

# 2018 OSIM INSPECTIONS SUMMARY REPORT



Our Project #18-010

August 13, 2018

## NORFOLK COUNTY 2018 OSIM INSPECTIONS SUMMARY REPORT

### EXECUTIVE SUMMARY

Over the spring of 2018, G. Douglas Vallee Limited staff completed field inspections on 239 known bridges and culverts in Norfolk County. The biennial inspections were performed in accordance with the Ontario Structure Inspection Manual (OSIM). The purpose of these inspections was to update the 2016 OSIM inventory and to complete full OSIM reports for each bridge and culvert structure having a span of 3.0 m or greater owned by the County. The inspections are required by provincial law (O.Reg. 104/97 as amended by O.Reg. 472/10).

The inspection reports were analyzed in order to determine which structures are in need of rehabilitation or replacement. This process is needed to provide a planned schedule of rehabilitation and replacement work future years. This will assist in establishing a multi-year plan to perform the required work to maintain the assets in a safe and functional condition. Previous editions of this report focused on a top 10 priority; this report has been enhanced to encapsulate *all* recommended work.

This document summarizes the recommendations and cost estimates for structure replacement, rehabilitation, removal, and maintenance. This document will also serve as a tool for long-range project planning.

RECOMMENDATION	QUANTITY	ENGINEERING	CONSTRUCTION	ASSOCIATED WORK	TOTAL
FULL REPLACEMENT	20	\$ 1,517,400	\$ 12,810,000	\$ 891,600	\$ 15,074,000
MAJOR REHABILITATION	20	\$ 1,552,100	\$ 15,607,000	\$ 1,296,400	\$ 18,455,500
MINOR REHABILITATION	52	\$ 1,958,300	\$ 13,478,000	\$ 684,700	\$ 16,128,000
REMOVAL	3	\$ 72,000	\$ 210,000	\$ 73,000	\$ 355,000
MAINTENANCE ONLY	130		\$ 650,000	-	\$ 650,000
				<b>GRAND TOTAL</b>	<b>\$ 50,662,500</b>

*Note: These figures are based on approximated present day values and do not reflect the amortized cost (i.e.: depreciation, inflation, etc.) of performing the necessary work in the future.*

<sup>1</sup> *Engineering includes: investigation, design, contract preparation, and inspection.*

<sup>2</sup> *Construction includes: bridge construction & contingency for the construction stages.*

<sup>3</sup> *Associated Work includes: other direct and indirect costs, materials testing and investigations, and general project contingencies.*

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## **DETAILED INSPECTIONS**

The Ontario Structure Inspection Manual (OSIM) has the following objectives for inspections:

- to maintain structures in a safe condition;
- to protect and prolong the useful life of structures;
- to identify maintenance, repair, and rehabilitation needs of structures;
- to provide a basis for a structure management system that will assist the planning and funding for the maintenance and rehabilitation of structures.

Prior to attending each site, the previous OSIM reports prepared by G. Douglas Vallee Limited were reviewed. Copies of the previous OSIM reports and photographs were taken to each site and used as a basis to determine the nature, severity, and rate of any ongoing deterioration. The OSIM reports were updated in the field to reflect the current condition of the structures.

The typical process of inspecting individual structures include a detailed visual examination of each element. The visual inspections of elements were conducted from within an arm's-length where accessible. In many cases the inspection involved physically tapping concrete structures with a hammer to test for soundness.

Most of the structures inspected were found to be in fair to good condition and it was generally found that deterioration noted in previous OSIM inspections had progressed. For most structures, it appeared as though the deterioration was at a normal rate. There were structures where the deterioration was at a faster rate than the average. The priority rankings have been adjusted to account for this deterioration; this is discussed in greater detail in the recommendations section of this report.

Given that most of the structures are comprised of reinforced concrete elements, the majority of the noted deterioration includes areas of concrete spalling, cracking, efflorescence, and delamination. These typical concrete deficiencies are found more often in locations that are exposed to road salts or that do not have the appropriate concrete cover over reinforcing steel, or a combination of both.

During the detailed visual examinations a variety of maintenance issues were noted. Examples of these issues include: roadway and embankment erosion, absence of hazard signs, vegetation overgrowth, debris, minor collision damage, clogged deck drains, etc. Areas of deterioration or maintenance needs for each individual structure were noted on the OSIM forms as well as documented with photographs, which are included in the OSIM Reports.

We recommend that selected structures undertake additional investigations such as Structure Evaluations, Bridge Condition Studies, and Enhanced OSIM inspections to help determine the extent of scope of work required for future capital projects and to assist in preparing budget estimates. This will be discussed in greater detail in the following sections of this report.

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## **INVENTORY**

The Canadian Highway Bridge Design Code (CHBDC) and the Ontario Structure Inspection Manual (OSIM) are used as reference documents for this assignment. Both of these documents are the prescribed standards set in provincial regulations (O.Reg 104/97 amended by O.Reg. 472/10). These documents define a bridge as a structure that provides a roadway or walkway for the passage of vehicles, pedestrians, or cyclists across any obstruction, gap, or facility that is greater than or equal to 3 m in span. The same is true for a culvert except that the opening is through soil. Typically a culvert will convey water under a given road, whereas a bridge carries the road over the waterway or obstacle. The 2018 inventory of Norfolk County structures includes 239 bridges and culverts.

## **STRUCTURE TYPES & VINTAGE**

The types of structures owned by the County are varied in size, age, and material. An analysis of the current inventory reveals that over 50% of those examined are rigid frame or box concrete structures. This style of construction was prevalent throughout the late 1940's until the mid-1970s. Examining the age of structures reveals that approximately 75% of the inventory was built before 1978 and is over 40 years old. Current standards dictate that bridges are to be designed with a lifespan of 75 years, however damage and deterioration due to wear and exposure is inevitable and degradation of structural elements may occur much earlier.

<b>STRUCTURE TYPE</b>	<b>INVENTORY</b>	<b>YEAR BUILT</b>	<b>COUNT</b>
Rigid Frame, Vertical Legs	100	1910's	3
I-Beam of Girders	32	1920's	5
Rectangular Culvert	27	1930's	4
Arch Culvert	21	1940's	2
Round Culvert	16	1950's	35
Ellipse Culvert	10	1960's	77
Box Beams of Girders	8	1970's	60
Half-Through Truss	7	1980's	15
Solid Slab	7	1990's	10
Undefined	4	2000's	13
T-Beam	3	2010's	13
Bailey Panel	1	Unknown	2
Circular Voided Slab	1	<b>TOTAL</b>	<b>239</b>
Half-through Beams / Girders	1		
Hybrid	1		
<b>TOTAL</b>	<b>239</b>		

Refer to the appendix for a figure showing the quantity of structures grouped by decade constructed and a figure showing the quantity of structures grouped by age.

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## RECENT WORK COMPLETED

Since the previous OSIM Summary Report in 2016, the following projects have been completed:

STRUCTURE	NUMBER	PROJECT DESCRIPTION
Conc. 2 Townsend Bridge	010056	Rehabilitation of rigid frame bridge including deck overlay.
Conc. 9 Villa Nova Road Culvert	010092	Bridge replacement with precast rectangular box culvert.
Cemetery Road Culvert	010105	Bridge replacement with precast rectangular box culvert.
Vittoria Bridge	D00024	Rehabilitation of T-Beam bridge including deck overlay.

## LOAD RESTRICTIONS

There are currently eleven (11) bridges with load postings specific to the structure itself. All of these structures are currently closed to traffic or have replacement or rehabilitation work scheduled in the coming years:

STRUCTURE	NUMBER	LOCATION	STATUS	POSTING (TONNE)
Venison Creek Bridge	000103	Troyer Rd., S. Walsingham	Closed	12 t
Big Creek Bridge (Hazen Road)	000105	Hazen Rd., S. Walsingham	Closed	2 t
Big Creek Conc. A Pony Truss	000110	Conc. A Rd., S. Walsingham	Closed	3 t
Big Creek Bridge (8 <sup>th</sup> Conc.)	000303	8 <sup>th</sup> Conc. Rd., N. Walsingham	Rehab 2027	12 t
Conc. A-B Overflow Arch	002113	Conc. A Rd., S. Walsingham	Closed	3 t
Conc. A-B Overflow Arch	002114	Conc. A Rd., S. Walsingham	Closed	3 t
Dedrick Creek Bridge	002122	4 <sup>th</sup> Conc. Rd., S. Walsingham.	Replace 2028	5 t
Porters Bridge	010038	Marburg Rd., Woodhouse	Closed	8 /11 /15 t
Big Creek Bridge (Rd. 45)	984503	County Rd. 45, N. Walsingham	Replace 2019	3 t
Lot 11 Conc. 3 Road Bridge	D00006	Conc. 3 Rd., Windham	Replace 2026	14 /25 /35 t
Side Rd. Lot 22 Bridge	D00013	Windham Rd. 19, Windham	Replace 2019	3t

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## **ADDITIONAL INVESTIGATIONS**

Based on the recently completed OSIM inspections, we recommended that a number of structures in the County inventory have additional investigations completed. For the purpose of prioritization and project planning, it is recommended to complete these studies on structures corresponding with the rehabilitation recommendations list and the County capital expenditure forecast.

The following table provides a list of the structures recommended for additional investigations and studies. These additional investigations will assist in planning and scheduling future structural work. The structures are organized in order of priority based on Norfolk County's latest tax supported capital expenditure forecast list and scheduled projects.

<b>STRUCTURE</b>	<b>NUMBER</b>	<b>INVESTIGATIONS</b>	<b>EST. COST</b>
1. Big Creek Bridge Rd. 16	981602	1. Deck / Concrete Condition Survey 2. Structure Evaluation	\$ 35,000
2. County Road 74	987404	1. Deck / Concrete Condition Survey	\$ 10,000
3. East ¼ Line Bridge	970502	1. Deck / Concrete Condition Survey	\$ 15,000
4. Lot 10 Conc. 8 Road	010051	1. Deck / Concrete Condition Survey	\$ 15,000
5. Swimming Pool Rd. Bridge	983701	1. Deck / Concrete Condition Survey	\$ 17,500
6. Lot 23 Concession 12 Road	010045	1. Deck / Concrete Condition Survey	\$ 15,000
7. Lynedoch Bridge	982101	1. Deck / Concrete Condition Survey	\$ 17,500
8. Port Royal Bridge	984202	1. Deck / Concrete Condition Survey	\$ 17,500
9. Lot 9 Conc. 8 Road	010052	1. Deck / Concrete Condition Survey	\$ 7,500
10. Big Creek Bridge Hwy. 59	985902	1. Deck / Concrete Condition Survey 2. Coating Condition Survey 3. Structure Evaluation	\$ 35,000

## **ENHANCED OSIM INSPECTIONS**

Periodically, it may be necessary to utilize special equipment and tools to get within arms-reach of all areas of structure elements. Inspections of this nature are Enhanced OSIM inspections. The frequency of Enhanced OSIM inspections should be a maximum of six years for structures that:

- are over 30 years old,
- and contain critical elements and components in poor condition.

The complete list of structures recommended to have Enhanced OSIM inspections completed is located in the appendix.

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## **REHABILITATION RECOMMENDATIONS**

There are 72 structures that require some form of rehabilitation or repair to identified elements. The majority of the structures inspected require some form of maintenance. Of the 72 structures identified for work, 20 are recommended for major rehabilitations and 52 are recommended for minor rehabilitations. Refer to the appendix for a planning schedule showing all priority rehabilitation projects and estimated costs for engineering, construction, and associated costs.

In order to assist in prioritizing the recommended work, the calculated MTO Bridge Condition Index (BCI) number has been included in the rehabilitation recommendations table. The BCI values are used for planning purposes for repair work and do not represent the relative safety of the bridge. In general, for a bridge with a BCI value:

- Greater than 70 - Repair work is not usually required within the next five years;
- Between 60 and 70 - Repair work is usually scheduled within the next five years;
- Less than 60 - Repair work is usually scheduled within the next year.

Other factors were also considered in the prioritization of the structure rehabilitation recommendations including:

- state of deterioration and estimated length of prolonged useful lifespan;
- need for rehabilitation given the length of detour or alternate access;
- cost vs. benefit consideration with respect to possible future replacement.

It should be noted that the recommendations and relative priority rankings shown in the planning schedule are based on the inspections of the structures in accordance with the OSIM manual as well as engineering judgement and experience. As mentioned in the above section, it is recommended to complete additional investigations such as bridge condition studies on structures corresponding with the priority rankings. The priority list shown in the planning schedule may be modified to suit the results from such studies once completed.

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## **REPLACEMENT RECOMMENDATIONS**

Based on our detailed visual inspections of each structure, we have compiled a list of 20 structures recommended for replacement. Refer to the appendix for a planning schedule showing all replacement projects and estimated costs for additional investigations, engineering, construction, and associated costs.

It should be noted that 3 structures located on Concession A Road, South Walsingham were closed to traffic in 2007. A Municipal Class Schedule B Environmental Assessment (EA) recommended removal of the structures. Norfolk County Council directed staff to amend the EA recommendation and plan for the replacement of the structures:

- Big Creek Bridge, Structure 000110,
- Concession A-B Overflow Culverts, Structures 002113 and 002113.

For planning purposes, the structures are now listed in the replacement section in the planning schedule located in the appendix.

## **REMOVAL RECOMMENDATIONS**

There are a number of structures that no longer function in the capacity for which they were designed. All of these structures are located on closed roads. Redundant, closed, and undesignated bridges present a liability to the County and are recommended for removal. Refer to the appendix for a planning schedule showing all removal projects and estimated costs for additional investigations, engineering, construction, and associated costs.

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## **GENERAL MAINTENANCE & IMPROVEMENTS**

Nearly 200 structures in the inventory require maintenance and/or improvements ranging from erosion control to guide rail improvements. Each of these maintenance issues are indicated on the individual OSIM report forms for each structure. Many of the maintenance issues requiring attention are minor and may include the following:

- erosion control on the approach embankments and slopes at the inlet and outlet;
- hazard sign repair/replacement;
- overgrowth removal;
- waterway debris removal;
- wearing surface maintenance (crack sealing, asphalt patching);
- deck surface and drain cleaning;
- minor concrete repairs not requiring engineering direction.

The inspections revealed that some structures do not have barriers and guide rails that meet current standards. The requirement for guide rails on the structures and on the approaches is dependent upon a number of factors including:

- elevation difference between the road centerline and adjacent properties;
- traffic volume (AADT);
- operating speeds;
- road geometry (eg. sight lines, curves, etc.);
- hazards.

It is important to note that some structures may require the installation of energy attenuator end treatments based on the factors listed above. The cost of installing new guide rail systems on every structure in the County is prohibitive, however the County will be installing guide rail systems that meet the current standard on any structures that are replaced or rehabilitated and require them in the future.

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## **COSTS: PROFESSIONAL SERVICES & CONSTRUCTION**

The professional services required to complete structure rehabilitations or structure replacements may include the following:

- Geotechnical investigations;
- Legal land surveys;
- Topographical land surveys;
- Environmental screening (Species-at-risk, endangered species, etc.);
- Hydraulic assessment;
- Archaeological assessments;
- Cultural heritage impact assessment reports;
- Municipal class environmental assessments;
- Engineering design, project tendering, and contract administration;
- Material Testing Quality Assurance during construction.

As shown in the list above, many services may be needed to satisfy the requirements of permitting authorities prior to commencing the engineering design of a given project. Typically, replacement projects will require all of the services listed above; however rehabilitation projects may not.

To assist with budget planning, we offer the following estimated costs for each of the above noted professional services:

<b>PROFESSIONAL SERVICE</b>	<b>ESTIMATED TYPICAL COST (per structure)</b>
Geotechnical investigations	\$ 9,000
Legal land surveys	\$ 3,000
Topographical land surveys	\$ 3,000
Environmental screening	\$ 2,000
Hydraulic assessment	\$ 5,000
Archaeological assessments	\$ 2,000
Cultural heritage impact assessment reports	\$ 9,000
Municipal class environmental assessments	\$ 10,000
Engineering design, project tendering, and contract administration	\$ 80,000
Material Testing Q.A. (during construction)	\$ 10,000
<b>TOTAL</b>	<b>\$133,000</b>

The above noted costs are typical in nature and will vary from project to project. In some instances one or more of the above noted services may not be required. Conversely, there can be cases where additional services may be needed. For example, in the event that the environmental screening reveals that there are species at risk present at the bridge location, a relocation program may be required involving additional costs, permitting processes, and time.

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The current capital budget forecast for the County for the next five years includes average of approximately \$1.85 million per year for the bridge program. The current asset value for the structures inventory including 239 bridges and culverts is \$157 million. The total work identified on the 239 structures is \$50.7 million.

