Cartwright West 1/4 Line	Old Scougog Road	95	2.690	NOW	Const	REC	1,222,014.28
24.00	160	Scougog Line No 12	23-Lake Ridge Road	Marsh Hill Road	300	3.560	NOW	Const	REC	2,263,744.55
24.00	480	Gray Sideroad	Scougog Line No 4	21-Goodwood Road	75	1.410	NOW	Const	REC	640,535.36
24.00	340	Scougog Line No 9	Marsh Hill Road	23-Lake Ridge Road	150	3.590	NOW	Const	REC	1,886,265.34
24.00	30210	First Street, Caesarea	57-Caesarea Road	42nd Street	120	0.230	NOW	Const	REC	110,882.44
24.00	2110	Colwell Circle	St. Christopher's Beach Road	St. Christopher's Beach Road	50	0.700	NOW	Const	REC	327,600.89
24.00	2220	Cartwright/Manvers Boundary Road	57-Caesarea Road	Magill Drive	150	0.340	NOW	Const	REC	197,364.82
25.00	30020	Manor Road, Caesarea	Summit Drive	Cedargrove Drive	50	0.080	NOW	Const	REC	38,567.80
25.00	2360	Shady Acres Avenue	Jack Rabbit Run	North End	80	0.120	NOW	Const	REC	69,658.17
25.00	2240	Nesbitt Line	Malcolm Road	St. Alban Road	213	1.700	NOW	Const	REC	733,714.44
25.00	320	Scougog Line No 10	Till Sideroad	Old Simcoe Road	200	0.900	NOW	Const	REC	388,437.06
25.00	350	Scougog Line No 9	Highway 7 & 12	Marsh Hill Road	150	3.570	NOW	Const	REC	1,875,756.89
25.00	590	Scougog Line No 3	1.0 km East of 2-Simcoe Street	2.1 km East of 2-Simcoe Street	150	1.100	NOW	Const	REC	474,756.40
25.00	40	Scougog Brook Townline	Hwy 7 & 12	Old Simcoe Road	112	3.660	NOW	Const	REC	1,662,666.26
25.00	1160	Aldred Drive	Demara Road	Edgewood Crescent	150	0.920	NOW	Const	REC	443,529.72
25.00	10800	Sexton Street	Union Avenue	Allan Street	355	1.300	NOW	Const	REC	63,456.81
26.00	1080	Ma Brown's Road	7-Island Road	1.3 km East of 7-Island Road	147	1.300	NOW	Const	REC	661,483.68
26.00	10010	Brook Street, Prince Albert	Highway 7 & 12	Highway 7A	350	0.270	NOW	Const	REC	135,210.94
27.00	680	Chalk Lake Road	Ashburn Road	1.25km West of Ashburn Road	170	1.250	NOW	Const	REC	1,236,318.19
27.00	20030	Pettet Drive	Stephenson Point Road	North End	180	0.460	NOW	Const	REC	238,953.87
27.00	10380	Josephine Street	Josephine Street	Union Avenue	400	0.150	NOW	Const	REC	74,416.55
27.00	30030	Sunset Boulevard, Caesarea	Cedargrove Drive	Summit Drive	50	0.080	NOW	Const	REC	46,438.78
27.00	2180	Washago Bay Lane	View Lake Road	West End	75	0.800	NOW	Const	REC	273,575.82
28.00	30050	Bayview Crescent, Caesarea	Park Hill Avenue	South End	50	0.130	NOW	Const	REC	62,672.69
28.00	1670	Jobb Road	57-Blackstock Road	McLaughlin Road	250	2.950	NOW	Const	REC	1,549,995.20
28.00	400	Scougog Line No 8	Highway 7 & 12	Old Simcoe Road	73	3.500	NOW	Const	REC	1,306,056.15
28.00	70	Scougog Line No 14	23-Lake Ridge Road	Marsh Hill Road	330	2.990	NOW	Const	REC	2,314,615.21
28.00	2560	Marsh Hill Road	300m North of 12 Scougog Line	Blue Mountain Road	100	1.050	NOW	Const	REC	476,994.42
29.00	70040	River Street, Seagrave	2-Simcoe Street	Nonquon River Bridge	400	0.940	NOW	Const	REC	138,756.90
29.00	12000	Castle Harbour Drive	Cawkers Cove Road	Stone Sound Road	600	0.560	NOW	Const	REC	296,131.79
29.00	860	Town Line Road	Mud Lake Road	Duff's Road	781	0.770	NOW	Const	REC	523,367.69
29.00	580	Scougog Line No 3	2-Simcoe Street	1.0 km East of 2-Simcoe Street	163	1.000	NOW	Const	REC	431,596.73
29.00	760	Scougog Line No 2	Bryant Sideroad	Ashburn Road	86	1.620	NOW	Const	REC	671,024.85
30.00	520	High Point Road	Smith Sideroad	Ashburn Road	51	2.940	NOW	Const	REC	1,335,584.38

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
30.00	430	Scugog Line No 6	Highway 7 & 12	Marsh Hill Road	382	3.600	NOW	Const	REC	2,786,827.68
30.00	640	Russell Road	1.0 km South of Shirley Road	Oshawa Boundary	173	0.490	NOW	Const	REC	211,482.39
30.00	540	Gray Sideroad	Scugog Line No 3	Scugog Line No 4	75	1.620	NOW	Const	REC	735,934.25
30.00	2250	Nesbitt Line	St. Alban Road	North End	150	1.460	NOW	Const	REC	383,558.14
30.00	2218	Coleman Crescent	70m West of Cartwright / Manvers Boundary	Cartwright/Manvers Boundary Road	150	0.070	NOW	Const	REC	44,177.16
31.00	20045	Percy Crescent	Pete Street	Pete Street	150	0.500	NOW	Const	REC	290,242.39
31.00	30010	Cedargrove Drive, Caesarea	Manor Road	Cedargrove Drive West	150	0.870	NOW	Const	REC	419,424.85
31.00	1830	McLaughlin Road	Jobb Road	0.2km South of Suggitt Drive	720	0.870	NOW	Const	REC	719,889.16
31.00	1050	Head Road	0.7 km North of Ashbridge Road	Ashbridge Road	240	0.700	NOW	Const	REC	445,118.31
31.00	90	Scugog Line No 14, Saintfield	0.4km West of Hwy 7 & 12	Hwy 7 & 12	350	0.400	NOW	Const	REC	232,193.91
31.00	2630	Old Simcoe Road	Scugog Line No 8	Whitfield Road	394	1.440	NOW	Const	REC	1,114,731.07
31.00	460	Mast Road	Ashburn Road	Pine Gate Road	149	1.700	NOW	Const	REC	893,217.58
31.00	710	Middle March Road	0.9 km West of Ashburn Road	Woodbridge Circle	400	0.550	NOW	Const	REC	283,136.70
31.00	810	Town Line Road	Grouse Court	Dagmar Road	870	1.630	NOW	Const	REC	1,348,757.84
32.00	420	Scugog Line No 6	Marsh Hill Road	23-Lake Ridge Road	250	3.610	NOW	Const	REC	1,896,773.78
32.00	11070	Balsam Street	Old Simcoe Road	Rosa Street	172	0.280	NOW	Const	REC	136,295.17
32.00	20060	Percy Crescent	Pete Street	Platten Boulevard	250	0.230	NOW	Const	REC	114,105.37
32.00	1530	Manvers/Scugog Townline Road	McKee Road	Edgerton Road	275	1.420	NOW	Const	REC	779,572.33
32.00	30220	Pleasant View Avenue, Caesarea	57-Caesarea Road	Rowan Avenue	120	0.290	NOW	Const	REC	139,808.29
32.00	30080	Henon Street, Caesarea	Marina Drive	57-Caesarea Road	50	0.100	NOW	Const	REC	48,209.75
33.00	11985	Scugog Line No 8	Old Simcoe Road	2-Simcoe Street	907	0.130	NOW	Const	REC	66,923.22
33.00	50030	Byron Street	Palace Street	8-Reach Street	60	0.540	NOW	Const	REC	201,505.81
33.00	2650	Old Simcoe Road	Scugog Line No 10	Cragg Road	347	1.440	NOW	Const	REC	915,671.95
33.00	110	Blue Mountain Road	Marsh Hill Road	23-Lake Ridge Road	90	3.520	NOW	Const	REC	1,313,519.33
34.00	12130	Honey's Beach Road	Whitfield Road	South End	473	0.480	NOW	Const	REC	311,524.03
34.00	1150	Aldred Drive	Demara Road	0.5 km South of Demara Road	350	0.500	NOW	Const	REC	241,048.76
34.00	30180	Pine Street, Caesarea	Centre Street	North End	50	0.130	NOW	Const	REC	62,672.69
34.00	1610	Church Street	0.6 km West of Old Scugog Road	Cartwright West 1/4 Line	350	2.120	NOW	Const	REC	1,698,651.70
34.00	2555	Marsh Hill Road	200m South of 12 Scugog Line	300m North of 12 Scugog Line	146	0.500	NOW	Const	REC	227,140.20
35.00	2340	Williams Point Road	57-Caesarea Road	0.6 km North of 57-Caesarea Road	476	0.600	NOW	Const	REC	308,876.40
35.00	2040	Armstrong Avenue	Scugog Point Road	East End	50	0.350	NOW	Const	REC	168,734.14
35.00	2140	St. Christopher's Beach Road	Colwell Circle	0.2 km North of Colwell Circle	100	0.200	NOW	Const	REC	90,856.08
35.00	1480	Cartwright East 1/4 Line	Mountjoy Road	Devitt's Road	94	1.430	NOW	Const	REC	644,872.59
35.00	1220	Chandler Drive	7-Island Road	The Mississauga's Trail	400	0.900	NOW	Const	REC	572,294.97
35.00	10690	Alma Street	Gibson Drive	Pine Court	425	0.120	NOW	Const	REC	59,533.24
36.00	10550	High Street	Scugog Street	South End	500	0.060	NOW	Const	REC	32,820.32
36.00	12160	Taylor Boulevard	North Port Road	East End Turnaround	300	0.380	NOW	Const	REC	211,652.14
36.00	30	Brook/1st Line	Hwy 7 & 12	West End	55	1.900	NOW	Const	REC	863,132.76
36.00	80	Scugog Line No 14	Marsh Hill Road	0.3 km West of Hwy 7 & 12	336	3.290	NOW	Const	REC	2,546,850.85
36.00	30105	Putsey Drive, Caesarea	Marina Drive	West End	100	0.250	NOW	Const	REC	120,524.39
36.00	2230	Nesbitt Line	Highway 7A	Malcolm Road	163	1.320	NOW	Const	REC	569,707.68

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
37.00	2200	Birch Island Road	View Lake Road	Birch Island	100	0.210	NOW	Const	REC	50,620.25
37.00	2640	Old Simcoe Road	Whitfield Road	Scugog Line No 10	375	1.450	NOW	Const	REC	1,122,472.26
37.00	440	Mast Road	Pine Gate Road	21-Goodwood Road	100	1.820	NOW	Const	REC	826,790.33
37.00	800	Town Line Road	Dagmar Road	23-Lake Ridge Road	870	0.400	NOW	Const	REC	330,983.52
37.00	1110	Pine Point Road	2.0 km East of 7-Island Road	The Mississauga's Trail	638	1.250	NOW	Const	REC	984,606.00
38.00	1230	Chandler Drive	The Mississauga's Trail	Davidge Drive	400	1.530	NOW	Const	REC	972,901.45
38.00	20080	Platten Boulevard	Percy Crescent North	Lakeside Beach Road	974	0.460	NOW	Const	REC	285,838.19
38.00	1000	Portview Road	0.8 km West of 7-Island Road	Gerrow Road	350	0.750	NOW	Const	REC	388,579.54
38.00	30090	Marina Drive, Caesarea	Cedargrove Drive	Heron Street	50	0.190	NOW	Const	REC	91,598.54
39.00	2070	Prosser Avenue	Scugog Point Road	Morris Lane	50	0.160	NOW	Const	REC	77,135.60
39.00	1290	Carnegie Beach Road	Charles Street	South End	515	1.350	NOW	Const	REC	689,748.91
39.00	1130	Aldred Drive	0.8 km South of Demara Road	Pine Point Road	520	0.710	NOW	Const	REC	342,289.25
40.00	20100	Platten Boulevard	Lakeside Beach Road	North End	200	0.460	NOW	Const	REC	221,764.86
40.00	670	Chalk Lake Road	1.25 km West of Ashburn Road	23-Lake Ridge Road	169	2.170	NOW	Const	REC	1,140,165.95
40.00	820	Town Line Road	Heron Road	Grouse Court	950	0.830	NOW	Const	REC	686,790.80
41.00	20090	Lakeside Beach Road	Platten Boulevard	South End	100	0.290	NOW	Const	REC	139,808.29
41.00	415	Medd Road	2.1km East of 23 Lakeridge Road	8 Reach Street	400	1.300	NOW	Const	REC	1,006,354.44
42.00	2635	Whitfield Road	2-Simcoe Street	Old Simcoe Road	225	0.610	NOW	Const	REC	263,274.00
44.00	1770	Cartwright West 1/4 Line	Church Street	Highway 7A	1,023	1.420	NOW	Const	REC	980,995.36
45.00	2190	View Lake Road	View Lake Road	120m East of View Lake Road	209	0.120	NOW	Const	REC	57,851.70
45.00	10280	Old Simcoe Road	Edinborough Avenue	Scugog Line 8	1,132	1.170	NOW	Const	REC	889,446.38
45.00	990	Portview Road	7-Island Road	0.8 km West of 7-Island Road	299	0.780	NOW	Const	REC	603,812.66
46.00	2390	Ashburn Road	0.4 km South of Scugog Line No 2	High Point Road	791	1.820	NOW	Const	REC	1,505,975.02
47.00	770	Scugog Line No 2	0.4 km West of Smith Sideroad	Bryant Sideroad	300	0.710	NOW	Const	REC	549,624.35
48.00	840	Town Line Road	Duff's Road	Ashburn Road	878	1.660	NOW	Const	REC	140,654.76
50.00	2400	Ashburn Road	High Point Road	Scugog Line No 4	680	2.020	NOW	Const	REC	1,671,466.78
52.00	2370	Jack Rabbit Run	Williams Point Road	North End	300	0.630	NOW	Const	REC	303,721.45
61.00	830	Town Line Road	Ashburn Road	Heron Road	1,039	0.810	NOW	Const	REC	670,241.63
72.00	880	Town Line Road	Hwy 7 & 12	Mud Lake Road	781	0.390	NOW	Const	REC	266,082.34
9.00	11220	Silver Street	Queen Street	North End Checkerboard	50	0.110	6-10	Const	REC	58,168.75
15.00	50020	Byron Street, Epsom	Marsh Hill Road	Palace Street	90	0.130	6-10	Const	REC	65,708.78
21.00	2100	St. Christopher's Beach Road	57-Caesarea Road	Colwell Circle	135	1.240	6-10	Const	REC	563,307.70
36.00	11480	John Street	North Street	Perry Street	2,000	0.140	6-10	Const	REC	68,147.58
47.00	940	Coates Road West	1100 m West of 2-Simcoe Street North	Thornton Road	1,160	1.640	6-10	Const	REC	1,357,032.43
15.00	324	Harper Road	2-Simcoe Street	West End Turnaround	55	0.730	1-5	Const	REC	272,406.00
17.00	60015	Greenbank Avenue, Greenbank	Cragg Road	North End	80	0.200	1-5	Const	REC	99,222.06
19.00	30040	Park Hill Avenue, Caesarea	Summit Drive	Bayview Crescent	50	0.100	1-5	Const	REC	48,209.75
19.00	30240	Park Street, Caesarea	57-Caesarea Road	Centre Street, Caesarea	120	0.150	1-5	Const	REC	72,314.64
20.00	210	Scugog Line No 12	Old Simcoe Road	2-Simcoe Street	160	2.680	1-5	Const	REC	1,408,131.23
21.00	10000	King Street, Prince Albert	Rose Street	West End	75	0.340	1-5	Const	REC	163,913.16
21.00	11230	Ottawa Street	Scugog Street	Queen Street	481	0.280	1-5	Const	REC	150,681.62
22.00	30160	Centre Street, Caesarea	Pier Street	Park Street	250	0.530	1-5	Const	REC	267,889.64