Previous editions of this report focused on a top 10 priority. This report has been enhanced to encapsulate *all* recommended work and is intended to provide a summary of the overall condition of the bridge and culvert asset inventory. This report is not an asset management analysis, however it should be used as a basis for preparing an asset management analysis report.

There has been an overall decline in the condition of the structures in the bridge and culvert inventory, as expected. The overall average BCI for the inventory appears to be declining. It is reasonable to assume the current level of funding is inadequate to maintain the current average BCI across the inventory. In an effort to maintain and improve the overall state of the asset inventory, an asset management analysis should be completed to determine a recommended annual budget to maintain and/or improve the overall condition of the asset inventory.

The following chart itemizes the work to be done and the associated costs:

RECOMMENDATION	QUANTITY	ENGINEERING	CONSTRUCTION	ASSOCIATED WORK	TOTAL
<b>FULL REPLACEMENT</b>	20	\$ 1,517,400	\$ 12,810,000	\$ 891,600	\$ 15,074,000
<b>MAJOR REHABILITATION</b>	20	\$ 1,552,100	\$ 15,607,000	\$ 1,296,400	\$ 18,455,500
<b>MINOR REHABILITATION</b>	52	\$ 1,958,300	\$ 13,478,000	\$ 684,700	\$ 16,128,000
<b>REMOVAL</b>	3	\$ 72,000	\$ 210,000	\$ 73,000	\$ 355,000
<b>MAINTENANCE ONLY</b>	130		\$ 650,000	-	\$ 650,000
				<b>GRAND TOTAL</b>	<b>\$ 50,662,500</b>

*Note: These figures are based on approximated present day values and do not reflect the amortized cost (i.e.: depreciation, inflation, etc.) of performing the necessary work in the future.*

<sup>1</sup> *Engineering includes: investigation, design, contract preparation, and inspection.*

<sup>2</sup> *Construction includes: bridge construction & contingency for the construction stages.*

<sup>3</sup> *Associated Work includes: other direct and indirect costs, materials testing and investigations, and general project contingencies.*

Based on the total identified work the current level of funding appears to be insufficient for the scheduled workload of replacements and rehabilitations until the next biennial OSIM inspections scheduled for 2020. The ten year capital project forecast should be reviewed against the priority recommendations and the budgets and priorities be adjusted as required. Given that there are currently 181 structures that are over 40 years old which continue to deteriorate, we support a proactive approach to effectively manage the County's structural assets.

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## CONCLUSION

Norfolk County encompasses a large geographical area in southern Ontario which includes Big Creek and the north shore of Lake Erie. These water bodies provide drainage outlets for many streams, creeks, and tributaries across all of the former townships. In all, there are 239 bridges and culverts currently owned and maintained by the County. At the present time, 20 of those structures are recommended for replacement and 72 other structures are in need of major or minor rehabilitation work. There are 130 other structures that are also in need of maintenance efforts. In the analysis of all inspection reports, the current capital budget forecast, and the prioritized needs of the bridge and culvert inventory, we offer the following recommendations:

- Regularly scheduled maintenance work be completed on structures exhibiting minor, non-structural damage and deterioration, and that are identified to have maintenance needs;
- An RFP for materials testing consultants to perform Detailed Bridge Condition and Coating Condition Studies for structures scheduled to have rehabilitation work completed in the following year;
- Prepare an asset management analysis to determine the annual funding required to maintain the overall condition of the asset inventory;
- Biennial OSIM inspections continue to be completed on the entire structure inventory in the County;
- Enhanced OSIM inspections be scheduled for structures meeting the requirements outlined in the Ontario Structure Inspection Manual.

We trust that this summary report contains the vital information that Norfolk County will need to make preparations for the bridge and culvert work in the next two years. It has been a pleasure to work with the County staff over the duration of this project and we look forward to continuing to work with you in the future.



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## APPENDIX A: STRUCTURE MAP

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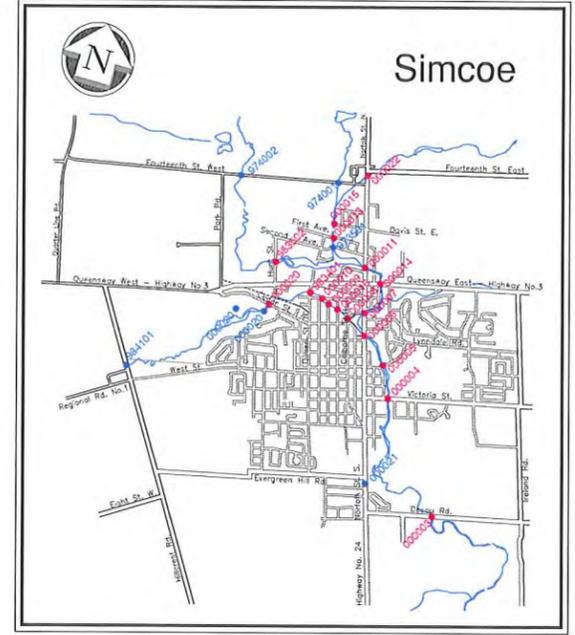
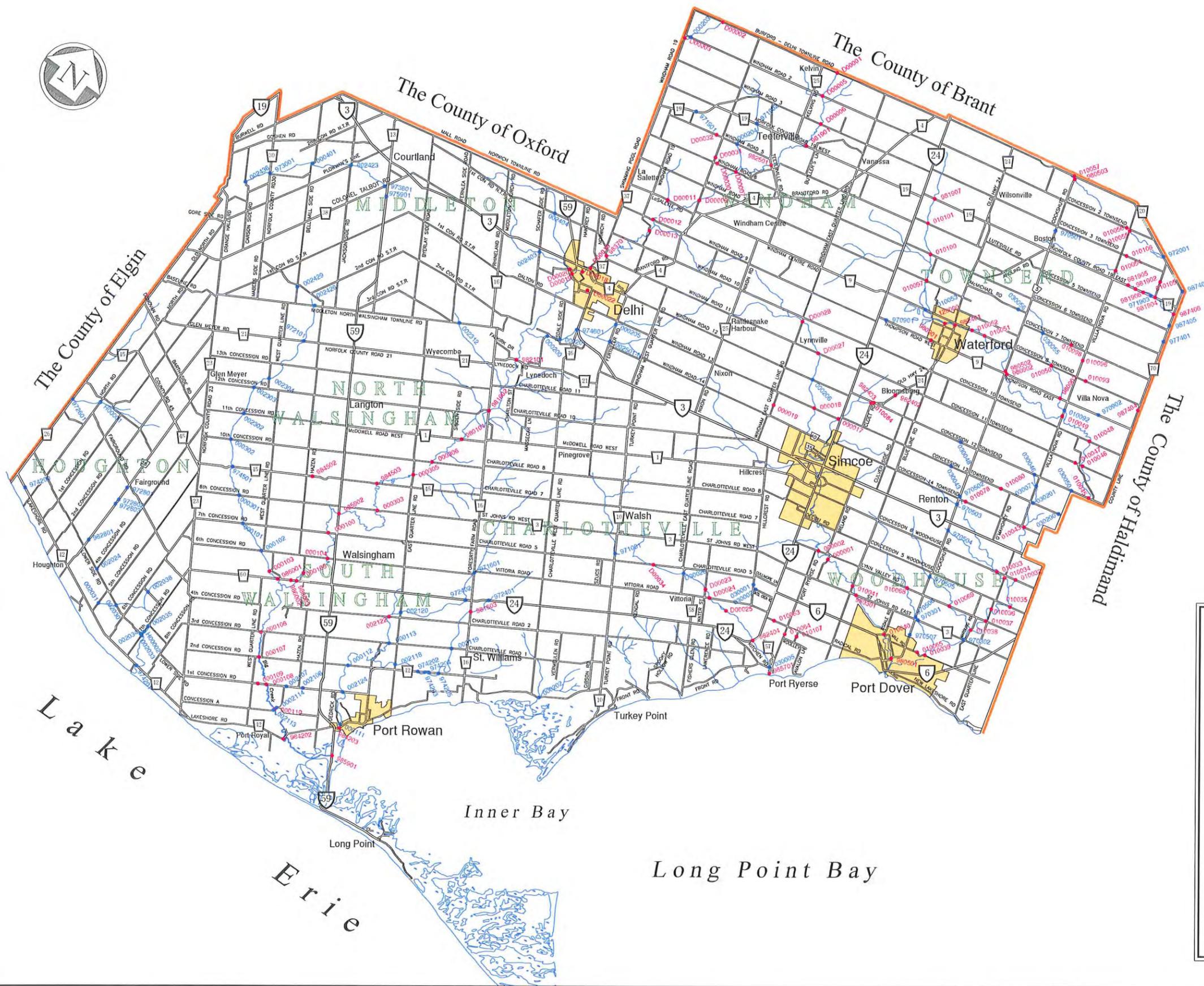
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### NORFOLK COUNTY BRIDGE INSPECTIONS

- 000000 BRIDGE STRUCTURES
- 000000 CULVERT STRUCTURES

#### LEGEND:

- PROVINCIAL HIGHWAY
- COUNTY HIGHWAY
- LOCAL ROAD
- COUNTY BOUNDARY



## APPENDIX B: STRUCTURE INVENTORY LIST

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STRUCTURE INVENTORY LIST

Site Number	Structure Name	Road Name	Bridge Type	Structure Type	Year Built	Total Deck Length	Overall Structure Width	Number of Spans	Span Lengths	Posted Load Limit	AADT	Estimated Replacement Cost	Estimated BCI
000001	Graham Bridge	IRELAND ROAD, SIMCOE	Bridge	I-Beam or Girders	1986	18	10.4	1	17		130	\$ 935,000	91
000002	Lynn Valley Road Bridge	LYNN VALLEY ROAD, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1953	15.6	8.3	1	14.1		280	\$ 776,000	87
000003	Decou Road Bridge	DECOU ROAD, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1954	14.3	8.2	1	13.9		2343	\$ 765,000	84
000004	Victoria Street Bridge	VICTORIA STREET, SIMCOE	Bridge	Solid Slab	1971	16.2	16.5	1	15.2		7263	\$ 1,045,000	63
000005	Argyle Street Bridge	ARGYLE STREET, SIMCOE	Bridge	Solid Slab	2002	17.6	13.4	1	17.0		2993	\$ 935,000	93
000006	Norfolk Street Bridge	NORFOLK STREET, SIMCOE	Bridge	Box Beams of Girders	1958	17.3	18.5	1	16.7		9828	\$ 1,148,000	57
000007	Norfolk Street North Bridge	NORFOLK STREET NORTH, SIMCOE	Bridge	Box Beams of Girders	1958	10.6	18.3	1	10.4		9828	\$ 715,000	67
000008	Colborne St. Bridge	COLBORNE STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1960	7	20.2	1	6.1		3849	\$ 419,000	85
000009	Head Street Bridge	HEAD STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	2004	6.9	12.8	1	6.1		500	\$ 336,000	94
000010	Windham Street Bridge	WINDHAM STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1972	6.9	14.6	1	6.1		610	\$ 336,000	87
000011	Norfolk Street North Bridge	NORFOLK STREET NORTH (HWY 24), SIMCOE	Bridge	Solid Slab	1967	21.6	18.9	3	2 @ 6.2, 1 @ 8.2		11852	\$ 1,416,000	89
000013	First Avenue Bridge "Simcoe"	FIRST AVENUE, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1959	6.9	22.5	1	6.1		345	\$ 419,000	67
000014	Const. John Verral Bridge	QUEENSWAY EAST (HWY3), SIMCOE	Bridge	I-Beam or Girders	1922	14.4	18.2	1	13.7		18636	\$ 942,000	47
000015	Davis Street Bridge	DAVIS STREET, SIMCOE	Bridge	Round Culvert	1966	7.6	10.3	2	2 @ 3.3		345	\$ 363,000	88
000016	Talbot St Bridge	TALBOT STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1960	7	20.2	1	6.1		500	\$ 419,000	88
000017	13th St West Bridge	CONCESSION 13 ROAD, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1955	7	15.4	1	6.2		1300	\$ 426,000	84
000018	13th St West Arch	CONCESSION 13 ROAD, SIMCOE	Bridge	Arch Culvert	1955	6.1	17.1	1	6.1		1371	\$ 419,000	61
000019	Windham East 1/4 Line Bridge	WINDHAM EAST 1/4 LINE ROAD, SIMCOE	Bridge	Rectangular Culvert	2006	4.3	15.2	1	3.7		1000	\$ 254,000	94
000020	Cedar Street Bridge	CEDAR STREET, SIMCOE	Culvert	Rectangular Culvert	2012	6.7	17.3	1	6		3478	\$ 402,000	95
000021	Norfolk St South Bridge	NORFOLK STREET SOUTH, SIMCOE	Bridge	Round Culvert	1978	3.2	20	2	1.6, 1.6		10431	\$ 2,200,000	90
000022	Norfolk Street Bridge	NORFOLK STREET NORTH, SIMCOE	Culvert	Rigid Frame, Vertical Legs	1970	4.5	52	1	3.7		11852	\$ 270,000	89
000023	Cedar Street Water & Wastewater Operation Yard Culvert 'A'	CEDAR STREET, SIMCOE	Culvert	Arch Culvert	0	3.2	4.7	1	3.2		N/A	\$ 83,000	43
000024	Cedar Street Water & Wastewater Operation Yard Culvert 'B'	CEDAR STREET, SIMCOE	Culvert	Arch Culvert	0	3.3	5	1	3.3		N/A	\$ 91,000	64
000100	Big Creek Bridge	TOWNLINE ROAD NORTH (7TH CONCESSION RD), WALSINGHAM	Bridge	I-Beam or Girders	1961	48	10.5	3	1 @ 18.1, 2 @ 14.7		241	\$ 2,613,000	66
000101	Hosner Culvert	TOWNLINE ROAD (7TH CONCESSION RD), WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1964	7.1	48	1	6.1		81	\$ 426,000	66
000102	Venison Creek Culvert	6TH CONCESSION RD, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1968	7	20	1	6.0		145	\$ 420,000	86
000103	Venison Creek Bridge	TROYER ROAD, SOUTH WALSINGHAM	Bridge	Half-Through Truss	1920	22.2	4.9	1	21.8	12	0	\$ 1,199,000	41
000104	Big Creek Bridge Concession 6	6TH CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	I-Beam or Girders	1970	41.2	9	3	1 @ 19.5, 2 @ 10.85		250	\$ 2,266,000	61
000105	Big Creek Bridge Hazen Rd.	HAZEN ROAD, SOUTH WALSINGHAM	Bridge	Half-Through Truss	1920	14	4.2	1	13.5	2	0	\$ 743,000	38
000106	Big Creek Bridge	3RD CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	I-Beam or Girders	1972	45.3	8.9	3	1 @ 18.7, 2 @ 13.30		84	\$ 2,492,000	62
000107	Big Creek Lot 7 2nd Concession	2ND CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	I-Beam or Girders	1981	45.5	8.9	3	2 @ 13.5, 1 @ 18.6		200	\$ 2,508,000	81
000108	Big Creek Bridge Lot 8 1st Concession	1ST CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	I-Beam or Girders	1960	46.9	10	3	1 @ 19.8, 2 @ 13.5		463	\$ 1,832,000	88
000109	Big Creek Overflow Bridge	1ST CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	Rigid Frame, Vertical Legs	1960	13.4	18.3	2	2 @ 6.2		463	\$ 853,000	92
000110	Big Creek Bridge Lot 9 Concession A	CONCESSION A ROAD, SOUTH WALSINGHAM	Bridge	Half-Through Truss	1920	18.5	4.3	1	17.9	3	0	\$ 985,000	38
000111	Stark Culvert	DEDRICK ROAD, SOUTH WALSINGHAM	Culvert	Rectangular Culvert	1988	9.6	23	2	2 @ 4.5		100	\$ 576,000	91
000112	Lot 24 Concession 2	2ND CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1966	10.5	24	2	2 @ 4.8		300	\$ 630,000	86
000113	Concession 2-3 Culvert South Walsingham	3RD CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1965	6.4	20	1	6.2		213	\$ 384,000	88
000200	Bilger's Road Culvert	BILGER'S ROAD, MIDDLETON	Culvert	Round Culvert	1980	3.4	24.4	1	3.4		58	\$ 204,000	90
000201	Tisdale Road Culvert	TISDALE ROAD, DELHI	Culvert	Arch Culvert	1980	3.7	17.3	1	3.7		107	\$ 222,000	95
000202	Lot 7 Concession B Charlotteville	FRONT ROAD, CHARLOTTEVILLE	Culvert	Round Culvert	1980	4.7	40.2	1	4.7		2000	\$ 282,000	90
000203	Lot 24 Concession 2	WINDHAM ROAD 2	Culvert	Rigid Frame, Vertical Legs	1980	13	12.8	2	2 @ 6.0		163	\$ 768,000	90
000204	Lot 17 Concession 4-5	WINDHAM ROAD 5	Culvert	Rigid Frame, Vertical Legs	1965	4.7	24.3	1	3.9		294	\$ 282,000	62
000205	Lot 21-22 Concession 13	FERTILIZER ROAD, DELHI	Bridge	Rectangular Culvert	1970	8.2	20.3	1	3.6		1390	\$ 248,000	65
000206	Harmony Road Culvert	WINDHAM ROAD 12	Culvert	Rigid Frame, Vertical Legs	1970	18.6	5.3	1	4.7		1371	\$ 318,000	89
000301	Venison Creek Culvert Concession 8	8TH CONCESSION ROAD, NORTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1966	6.7	28	1	6.0		76	\$ 402,000	82
000302	Lot 3 Concession 9 -10 N. Walsingham	10TH CONCESSION ROAD, NORTH WALSINGHAM	Culvert	Arch Culvert	1970	6	40	1	6.		184	\$ 360,000	60
000303	Big Creek 8th Concession Bridge	8TH CONCESSION ROAD, NORTH WALSINGHAM	Bridge	Half-Through Truss	1930	23	4.9	1	22.2	12	98	\$ 1,221,000	48
000305	Big Creek E1/4 Line Bridge	EAST 1/4 LINE ROAD, NORTH WALSINGHAM	Bridge	I-Beam or Girders	1960	47.8	10.5	3	2 @ 14.6, 1 @ 18.6		730	\$ 2,629,000	59
000306	Big Creek 10th Concession Bridge	10TH CONCESSION ROAD, NORTH WALSINGHAM	Bridge	I-Beam or Girders	2003	54	11	3	2 @ 13.5, 1 @ 16.4		200	\$ 2,387,000	91
000401	Lot 10-11 Concession 2 NTR Middleton	BELL MILL SIDE ROAD, MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1959	35	6.6	1	6.1		790	\$ 396,000	81
002024	Lot 1 Concession 3 Houghton	LOWER SIDE ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1966	23	15.5	1	4.4		149	\$ 930,000	90
002030	Lot 1-2 Concession 5 Houghton	LOWER SIDE ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1999	14	14.8	1	4.2		69	\$ 840,000	86
002031	Lot 12-13 NLR Houghton	5TH CONCESSION ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1969	20	5	1	4.3		133	\$ 300,000	86
002033	Lot 1 Concession 6-7 Houghton	7TH CONCESSION ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1966	21	5.5	1	4.9		203	\$ 330,000	86
002034	Concession 7 Road Culvert	LOWER SIDE ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1975	23	15.5	1	4.9		69	\$ 930,000	87
002035	Lot 2 Concession 6-7 Houghton	7TH CONCESSION ROAD, HOUGHTON	Culvert	Arch Culvert	1978	4.9	20	1	4.9		139	\$ 294,000	90
002038	Graves Side Road Culvert	GRAVES SIDE ROAD, HOUGHTON	Culvert	Ellipse Culvert	1975	3.9	13.7	1	3.7		18	\$ 234,000	65
002106	James Berry Drain, Lot 2 Concession A-1	1ST CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1959	4.3	20	1	3.6		463	\$ 258,000	88
002107	Lot Concession A-1 South Walsingham	1ST CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Ellipse Culvert	1975	3.4	20	1	3.4		463	\$ 204,000	90
002113	Lot 9 Concession A-B Overflow	CONCESSION A ROAD, SOUTH WALSINGHAM	Culvert	Arch Culvert	1919	5.2	4.8	1	4.6	3	0	\$ 137,000	38
002114	Lot 9 Concession A-B	CONCESSION A ROAD, SOUTH WALSINGHAM	Culvert	Arch Culvert	1919	5.2	5	1	4.3	3	0	\$ 143,000	40
002118	East 1/4 Line Culvert	EAST 1/4 LINE ROAD, SOUTH WALSINGHAM	Culvert	Ellipse Culvert	1969	5.1	22	1	1 @ 5.1		500	\$ 306,000	55
002119	Lot 23 Concession 2-3 South Walsingham	3RD CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Round Culvert	1971	3.9	20	1	3.9		181	\$ 234,000	63
002120	Lot 18-19 Concession 4	EAST 1/4 LINE ROAD, SOUTH WALSINGHAM	Culvert	Rectangular Culvert	1962	6.6	22	1	6.0		190	\$ 396,000	88
002122	Dedrick Creek 4th Concession Bridge	4TH CONCESSION ROAD, SOUTH WALSINGHAM	Bridge	Undefined	1998	8	3.5	1	6.7	5	35	\$ 369,000	62
002124	Lot 14 Concession A-1	1st CONCESSION ROAD, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1966	10.4	30	2	2 @ 4.9		820	\$ 624,000	70
002302	Lot 4 Concession 10-11	11th CONCESSION ROAD, NORTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1950	6.4	50	1	5.2		126	\$ 384,000	81
002303	Lot 4 Concession 11 -12	12h CONCESSION ROAD, NORTH WALSINGHAM	Culvert	Round Culvert	1978	5.5	34	1	5.5		726	\$ 330,000	86
002304	David Overbaugh Culvert	WEST 1/4 LINE ROAD, NORTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1967	6.2	37	1	5.0		178	\$ 372,000	68
002312	Lot 21 North Walsingham	MIDDLETON - NORTH WALSINGHAM TOWNLINE ROAD	Culvert	Rigid Frame, Vertical Legs	1965	3.6	20	1	3.0		276	\$ 216,000	70