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
22.00	2350	Williams Point Road	0.6 km North of 57-Caesarea Road	Jack Rabbitt Run	450	0.980	1-5	Const	REC	477,033.08
23.00	330	Scugog Line No 10	Highway 7 & 12	Till Sideroad	165	2.690	1-5	Const	REC	1,413,385.44
24.00	30230	Lake View Street, Caesarea	57-Caesarea Road	Rowan Avenue	120	0.250	1-5	Const	REC	120,524.39
24.00	30170	Pier Street, Caesarea	57-Caesarea Road	North End	392	0.300	1-5	Const	REC	158,642.03
25.00	2520	Marsh Hill Road	Scugog Line No 8	Scugog Line No 9	240	1.460	1-5	Const	REC	801,532.12
25.00	2540	Marsh Hill Road	47-Highway 47	Cragg Road	233	1.400	1-5	Const	REC	735,590.94
26.00	2030	Scugog Point Road	Mabel's Road	Johnstone Lane	389	0.660	1-5	Const	REC	383,119.95
27.00	30200	Rowan Avenue, Caesarea	Pleasant View Avenue	Park Street	80	0.160	1-5	Const	REC	77,135.60
28.00	30000	Cedar Grove Drive, Caesarea	Pier Street	Cedar Grove Drive South	990	0.340	1-5	Const	REC	262,554.81
28.00	2160	Cedarvale Road	Malcolm Road	57-Caesarea Road	167	3.060	1-5	Const	REC	213,026.65
28.00	12120	Whitfield Road	Indian Way	East End	473	0.620	1-5	Const	REC	421,412.95
29.00	60020	Cragg Road, Greenbank	0.8 km East of Hwy 7 & 12	Hwy 7 & 12	539	0.800	1-5	Const	REC	588,560.90
30.00	20070	Platten Boulevard	Stephenson Point Road	Percy Crescent North	1,338	0.580	1-5	Const	REC	410,383.09
37.00	30100	Marina Drive, Caesarea	Cedar Grove Drive	Centre Street	500	0.150	1-5	Const	REC	72,314.64
38.00	1812	Old Scugog Road	300m North of Bradburn Road	750m North of Bradburn Road	1,140	0.450	1-5	Const	REC	313,386.10
44.00	950	Coates Road West	2-Simcoe Street North	1100 m West of Simcoe Street North	1,160	1.100	1-5	Const	REC	910,204.68
56.00	1620	Edgerton Road	0.6 km East of McLaughlin Road	57-Blackstock Road	1,230	3.310	1-5	Const	REC	2,738,888.63
57.00	930	Coates Road West	Thornton Road North	Whitby/Oshawa Townline	1,164	0.510	1-5	Const	REC	422,003.99
						158.660				87,896,596.64
NONE	2.00	2120	View Lake Road	0.2 km North of Colwell Circle	100	0.400	NOW	Const	NONE	0.00
						0.400				0.00
BS	17.00	260	Cragg Road	0.6 km West of Hwy 7 & 12	121	2.770	NOW	Const	BS	114,619.41
	17.00	240	Brunon Avenue	Puckrin Drive	150	0.930	NOW	Const	BS	40,746.00
	18.00	2690	Old Simcoe Road	Dunward Road	223	1.490	NOW	Const	BS	61,654.49
	19.00	120	Blue Mountain Road	Marsh Hill Road	55	0.600	NOW	Const	BS	21,581.91
	19.00	300	Cragg Road	Old Simcoe Road	200	0.910	NOW	Const	BS	37,654.75
	20.00	560	Scugog Line No 3	Hwy 7 & 12	191	2.490	NOW	Const	BS	103,033.34
	20.00	1330	Carnegie Beach Road	7-Island Road	86	1.270	NOW	Const	BS	45,681.71
	20.00	2090	Mabel's Road	Scugog Point Road	150	1.030	NOW	Const	BS	42,620.22
	22.00	2195	View Lake Road	120m East of View Lake Road	150	1.200	NOW	Const	BS	46,084.68
	22.00	1580	McKee Road	57-Blackstock Road	120	3.910	NOW	Const	BS	161,791.30
	22.00	630	Russell Road	19-Shirley Road	173	1.000	NOW	Const	BS	41,378.85
	23.00	2670	Old Simcoe Road	Scugog Line No 12	250	1.370	NOW	Const	BS	56,689.02
	23.00	600	Scugog Line No 3	2.1 km East of 2-Simcoe Street	140	0.580	NOW	Const	BS	23,999.73
	23.00	510	Scugog Line No 4	2-Simcoe Street	300	1.030	NOW	Const	BS	42,620.22
	24.00	790	Scugog Line No 2	Old Simcoe Road	192	2.680	NOW	Const	BS	110,895.32
	24.00	780	Scugog Line No 2	Hwy 7 & 12	301	1.590	NOW	Const	BS	65,792.37
	24.00	2700	Old Simcoe Road	0.4 km West of Smith Sideroad	200	1.470	NOW	Const	BS	60,826.91
	24.00	230	Brunon Avenue	6-Sainfield Road	200	1.470	NOW	Const	BS	60,826.91
	24.00	230	Brunon Avenue	South End	150	0.570	NOW	Const	BS	24,973.35