STRUCTURE INVENTORY LIST

Site Number	Structure Name	Road Name	Bridge Type	Structure Type	Year Built	Total Deck Length	Overall Structure Width	Number of Spans	Span Lengths	Posted Load Limit	AADT	Estimated Replacement Cost	Estimated BCI
002403	Lot 40-41 Concession 1 STR Middleton	SCHAFFER SIDE ROAD, MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1960	3.7	26	1	3.1		225	\$ 222,000	83
002404	Lot 42 Concession I-II NTR Middleton	1ST CONCESSION ROAD N.T.R., MIDDLETON	Culvert	Arch Culvert	1982	4.5	22.5	1	4.5		138	\$ 270,000	61
002423	Lot 15-16 Concession 2 NTR Middleton	JACKSON SIDE ROAD, MIDDLETON	Culvert	Round Culvert	1965	4.2	30	1	4.2		289	\$ 252,000	88
002426	Lot 13 Townline road	MIDDLETON – NORTH WALSHINGHAM TOWNLINE ROAD	Culvert	Arch Culvert	1970	3.2	30	1	3.0		596	\$ 192,000	89
002429	Lot 10 - 11 Concession 2 NTR	BELL MILL SIDE ROAD, MIDDLETON	Culvert	Arch Culvert	1966	3.4	21	1	3.4		269	\$ 204,000	88
002436	Lot 2-3 Concession 2 NTR Middleton	CARSON SIDE ROAD, MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1994	33	6.6	1	6.0		68	\$ 396,000	92
010032	Misener Bridge	SCOTCH LINE ROAD (CONCESSION 6), WOODHOUSE	Culvert	Rectangular Culvert	1988	9	23	2	2 @ 4.5		177	\$ 540,000	91
010033	Dunn Bridge	SCOTCH LINE ROAD (CONCESSION 6), WOODHOUSE	Bridge	Rigid Frame, Vertical Legs	1978	13.7	9.8	1	12.2		221	\$ 671,000	76
010034	Lot 18-19 Concession 5	EAST ¼ LINE ROAD, WOODHOUSE	Bridge	Rigid Frame, Vertical Legs	1966	12.2	21.6	2	2 @ 5.5		83	\$ 756,000	88
010035	Gurney Bridge	CONCESSION 5, WOODHOUSE	Bridge	Box Beams of Girders	1974	14.6	8.8	1	13.3		95	\$ 732,000	87
010036	Ellis Ryerse Bridge	EAST ¼ LINE ROAD, WOODHOUSE	Bridge	I-Beam or Girders	1975	20.1	8.5	1	18.3		83	\$ 1,007,000	90
010037	McBride Bridge	LYNN VALLEY ROAD, WOODHOUSE	Bridge	Ellipse Culvert	1978	11	18	2	2 @ 5.5		190	\$ 756,000	87
010038	Porters Bridge	MARBURG ROAD, WOODHOUSE	Bridge	Half-Through Truss	1918	20.1	4.3	1	17.7	8 11 15	0	\$ 974,000	40
010039	Ryerse Bridge	MILL ROAD (CONCESSION 2), WOODHOUSE	Bridge	I-Beam or Girders	1980	35.7	11	2	2 @ 17.5		172	\$ 1,925,000	88
010040	Ivey Bridge	PROSPECT STREET, PORT DOVER	Bridge	I-Beam or Girders	1960	18.9	10.6	1	18.		700	\$ 990,000	88
010041	Blue Line Road Bridge	BLUE LINE ROAD, WOODHOUSE	Bridge	I-Beam or Girders	1971	20.1	10.1	1	18.3		4767	\$ 1,007,000	69
010043	Lot 19 Concession 14 Road	CONCESSION 14, TOWNSEND	Bridge	Rectangular Culvert	2009	14	8.5	2	4		88	\$ 220,000	94
010045	Lot 23 Concession 12 Road	CONCESSION 12, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1958	17.7	10.1	1	15.2		36	\$ 836,000	57
010046	Lot 22 Concession 10 Road	CONCESSION 10, TOWNSEND	Bridge	Box Beams of Girders	1969	13.4	8.8	1	12.2		304	\$ 671,000	60
010047	Rockford Bridge	CONCESSION 11, TOWNSEND	Bridge	I-Beam or Girders	2012	14	10	1	12		304	\$ 660,000	95
010048	Hall Bridge	CONCESSION 10, TOWNSEND	Bridge	I-Beam or Girders	2010	15.3	10.1	1	13.5		234	\$ 743,000	94
010049	Nanticoke Creek Bridge	VILLA NOVA ROAD, TOWNSEND	Bridge	Box Beams of Girders	1971	11.6	9.4	1	10.7		494	\$ 589,000	61
010050	Lot 16 Concession Road 8	CONCESSION 8, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1965	7	19.2	1	6.1		139	\$ 419,000	88
010051	Lot 10 Concession 8 Road	CONCESSION 8, TOWNSEND	Bridge	T-Beam	1960	11.9	9.8	1	11		253	\$ 605,000	62
010052	Lot 9 Concession 8 Road	DEER PARK ROAD (CONCESSION 8), TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1958	11	8.2	1	9.8		253	\$ 539,000	59
010053	Waterford Pond Bridge	POND ROAD (MECHANIC STREET), WATERFORD	Bridge	Rectangular Culvert	2001	11.4	19.9	2	5.1, 5.1		1294	\$ 701,000	93
010054	East 1/4 Line Bridge Concession 3	VILLA NOVA ROAD, TOWNSEND (BEALTON)	Bridge	Rigid Frame, Vertical Legs	1950	12.2	8.2	1	10.4		570	\$ 572,000	61
010055	East 1/4 Line Bridge Concession 2	VILLA NOVA ROAD, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	14.9	8.2	1	13.4		506	\$ 737,000	62
010056	Concession 2 Bridge	CONCESSION 2, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1961	14.6	8.2	1	12.8		177	\$ 704,000	88
010057	Townline Bridge	BRANT - NORFOLK TOWNLINE ROAD	Bridge	Undefined	2016	24.6	8.6	1	14.6		100	\$ 803,000	95
010063	Lot 1 Concession 1-BF	RADICAL ROAD, WOODHOUSE	Culvert	Rigid Frame, Vertical Legs	1960	4.7	16.9	1	3.7		1848	\$ 282,000	88
010064	Hay Creek Dam	PORT RYERSE ROAD, WOODHOUSE	Bridge	Solid Slab	1965	5.6	13.5	1	4.6		550	\$ 253,000	64
010065	Mill Road Culvert, Lot 14 Concession 2	MILL ROAD (CONCESSION 2), WOODHOUSE	Culvert	Arch Culvert	2011	5.5	5.1	1	6		172	\$ 154,000	95
010068	Lot 11 Lynn Valley Road	LYNN VALLEY ROAD, WOODHOUSE	Bridge	Rectangular Culvert	1990	3.5	1.7	1	3		500	\$ 206,000	92
010069	Lot 15 Concession 4 Road	LYNN VALLEY ROAD, WOODHOUSE	Culvert	Rigid Frame, Vertical Legs	1991	5.5	20.9	1	4.9		190	\$ 330,000	92
010078	Black Creek Culvert	CONCESSION 14, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	6.8	18	1	6.		82	\$ 413,000	88
010080	Lot Concession 13 Road	CONCESSION 13, TOWNSEND	Culvert	Rectangular Culvert	2015	4.6	12.2	1	4.2		495	\$ 276,000	95
010084	Cloet Road Bridge	CLOET ROAD, TOWNSEND	Bridge	Arch Culvert	1970	16.4	3.5	1	3.3		32	\$ 182,000	94
010092	Villa Nova Road Culvert	VILLA NOVA ROAD, TOWNSEND	Culvert	Box Culvert	2016	6.5	12.25	1	6		494	\$ 390,000	95
010093	Lot 20 Concession 8 Road	CONCESSION 8, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1970	3.6	15.9	1	3.		285	\$ 206,000	89
010096	Milk Factory Culvert	VILLA NOVA ROAD, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	5	21	1	4.3		209	\$ 296,000	60
010097	Lot 3 Concession 7 Road	CONCESSION 7, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	10.9	20.1	2	2 @ 4.9		228	\$ 654,000	68
010098	Lot 17 Concession 7 Road	CONCESSION 7, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1970	3.6	13.7	1	3.0		189	\$ 165,000	86
010100	Lot 3 Concession 6 Road	CONCESSION 6, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	5.5	18.3	1	4.9		300	\$ 330,000	88
010101	Lot 2 Concession 5 Road	CONCESSION 5, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	6	19.8	1	5.2		500	\$ 358,000	88
010105	Cemetery Road Bridge	CEMETERY ROAD, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	2016	5	6.4	1	4.4		101	\$ 242,000	97
010106	Lot 19 Concession 3 Road Townsend	CONCESSION 3, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	3.6	13.8	1	3.		76	\$ 165,000	92
010107	Gilbert Road Culvert	GILBERT ROAD, WOODHOUSE	Culvert	Rectangular Culvert	1940	2.4	13	1	2.4		45	\$ 144,000	42
030001	Charlottesville / Woodhouse Line	CHARLOTTEVILLE – WOODHOUSE TOWNLINE (HILLCREST ROAD)	Culvert	Round Culvert	1970	23.8	3.5	1	3.3		285	\$ 210,000	91
030002	United Church Road Culvert	UNITED CHURCH ROAD, WOODHOUSE	Culvert	Round Culvert	1970	3	22	1	3.3		44	\$ 180,000	89
030005	Port Ryerse Culvert	FRONT ROAD, WOODHOUSE	Culvert	Round Culvert	1976	36.5	6.1	1	5.5		750	\$ 366,000	72
030043	Black Creek Culvert	CONCESSION 13, TOWNSEND	Culvert	Rectangular Culvert	2009	17	4.8	1	4.3		443	\$ 288,000	94
030046	Lot 18 Concession 12	CONCESSION 12, TOWNSEND	Culvert	Arch Culvert	1970	22.2	3.8	1	3.6		143	\$ 228,000	89
030048	Black Creek Culvert	CONCESSION 12, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1970	4.2	18.6	1	3.6		152	\$ 252,000	86
030050	Lot 20 Concession 12 Road	CONCESSION 12, TOWNSEND	Culvert	Ellipse Culvert	1970	22.8	3.2	1	3.2		36	\$ 192,000	56
030055	Lot 17 Concession 7 Road	CONCESSION 7, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1970	4.2	18	1	3.6		189	\$ 252,000	89
030056	McMichael Road Culvert	McMICHAEL ROAD, TOWNSEND	Culvert	Arch Culvert	1970	29	6	1	4.		108	\$ 360,000	89
030071	Lot 18-19 Concession 12 Townsend	VILLA NOVA ROAD, TOWNSEND	Culvert	Ellipse Culvert	1975	34	5	1	5.		494	\$ 300,000	74
030200	Lot 20 Concession 13 Road	CONCESSION 13, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1970	3.2	20.2	1	3.		386	\$ 192,000	51
030201	Concession 13 Culvert	CONCESSION 13, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	4.7	20.2	1	3.95		494	\$ 282,000	88
120000	Waterford Causeway Bridge	ST. JAMES STREET, WATERFORD	Bridge	Rigid Frame, Vertical Legs	1995	10.5	4.5	1	10.5		0	\$ 578,000	92
970301	Black Creek Culvert	ST. JOHNS ROAD EAST, WOODHOUSE	Culvert	Rectangular Culvert	1961	31.9	4.6	1	3.7		4247	\$ 276,000	88
970302	Black Creek Structural Arch	ST. JOHN'S ROAD EAST, WOODHOUSE	Culvert	Arch Culvert	1972	15.2	40.2	1	15.2		4247	\$ 912,000	71
970501	Boston Creek Box Culvert	COCKSHUTT RD. (COUNTY ROAD 5), TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1959	5.5	20.4	1	4.9		4363	\$ 330,000	88
970502	Black Creek Culvert (Road 5)	COUNTY ROAD 5, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	5.5	20.9	1	5.0		2942	\$ 330,000	66
970503	Road 5 Culvert	COUNTY ROAD 5 - RENTON, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1958	3.7	27.5	1	3.1		2942	\$ 222,000	87
970504	Renton Concession Culvert	COUNTY ROAD 5, WOODHOUSE	Culvert	Rigid Frame, Vertical Legs	1963	3.7	36.8	1	3.1		2942	\$ 222,000	88
970505	Concession 4 (Woodhouse) Culvert	COUNTY ROAD 5, WOODHOUSE	Culvert	Rectangular Culvert	1953	5.5	33.4	1	4.3		2755	\$ 330,000	87
970506	Cockshutt Road Culvert	COUNTY ROAD 5, WOODHOUSE	Culvert	Rectangular Culvert	1957	4.3	21.3	1	3.7		2755	\$ 258,000	55
970507	Dover Road Culvert	COUNTY ROAD 5, WOODHOUSE	Culvert	Rectangular Culvert	1958	4.3	27.4	1	3.7		2755	\$ 258,000	85