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
24.00	20	Victoria Corners Road	23-Lake Ridge Road	Sideroad 17	108	2,960	NOW	Const	BS	122,481.40
25.00	1680	Fallis Road	Cartwright East 1/4 Line	Mahood's Road	60	1,200	NOW	Const	BS	43,163.82
27.00	1820	McLaughlin Road	Edgerton Road	Jobb Road	680	1,410	NOW	Const	BS	58,344.18
27.00	690	Middle March Road	Ashburn Road	0.9 km West of Ashburn Road	400	0,970	NOW	Const	BS	40,137.48
27.00	290	Cragg Road	Till Sideroad	1.0 km West of Till Sideroad	164	1,000	NOW	Const	BS	41,378.85
28.00	170	Scugog Line No 12	Marsh Hill Road	Hwy 7 & 12	240	3,610	NOW	Const	BS	149,377.65
30.00	1750	Cartwright West 1/4 Line	19-Shirley Road	Bradburn Road	813	1,470	NOW	Const	BS	60,826.91
31.00	1890	Cartwright East 1/4 Line	Devitt's Road	McKee Road	300	1,440	NOW	Const	BS	59,585.54
31.00	2020	Scugog Point Road	57-Caesarea Road	Mabel's Road	729	0,900	NOW	Const	BS	32,372.87
31.00	1450	Byers Road	Old Scugog Road	57-Blackstock Road	88	0,850	NOW	Const	BS	30,574.37
33.00	1540	Manvers/Scugog Townline Road	Edgerton Road	Gray Road	203	0,330	NOW	Const	BS	13,655.02
0.00	1500	Devitt's Road	Manvers/Scugog Townline Road	Cartwright East 1/4 Line	422	3,560	6-10	Const	BS	147,308.71
8.00	1720	Wilson Avenue	Fallis Road	Highway 7A	56	1,440	6-10	Const	BS	59,585.54
10.00	1250	Canal Street	Chandler Drive	South End	50	0,110	6-10	Const	BS	4,224.43
10.00	2530	Marsh Hill Road	Scugog Line No 9	47-Highway 47	134	1,410	6-10	Const	BS	58,344.18
11.00	270	Cragg Road	1.0 km West of Till Sideroad	0.8 km East of Hwy 7 & 12	164	0,890	6-10	Const	BS	36,827.18
11.00	1090	Spring Boulevard	7-Island Road	0.3 km North of 7-Island Road	225	0,300	6-10	Const	BS	13,143.87
11.00	11160	Kellett Street	Bigelow Street	2-Simcoe Street	322	0,120	6-10	Const	BS	4,608.47
13.00	1710	Wilson Avenue	Edgerton Road	Fallis Road	82	1,440	6-10	Const	BS	59,585.54
13.00	2050	Mabel's Road	Scugog Point Road	West End	375	0,760	6-10	Const	BS	33,297.80
13.00	2170	View Lake Road	57-Caesarea Road	1.2 km North of 57-Caesarea Road	126	1,270	6-10	Const	BS	52,551.14
14.00	380	Scugog Line No 8	8-Reach Street	Marsh Hill Road	50	1,740	6-10	Const	BS	71,999.20
15.00	1390	Fralick's Beach Road	Hood Drive	North End Turnaround	74	1,900	6-10	Const	BS	83,244.51
16.00	2280	Proutt Road	57-Caesarea Road	2.0 km East of 57-Caesarea Road	70	2,000	6-10	Const	BS	71,939.70
17.00	2260	Beacock Road	57-Caesarea Road	West End	100	1,950	6-10	Const	BS	80,688.76
18.00	2150	John's Road	Highway 7A	Malcolm Road	158	1,430	6-10	Const	BS	51,436.89
18.00	1600	Church Street	Cartwright West 1/4 Line	West End	90	1,100	6-10	Const	BS	45,516.74
19.00	1590	McKee Road	Cartwright East 1/4 Line	Manvers/Scugog Townline Road	150	3,550	6-10	Const	BS	146,894.92
19.00	1430	Fowler Line	Boundary Road	Mountjoy Road	120	1,410	6-10	Const	BS	58,344.18
19.00	200	Scugog Line No 12	Spadina Sideroad	Old Simcoe Road	160	2,070	6-10	Const	BS	85,654.22
20.00	70070	Coryell Street, Seagrave	River Street	Coryell Street	400	0,150	6-10	Const	BS	6,571.94
20.00	550	Scugog Line No 3	Gray Sideroad	Hwy 7 & 12	79	1,160	6-10	Const	BS	47,999.47
20.00	1070	Ma Brown's Road	1.3 km East of 7-Island Road	Head Road	125	1,290	6-10	Const	BS	46,401.11
20.00	1795	Old Scugog Road	.52km South of 19 Shirley Road	19 Shirley Road	750	0,520	6-10	Const	BS	22,782.71
21.00	1510	Manvers/Scugog Townline Road	Clarington Boundary	Devitt's Road	148	2,910	6-10	Const	BS	120,412.45
21.00	1060	Head Road	Ma Brown's Road	0.7 km North of Ashbridge Road	180	1,480	6-10	Const	BS	53,235.38
21.00	250	Cragg Road	Marsh Hill Road	West End Turnaround	50	1,040	6-10	Const	BS	43,034.00
22.00	1870	Nesleton Road	0.5 km North of Highway 7A	0.3 km North of Malcolm Road	1,300	1,240	6-10	Const	BS	44,602.61
23.00	1900	Cartwright East 1/4 Line	McKee Road	Edgerton Road	300	1,440	6-10	Const	BS	59,585.54
24.00	2420	Marsh Hill Road, Utica	21-Goodwood Road	0.4 km North of 21-Goodwood Road	750	0,400	6-10	Const	BS	17,525.16
24.00	1460	Mountjoy Road	57-Blackstock Road	Fowler Line	203	2,480	6-10	Const	BS	102,619.55
28.00	1780	Old Scugog Road	Boundary Road	Byers Road	594	1,390	6-10	Const	BS	49,998.09

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
35.00	1810	Old Scugog Road	Bradburn Road	300m North of Bradburn Road	1,140	0.300	6-10	Const	BS	12,413.66
12.00	326	Harper Road	2-Simcoe Street	East End	50	0.990	1-5	Const	BS	35,610.15
14.00	2310	Malcolm Road	0.5 km East of Nestleton Road	Johns Road	79	2.450	1-5	Const	BS	101,378.18
18.00	30070	Summit Drive, Caesarea	Cedar Grove Drive	Park Hill Avenue	250	0.970	1-5	Const	BS	42,498.51
18.00	10	Victoria Corners Road	23-Lake Ridge Road	Uxbridge Townline	251	0.600	1-5	Const	BS	24,827.31
18.00	1360	The Mississauga's Trail	0.2 km S of 7-Island Road	Chandler Drive	104	1.070	1-5	Const	BS	38,487.74
19.00	180	Scugog Line No 12	Hwy 7 & 12	Spadina Sideroad	158	1.480	1-5	Const	BS	61,240.70
19.00	1740	Cartwright West 1/4 Line	Byers Road	19-Shirley Road	80	1.430	1-5	Const	BS	59,171.76
20.00	2510	Marsh Hill Road	0.7 km North of 8-Reach Street	Scugog Road No 8	400	0.710	1-5	Const	BS	25,538.59
21.00	370	Ward Road	23-Lake Ridge Road	East End Turnaround	60	0.500	1-5	Const	BS	20,689.43
22.00	1800	Old Scugog Road	19-Shirley Road	Bradburn Road	813	1.450	1-5	Const	BS	59,999.33
22.00	265	Cragg Road, Greenbank	850m West of Hwy 7/12	600m West of Hwy 7/12	121	0.250	1-5	Const	BS	10,344.71
25.00	1560	Bradburn Road	Cartwright West 1/4 Line	Old Scugog Road	275	2.670	1-5	Const	BS	110,481.53
28.00	1520	Manvers/Scugog Townline Road	Devitt's Road	McKee Road	275	1.430	1-5	Const	BS	59,171.76
29.00	2000	Cartwright East 1/4 Line	Edgerton Road	Fallis Road	275	1.430	1-5	Const	BS	51,436.89
29.00	1490	Devitts Road	Cartwright East 1/4 Line	57-Blackstock Road	675	3.780	1-5	Const	BS	156,412.05
31.00	1760	Cartwright West 1/4 Line	Bradburn Road	Church Street	910	1.410	1-5	Const	BS	58,344.18
33.00	2010	Cartwright East 1/4 Line	Fallis Road	Highway 7A	275	1.450	1-5	Const	BS	52,156.28
						111.350				4,514,708.42

SD

10.00	1650	Edgerton Road	Manvers/Scugog Townline Road	Wilson Avenue	400	0.600	6-10	Maintenance	SD	0.00
11.00	70100	Coryell Street, Seagrave	0.3 km N of Isabella Street	6-Saintfield Road	600	0.400	6-10	Maintenance	SD	0.00
12.00	1200	Demara Road	The Mississauga's Trail	Aldred Drive	600	1.500	6-10	Maintenance	SD	0.00
12.00	12300	Reach Industrial Park Road	8-Reach Street	South End Turnaround	1,000	0.520	6-10	Maintenance	SD	0.00
13.00	2320	Malcolm Road	John's Road	Cedardale Road	178	0.580	6-10	Maintenance	SD	0.00
15.00	30060	Summit Drive, Caesarea	Park Hill Avenue	South End Turnaround	150	0.540	6-10	Maintenance	SD	0.00
16.00	2330	Malcolm Road	Cedardale Road	Nesbitt Line	138	1.190	6-10	Maintenance	SD	0.00
17.00	1190	Demara Road	7-Island Road	The Mississauga's Trail	600	1.710	6-10	Maintenance	SD	0.00
17.00	70080	Coryell Street, Seagrave	Coryell Street	Isabella Street	400	0.140	6-10	Maintenance	SD	0.00
20.00	1880	Nestleton Road	0.3 km North of Malcolm Road	57-Caesarea Road	1,100	1.140	6-10	Maintenance	SD	0.00
22.00	30250	Hiawatha Boulevard, Caesarea	57-Caesarea Road	South End	70	0.220	6-10	Maintenance	SD	0.00
24.00	1105	Pine Point Road	7-Island Road	2.0 km East of 7-Island Road	745	2.000	6-10	Maintenance	SD	0.00
25.00	1120	Pine Point Road	The Mississauga's Trail	Aldred Drive	523	1.130	6-10	Maintenance	SD	0.00
25.00	220	Puckrin Drive	2-Simcoe Street	Brunon Avenue	1,646	0.900	6-10	Maintenance	SD	0.00
30.00	1310	Hood Drive	Fralick's Beach Road	7-Island Road	502	1.480	6-10	Maintenance	SD	0.00
						14.050				0.00

NONE<50

21.00	2130	View Lake Road	0.6 km North of Colwell Circle	East End	50	0.280	NOW	Maintenance	NONE<50	0.00
						0.280				0.00

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
CRK	11.00	60000	Cragg Road, Greenbank	0.3 km West of Hwy 7 & 12	300	0.300	6-10	Maintenance	CRK	1,200.00
						0.300				1,200.00
R2	11.00	60010	Cragg Road, Greenbank	Hwy 7 & 12	406	0.300	1-5	Rehab	R2	134,565.48
	15.00	11150	Kenny Court	Rosa Street	150	0.130	1-5	Rehab	R2	54,244.78
	15.00	11400	Bigelow Street	Paxton Street	212	0.310	1-5	Rehab	R2	139,338.06
	16.00	11410	Bigelow Street	Bay Street	250	0.200	1-5	Rehab	R2	89,895.52
	17.00	11260	Rosa Street	Queen Street	416	0.220	1-5	Rehab	R2	129,592.03
	18.00	11270	Rosa Street	MacDonald Street	420	0.150	1-5	Rehab	R2	66,347.97
	18.00	10480	Lakeview Drive	2-Simcoe Street	1,159	0.210	1-5	Rehab	R2	87,626.18
	18.00	10880	MacDonald Street	Cochrane Street	710	0.110	1-5	Rehab	R2	48,655.18
	19.00	10640	Ash Street	Alma Street	1,046	0.270	1-5	Rehab	R2	112,662.23
	19.00	11530	Perry Street	Queen Street	2,170	0.120	1-5	Rehab	R2	69,354.29
	20.00	10890	MacDonald Street	Bigelow Street	711	0.110	1-5	Rehab	R2	50,229.89
	21.00	10850	MacDonald Street	Old Simcoe Road	710	0.210	1-5	Rehab	R2	94,390.30
	21.00	10500	Carnegie Street	Scuggog Street	1,200	0.330	1-5	Rehab	R2	143,603.46
	23.00	10880	Queen Street	Scuggog Street	3,705	0.410	1-5	Rehab	R2	160,808.23
	25.00	2580	Old Simcoe Road	2-Simcoe Street	732	1.020	1-5	Rehab	R2	227,734.98
	28.00	10240	Old Simcoe Road	Queen Street	6,300	0.370	1-5	Rehab	R2	164,599.15
	35.00	10255	Old Simcoe Road	75m North of Paxton Street	6,300	0.240	1-5	Rehab	R2	104,438.88
	37.00	10260	Old Simcoe Road	Bay Street	6,221	0.480	1-5	Rehab	R2	217,467.12
						5.190				2,095,553.73
R1	6.00	12080	Clyde Court	Cawkers Cove Road	50	0.580	6-10	Rehab	R1	179,668.78
	7.00	2425	Christie Crescent, Utica	21-Goodwood Road	130	0.420	6-10	Rehab	R1	52,186.40
	8.00	10130	Greenway Boulevard	2-Simcoe Street	561	0.300	6-10	Rehab	R1	107,737.11
	8.00	11190	Kent Street	0.1 km North of Beech Street	250	0.250	6-10	Rehab	R1	77,979.85
	9.00	50000	Ashton Lane, Epsom	Marsh Hill Road	90	0.180	6-10	Rehab	R1	21,969.66
	9.00	70150	River Street, Seagrave	Henrietta Street	356	0.390	6-10	Rehab	R1	126,669.39
	10.00	70140	River Street, Seagrave	Keene Street	400	0.120	6-10	Rehab	R1	36,142.94
	10.00	11850	Carlan Drive	8-Reach Street	98	0.400	6-10	Rehab	R1	52,635.19
	10.00	10860	Walsh Drive	Queen Street	481	0.400	6-10	Rehab	R1	126,798.02
	11.00	10840	Chester Crescent	Walsh Drive	311	0.560	6-10	Rehab	R1	169,431.37
	11.00	10540	Blossom Court	Orchard Road	200	0.220	6-10	Rehab	R1	68,150.23
	11.00	11360	Cochrane Street	Bay Street	150	0.190	6-10	Rehab	R1	58,857.02
	12.00	11380	Bigelow Street	Queen Street	217	0.310	6-10	Rehab	R1	102,016.23
	12.00	30190	42nd Street	First Street	50	0.090	6-10	Rehab	R1	9,242.96
	13.00	40080	Greensboro Drive, Blackstock	0.5 km South of Old Scuggog Road	212	0.700	6-10	Rehab	R1	84,412.78
	13.00	11750	Mary Street	Perry Street	1,500	0.170	6-10	Rehab	R1	58,497.71
	14.00	10270	Old Simcoe Road	8-Reach Street	1,871	0.290	6-10	Rehab	R1	97,301.26

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
15.00	10970	MacDonald Street	Rosa Street	Cochrane Street	710	0.120	6-10	Rehab	R1	38,460.24
15.00	10930	Queen Street	Perry Street	Water Street	5,395	0.170	6-10	Rehab	R1	75,310.61
17.00	10920	Queen Street	2-Simcoe Street	Perry Street	5,284	0.270	6-10	Rehab	R1	119,610.97
18.00	10530	Orchard Road	Lakeview Drive	Lakeview Drive	800	0.780	6-10	Rehab	R1	241,623.53
22.00	11590	Water Street	Mary Street	Queen Street	7,053	0.120	6-10	Rehab	R1	57,572.74
22.00	2415	Marsh Hill Road, Utica	0.3 km South of 21-Goodwood Road	21-Goodwood Road	625	0.300	6-10	Rehab	R1	38,073.15
23.00	2410	Marsh Hill Road	Scugog Line No 4	0.3 km South of 21-Goodwood Road	609	1.110	6-10	Rehab	R1	137,406.62
26.00	40030	Old Scugog Road, Blackstock	0.4 km South of Church Street	0.1 km South of Church Street	871	0.300	1-5	Rehab	R1	36,706.14
						8.740				2,174,460.90
PR2										
12.00	360	Strattonville Crescent	23-Lake Ridge Road	23-Lake Ridge Road	90	0.450	NOW	Rehab	PR2	102,272.63
15.00	70010	Meadow Green Court	Bruce Road	North End Turnaround	60	0.430	NOW	Rehab	PR2	93,869.30
16.00	740	Wintergreen Court	Woodbridge Circle	South End Turnaround	50	0.480	NOW	Rehab	PR2	110,215.73
17.00	60060	Murray Street, Greenbank	Ianson Drive	Eastside Street	100	0.120	NOW	Rehab	PR2	29,129.94
17.00	60090	Howsam Street, Greenbank	Ianson Drive	Cragg Road	136	0.120	NOW	Rehab	PR2	29,129.94
19.00	60070	Eastside Street, Greenbank	Murray Street	Ianson Drive	80	0.360	NOW	Rehab	PR2	87,389.82
19.00	60030	Pearl Drive, Greenbank	Couves Lane	Cragg Road	114	0.570	NOW	Rehab	PR2	127,727.60
19.00	10070	Oyler Drive	2-Simcoe Street	East End	100	0.110	NOW	Rehab	PR2	25,164.51
19.00	1180	Davidge Drive	Chandler Drive	Edgewood Crescent	250	0.720	NOW	Rehab	PR2	153,566.28
20.00	20050	Pete Street	Percy Crescent	Percy Crescent	100	0.100	NOW	Rehab	PR2	19,742.04
20.00	10710	Maple Street	Alma Street	Victoria Street	200	0.260	NOW	Rehab	PR2	54,407.73
20.00	100	Jacobson Blvd, Saintfield	Scugog Line No 14	Hwy 7 & 12	90	0.420	NOW	Rehab	PR2	88,135.36
20.00	70000	Bruce Road	2-Simcoe Street	East End	90	0.160	NOW	Rehab	PR2	32,544.72
20.00	730	Wyldewood Court	Woodbridge Circle	East End Turnaround	50	0.050	NOW	Rehab	PR2	11,116.34
20.00	720	Lauren Road	Middle March Road	North End Turnaround	50	0.210	NOW	Rehab	PR2	46,688.61
20.00	700	Mansfield Park Court	Middle March Road	Mansfield Park Court	80	0.590	NOW	Rehab	PR2	136,544.00
21.00	60050	Jack St, Greenbank	Hwy 7 & 12	Ianson Drive	394	0.080	NOW	Rehab	PR2	19,794.74
21.00	60080	Ianson Drive, Greenbank	Murray Street	East End Turnaround	295	0.830	NOW	Rehab	PR2	201,482.09
21.00	60040	Couves Lane, Greenbank	Hwy 7 & 12	West End	150	0.230	NOW	Rehab	PR2	51,539.21
21.00	20040	Percy Crescent	Plattin Boulevard	Pete Street	150	0.270	NOW	Rehab	PR2	61,905.79
23.00	40170	Crestview Avenue, Blackstock	Sunrise Drive	57-Blackstock Road	439	0.340	NOW	Rehab	PR2	85,564.94
24.00	1170	Edgewood Crescent	Aldred Drive	Davidge Drive	150	0.750	NOW	Rehab	PR2	157,768.88
25.00	12020	Cawkers Cove Road	Castle Harbour Drive	Stone Sound Road	200	0.700	NOW	Rehab	PR2	165,825.45
27.00	40110	Meadowcrest Lane, Blackstock	Old Scugog Road	Greensboro Drive	300	0.110	NOW	Rehab	PR2	26,344.13
28.00	20010	Stephenson Point Road	Plattin Boulevard	Pellet Drive	384	0.480	NOW	Rehab	PR2	110,331.00
28.00	1140	Aldred Drive	0.5 km South of Demara Road	0.8 km South of Demara Road	350	0.300	NOW	Rehab	PR2	61,158.60
29.00	10680	Alma Street	Old Simcoe Road	Gibson Drive	423	0.100	NOW	Rehab	PR2	21,517.65
29.00	12010	Castle Harbour Drive	Stone Sound Road	Cawkers Cove Road	500	0.350	NOW	Rehab	PR2	82,048.05
29.00	2380	Ashburn Road	Townline Road	0.4 km South of Scugog Line No 2	836	1.190	NOW	Rehab	PR2	253,007.51
30.00	1370	The Mississauga's Trail	7-Island Road	0.2 km S of 7-Island Road	700	0.200	NOW	Rehab	PR2	42,955.95
30.00	40090	Greensboro Drive, Blackstock	0.15 km South of Old Scugog Road	0.5 km South of Old Scugog Road	300	0.350	NOW	Rehab	PR2	83,822.24