STRUCTURE INVENTORY LIST

Site Number	Structure Name	Road Name	Bridge Type	Structure Type	Year Built	Total Deck Length	Overall Structure Width	Number of Spans	Span Lengths	Posted Load Limit	AADT	Estimated Replacement Cost	Estimated BCI
970901	Thompson Road Culvert	COUNTY ROAD 9, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	3.7	24.3	1	3.1		2922	\$ 222,000	88
970902	Thompson Road Culvert	COUNTY ROAD 9, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1960	4.3	28.4	1	3.7		1684	\$ 258,000	88
971001	Young's Creek Culvert	TURKEY POINT ROAD (COUNTY ROAD 10), CHARLOTTEVILLE	Culvert	Rigid Frame, Vertical Legs	1964	5.2	43.8	1	4.4		2300	\$ 312,000	86
971601	Dedrick Creek Culvert	NORFOLK 16, ST. WILLIAMS ROAD, CHARLOTTEVILLE	Culvert	Rectangular Culvert	1955	7	18.5	1	6.2		1953	\$ 420,000	67
971901	Bookton Drain Culvert	COUNTY ROAD 19, WINDHAM	Culvert	Round Culvert	1990	10	51.9	1	3.7		400	\$ 600,000	97
971902	Lot 16 Concession 3-4	COUNTY ROAD 19, WINDHAM	Culvert	Arch Culvert	1970	5	16.7	1	3.6		887	\$ 300,000	89
971903	Bealton Twin Box Culvert	COUNTY ROAD 19, TOWNSEND	Culvert	Rectangular Culvert	1985	8	25.8	2	2 @ 3.7		443	\$ 480,000	84
972001	Mackenzie Creek Dam	INDIAN LINE ROAD, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1965	9	24.7	2	2 @ 4.3		4098	\$ 540,000	88
972101	Venison Creek Culvert	COUNTY ROAD 21, NORTH WALSINGHAM	Culvert	Ellipse Culvert	1960	3.7	31.3	1	3.7		392	\$ 222,000	70
972401	County Road 24 Culvert	COUNTY ROAD 24, CHARLOTTEVILLE	Culvert	Rectangular Culvert	1970	5	24.5	1	4.2		2165	\$ 300,000	89
972402	County Road 24 Culvert	COUNTY ROAD 24, SOUTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1960	6.8	21.6	1	6.0		1400	\$ 408,000	68
972601	South Otter Creek	COUNTY ROAD 26/ELGIN COUNTY ROAD 55, HOUGHTON	Culvert	Arch Culvert	1982	30.5	6.1	1	6.1		50	\$ 366,000	88
972801	County Rd. 28 Culvert	COUNTY ROAD 28, HOUGHTON	Culvert	Arch Culvert	1973	53.6	6.6	2	3.3		760	\$ 396,000	89
972802	County Road 28 Culvert	NORFOLK COUNTY ROAD 28, HOUGHTON	Culvert	Ellipse Culvert	1973	4	8.2	2	4.1		300	\$ 180,000	89
972803	Norfolk County Rd. 28 Culvert	NORFOLK COUNTY ROAD 28, HOUGHTON	Culvert	Arch Culvert	1973	49.2	8.2	1	4.1		300	\$ 492,000	85
973001	Otter Creek Culvert	NORFOLK COUNTY ROAD 30, MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1955	36.6	12.8	2	2 @ 6.1		3730	\$ 768,000	62
973501	Second Avenue Culvert	SECOND AVENUE, SIMCOE	Culvert	Rigid Frame, Vertical Legs	1960	6.4	41.2	1	6.0		488	\$ 384,000	88
973801	Little Otter Creek Culvert	TALBOT ROAD (COUNTY ROAD 38), MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1968	4.3	36.5	1	3.7		756	\$ 258,000	86
974001	14th Street West Culvert	COUNTY ROAD 40, WINDHAM	Culvert	Rigid Frame, Vertical Legs	1963	6.8	35.7	1	6.2		2461	\$ 408,000	68
974002	Patterson Creek Culvert	COUNTY ROAD 40, WINDHAM	Culvert	Ellipse Culvert	1969	6.1	22.7	1	6.1		2461	\$ 366,000	89
974200	Houghton Lake Erie Culvert	LAKESHORE ROAD, HOUGHTON	Culvert	Round Culvert	2008	50	3.5	1	3.5		161	\$ 210,000	74
974201	Clear Creek Culvert	LAKESHORE ROAD COUNTY ROAD 42, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1956	34.2	9.3	1	6.1		133	\$ 558,000	57
974202	Mud Creek Culvert	PORT ROWAN ROAD 42, SOUTH WALSINGHAM	Culvert	Round Culvert	1967	4.1	36	1	4.3		1595	\$ 246,000	86
974203	Rohrer Culvert	PORT ROWAN ROAD 42, SOUTH WALSINGHAM	Culvert	Round Culvert	1967	4	31	1	4.0		1595	\$ 240,000	89
974204	Tulpin Culvert	PORT ROWAN ROAD 42, SOUTH WALSINGHAM	Culvert	Rectangular Culvert	2013	5.6	30	1	5		1595	\$ 336,000	95
974205	Wilbur Smith Culvert	PORT ROWAN ROAD 42, SOUTH WALSINGHAM	Culvert	Rectangular Culvert	2012	5.8	38.4	1	5.2		1595	\$ 348,000	100
974501	Venison Creek Box Culvert	COUNTY ROAD 45, NORTH WALSINGHAM	Culvert	Rigid Frame, Vertical Legs	1968	7.3	40	1	6.1		353	\$ 438,000	91
974601	Pine Grove Lake Culvert	COUNTY ROAD 46 (GILBERTSVILLE), MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1929	6.7	17	1	5.5		2750	\$ 402,000	68
975901	Little Otter Creek Culvert	HIGHWAY 59, MIDDLETON	Culvert	Rigid Frame, Vertical Legs	1959	3.6	29	1	3.0		3739	\$ 216,000	88
977401	Townline Road Culvert	COUNTY ROAD 74, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	7.5	18.3	1	3.1		978	\$ 213,000	70
980101	Hambleton Bridge	MCDOWELL ROAD WEST, NORFOLK COUNTY	Bridge	T-Beam	1947	23.2	9.1	1	21.9		2600	\$ 1,205,000	77
980301	Waddle Bridge	COUNTY ROAD 3 (ST. JOHN'S ROAD), WOODHOUSE	Bridge	I-Beam or Girders	1977	19.2	10.1	1	18.3		3137	\$ 1,007,000	78
980501	Misner Dam Bridge	LYNN STREET, PORT DOVER	Bridge	I-Beam or Girders	1970	32.3	11.3	2	2 @ 15.2		3253	\$ 1,672,000	71
980502	Townsend Centre Bridge	COUNTY ROAD 5 (COCKSHUTT), TOWNSEND	Bridge	Rectangular Culvert	1968	12.2	21.3	2	2 @ 5.5		2942	\$ 756,000	70
980503	Haviland Bridge	COUNTY ROAD 5, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1956	8.2	18.9	1	7.3		4363	\$ 502,000	87
980901	Waterford Underpass	THOMPSON ROAD, COUNTY ROAD 9, TOWNSEND	Bridge	Half-through Beams of Girders	1967	30	5	3	1 @ 13.0, 2 @ 8.5		2922	\$ 1,650,000	86
980902	Renner Bridge	COUNTY ROAD 9, YANKEE STREET, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1953	12.2	10.4	1	11		3039	\$ 605,000	84
980903	Villa Nova Bridge	COUNTY ROAD 9, YANKEE STREET, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1950	10.1	10.4	1	8.5		3039	\$ 468,000	86
981602	Big Creek Bridge	COUNTY ROAD 16, NORTH WALSINGHAM	Bridge	I-Beam or Girders	1968	59.4	10.5	3	1 @ 22.9, 2 @ 18.3		2140	\$ 3,273,000	58
981603	Box Culvert	16 ST. WILLIAMS ROAD, SOUTH WALSINGHAM	Bridge	Rectangular Culvert	1960	6.8	20.5	1	4.3		1953	\$ 296,000	88
981901	Big Creek Bridge	COUNTY ROAD 19, WINDHAM	Bridge	I-Beam or Girders	1964	21.1	10.1	1	19.8		925	\$ 1,089,000	68
981902	Bowen Structure	COUNTY ROAD 19, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1985	7.4	18.6	2	2 @ 3.7		443	\$ 509,000	91
981904	County Road 19 Bridge	COUNTY ROAD 19, TOWNSEND	Bridge	Solid Slab	2000	12.5	11	1	10.0		443	\$ 550,000	93
981905	Sanders Driveway	COUNTY ROAD 19, TOWNSEND	Bridge	Ellipse Culvert	1985	8	10	2	2 @ 3.7		443	\$ 407,000	91
981906	Vezenyi Driveway	COUNTY ROAD 19, TOWNSEND	Bridge	Round Culvert	1985	10	8.4	2	2 @ 3.7		443	\$ 407,000	96
981907	Nanticoke Creek Bridge	COUNTY ROAD 19, TOWNSEND	Bridge	Rectangular Culvert	2007	5.8	16.1	1	5.1		535	\$ 351,000	94
982101	Lynedoch Bridge	LYNEDOCH ROAD, COUNTY ROAD 21, CHARLOTTEVILLE	Bridge	Rigid Frame, Vertical Legs	1957	24.9	10.7	1	21.9		1450	\$ 1,205,000	65
982401	Waterford Overpass	MAIN STREET, WATERFORD	Bridge	I-Beam or Girders	2000	60	14.1	4	4 @ 14.75		5924	\$ 3,245,000	93
982402	Bloomsburg Bridge	OLD HIGHWAY 24, COUNTY ROAD 24, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1950	10.3	8	1	3.1		2539	\$ 171,000	53
982403	Elliott Culvert	COUNTY ROAD 24, BLOOMSBURG, TOWNSEND	Culvert	Rectangular Culvert	2014	6.6	10.8	1	6		2146	\$ 392,000	95
982404	Young Creek Bridge	HIGHWAY 24, WOODHOUSE	Bridge	I-Beam or Girders	1965	57	11	3	3 @ 19m		3145	\$ 3,135,000	60
982501	Teeterville Bridge	COUNTY ROAD 25, WINDHAM	Bridge	I-Beam or Girders	1971	22.9	10.1	1	21.9		508	\$ 1,205,000	71
982801	Multi Plate	NORFOLK COUNTY ROAD 28, HOUGHTON	Culvert	Arch Culvert	1973	15	4.3	1	4.3		149	\$ 258,000	89
983401	Queen Street Bridge	QUEEN STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1970	7.3	20.4	1	6.7		9496	\$ 461,000	86
983502	Hunt Street Bridge	HUNT STREET, SIMCOE	Bridge	Rigid Frame, Vertical Legs	1967	7	14.3	1	6.1		488	\$ 336,000	86
983701	Swimming Pool Road Bridge	SWIMMING POOL COUNTY ROAD 37, WINDHAM	Bridge	I-Beam or Girders	1970	45.4	10.1	3	1 @ 18.7, 2 @ 13.0		1867	\$ 2,459,000	58
984101	Hillcrest Bridge	COUNTY ROAD 41 HILLCREST, CHARLOTTEVILLE	Culvert	Rectangular Culvert	2003	7	18	1	6		5552	\$ 420,000	94
984202	Port Royal Bridge	42 FRONT ROAD, SOUTH WALSINGHAM	Bridge	I-Beam or Girders	1969	45.4	11	3	2 @ 13.6, 1 @ 18.3		3006	\$ 2,503,000	61
984203	Dedrick Creek Bridge	MAIN STREET, PORT ROWAN	Bridge	Rigid Frame, Vertical Legs	1991	12.5	13.8	1	12.2		2238	\$ 671,000	87
984502	Deer Creek Dam	COUNTY ROAD 45, NORTH WALSINGHAM	Bridge	I-Beam or Girders	1969	17.1	9.1	1	16.5		353	\$ 908,000	61
984503	Road 45 Big Creek Bridge	COUNTY ROAD 45, NORTH WALSINGHAM	Bridge	Bailey Panel	1992	33.5	5	1	33.5	3	353	\$ 1,843,000	56
985701	Port Ryerse Bridge	PORT RYERSE ROAD, COUNTY ROAD 57, WOODHOUSE	Bridge	Undefined	2008	16.5	13	3	0		750	\$ 908,000	94
985901	Long Point Causeway Bridge	COUNTY HIGHWAY 59, SOUTH WALSINGHAM	Bridge	Undefined	1959	32.9	11.3	7	1 @ 4.1, 4 @ 4.9, 1 @ 4.8, 1 @ 4.4		3739	\$ 1,810,000	42
985902	Big Creek Bridge	COUNTY HIGHWAY 59, NORTH WALSINGHAM	Bridge	I-Beam or Girders	1959	57.1	10.7	3	3 @ 18.7		3055	\$ 3,086,000	64
986001	Venison Creek Bridge	COUNTY ROAD 60, CONCESSION 5 SOUTH, SOUTH WALSINGHAM	Bridge	Rigid Frame, Vertical Legs	1958	6.7	19.5	1	6.1		131	\$ 419,000	85
986002	Big Creek Concession 5 Road Overflow	CONCESSION 5 SOUTH, SOUTH WALSINGHAM	Bridge	Rigid Frame, Vertical Legs	1960	6.1	21.3	1	6.1		131	\$ 419,000	56
986003	Big Creek 5th Concession	COUNTY ROAD 60, CONCESSION 5 SOUTH, SOUTH WALSINGHAM	Bridge	Rigid Frame, Vertical Legs	1951	25	9.1	1	21.9		131	\$ 1,205,000	60
987404	987404	COUNTY ROAD 74, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	4.3	12.1	1	3.7		978	\$ 204,000	52
987405	County Road 70 Culvert	COUNTY ROAD 70, TOWNSEND	Culvert	Rigid Frame, Vertical Legs	1950	16.5	3.6	1	3.		978	\$ 216,000	69
987406	County Line Bridge	COUNTY LINE, TOWNSEND	Bridge	Circular Voided Slab	2015	12.9	9.9	1	11.4		978	\$ 627,000	95

STRUCTURE INVENTORY LIST

Site Number	Structure Name	Road Name	Bridge Type	Structure Type	Year Built	Total Deck Length	Overall Structure Width	Number of Spans	Span Lengths	Posted Load Limit	AADT	Estimated Replacement Cost	Estimated BCI
987407	987407	COUNTY LINE, TOWNSEND	Bridge	Rigid Frame, Vertical Legs	1960	4.3	18.5	1	3.7		978	\$ 254,000	88
002501-N	Fertilizer Road Culvert	FERTILIZER ROAD, WINDHAM	Culvert	Rigid Frame, Vertical Legs	1960	3.9	21	1	3.3		1390	\$ 234,000	45
D00001	Lot 11, Concession 1 Windham	BURFORD – DELHI TOWNLINE, WINDHAM	Bridge	Box Beams of Girders	1966	26	9.7	2	2 @ 12.6		535	\$ 1,386,000	88
D00002	Lot 22 Concession 1 Road	WINDHAM/NORWICH TOWNLINE ROAD, WINDHAM	Bridge	Rigid Frame, Vertical Legs	1970	11	20.1	2	2 @ 4.7		532	\$ 646,000	86
D00003	Lot 24 Concession 2 Windham	WINDHAM ROAD 19, WINDHAM	Bridge	I-Beam or Girders	1970	13.4	7	1	12.6		500	\$ 693,000	67
D00005	Lot 11 Concession 2 Road	CONCESSION 2 ROAD, WINDHAM	Bridge	Box Beams of Girders	1970	17.7	9.2	1	17.1		350	\$ 941,000	69
D00006	Lot 11 Concession Road 3	CONCESSION 3 ROAD, WINDHAM	Bridge	Half-Through Truss	1930	19.5	4.8	1	18.3	14 25 35	174	\$ 1,007,000	41
D00007	Lot 16 Concession 5-6	CONCESSION 6 ROAD, WINDHAM	Bridge	I-Beam or Girders	1971	17.8	8.8	1	17.0		135	\$ 935,000	86
D00009	Lot 18 -19 Concession 7 Windham	WINDHAM W. ¼ LINE ROAD, WINDHAM	Bridge	I-Beam or Girders	1970	25.7	10.1	1	25.		245	\$ 1,375,000	69
D00011	LaSalette Bridge	WINDHAM ROAD 8, WINDHAM	Bridge	I-Beam or Girders	1975	19.4	9.7	1	18.6		397	\$ 1,023,000	72
D00012	Meserole Bridge	WINDHAM ROAD 9, WINDHAM	Bridge	I-Beam or Girders	1992	30.2	6.2	1	27.8		200	\$ 1,529,000	76
D00013	Side Road Lot 22 Bridge	WINDHAM ROAD 19, WINDHAM	Bridge	Half-Through Truss	1930	15.5	4.2	1	15.0	3	77	\$ 825,000	41
D00016	Norwich Road Bridge	NORWICH ROAD, DELHI	Bridge	I-Beam or Girders	2011	28.3	8.8	1	27.1		71	\$ 1,491,000	95
D00018	Western Ave Bridge	WESTERN AVE., DELHI	Bridge	Rigid Frame, Vertical Legs	1960	21.5	11.7	1	18.3		2100	\$ 1,007,000	68
D00019	Lehman Bridge	WILLIAM STREET, DELHI	Bridge	Box Beams of Girders	1971	39.4	10.1	3	2 @ 11.0, 1 @ 16.0		575	\$ 2,090,000	65
D00020	Old Mill Road	OLD MILL ROAD, DELHI	Bridge	Rigid Frame, Vertical Legs	1975	10.7	10	1	9.1		63	\$ 501,000	72
D00022	East Street Underpass	EAST STREET, DELHI	Bridge	Solid Slab	1930	6.1	6.1	1	6.		225	\$ 330,000	39
D00023	Lot 20-21 Concession 4	WATER STREET, VITTORIA	Culvert	Rigid Frame, Vertical Legs	1966	10.3	20.2	2	2 @ 5.0		446	\$ 618,000	88
D00024	Vittoria Bridge	VITTORIA ROAD, CHARLOTTEVILLE	Bridge	T-Beam	1950	8.9	10.3	1	7.9		1081	\$ 435,000	91
D00025	Vittoria Dam	MILL POND ROAD, CHARLOTTEVILLE	Bridge	Solid Slab	1970	11.4	11.9	2	2 @ 5.0		58	\$ 550,000	63
D00026	Youngs Creek Twin Culverts	CHARLOTTEVILLE E.1/4 LINE ROAD, CHARLOTTEVILLE	Culvert	Round Culvert	1965	8.6	28	2	2 @ 4.3		800	\$ 516,000	86
D00027	Lynnville Road Bridge	LYNNVILLE ROAD, CONCESSION 11, WINDHAM	Bridge	Hybrid	1965	5.4	12.6	1	4.5		459	\$ 248,000	64
D00028	E1/4 Line Concession 10 Windham	EAST ¼ LINE ROAD, WINDHAM	Culvert	Rigid Frame, Vertical Legs	1975	5.3	17.5	1	4.6		438	\$ 318,000	90
D00030	Lot 18 Concession 5-6	CONCESSION 6 ROAD, WINDHAM	Culvert	Rigid Frame, Vertical Legs	1970	5.4	19.4	1	4.8		1350	\$ 324,000	71
D00031	Lot 18-19 Concession 5	WEST ¼ LINE ROAD, WINDHAM	Bridge	Rigid Frame, Vertical Legs	1970	6.5	22.3	1	5.7		245	\$ 392,000	71
D00032	Lot 20 Concession 4-5	CONCESSION 5 ROAD, WINDHAM	Bridge	Rigid Frame, Vertical Legs	1960	5	17	1	4.4		294	\$ 303,000	70
D00034	Lot 16 Concession 4-5 Charlottesville Culvert	CONCESSION 5 ROAD, CHARLOTTEVILLE	Culvert	Rigid Frame, Vertical Legs	1970	7.1	20.2	1	6.2		145	\$ 426,000	89
H000001	North Road Culvert	NORTH ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1950	21	6.7	1	6.1		353	\$ 402,000	80
H000002	Lot 2, Concession 6-7 Houghton	CONCESSION 6 – 7 ROAD, HOUGHTON	Culvert	Rigid Frame, Vertical Legs	1955	23.6	4.8	1	4.2		139	\$ 288,000	67

## APPENDIX C: PLANNING SCHEDULE

**G. DOUGLAS VALLEE LIMITED**  
**Consulting Engineers, Architects & Planners**

# PLANNING SCHEDULE

Priority Rank	Structure No.	Structure Name	Year Constructed	AADT	BCI	Recommended Work - Timeline	Current Capital Forecast Year	Cost Estimate		
								Professional Services	Construction Estimate	Associated Work and Contingency

**Removal Recommendations**

1	D00022	East Street Underpass	1930	225	39	1-5 Years	2026	\$	22,000	\$	60,000	\$	23,000	\$	105,000	
2	000103	Venison Creek Bridge	1920	0	41	1-5 Years		\$	25,000	\$	75,000	\$	25,000	\$	125,000	
3	000105	Big Creek Bridge Hazen Rd.	1920	0	38	1-5 Years		\$	25,000	\$	75,000	\$	25,000	\$	125,000	
								<b>SUBTOTAL</b>	\$	72,000	\$	210,000	\$	73,000	\$	355,000

**Replacement Recommendations**

1	965901	Long Point Causeway Bridge	1959	3739	42	1-5 Years	2024	\$	114,000	\$	1,800,000	\$	86,000	\$	2,000,000	
2	002501-N	Fertilizer Road Culvert	1960	1390	45	1-5 Years	2019	\$	47,500	\$	490,000	\$	22,500	\$	560,000	
3	967404	967404	1960	978	52	1-5 Years	2021	\$	64,100	\$	400,000	\$	35,900	\$	500,000	
4	000200	Lot 20 Concession 13 Road	1970	386	51	1-5 Years	2019	\$	50,000	\$	425,000	\$	20,000	\$	495,000	
5	964503	Road 45 Big Creek Bridge	1992	353	56	1-5 Years	2012	\$	170,000	\$	1,700,000	\$	215,000	\$	2,085,000	
6	D00006	Lot 11 Concession Road 3	1930	174	41	1-5 Years	2026	\$	130,500	\$	1,100,000	\$	29,500	\$	1,260,000	
7	002122	Dedrick Creek 4th Concession Bridge	1998	35	62	1-5 Years	2028 Proposed	\$	89,000	\$	350,000	\$	18,000	\$	457,000	
8	010038	Powers Bridge	1918	0	40	1-5 Years	2010	\$	80,000	\$	275,000	\$	30,000	\$	385,000	
9	000110	Big Creek Bridge Lot 9 Concession A	1920	0	38	1-5 Years	2013	\$	75,000	\$	950,000	\$	105,000	\$	985,000	
10	002113	Lot 9 Concession A-B Overflow	1919	0	38	1-5 Years	2013	\$	45,000	\$	400,000	\$	40,000	\$	485,000	
11	002114	Lot 9 Concession A-B	1919	0	40	1-5 Years	2013	\$	45,000	\$	400,000	\$	40,000	\$	485,000	
12	D00013	Side Road Lot 22 Bridge	1930	77	41	1-5 Years	2015	\$	110,000	\$	1,100,000	\$	50,000	\$	1,260,000	
13	010107	Gilbert Road Culvert	1940	45	42	1-5 Years	2019	\$	55,400	\$	460,000	\$	34,600	\$	550,000	
14	000023	Cedar Street Water & Wastewater Operation Yard Culvert A	Unknown	0	43	1-5 Years	2019	\$	10,000	\$	150,000	\$	10,000	\$	170,000	
15	970506	Cockshut Road Culvert	1957	2755	55	6-10 Years	2019	\$	54,400	\$	590,000	\$	20,600	\$	635,000	
16	962402	Bloomsburg Bridge	1950	2539	53	6-10 Years	2024	\$	77,000	\$	470,000	\$	53,000	\$	600,000	
17	002118	East 1/4 Line Culvert	1969	500	55	6-10 Years	2023	\$	71,000	\$	485,000	\$	19,000	\$	575,000	
18	002404	Lot 42 Concession Hill NTR Middleton	1962	138	61	6-10 Years	2026	\$	90,500	\$	650,000	\$	29,500	\$	770,000	
19	030050	Lot 20 Concession 12 Road	1970	36	56	6-10 Years	2028 Proposed	\$	89,000	\$	350,000	\$	18,000	\$	457,000	
20	002038	Graves Side Road Culvert	1975	18	65	6-10 Years		\$	50,000	\$	295,000	\$	15,000	\$	360,000	
								<b>SUBTOTAL</b>	\$	1,517,400	\$	12,810,000	\$	891,600	\$	15,074,000

**Major Rehabilitation Recommendations**

1	000014	Const. John Verral Bridge	1922	18636	47	1-5 Years	2020	\$	156,500	\$	2,800,000	\$	643,500	\$	3,600,000
2	000006	Norfolk Street Bridge	1958	9828	57	1-5 Years	2025	\$	82,000	\$	610,000	\$	38,000	\$	730,000
3	964202	Port Royal Bridge	1969	3005	61	1-5 Years	2024	\$	72,500	\$	640,000	\$	37,500	\$	750,000
4	961602	Big Creek Bridge	1968	2140	58	1-5 Years	2020	\$	61,700	\$	1,650,000	\$	36,300	\$	1,750,000
5	010054	East 1/4 Line Bridge Concession 3	1950	570	61	1-5 Years	2018	\$	52,000	\$	465,000	\$	23,000	\$	540,000
6	010049	Nanticoke Creek Bridge	1971	494	61	1-5 Years	2028 Proposed	\$	94,000	\$	725,000	\$	37,000	\$	856,000
7	D00011	La Salette Bridge	1975	397	72	1-5 Years	2018	\$	53,000	\$	560,000	\$	127,000	\$	740,000
8	010046	Lot 22 Concession 10 Road	1969	304	60	1-5 Years		\$	60,000	\$	550,000	\$	15,000	\$	625,000
9	010051	Lot 10 Concession 8 Road	1960	253	62	1-5 Years	2018	\$	52,000	\$	450,000	\$	18,000	\$	520,000
10	010052	Lot 9 Concession 8 Road	1958	253	59	1-5 Years	2022	\$	59,000	\$	415,000	\$	25,000	\$	500,000
11	000104	Big Creek Bridge Concession 6	1970	250	61	1-5 Years	2026	\$	82,000	\$	600,000	\$	38,000	\$	720,000
12	010086	Milk Factory Culvert	1960	209	60	1-5 Years	2027	\$	75,000	\$	450,000	\$	25,000	\$	550,000
13	965003	Big Creek 5th Concession	1951	131	60	1-5 Years	2025	\$	105,000	\$	1,500,000	\$	44,000	\$	1,650,000

# PLANNING SCHEDULE

Priority Rank	Structure No.	Structure Name	Year Constructed	AADT	BCI	Recommended Work - Timeline	Current Capital Forecast Year	Cost Estimate			Total Project Cost Estimate
								Professional Services	Construction Estimate	Associated Work and Contingency	
14	000303	Big Creek 8th Concession Bridge	1930	98	48	1-5 Years	2027 Proposed	\$ 147,500	\$ 1,300,000	\$ 37,000	\$ 1,484,500
15	988002	Big Creek Concession 5 Road Overflow	1960	131	56	1-5 Years	2027	\$ 75,000	\$ 500,000	\$ 25,000	\$ 600,000
16	000108	Big Creek Bridge	1972	84	62	1-5 Years	2026	\$ 82,000	\$ 600,000	\$ 38,000	\$ 720,000
17	010045	Lot 23 Concession 12 Road	1958	36	57	1-5 Years	2023	\$ 82,000	\$ 425,000	\$ 32,200	\$ 520,000
18	970502	Black Creek Culvert (Road 5)	1960	2942	66	6-10 Years	2022	\$ 59,100	\$ 367,000	\$ 23,900	\$ 450,000
19	D00003	Lot 24 Concession 2 Windham	1970	500	67	6-10 Years		\$ 60,000	\$ 575,000	\$ 15,000	\$ 650,000
20	010033	Dunn Bridge	1978	221	76	6-10 Years		\$ 60,000	\$ 425,000	\$ 15,000	\$ 500,000
<b>SUBTOTAL</b>								<b>\$ 1,552,100</b>	<b>\$ 15,607,000</b>	<b>\$ 1,296,400</b>	<b>\$ 18,455,500</b>

### Minor Rehabilitation Recommendations

1	000004	Victoria Street Bridge	1971	7263	63	1-5 Years		\$ 25,000	\$ 255,000	\$ 15,000	\$ 295,000
2	982404	Young Creek Bridge	1965	3145	80	1-5 Years		\$ 85,000	\$ 1,232,000	\$ 30,000	\$ 1,347,000
3	983701	Swimming Pool Road Bridge	1970	1867	58	1-5 Years	2022	\$ 82,000	\$ 740,000	\$ 28,000	\$ 850,000
4	000018	13th St West Arch	1955	1371	81	1-5 Years		\$ 25,000	\$ 140,000	\$ 10,000	\$ 175,000
5	000205	Lot 21-22 Concession 13	1970	1390	65	1-5 Years	2024	\$ 54,000	\$ 150,000	\$ 21,000	\$ 225,000
6	000305	Big Creek E1/4 Line Bridge	1960	730	59	1-5 Years		\$ 85,000	\$ 1,075,000	\$ 30,000	\$ 1,190,000
7	000005	Port Ryerse Culvert	1976	750	72	1-5 Years		\$ 20,000	\$ 76,000	\$ 5,000	\$ 101,000
8	010055	East 1/4 Line Bridge Concession 2	1960	506	62	1-5 Years		\$ 55,000	\$ 233,000	\$ 15,000	\$ 303,000
9	010064	Hay Creek Dam	1965	550	64	1-5 Years		\$ 20,000	\$ 71,000	\$ 5,000	\$ 96,000
10	D00027	Lynnville Road Bridge	1965	459	64	1-5 Years		\$ 20,000	\$ 69,000	\$ 5,000	\$ 94,000
11	000071	Lot 18-19 Concession 12 Townsend	1975	494	74	1-5 Years		\$ 20,000	\$ 49,000	\$ 5,000	\$ 74,000
12	984502	Deer Creek Dam	1969	353	61	1-5 Years		\$ 55,000	\$ 316,000	\$ 15,000	\$ 386,000
13	000204	Lot 17 Concession 4-5	1965	294	62	1-5 Years		\$ 20,000	\$ 84,000	\$ 10,000	\$ 114,000
14	000302	Lot 3 Concession 9 -10 N. Walsingham	1970	184	60	1-5 Years		\$ 25,000	\$ 124,000	\$ 10,000	\$ 159,000
15	974200	Houghton Lake Erie Culvert	2008	161	74	1-5 Years		\$ 20,000	\$ 27,000	\$ 5,000	\$ 52,000
16	974201	Clear Creek Culvert	1956	133	57	1-5 Years		\$ 25,000	\$ 229,000	\$ 15,000	\$ 269,000
17	D00012	Meserole Bridge	1962	200	76	1-5 Years		\$ 56,000	\$ 268,000	\$ 15,000	\$ 339,000
18	D00020	Old Mill Road	1975	63	72	1-5 Years		\$ 20,000	\$ 109,000	\$ 10,000	\$ 139,000
19	D00025	Victoria Dam	1970	58	63	1-5 Years		\$ 25,000	\$ 179,000	\$ 15,000	\$ 219,000
20	000007	Norfolk Street North Bridge	1958	9828	67	6-10 Years		\$ 25,000	\$ 125,000	\$ 10,000	\$ 160,000
21	010041	Blue Line Road Bridge	1971	4767	69	6-10 Years		\$ 55,000	\$ 249,000	\$ 15,000	\$ 319,000
22	973001	Otter Creek Culvert	1955	3730	62	6-10 Years		\$ 55,000	\$ 248,000	\$ 15,000	\$ 316,000
23	970302	Black Creek Structural Arch	1972	4247	71	6-10 Years		\$ 25,000	\$ 221,000	\$ 15,000	\$ 261,000
24	985902	Big Creek Bridge	1959	3055	64	6-10 Years		\$ 85,000	\$ 1,057,000	\$ 30,000	\$ 1,172,000
25	980501	Misner Dam Bridge	1970	3253	71	6-10 Years		\$ 55,000	\$ 414,000	\$ 15,000	\$ 484,000
26	980502	Townsend Centre Bridge	1968	2942	70	6-10 Years		\$ 25,000	\$ 181,000	\$ 15,000	\$ 221,000
27	980301	Wardle Bridge	1977	3137	78	6-10 Years		\$ 25,000	\$ 165,000	\$ 5,000	\$ 195,000
28	974001	14th Street West Culvert	1963	2461	68	6-10 Years		\$ 20,000	\$ 108,000	\$ 5,000	\$ 134,000
29	D00018	Western Ave Bridge	1960	2100	68	6-10 Years		\$ 55,000	\$ 265,000	\$ 15,000	\$ 335,000
30	971601	Dedrick Creek Culvert	1955	1953	67	6-10 Years		\$ 20,000	\$ 113,000	\$ 10,000	\$ 143,000
31	982101	Lynedoth Bridge	1957	1450	65	6-10 Years	2023	\$ 66,300	\$ 480,000	\$ 23,700	\$ 570,000
32	972402	County Road 24 Culvert	1990	1400	68	6-10 Years		\$ 20,000	\$ 111,000	\$ 5,000	\$ 136,000
33	D00030	Lot 18 Concession 5-6	1970	1350	71	6-10 Years		\$ 20,000	\$ 69,000	\$ 5,000	\$ 94,000
34	977401	Townline Road Culvert	1960	978	70	6-10 Years	2021	\$ 16,000	\$ 75,000	\$ 9,000	\$ 100,000
35	981901	Big Creek Bridge	1964	925	68	6-10 Years		\$ 56,000	\$ 266,000	\$ 15,000	\$ 336,000