Total Needs Summary by Improvement Type

Current Inspection Batch -Needs Only

Priority #	Asset ID	Street Name	From	To	AADT	Length	TON	Imp. Class	Imp	Imp. Cost
37.00	10870	Scugog Line No 6	1.8km East of Highway 7 & 12	Highway 7 & 12	705	1.800	NOW	Rehab	PR2	376,081.65
40.00	1280	Pogue Road	Carnegie Beach Road	1.6 km East of 7-Island Road	515	0.650	NOW	Rehab	PR2	142,555.73
51.00	20000	Stephenson Point Road	7-Island Road	Platten Boulevard	1,731	0.560	NOW	Rehab	PR2	122,199.00
6.00	40180	Sunrise Court, Blackstock	Crestview Avenue	North End Cul-de-Sac	60	0.120	6-10	Rehab	PR2	28,717.09
9.00	40210	Trewin Court, Blackstock	Sunrise Drive	West End Cul-de-Sac	50	0.050	6-10	Rehab	PR2	11,965.46
10.00	40230	Donelda Court, Blackstock	Sunrise Drive	North End Cul-de-Sac	120	0.200	6-10	Rehab	PR2	47,393.34
14.00	40200	Sunrise Drive, Blackstock	Crestview Avenue	Crestview Avenue	500	0.830	6-10	Rehab	PR2	198,626.55
20.00	12110	Whitfield Road	2-Simcoe Street	Indian Way	473	1.030	6-10	Rehab	PR2	205,374.53
44.00	910	Coates Road West	Whitby/Oshawa Townline	Garrard Road	1,150	0.310	6-10	Rehab	PR2	64,299.27
14.00	10660	Alma Street	Maple Street	Victoria Street	200	0.440	1-5	Rehab	PR2	100,770.78
17.00	10560	Victoria Street	Alma Street	Old Simcoe Road	255	0.220	1-5	Rehab	PR2	48,754.86
18.00	40100	Greensboro Drive, Blackstock	Old Scugog Road	0.15 km South of Old Scugog Road	300	0.150	1-5	Rehab	PR2	37,318.28
19.00	10740	Gibson Drive	Alma Street	North End Cul-de-sac	120	0.120	1-5	Rehab	PR2	25,508.74
21.00	750	Woodbridge Circle	Middle March Road	Woodbridge Circle	400	0.790	1-5	Rehab	PR2	181,396.72
23.00	2500	Marsh Hill Road, Epsom	0.8 km South of 8-Reach Street	8-Reach Street	663	0.800	1-5	Rehab	PR2	176,250.96
23.00	10370	Josephine Street	Hurd Street	Josephine Street	300	0.330	1-5	Rehab	PR2	64,762.24
28.00	40160	Crestview Avenue, Blackstock	Old Scugog Road	Sunrise Drive	750	0.190	1-5	Rehab	PR2	54,856.63
38.00	900	Coates Road West	Garrard Road	Hwy 7 & 12	1,087	0.440	1-5	Rehab	PR2	90,258.17
						20.460				4,549,800.78
										128,544,280.51
										128,544,280.51

Appendix J: Bridge and Culvert Needs Summary

From AECOM 2012 Municipal Structure Inventory and Inspection

Appendix B

Bridge Improvement Needs

Township of Scugog Bridge Improvement Needs

Data Last Refreshed September 05, 2011
9:41:35AM

Bridge No.	Priority	Bridge Name	Road Name	Location	Const. Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost (1)
000009	1.00	LOT 15/16, CONC 7/8	SCUGOG LINE NO 8	1.70 km E of HIGHWAY 7/12	1940 1940	0	0	0	Q-WAT. Over	3	10.40	7.50		Const	REB	NOW	76,000
														Const	RSL	NOW	780,000
														Const Extra	bcApp	NOW	280,000
														Const Extra	bcDET	NOW	7,000
														Const Extra	bcENV	NOW	20,000
														Total Cost NOW			1,145,000
														Total Cost			1,145,000
														Municipal %			100
														Municipal Cost			1,145,000
000006	2.00	SEAGRAVE BRIDGE, LOT 23/24, CON 13	RIVER ST, SEAGRAVE	0.95 km N of REGIONAL ROAD 2	1920 1920	10	0	0	Q-WAT. Over	1	16.50	4.90		Const	REB	NOW	104,000
														Const	RSL	NOW	1,235,000
														Const Extra	bcApp	NOW	195,000
														Const Extra	bcDET	NOW	7,000
														Const Extra	bcENV	NOW	95,000
														Const Extra	bcROW	NOW	20,000
														Rehab	CDR	NOW	78,000
														Rehab	RSP	NOW	72,000
														Rehab Extra	brDET	NOW	7,000
														Total Cost NOW			1,813,000
														Maintenance	OTHim	1-5	0
														Rehab	CSS	1-5	117,000
														Rehab	RCS	1-5	13,000
														Rehab	RSB	1-5	26,000
														Rehab	SPI	1-5	20,000
														Rehab Extra	brDET	1-5	7,000
														Total Cost			183,000
														Total Cost			1,996,000
														Municipal %			100
														Municipal Cost			1,996,000