# PLANNING SCHEDULE

Priority Rank	Structure No.	Structure Name	Year Constructed	AADT	BCI	Recommended Work - Timeline	Current Capital Forecast Year	Cost Estimate			Total Project Cost Estimate
								Professional Services	Construction Estimate	Associated Work and Contingency	
36	002124	Lot 14 Concession A-1	1966	620	70	6-10 Years		\$ 25,000	\$ 149,000	\$ 10,000	\$ 184,000
37	D00019	Lehman Bridge	1971	575	65	6-10 Years		\$ 75,000	\$ 665,000	\$ 20,000	\$ 760,000
38	982501	Teeterville Bridge	1971	508	71	6-10 Years		\$ 55,000	\$ 277,000	\$ 15,000	\$ 347,000
39	972101	Venison Creek Culvert	1960	392	70	6-10 Years		\$ 20,000	\$ 43,000	\$ 5,000	\$ 68,000
40	000013	First Avenue Bridge "Simcoe"	1959	345	67	6-10 Years		\$ 20,000	\$ 110,000	\$ 10,000	\$ 140,000
41	D00005	Lot 11 Concession 2 Road	1970	350	69	6-10 Years		\$ 25,000	\$ 259,000	\$ 15,000	\$ 299,000
42	D00032	Lot 20 Concession 4-5	1960	294	70	6-10 Years		\$ 20,000	\$ 87,000	\$ 5,000	\$ 92,000
43	002312	Lot 21 North Walsingham	1965	276	70	6-10 Years		\$ 20,000	\$ 39,000	\$ 5,000	\$ 64,000
44	000100	Big Creek Bridge	1961	241	66	6-10 Years		\$ 75,000	\$ 832,000	\$ 30,000	\$ 937,000
45	D00009	Lot 18 -19 Concession 7 Windham	1970	245	69	6-10 Years		\$ 55,000	\$ 368,000	\$ 15,000	\$ 438,000
46	D00031	Lot 18-19 Concession 5	1970	245	71	6-10 Years		\$ 20,000	\$ 88,000	\$ 5,000	\$ 113,000
47	010097	Lot 3 Concession 7 Road	1960	228	68	6-10 Years		\$ 25,000	\$ 177,000	\$ 15,000	\$ 217,000
48	002119	Lot 23 Concession 2-3 South Walsingham	1971	181	63	6-10 Years		\$ 20,000	\$ 61,000	\$ 10,000	\$ 91,000
49	002304	David Overbaugh Culvert	1967	178	68	6-10 Years		\$ 20,000	\$ 95,000	\$ 5,000	\$ 120,000
50	000107	Big Creek Lot 7 2nd Concession	1961	200	81	6-10 Years		\$ 55,000	\$ 317,000	\$ 15,000	\$ 387,000
51	H000002	Lot 2, Concession 6-7 Houghton	1955	139	67	6-10 Years		\$ 20,000	\$ 73,000	\$ 5,000	\$ 98,000
52	000101	Hosner Culvert	1964	81	66	6-10 Years		\$ 25,000	\$ 116,000	\$ 10,000	\$ 151,000
53	987405	County Road 70 Culvert	1950	978	69	Maintenance	2021	\$ 16,000	\$ 75,000	\$ 9,000	\$ 100,000
54	987407	987407	1960	978	88	Maintenance	2021	\$ 16,000	\$ 75,000	\$ 9,000	\$ 100,000
SUBTOTAL								\$ 1,965,300	\$ 13,478,000	\$ 684,700	\$ 16,128,000
<b>TOTAL</b>								<b>\$ 5,106,800</b>	<b>\$ 42,105,000</b>	<b>\$ 2,945,700</b>	<b>\$ 50,012,500</b>

## APPENDIX D: BRIDGE MANAGEMENT TABLES

**G. DOUGLAS VALLEE LIMITED**  
**Consulting Engineers, Architects & Planners**

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
<b>Urgent Needs</b>				
000022	Streams and Waterways		Bridge Cleaning	Fallen tree debris at inlet, removal required.
000111	Railing System	On Shoulder	Other Maintenance - Tighten Cables	Post, end fittings and splice. Cables are loose. Posts are splitting and leaning. 2 New barrier posts installed (2014).
000202	Streams and Waterways		Erosion Control at Bridges	Stream bank is stabilized at outlet with large concrete blocks. Riprap protection from roadway down to inlet. Severe erosion on North slope at asphalt spillway.
000203	Embankments		Erosion Control at Bridges	Erosion and undermining at Northwest and Southwest quadrants.
000401	Streams and Waterways		Animal Control, Erosion Protection	Somewhat overgrown. Beaver dam at mid-length. Inlet partially blocked by sandbar. Banks are steep and are eroding.
002106	Embankments		Erosion Control at Bridges	Moderate erosion at Southwest quadrant. Slope protection and regrading recommended at this area.
010037	Streams and Waterways		Other - Remove Tree Debris	Large amount of tree debris blocking West barrel. Recommend removing debris to avoid damming of stream.
010045	Wearing Surface	Top of Deck	Bridge Surface Repair	Spalling and patching at centreline construction joint. Moderate deterioration. Pothole in deck at East end. Pothole patching is deteriorated. Settlement at East structure edge. Very rough riding surface.
010064	Barrier/Parapet Walls		Bridge Railing System Maintenance	New chain link fence (2016). Corrosion on bridge barrier railing. Popout with exposed rebar on Northeast post. Mid rail on South retaining wall railing is broke. Repair asap.
030048	Embankments		Erosion Control at Bridges	Moderate erosion at North quadrants. Severe erosion at South quadrants.
972101	Embankments		Other - Repair slope and retaining wall.	Concrete block retaining wall at Northeast quadrant has failed. Slope at NE quadrant has eroded heavily and portion of asphalt shoulder has broken off. (2016) Wall at asphalt has been fixed. (2018) Steep slopes require additional slope and erosion protection.
972601	Streams and Waterways		Bridge Cleaning	Creek bank stable with minor erosion at quadrants. Some vegetation overgrowth should be cleared.
974200	Barrels	Inside	Repair to Structural Steel	Deformation & separation at north most joint, west wall. Deformation and movement at joints. Hole with rushing water through culvert plate at middle joint between sections. Water appears clear & buildup of chlorides. Monitor and repair hole. Deformation & surface corrosion of walls at South most joint. Moderate to severe corrosion typical on all joints.
980101	Drainage		Bridge Deck Drainage	Drains at ends of bridge.
981602	Drainage	Through Deck	Bridge Deck Drainage	Drains are corroded with holes at pipe outlets. Visible from beneath deck. Recommend repair lower portion of drains.
981901	Railing System	Top of Curb	Other	Surface corrosion at base of barrier rail posts. Broken panel at north barrier. Impact damage on SBGR at Southwest.
981907	Inlet Components	North	Other - Remove Debris at Inlet	Parging in lifting hooks failing. Build-up of debris in stream.
983701	Armouring/retaining devices	North and South	Bridge Joint Deck Repair	North and south side of joint system need sealing. Fascia and curbs are cracking and deteriorating at joints.
985901	Soffit Thin Slab		Other - Tighten Post Tension Cables	Bottom rods - pressure plates visible and in fair condition. Steel channels show surface corrosion on flanges. Difficult to observe due to post-tension components. Post tension cables are loose. Two loose deck slat at South span soffit by south abutment have dropped and are resting on tension rods. Two (2) loose deck slats at North span soffit by north abutment have dropped down. Slats at North area deflect when vehicle drives over bridge. Area corresponds with patched area on top deck surface. Tension rods area severely loose. 2 Broken deck slats in 2nd span from North have deformed. Limited inspection for centre spans.
987406	Wearing Surface (Approaches)		Bridge Surface Repair	Two cracks on north approach wearing surface. Transverse cracks at asphalt joints. Large pothole and alligator cracking in original asphalt south of structure.
D00020	Railing System	4 End Posts	Bridge and Handrail Maintenance	Approach barriers have substandard connection to parapet walls. Approach barrier is damaged at North ends (Northeast and Northwest).
D00027	Girders	In Mid -Section	Repair to Structural Steel	More rust and leakage from the top. Corrosion with loss of cross section throughout. Significant surface corrosion throughout. South beam is severely corroded, web and flange are in poor condition. Replace South beam as soon as possible.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
<b>Within 1 Year</b>				
000001	Armouring/retaining devices	North and South Ends	Bridge Cleaning	Joints filled with debris.
000002	Railing System	North and South	Bridge Railing Maintenance	Five barrier rail endcaps are missing.
000003	Abutment Walls	North and South Ends	Concrete Sealing	Two (2) moderate sized spalls on north fascia. Vertical cracks in abutment walls with evidence of leakage. Longitudinal centreline crack on soffit with patch. Minor hairline cracks throughout soffit.
000005	Abutment Walls		Bridge Concrete Repair	Minor cracks on abutment walls , some minor seepage.
	Soffit Thin Slab		Concrete Sealing	Includes: Deck wear surface sidewalks, parapet walls, end post - rails, drain, embankment approaches. Crack along South sidewalk half length of bridge. Crack along North sidewalk on East side. Crack and spalling at northwest endpost.
	Armouring/retaining devices	East and West	Bridge Deck Joint Repair	Settlement at east and west joints. East and west joints showing evidence of leakage. Debris in joints.
000006	Abutment Walls	North and South	Repair of Bridge Concrete	Hairline cracks throughout north and south walls. Spalling at bearing seats at north and south bearing seats. Patches and deterioration at abutment corners.
	Wingwalls		Repair of Bridge Concrete	Delamination and spalling at all four wingwall quadrants.
	Sidewalk	East Side	Repair of Bridge Concrete	Longitudinal cracking on sidewalk.
	Railing System	West Side/ Top of Deck	Repair of Bridge Concrete	
	Seals/Sealants	North and South Ends	Bridge Deck Joint Repair	Joints require debris removal. Deterioration of patches and settlement with potholes forming at north and south joints.
000007	Approaches Drainage (app)	North and South	Bridge Cleaning	Steel outlet drain with significant deterioration and concrete outlet drain at Northwest quadrant.
	Seals/Sealants	North and South Ends	Bridge Cleaning	Settlement and deterioration of patches at north and south expansion joints with debris.
000011	Barrier/Parapet Walls	Top of Sidewalk	Bridge Rail System Maintenance	New concrete barriers. Section of SBGR missing at southeast quadrant, to be repaired.
	Drainage	Through Deck	Bridge Cleaning	Deck drains packed with debris at inlets.
000013	Inlet Components	North End	Erosion Control at Bridges	Banks show signs of movement over time however look stable. Rubble retaining wall over hanging inlet.
000014	Wearing Surface (Approaches)	Top of Approach	Rout and Seal	Transverse crack in wearing surface at west approach.
000015	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Drain is good. Settlement at structure edges with map cracking in wearing surface.
	Inlet Components	North End	Erosion Control	Area between pipes should be sealed. Minor undermining on West barrel at inlet.
000016	Wearing Surface	Top of Deck	Rout and Seal	Transverse crack in wearing surface at south approach.
000018	Inlet Components	North End	Repair of Bridge Concrete	Repair head wall and wingwalls - urgent. Two large cracks. West wingwall has separated portion, deteriorated since last inspection.
000019	Wearing Surface (Approaches)	On Fill / Deck	Rout and Seal	Centreline crack and transverse cracks at both approaches in wearing surface.
000022	Approaches Drainage (app)	East and West Side	Repair of Bridge Concrete	Includes curb and sidewalk on east and west side. Small spalls along east curb. Medium size sinkhole forming on west paved shoulder between the road and sidewalk, hole approx. 450mm in diameter and 1m deep. CSP outlet drain at NW quadrant corroded at the bottom with section loss.
	Barrels	Inside Culvert	Concrete Sealing	Leakage on South wall at joint. Hairline cracks with leakage and chlorides on barrel walls.
000023	Wearing Surface	Top of Fill	Erosion Control at Bridges	Erosion of wearing surface at quadrants. Rutting noted on deck wearing surface.
000100	Wingwalls	East and West	Repair of Bridge Concrete	Delamination and spalling on SW wingwall. Chlorides on wingwalls. Cracking and areas of delamination on NW, NE & SW wingwalls.
	Seals/Sealants		Bridge Cleaning	Joints to be cleaned. Approach surface deteriorating and settling at joints. NE concrete fascia at joint is delaminating and spalling.
000101	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	Material is tar and chip. Transverse cracking along centre line of culvert. Longitudinal cracking.
	Barrels	North	Repair of Bridge Concrete	Limited inspection at centreline span due to water level. Delamination on north end soffit. Possible delamination on south end soffit.
000104	Approach Slabs (Approaches)	East and West	Bridge Surface Repair	Settlement on approaches. East approach patched. Asphalt surface is deteriorating at joints. No approach barriers Pot holes and cracking on approaches.
	Railing System	Top of Parapet	Bridge Railing System Maintenance	Repair top rail in NW quadrant. Impact damage. Surface corrosion on railing.
000106	Approach Slabs (Approaches)	East and West	Bridge Surface Repair	Tar and chip. No barriers at approach. Approaches settling at joints.
000107	Girders	Under Deck	Repair of Bridge Concrete	South girder at West bearing has a crack on the exterior and spall at bearing on interior. Spall on girder at Northeast bearing with exposed rebar.
	Deck Top	Top of Beams	Repair of Bridge Concrete	Hairline crack transverse counted (14) visible between beams. Fascia has localized areas of delamination and cracking at east abutment expansion joints. 5 areas of spalling on deck surface. One spalled area with exposed reinforcement.
000108	Abutment Walls	Abutments and Piers	Repair of Bridge Concrete	Staining on abutments and pier, evidence of leaking. Patch at Northwest abutment bearing is severely deteriorated with exposed rebar.
	Diaphragms	Midspan	Repair of Bridge Concrete	Cracking and delamination on East pier diaphragm.
	Girders	Centre Span	Repair of Bridge Concrete	Five (5) beams in centre span. Minor deterioration of beam at pier support at SW corner. Spalling and exposed rebar on underside of girder at Northeast bearing and 2nd from North at East bearing. Monitor bearings.
	Foundation (below ground level)		Erosion Control at Bridges	Exposed at east abutment. Footing at East abutment wall should be filled to protect footing and piling from frost. Erosion at footing.
	Armouring/retaining devices	Abutments and Piers	Bridge Cleaning	Angles have minor damage at approaches. Hairline cracks in West end dam. Evidence of leakage on ballast walls - possibly prior to last rehab - monitor. Joints full of debris.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
000110	Streams and Waterways		Erosion Control at Bridges	The east abutment interferes with the stream flow.
	Foundation (below ground level)		Erosion Control at Bridges	East footing is completely eroded on creek side. Wooden piles visible. Load bearing deficient. West footing not visible.
000111	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Cracking and deterioration at edge of structure. Settlement at edges of structure.
	Inlet Components	Top of Culvert	Repair of Bridge Concrete	Exposed rebar and delaminations. Parging is deteriorating at box joints.
	Outlet Components	Top of Culvert	Repair of Bridge Concrete	Exposed rebar and delaminations. Parging is deteriorating at box joints.
	Embankments		Erosion Control at Bridges	Inlet and outlet protection at structure edges required. Realign stream to inside of box to prevent erosion at box end units. Erosion present at quadrants.
000112	Outlet Components	South	Repair of Bridge Concrete	Area of delamination on outlet fascia. Tree resting on outlet. Cracking, stalactites and staining evident at fascia on barrel walls at centre support.
	Embankments		Erosion Control at Bridges	Moderate erosion at Northeast quadrant. Light erosion at Southwest quadrant. Concrete slope protection at Northwest quadrant.
000205	Barrels		Concrete Sealing	Cracking and efflorescence in walls at both ends. Honeycombing near bottom of walls in several locations.
000302	Posts		Erosion Control at Bridges	North guide rail leaning outward. Single cable guide rail at North. Three cable guide rail at South has loose cables. Posts are rotting. Broken posts at North. North barrier failed.
	Barrels	Inside	Bridge Railing System Maintenance	Limited inspection due to access. (2016) Surface rust visible at water level and at various locations at bolts (2018). Multi-Plate connection showing signs of corrosion and leakage.
	Outlet Components		Animal/Pest Control	Limited inspection due to access. Clear vegetation. (2016)
	Embankments		Erosion Control at Bridges	Slope protected with masonry rubble - failing at curb stop.
000305	Drainage	Through Deck	Bridge Cleaning	Some drains plugged with debris.
	Seals/Sealants		Bridge Cleaning	Some deterioration and minor spalling of concrete on top of joints both east and west. Debris in seals.
000306	Soffit Thin Slab	Full Span	Repair of Bridge Concrete	Includes fascia. Cracking & delamination on South fascia at West bearing. Plastic rebar chair exposed.
	Streams and Waterways		Erosion Control at Bridge	Severe erosion at west pier. Erosion control needs to be installed.
002030	Streams and Waterways		Erosion Control at Bridges	Banks stable. Erosion on northeast quadrant deteriorating road. Minor undermining of asphalt wearing surface at northeast quadrant.
002031	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	No signs or barriers. Transverse cracks and settlement at structure edges.
	Barrels	Inside	Concrete Sealing	Approximately 1.5m of deck top visible at each end. Vertical cracks in barrel walls throughout.
	Streams and Waterways		Other - Clear Overgrowth	Banks stable. Clear overgrowth/grub for drainage.
002033	Outlet Components	East	Repair of Bridge Concrete	Minor crack at construction joint on southeast corner. Clearing of overgrowth required. Chloride staining and wet on soffit.
002034	Outlet Components		Repair of Bridge Concrete	Slopes stable. Minor spalling on southeast face.
002038	Outlet Components		Erosion Control at Bridges	Inlet and outlet showing bottom plate on arch. Protection required. Clear vegetation and blockage. Poor erosion control at inlet and outlet. Undermining at outlet, culvert is sagging at outlet.
	Inlet Components		Erosion Control at Bridges	Inlet and outlet showing bottom plate on arch. Protection required. Poor erosion control at inlet and outlet.
	Streams and Waterways		Erosion Control at Bridges	Banks stable but steep. Rip-rap failing. Clear blockage at inlet and outlet. Undermining of embankment at culvert outlet, Southwest bank.
002106	Barrels		Repair of Bridge Concrete	Honeycombing at footing construction joint. Deterioration at construction joint.
002107	Inlet Components		Erosion Control at Bridges	Clear vegetation. Overgrown. Culvert in undermined at inlet wingwalls.
	Embankments		Erosion Control at Bridges	Slope protection is failing at outlet. Erosion at southwest quadrant. Overgrown. Light erosion at Northeast road slope.
002118	Streams and Waterways		Erosion Control at Bridges	The stream needs significant riprap protection at outlet. Bank is eroded. Erosion at outlet quadrants.
002120	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Surface has rutting and small pothole at edge. Polishing of road surface at edges. Settlement at road edges at culvert. Longitudinal centreline crack and transverse cracks.
	Inlet Components	East End	Erosion Control at Bridges	
	Streams and Waterways		Erosion Control at Bridges	Vegetation growing at culvert inlet. Minor erosion at quadrants and build up of streambed material along North wall.
002122	Deck Top		Bridge Cleaning - Remove fill from deck	Surface is covered with soil along centreline with rutting. Deck boards warped at ends. Broken deck boards (four) at Northwest and Southwest quadrants. Substandard barriers on structure.
002124	Wearing Surface (Approaches)	Over Culvert	Rout and Seal	Deep cracking throughout. Areas of settlement. Large rut in North shoulder near culvert.
002302	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Longitudinal crack in East bound lane. Transverse cracks throughout wearing surface. Erosion of North ditch off wearing surface.
	Embankments		Erosion Control at Bridges	Stone retaining walls at quadrants are deteriorating. Erosion evident.
002303	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	Catch basins at road edges west of culvert in fair condition. Transverse crack on wearing surface from catch basin to catch basin. No signs. Wearing surface polished and cracked along centreline of culvert.
	Railing System	Both Sides	Bridge Railing System Maintenance	Guide rails are loose on both sides. Guide rail leaning outward. Silt build-up along edges of road.
002312	Wearing Surface (Approaches)	Top of Fill	Bridge Deck Drainage	Roadway surface shows transverse cracking throughout. Large patch on north side of road. Patch rides rough. Surface is polished.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
002403	Wearing Surface (Approaches)	Top of Fill	Rout and Seal, Bridge Surface Repair	No signs or barriers. Numerous transverse cracks and potholes.
	Barrels	Inside	Repair of Bridge Concrete	Localized cracks and deterioration underneath drain outlets. Culvert soffit and walls showing condensation. Exposed rebar on south haunch near inlet.
	Inlet Components	East	Repair of Bridge Concrete	Trees growing on top of culvert end. Deterioration of culvert wall at footing (Southwest corner). Chlorides and efflorescence at top Southwest corner.
	Streams and Waterways		Erosion Control at Bridges	Very steep. Scour / erosion at inlet on north corner.
002404	Barrels	Inside	Other Maintenance: Remove Tree	Plates deflecting, needs a more detailed investigation. (2012) Limited inspection due to water level (2014, 2016,2018). Tree has fallen at outlet.
002423	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Includes: Signs - no signs, Barriers - no barriers. Minor transverse cracks in asphalt and alligator cracks along west edge of road.
	Outlet Components		Erosion Control	CSP cut diagonally to suit embankment slope, minor undermining.
	Inlet Components		Erosion Control	CSP cut diagonally to suit embankment slope, minor undermining.
	Streams and Waterways		Erosion Control	Banks are stable but steep, protected with riprap. Minor erosion and undermining at northwest quadrant.
002426	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Transverse cracks in road surface. Surface is polished. No barriers or signs.
002429	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Map cracking throughout wearing surface. Pothole on North approach. Rutting on wearing surface.
002436	Wearing Surface (Approaches)	Top of Fill	Other Maintenance	No Signs. Barrier is 3-cable guide rail and is loose with parts leaning away from road at Northeast. Slopes are stable except for minor erosion at northwest quadrant.
010034	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Potholes throughout gravel wearing surface. No guide rail and hazard signs.
010035	Drainage	Through Curbs	Bridge Cleaning	Drains have significant surface corrosion. Debris build-up at drains.
	Seals/Sealants	East and West Ends	Bridge Cleaning	Armoured compressed expansion joints. Minor deterioration and spalling of concrete on top of joints both east and west. Joints packed in areas with debris. Joints may be leaking - evidence on abutment wall - monitor.
010036	Approach Slabs (Approaches)	North and South Ends	Bridge Surface Repair	Tar and chip surfaces. Large pothole at North joint. Settlement and rough surface over joints. Tar and chip extends over joints.
	Embankments		Erosion Control at Bridges	Moderate to severe erosion at Northeast quadrant. Light erosion at remaining quadrants.
010040	Approach Slabs (Approaches)	East and West	Rout and Seal	Storm sewer outlets on east and west side. Transverse crack in wearing surface at east approach slab (end of slab).
	Soffit Thin Slab	Underside	Concrete Sealing	Tar and chip cracking at all quadrants above wingwalls with leakage/efflorescence.
	Sidewalk and Medians	North Side	Concrete Sealing	Transverse cracks in sidewalk located at deck ends.
010041	Barrier/Parapet Walls		Bridge deck joint repair	Joint seals at quadrants have holes. Replace joint seals.
	Drainage		Bridge Deck Drainage	Drains outlet directly onto girders. Extend drains to avoid deterioration of girders.
	Embankments		Erosion Control at Bridges	Stream underpasses the bridge against South abutment. Moderate erosion at Northeast quadrant. Light erosion at Northwest quadrant.
010043	Wearing Surface (Approaches)		Bridge Surface Repair	Potholes on approach wearing surface.
	Railing System		Bridge Railing System Maintenance	Three (3) broken guide rail posts on North guide rail.
	Deck Top		Repair of Bridge Concrete	Approximately 3.5m exposed each end. Minor impact damage on north and south fascia. Installation damage. Minor loss of parging at northwest quadrant
	Wearing Surface		Bridge Surface Repair	No hazard signage at approaches. Potholes on deck wearing surface.
010045	Drainage	Through Deck	Bridge Cleaning	Visible damage to soffit drains, extend or replace. Unclog drains.
	Streams and Waterways		Erosion Control at Bridges	Banks are vegetated. Light erosion at quadrants.
010046	Drainage	Through Abutment/Walls	Bridge Cleaning	Deck drains are plugged with debris.
	Wearing Surface	Top of Deck	Repair of Bridge Concrete	Seal or waterproof deck surface and pave. Cracks/joints between girders on top deck have been routed and sealed. Seals are damaged and missing on two North most joints. Spalling and deterioration at joints. Approximately 25% of deck area is delaminated.
	Seals/Sealants	East and West Ends	Bridge Cleaning	Seals are full of debris.
010048	Wingwalls	All 4 Quadrants	Concrete Sealing	Narrow vertical cracks on fascia at bearings.
	Wearing Surface (Approaches)	Top of Approaches	Rout and Seal	One longitudinal crack on west approach. Two longitudinal cracks on East approach.
010049	Drainage	Through Abutment	Bridge Cleaning	Drains are plugged at inlets. Drains are severely corroded at outlets with holes. Concrete delamination and chlorides around outlets. Deterioration of surface at drain inlets.
010050	Embankments		Erosion Control at Bridges	Moderate erosion at Northwest quadrant.
010053	Railing System	Top of Culvert	Rout and Seal	No hazard signs. Transverse crack in wearing surface.
	Outlet Components	South	Repair of Bridge Concrete	Minor scaling on culvert tops. Parging deteriorated on South outlet.
	Inlet Components	North	Repair of Bridge Concrete	Minor scaling on culvert tops.
010054	Wingwalls	North and South	Bridge Concrete Repair	Wingwalls cracking away from structure. Lots of efflorescence. Large spall on northeast wingwall.
	Curb/Gutters	East and West	Bridge Concrete Repair	Curb showing deterioration.
	Drainage	Through Deck	Bridge Deck Drainage	Pipes too short. Extend.
	Soffit Thin Slab		Repair of Bridge Concrete	Scattered honeycombing throughout due to poor pouring of concrete. Several narrow cracks and efflorescence. Localized spalling and exposed rebar. Recommend DCS.
	Wearing Surface	Top of Deck	Repair of Bridge Concrete	Deck only visible at curbs and what is visible is deteriorating. Longitudinal crack in asphalt near east end. Cracking and slight settlement on joints. 8" of deck asphalt.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
010055	Wingwalls	North and South	Bridge Concrete Repair	Minor spalling and efflorescence. Northwest wingwall has minor spall and deterioration.
	Wearing Surface (app)	Top of Deck	Rout and Seal	Transverse crack at South approach. Settlement at structure edges. Two transverse cracks on North approaches. Minor rutting and polishing.
	Soffit Thick slab		Bridge Concrete Repair	Narrow cracks along length of soffit. Cold joint on south abutment. Deterioration and leaking from deck drains on soffit.
	Wearing Surface	Top of Deck	Bridge Concrete Repair	There is approx. 0.3m of asphalt on top of deck. Deck top is only visible at curb edge. The asphalt doesn't extend to edge of road, leaving a drop off on the edge of the road.
010056	Wearing Surface	Top of Deck	Bridge Cleaning	New concrete deck overlay, waterproofing and paving completed 2016. Debris on deck surface.
010057	Railing System		Bridge Railing System Maintenance	Southwest softstop attenuator leaning away from last post.
	Wearing Surface	Top of Road	Bridge Cleaning	HL3 wearing surface on waterproofing. Debris at edges of deck wearing surface.
010063	Inlet Components	North End	Repair of Bridge Concrete	Delamination and scaling on topside. Large spall and exposed rebar on North fascia.
	Embankments		Bridge Cleaning	Lots of dead brush and overgrowth on and at the inlet/outlet ends of the culvert.
	Sign		Other Maintenance	Hazard signs missing at all corners. Reflectors on North side of the road.
010068	Railing System	North and South Side	Bridge Railing System Maintenance	Consider installing attenuators. Some posts are cracked and have splits. One post on the North side is missing.
010078	Wingwalls	North End	Repair of Bridge Concrete	Localized spalls. Deterioration at construction joint at Northeast wingwall.
010080	Railing System	North and South	Bridge Railing System Maintenance	Cables are loose.
010092	Wearing Surface	Top of Deck	Rout and Seal	New wearing surface in 2016. Settlement at structure edges. Transverse cracks at structure edges.
010093	Barrels		Repair of Bridge Concrete	Patching on walls at footings and drains. Honeycombing throughout entire culvert due to poor pouring. Spalling in central soffit. Apparent cold joint on culvert walls.
	Inlet Components		Repair of Bridge Concrete	Scaling, cracking and minor spalls.
	Streams and Waterways		Erosion Control at Bridges	Erosion at East quadrant at inlet & outlet.
	Foundation (below ground level)	Below Walls	Repair of Bridge Concrete	Rock in place on stream bottom. Small spalls on footings. Light concrete erosion at edges of footings. Scaling on top of footings. Severe at drains.
010096	Wearing Surface (Approaches)	Top of Deck	Bridge Surface Repair	No signs, no barriers. Settlement at structure edges with transverse cracking and longitudinal cracks. Alligator cracking at East road edge.
010098	Outlet Components	South	Erosion Control at Bridges	Moderate to severe scaling on south fascia. Overgrown.
	Inlet Components	North	Erosion Control at Bridges	Damaged utility casing on North fascia damaged. Erosion at inlet quadrants. Moderate scaling on fascia.
	Deck Top	North and South Ends	Repair of Bridge Concrete	Moderate to severe scaling at ends.
010100	Wearing Surface (Approaches)	Top of Culvert	Bridge Surface Repair	Surface is polished and cracking at structure edges. (E&W) Settlement at structure edges.
	Outlet Components	South	Repair of Bridge Concrete	Delamination occurring at SE corner with efflorescence.
	Inlet Components	North	Repair of Bridge Concrete	Delamination occurring at NW corner with efflorescence. (Exterior and interior wall).
010101	Wearing Surface (Approaches)	Top of Road	Bridge Surface Repair	Includes: Roadway slopes (grass), (no signs, no barriers). Asphalt is polished. Settlement at structure edges.
010107	Outlet Components	East	Erosion Control At Bridge	Scour noted under both wingwalls. Deterioration on Southeast wingwalls at stream elevation. Bottom slab is undermined at outlet. Water drops 1ft into stream. Stream has scoured to 3ft depth at outlet. Slopes are steep and unstable.
	Wearing Surface		Rout & Seal	Patches on deck. Asphalt padded at road edges. Longitudinal cracks in new asphalt.
	Embankments		Erosion Control at Bridge	Some overgrowth at inlet. Slopes are steep and unstable at quadrants and at ends of culvert at road level.
030001	Wearing Surface (Approaches)	On Fill	Bridge Railing Maintenance	Some previous patching. Minor transverse cracking at structure edge. guide rail posts present on West side of road without cable.
030002	Wearing Surface (Approaches)	Over Culvert	Bridge Surface Repair	Potholes in East approach wearing surface.
030005	Inlet Components		Repair of Bridge Concrete	Spalling beginning on North concrete collar. Suspect water damage from drains.
030050	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	No barrier, no hazard signs. Potholes and rough riding surface.
030055	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Tar and Chip resurface since last inspection. Transverse crack at structure edge. No hazard signs.
	Inlet Components		Erosion Control at Bridges	Light erosion at inlet quadrants.
030200	Deck Top	North End	Repair of Bridge Concrete	All of visible deck top and fascia is deteriorated.
	Streams and Waterways		Erosion Control at Bridges	Moderate erosion at all quadrants.
030201	Embankments		Erosion Control at Bridges	Vegetated and stable overall. Moderate erosion at Northwest corner. Stream aligned to Northwest Corner of culvert. Suspect cause of erosion.
120000	Deck Top		Bridge Surface Repair	Deterioration to deck top, exposed concrete deck. Pot holes forming throughout deck.
970302	Railing System		Bridge Railing System Maintenance	Multiple broken guide rail posts.
970501	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Transverse and Longitudinal cracks in wearing surface.
	Railing Systems	East and West	Other: Tighten guide rail Cables	Steel posts and beam on SE side. Wood posts and 3 cable system on west side and NE. Cables on NE guide rail are loose. No hazard signs at approaches.
970502	Posts		Bridge Railing System Maintenance	Minor deterioration. Cables are corroded. West cables above culvert are low.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
970503	Approaches Drainage (app)	East/West Shoulder	Erosion Control at Bridge	Small drains present from shoulders to ditch. CSP drains are in fair condition. Filled with debris. Erosion at drain in East shoulder North of culvert.
	Outlet Components	East	Repair of Bridge Concrete	Cracking, staining, and efflorescence on East soffit at outlet.
970507	Railing System	East and West Side	Bridge Railing System Maintenance	Middle cable is corroded. Slope settling on east side, causing barrier to slide down. One post at east has settled severely. West barrier beginning to slide down as well.
	Inlet Components	West Side	Bridge Cleaning	Rubble falling down slopes and is starting to build up at inlet. Slope sliding over culvert end.
	Embankments		Erosion Control at Bridges	New slope protection added to top portion of slope. Slope appears to continue to erode. Erosion at all quadrants.
970901	Barrels	Inside	Repair of Bridge Concrete	Narrow vertical cracks in extended barrel walls. North end is an extension to the original culvert. Severe scaling throughout original section.
970902	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	There are no signs or barriers. Transverse and map cracking on wearing surface at culvert in East bound lane.
	Barrels		Concrete Sealing	Mid section is frame - extensions are rigid. Localized cracks with evidence of leakage and efflorescence. Leakage and efflorescence at joints. Vertical crack in West wall with staining.
	Foundation (below ground level)	Top of Rock	Repair of Bridge Concrete	Footing at Southeast and Northwest corner are spalled and breaking apart. Some undermining in midsection. Footings are on bedrock. (2012). Spalling on East footing at South culvert joint.
971903	Outlet Components		Repair of Bridge Concrete	Deterioration evident (minor). Deterioration of parging between joints.
	Inlet Components		Concrete Sealing	Light deterioration, efflorescence, cracking and small spall. Deterioration of parging between joints.
972001	Wingwalls		Concrete Sealing	Wingwalls show cracking and efflorescence.
	Approach Slabs (Approaches)	East and West	Other Maintenance	Collision damage at Northwest end of barrier.
	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Map cracking. Asphalt separating and potholes forming at North West and South East corners.
972401	Wearing Surface (Approaches)	Top of Road	Rout and Seal	New surface in 2003. Sealed transverse crack along on west approach. One transverse crack 5 m East of culvert in East bound lane. Wide longitudinal crack along centreline road.
	Embankments		Other - Debris Removal	East and West banks around culvert good. Streambed material build up on east wall. No barriers or hazard signs. Swale at Northeast quadrant. Light erosion at quadrants.
972601	Wearing Surface (Approaches)	Top of Fill	Bridge Railing System Maintenance	Three (3) wire Loose guide rail cables. Some broken cable clamps. Minor Impact damage noted at west.
972802	Outlet Components	East End	Other - Debris Removal	Tree debris blocking stream at outlet.
972803	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No signs or barriers. Map and alligator cracking throughout wearing surface. Some polishing.
973501	Barrels	Inside	Repair of Bridge Concrete	Includes top of deck 2.0 m visible, each side. Weathering. Staining at drains. Some staining and leakage with chlorides at joints.
	Streams and Waterways		Erosion Control at Bridges	Redirection of stream at inlet required to eliminate potential deterioration and undermining of East walls. Erosion at southeast quadrant.
973801	Barrels	Inside	Bridge Concrete Repair	Minor deterioration, staining and hairline cracking at wall drain outlets. Deterioration on east wall at midspan construction joint. Drains appear to be clogged. Limited inspection due to high water level. (2018)
	Inlet Components		Erosion Control, Remove Blockage	Inlet partially blocked by debris and wire fence. Minor erosion at both quadrants. Limited inspection due to high water level. (2018)
	Streams and Waterways		Erosion Control at Bridges	Banks are stable.
974001	Barrels	Inside	Bridge Cleaning	Some localized cracking with leakage & chlorides. Staining at drain outlet, drain outlets blocked with debris.
	Outlet Components	South End	Repair of Bridge Concrete	Delamination and spalling of walls. Severe on South East walls. Visible leakage & chlorides.
974002	Barrels	East and West Walls	Repair to Structural Steel	Some perforations (4) in south plate. More holes visible just below water level. Minor surface corrosion throughout at waterline. Some efflorescence at multi-plate joint near inlet.
	Inlet Components	North and South Ends	Erosion Control at Bridges	
975901	Barrels	Inside	Concrete Sealing	Top of deck visible for 0.6m at each end. Minor crack noted along south haunch at west end. (2016) Limited inspection due to high water level. (2018)
980101	Approach Slabs (Approaches)	East and West	Bridge Surface Repair	First 5m off bridge repaired in 2012. Cracking settling on repaired portion of approach wearing surfaces. Approaches poor beyond. Potholes forming at East approach.
	Wearing Surface	Top of Deck	Rout & Seal	New in 2012. Centreline crack on deck wearing surface full length of deck.
980301	Seals/Sealants	Both Ends of Deck	Bridge deck joint repair	Deterioration at joints. Plate and expandex type joints. (Asphaltic plug joint system). Joints appear to be leaking at North and South ends (staining on abutment walls). No seal in barrier joint.
980501	Approach Slabs (Approaches)	North and South Ends	Repair of Bridge Concrete	Includes wearing surface, sidewalk and curb and gutter. Asphalt deterioration at South joint.
	Seals/Sealants	North and South End of Deck	Bridge Cleaning	Both joints packed with debris.
980503	Barrels	Interior	Repair of Bridge Concrete	Wide crack in North abutment of original structure at Northeast. Walls of midsection are deteriorating, especially at bottom of South Wall. Concrete erosion on South wall. Midsection consists of walls and beams. Outside section are rigid frame. Joint between culvert ends and original bridge is leaking. Staining at joints between culvert ends and original bridge.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
980903	Wearing Surface (Approaches)	Top of Fill	Rout and Seal - Bridge Surface Repair	Asphalt surface is settling at armour angles. Asphalt has been patched. Longitudinal and transverse cracks on wearing surface.
	Barrier/Parapet Walls	North and South Sides	Concrete Sealing	Includes: inside and outside faces. Vertical hairline cracks
	Wearing Surface	Top of Concrete Deck	Bridge Surface Repair	Major deck rehabilitation in 2000. Work on surface completed in 2001. Potholes at East joint on deck. Longitudinal crack at centreline and transverse cracks in East bound lane.
	Embankments	The Boston Creek	Erosion Control at Bridges	Erosion at Northeast quadrant. Asphalt broken at corner.
981602	Diaphragms	Between Beams	Repair of Bridge Concrete	Two (2) cracks noted at south abutment.
981603	Wearing Surface (Approaches)	North and South of Culvert	Rout & Seal	No signs or barriers. Difficult to locate. New wearing surface 2014. Transverse crack in wearing surface at South side of culvert.
	Outlet Components	West End	Repair of Bridge Concrete	Bell cable in stream bed - protection required. Gas line present. Small chip at Southwest corners.
981901	Armouring/retaining devices	N & S	Bridge Cleaning	Recently cleaned. Joints filling with debris.
981902	Inlet Components		Repair of Bridge Concrete	Light scaling and surface cracking. Parged joint between culverts is deteriorating.
	Outlet Components		Repair of Bridge Concrete	Light scaling and surface cracking. Parged joint between culverts is deteriorating. Small spalls on culvert fascia.
981904	Abutment Walls		Concrete Sealing	3 narrow, vertical cracks in both abutment walls. Crack in East abutment has efflorescence.
	Soffit Thin Slab		Concrete Sealing	Small hairline cracking throughout soffit. Crack with efflorescence on NE corner. Vertical crack on Northeast and Southeast fascia with efflorescence.
	Wearing Surface	Top of Deck	Bridge Surface Repair	Localized cracking at expansion joints and along centreline of road. Deterioration at armour angles. Minor. Cracking on asphalt approach surfaces. Pothole on East approach. Settlement on both expansion joints.
	Seals/Sealants	Expansion Joint at West End	Bridge Cleaning and Concrete Sealing	Expansion joint at West. End dam at East (pinned). East dam has 3 cracks. Joints full of debris.
981905	Inlet Components		Other - Remove Debris	Tree debris stuck at South barrel at inlet.
981907	Barrels		Other Maintenance - Parge Joints	Joint parging failing with signs of leakage and chlorides. Light staining at drains.
982101	Wearing Surface (Approaches)		Rout & Seal	Cracking at bridge deck joints (2014). Settlement at approaches has been patched. Cracks at joints partially paved over. Longitudinal and alligator cracking in East approach. Rout & Seal.
	Railing System	Top of Curb	Bridge Railing System Maintenance	Includes flex beam system on approaches. Four (4) hazard markers present. Missing barrier anchor nuts on north side (2 posts), south side (1 post).
982401	Abutment Walls	North and South	Concrete Sealing	Included abutment seats (10) concrete. Graffiti on abutment faces. A few vertical hairline cracks in each abutment wall. Typical cracks in bearing pedestals.
	Slope Protection	Between Abutment and Pier	Repair of Bridge Concrete	Gabion baskets at foot of North slope protection slab. Localized cracking and heaving of concrete slabs. Graffiti. Medium cracks in south and north retaining wall at bottom of slope protection slabs. Medium cracks in south and large crack in north retaining curb at bottom of slope protection slab. Slight separation between abutment walls and retaining walls (failure of seal).
982402	Wearing Surface	Top of Deck	Bridge Surface Repair	Settlement at structure edges. centreline crack in wearing surface. Transverse cracking at edges of structure. Cracking throughout approach wearing surface.
	Embankments		Erosion Control at Bridges	Moderate erosion at Southwest quadrant and Northwest quadrants. Asphalt broken away at Southwest quadrant. Light erosion at East quadrants at upstream structure.
982404	Soffit Thin Slab		Repair of Bridge Concrete	Spalling with exposed rebar at three areas in Southeast bay. Narrow cracking at localized are on mid span soffit with efflorescence.
	Armouring/retaining devices	Exp. Joints at N and S	Bridge Cleaning	Some previous repair work is evident. Curb spalling and deteriorating at joints. Joint seals are full of debris.
982501	Barrier/Parapet Walls	E & W	Other Maintenance	Improper connection to bridge top barrier. Cables are loose. A number of posts are rotting.
	Drainage	Through Deck	Other Maintenance	Corroded at bottom ends. Drain length extended. Drains plugged. Corroded.
	Concrete End Dams	Expansion Joints at N and S Ends	Bridge Cleaning	Minor deterioration of concrete at joints on curbs and fascia. Deterioration of asphalt at joints. Joints contain debris.
982801	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Cracking through surface. Drainage to open ditches and slopes are stable.
983401	Embankments		Erosion Control at Bridges	Stone retaining walls. Erosion and undermining beginning at southeast retaining wall as well as cracking and separating, needs repair.
983502	Embankments		Bridge Cleaning	Banks stable. Tree debris at inlet.
983701	Abutment Walls	North and South	Concrete Sealing	Slopes between abutment walls and piers stable. Abutment wall patches delaminating and spalling.
	Wearing Surface (Approaches)	North and South	Rout and Seal	New asphalt wearing surface. (2018) Asphalt beginning to crack at joints.
	Girders	Below Deck	Bridge Bearing Maintenance	Beams at north end are cracking and spalling above bearing. Cracking and spalling of beam at seat at quadrants.
984202	Abutment Walls	E & W	Repair of Bridge Concrete	Repairs required on east abutment, north end due to delamination and spalling. Minor cracking and staining throughout. Spall with exposed rebar at southeast abutment.
	Wearing Surface (Approaches)	E & W	Rout and Seal	New asphalt surface in 2010. Paved over joints cracked. Deteriorating pot hole forming.
	Railing System	Approaches	Bridge Railing System Maintenance	Impact damage at Northeast guide rail.
	Wearing Surface	Top of Deck	Rout and Seal	Asphalt paved in 2010 over expansion joints deteriorating. Rout and Seal