Notes:
1. Cost includes engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	City Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recomm.			Cost (1)
						L3	L2	L1						Category	Type	TON	
000001	3.00	MALON BRIDGE LOT 5 CONC 11/12	SCUGOG LINE NO 12	1.10 km W of MARSH HILL ROAD	1964 1964	0	0	0	O-WAT, Over	2	10.40	8.80		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
															Total Cost	NOW	88,000
														Rehab	RSB	1-5	74,000
														Rehab	WSR	1-5	13,000
														Rehab Extra	brAPP	1-5	33,000
														Rehab Extra	brTCP	1-5	39,000
														Total Cost	1-5	169,000	
														Total Cost			244,000
														Municipal %			100
														Municipal Cost			244,000
000018	4.00	LOT 12, CONC 6/7	CONCESSION ROAD 6	0.20 km E of REGIONAL ROAD 57	1950 1950	0	0	0	O-WAT, Over	1	8.20	5.50		Const	REB	NOW	55,000
														Const Extra	bcApp	NOW	13,000
														Total Cost	NOW	78,000	
														Total Cost			78,000
														Municipal %			100
														Municipal Cost			78,000
000012	5.00	LOT 13, CONC 5/6	JOB ROAD	0.90 km E of REGIONAL ROAD 57	1950 1950	0	0	0	O-WAT, Over	1	7.80	7.30		Const	REB	1-5	59,000
														Const	RSL	1-5	754,000
														Const Extra	bcApp	1-5	130,000
														Const Extra	bcDET	1-5	7,000
														Const Extra	bcENV	1-5	50,000
														Total Cost	1-5	1,000,000	
														Total Cost			1,000,000
														Municipal %			100
														Municipal Cost			1,000,000

Bridge No.	Priority	Bridge Name	Road Name	Location	C. Yr Sub Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L31	L2	L1						Category	Type	TON	Cost(1)
000011	6.00	LOT 18, CONC 4/5	EDGERTON ROAD	0.20 km W of CARTWRIGHT 1/4 LINE	1925 1925	0	0	0	O-WAT. Over	1	13.40	6.70		Const	REB	NOW	81,000
														Const	RSL	NOW	819,000
														Const Extra	bcApp	NOW	130,000
														Const Extra	bcENV	NOW	50,000
														Const Extra	bcROW	NOW	10,000
														Const Extra	bcTCP	NOW	130,000
														Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost	NOW		1,316,000
														Rehab	CDS	1-5	26,000
														Rehab	OWP	1-5	59,000
														Rehab	RIR	1-5	7,000
														Rehab Extra	brDET	1-5	7,000
														Total Cost	1-5		99,000
														Rehab	RSB	6-10	20,000
														Total Cost	6-10		20,000
														Total Cost	6-10		20,000
														Total Cost			1,434,000
														Municipal %			100
														Municipal Cost			1,434,000
000002	7.00	LOT 4/5, CONCESSION 12/13	BLUE MOUNTAIN ROAD	1.10 km W of MARSH HILL ROAD	1985 1985	0	0	0	O-WAT. Over	2	10.40	8.50		Rehab	IAG	NOW	78,000
														Rehab Extra	brAPP	NOW	7,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost	NOW		92,000
														Maintenance	OTHm	1-5	0
														Rehab	RSB	1-5	26,000
														Rehab Extra	brTCP	1-5	13,000
														Total Cost	1-5		39,000
														Rehab	WSR	6-10	7,000
														Rehab Extra	brTCP	6-10	7,000
														Total Cost	6-10		14,000
														Total Cost			146,000
														Municipal %			100
														Municipal Cost			146,000

Bridge No.	Priority	Bridge Name	Road Name	Location	C. Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recomm.		Cost (1)	
						L3:	L2:	L1:						Category	Type		TON
000010	8.00	LOT 13, CONC 4/5	EDGERTON ROAD	0.35 km E of REGIONAL ROAD 57	1955 1955	0	0	0	O-WAT. Over	1	8.30	7.90		Rehab	RSS	6-10	26,000
															Total Cost	6-10	26,000
															Total Cost		26,000
															Municipal %		100
															Municipal Cost		26,000
000003	9.00	SWANICK BRIDGE, LOT 6, CONC 13/14	SCUGOG LINE NO 14	0.10 km W of MARSH HILL ROAD	1966 1966	0	0	0	O-WAT. Over	3	13.40	9.80		Rehab	IAG	NOW	78,000
														Rehab Extra	brAPP	NOW	11,000
														Rehab Extra	brTCP	NOW	7,000
															Total Cost	NOW	96,000
														Maintenance	OTHm	1-5	0
														Rehab	RSS	1-5	26,000
														Rehab Extra	brTCP	1-5	13,000
															Total Cost	1-5	39,000
															Total Cost		136,000
															Municipal %		100
															Municipal Cost		136,000
000007	10.00	CLEMENTS BRIDGE, LOT 20, CON 11/12	SCUGOG LINE NO 12	1.50 km W of REGIONAL ROAD 2	1980 1980	0	0	0	O-WAT. Over	2	10.40	9.20		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
															Total Cost	NOW	86,000
														Maintenance	OTHm	1-5	0
															Total Cost	1-5	0
															Total Cost		86,000
															Total Cost		86,000
															Municipal %		100
															Municipal Cost		86,000
000013	11.00	LOT 19, CONC 7/8	MALCOLM ROAD	1.60 km E of NESTLETON ROAD	1979 1979	0	0	0	O-WAT. Over	2	12.70	9.50		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
															Total Cost	NOW	85,000
														Maintenance	OTHm	1-5	0
														Rehab	RCS	1-5	7,000
														Rehab	RSS	1-5	7,000
														Rehab Extra	brTCP	1-5	7,000
															Total Cost	1-5	21,000
															Total Cost		106,000
															Municipal %		100
															Municipal Cost		106,000

BRIDGE IMPROVEMENT NEEDS

The bridges of span 3.0 m and greater under the jurisdiction of the Township of Scugog which were inventoried and appraised are listed in the following table. The bridge inventory section table is arranged numerically by bridge number and provides the following information:

- Local bridge number
- Priority Ranking
- The bridge name
- The bridge locations
- The year of substructure and superstructure construction
- Existing Load Limit Postings
- The crossing type
- The number of spans
- The deck length and deck width
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table B1:

- bc - Bridge Construction
br - Bridge Rehabilitation

Crossing Type

- O-WAT - Over Water
U-RWY - Under Railway
O-RWY - Over Railway

Engineering Investigations

SEI	Seismic Investigation
UI	Underwater Investigation
RDI	Routine Detailed Inspection
STI	Structure Investigation
RRA	Rehabilitate/Replace Analysis
LCE	Load Capacity Evaluation
C/S	Condition Survey of Other Components
CN/I	Condition Inspection
DART	DART Survey
DCCS	Detail Coating Condition Survey
DCS	Deck Condition Survey
FI	Fatigue Investigation

Type of Improvements

- **Capital Improvements / Construction Extra**

NEW	New bridge
RBC	Replace Bridge with Culvert
REB	Remove Existing Bridge
RNL	Replace Bridge - New location
RSL	Replace Bridge - Same location
TEB	Twin Existing Bridge
bcApp	Approaches
bcTCP	Traffic Control/Protection
bcUTI	Utility Relocation
bcROW	Right of Way costs
bcENV	Environmental Study Costs
bcDET	Detours

- **Bridge Rehabilitation Improvements / Rehabilitation Extra**

RSP -	Rehabilitate Superstructure
RSB -	Rehabilitate Substructure
RRW -	Rehabilitate/Replace Retaining Walls
RIR -	Railing Improvement/Replacement

- **Deck Rehabilitation Improvements**

WSR -	Wearing Surface Rehabilitation
CDR -	Complete Deck Replacement
OWP -	Overlay, Waterproof and Pave
PWP -	Patch, Waterproof and Asphalt Paving
CDS -	Concrete Deck Soffit Repairs
CR -	Concrete Repairs
PDR -	Partial Deck Replacement
RCS -	Rehabilitation/Replacement of Safety Curbs/Sidewalk
TJM -	Transverse Exp Joint Modification
TJR -	Transverse Expansion Joint Replacement
TJS -	Transverse Expansion Joint Seal Replacement
LMC -	Latex Modified Concrete Overlay
LJM -	Longitudinal Exp Joint Modification
LJR -	Longitudinal Exp Joint Replacement
LJS -	Longitudinal Exp Joint Seal Replacement

- **Bridge Coating Improvements**

CSR -	Coating Steel Railings
CSS -	Coating Structural Steel

- **Stream/Waterway Improvements**

- SPI - Scour Protection Improvements
- C/I - Channel Improvements
- C/R - Channel Realignment
- EIR - Embankment Improvement/Rehab

- **Safety Improvements**

- IAG - Installation of Approach Guiderail
- IAB - Install Approach Safety Shape Barrier

- **Non Standard Improvements**

- OTHm - Maintenance Improvements
- OTHR - Rehabilitation Improvements

- **Costing Category**

- PC - Preliminary Cost Estimate

Appendix C

Culvert Improvement Needs

Township of Scugog Culvert Improvement Needs

Data Last Refreshed September 05, 2011
9:44 21AM

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3	L2	L1						Category	Type	TON	Cost(1)
000207	1.00	LOTS 18/19, CONC XIII	OLD SIMCOE ROAD	1.05 km N of SCUGOG LINE 13	1960	0	0	0	O-WAT. Over	1	5.60	19.60		Const	cREC	NOW	39,000
														Const	cRSL	NOW	637,000
														Const Extra	ccAPP	NOW	52,000
														Const Extra	ccDET	NOW	7,000
														Const Extra	ccENV	NOW	20,000
														Total Cost		NOW	766,000
														Total Cost		NOW	766,000
														Municipal %			100
														Municipal Cost			766,000
000206	2.00	LOTS 18/19, CONC XIII	OLD SIMCOE ROAD	0.60 km N of SCUGOG LINE 13	1960	0	0	0	O-WAT. Over	1	6.10	19.60		Const	cREC	NOW	39,000
														Const	cRSL	NOW	676,000
														Const Extra	ccAPP	NOW	65,000
														Const Extra	ccDET	NOW	7,000
														Const Extra	ccENV	NOW	20,000
														Total Cost		NOW	807,000
														Total Cost		NOW	807,000
														Municipal %			100
														Municipal Cost			807,000
000201	3.00	LOT 16, CONC VIII	SCUGOG LINE NO 2	0.60 km W of OLD SIMCOE STREET	1960	0	0	0	O-WAT. Over	1	3.40	21.60		Rehab	cIAG	NOW	76,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost		NOW	86,000
														Rehab	crSP	1-5	13,000
														Total Cost		1-5	13,000
														Total Cost		1-5	13,000
														Total Cost			98,000
														Municipal %			100
														Municipal Cost			98,000

Notes:
1. Individual item costs include engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Culvert No.	Priority	Culvert Name	Road Name	Location	Const. Yr	Ex. Load Posting L3t L2t L1t	Crossing Type	No. of Calls	Total Span Length (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
												Category	Type	TON	Cost(1)
000204	4.00	LOT 10, CONC VVI	SCUGOG LINE NO 6	1.50 km W of HWY 7/12	1970	0 0 0	O-WAT, Over	1	4.60	17.10		Rehab	cAG	NOW	78,000
												Rehab Extra	crTCP	NOW	7,000
													Total Cost	NOW	86,000
												Rehab	crSP	1-5	13,000
													Total Cost	1-5	13,000
													Total Cost		98,000
													Municipal %		100
													Municipal Cost		98,000
000203	5.00	LOTS 6/7, CONC V	MARSH HILL ROAD	1.15 km S of SCUGOG LINE NO 6	1970	0 0 0	O-WAT, Over	1	4.00	15.50		Rehab	cAG	NOW	78,000
													Total Cost	NOW	78,000
												Rehab	ceIR	1-5	7,000
												Rehab Extra	crTCP	1-5	7,000
													Total Cost	1-5	14,000
													Total Cost		92,000
													Municipal %		100
													Municipal Cost		92,000
000205	7.00	LOT 18, CONC VII	OLD SIMCOE ROAD	0.65 km S of SCUGOG LINE 8	1960	0 0 0	O-WAT, Over	1	4.30	25.60		Rehab	cAG	NOW	78,000
												Rehab Extra	crTCP	NOW	7,000
													Total Cost	NOW	85,000
													Total Cost		95,000
													Municipal %		100
													Municipal Cost		95,000
000202	8.00	LOTS 6/7, CONC IV	MARSH HILL ROAD	0.70 km S of REGIONAL ROAD NO. 21	1980	0 0 0	O-WAT, Over	1	3.30	24.40		Rehab	cAG	NOW	76,000
												Rehab Extra	crTCP	NOW	7,000
													Total Cost	NOW	86,000
													Total Cost		96,000
													Municipal %		100
													Municipal Cost		96,000
000301	-	LOT 11, CONC XIII/IV	SCUGOG LINE NO. 14	0.40 km W of HIGHWAY 7 & 12	1970	0 0 0	O-WAT, Over	1	2.90	17.90					

Total Cost of Recommended Improvements

(2)

Notes:
1. Individual item costs include engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

CULVERT IMPROVEMENT NEEDS

The culverts of span 3.0 m and greater under the jurisdiction of the Township of Scugog which were inventoried and appraised are listed in the following table. The culvert inventory section table is arranged numerically by culvert number and provides the following information:

- Local culvert number
- Priority Ranking
- The culvert name
- The culvert road name
- The culvert location
- The year of construction
- The year extended
- Load Limit Postings
- The crossing type
- The number of cells
- The total span in metres
- The culvert length
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table C1:

- c - Culvert
- cc - Culvert Construction
- cr - Culvert Rehabilitation

Crossing Type

- O-WAT - Over Water
- O-PED - Over Pedestrian Walkway

Culvert Type

- CPS-PA/ - Corrugated Plate Steel Pipe Arch
- CPS-PR/ - Corrugated Plate Steel Pipe Round
- CPS-PAS - Corrugated Plate Steel Pipe Arch with Stiffener and/or Buttress
- CPS-PHS - Corrugated Plate Steel Pipe Horizontal Ellipse with Stiffener and/or Buttress
- CPS-PHE - Corrugated Plate Steel Pipe Horizontal Ellipse
- CPR-OTH - Cast-in-Place Reinforced Concrete Other
- CPR-BOX - Cast-in-Place Reinforced Concrete Box
- CPR-FRA - Cast-in-Place Replacement Concrete Frame
- PCC-PR/ - Precast Concrete Pipe Round
- CST-PA/ - Corrugated Steel Pipe Arch
- CST-PR/ - Corrugated Steel Pipe Round

Type of Improvements

- **Capital Improvements / Construction Extra**

cREC -	Remove Existing Culvert
cRSL -	Replace Culvert, Same Location
ccAPP -	Approaches
ccDET -	Detours
ccTCP -	Traffic Control / Protection
ccUTI -	Utility Relocation
ccROW -	ROW Costs
ccENV -	Environmental Study

- **Rehabilitation Improvements / Rehabilitation Extra**

cRRW -	Rehabilitate/Replace Retaining Walls/Wingwalls
cRSP -	Rehabilitate Superstructure
cRSB -	Rehabilitate Substructure
cRIO -	Rehabilitate Inlet/Outlet Treatment
cRCF -	Rehabilitate Culvert Floor/Invert
crAPP -	Approaches
crDET -	Detours
crTCP -	Traffic Control / Protection
crUTI -	Utility Relocation
crROW -	ROW Costs
crENV -	Environmental Study

- **Stream/Waterway Improvements**

cEIR -	Embankment Improvements/Rehabilitation
cSPI -	Scour Protection Improvements
cC/R -	Channel Realignment
cCH/I -	Channel Improvements

- **Safety Improvements**

clAG -	Installation of Approach Guiderail
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- **Costing Category**

cPC -	Preliminary Cost Estimate
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