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
984203	Barrier/Parapet Walls		Repair of Bridge Concrete	Vertical cracks throughout with localized spalling and delamination of parged surface. Localized area of exposed rebar at top of parapet wall.
	Wearing Surface		Rout & Seal	Roadway recently repaved. Many cracks have been rout & sealed. Transverse crack on deck to be rout and sealed.
	Curbs	North and South	Repair of Bridge Concrete	Narrow to medium localized transverse cracks. Remove and replace 1.5m of concrete sidewalk at each end of deck and replace to correct elevation difference. Asphalt ramps to structure sidewalk are deteriorating. Delamination and spalling at deck drains.
984502	Wearing Surface (Approaches)		Bridge Surface Repair	Wide centreline crack on approaches. Settlement and map cracking on approaches at joints.
	Deck Top		Rout & Seal	Wearing surface included. Deck not visible due to wearing surface. Wide centreline crack in deck asphalt. Four (4) metal deck drains in good condition. Recommend DCS.
984503	Embankments		Erosion Control at Bridges	East embankment is eroding.
985901	Wearing Surface (Approaches)	North and South	Bridge Surface Repair	Deep cracking of asphalt at approaches. Moderate settlement at structure edges. Patched with cold patch.
	Streams and Waterways	Big Creek	Erosion Control at Bridges	Washout at northeast wall.
985902	Barrier/Parapet Walls	East	Repair of Bridge Concrete	Cracks throughout, honeycombing noted. Some patches from previous rehab are cracking. Localized area of deterioration on east barrier wall.
	Armouring/retaining devices	Pier and Abutments	Bridge Cleaning	Joints filled with debris. Some corrosion showing on armour over pier. Two end joints removed and paved over. Spall on South pier end dam. Expansion joints above piers appear to be leaking. Monitor piers for deterioration.
986001	Embankments	Venison Creek	Erosion Control at Bridges	Improve drainage. Clear Vegetation, add slope protection on banks. Overgrown.
986003	Railing System	Side of Bridge	Bridge Railing System Maintenance	Damaged connection plate on bridge railing.
	Wearing Surface	Top of Deck	Bridge Surface Repair	Cracking at joints. Pot hole at West by joint.
987404	Barrels		Repair of Bridge Concrete	Barrel joints are leaking and presence of efflorescence and stalactites. Soffit is delaminating and spalling. Area exposed rebar on soffit of original section at Southeast and Northeast. Significant spall midspan needs to be monitored.
	Outlet Components	East End	Repair of Bridge Concrete	Moderate scaling. Spalling at southeast corner.
	Inlet Components	West End	Repair of Bridge Concrete	Moderate scaling. Light spalling at northwest corner.
	Embankments		Erosion Control at Bridges	Light erosion at quadrants.
987405	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Road slopes. (no signs- no barriers). Cracking and rutting on approaches. (severe at road edges). Transverse crack 2 m South of structure with settlement.
	Barrels	Inside	Repair of Bridge Concrete	Inlet-outlet (square). Scaling. Cold joints. Honeycombing typical on culvert walls. Some leakage on the South wall.
987407	Barrels	Top of Barrel	Bridge Concrete Repair	Honeycombing and scaling on barrel walls typical.
	Wearing Surface	Top of Fill	Bridge Surface Repair	50 mm settlement and cracking at approaches of structure. Cracking on surface.
	Embankments		Erosion Control at Bridges	Light erosion at quadrants.
002501-N	Wearing Surface	Top of Deck	Rout and Seal	Cracking along centreline of culvert and cracking at structure edges.
D00001	Drainage	Through Deck	Bridge Cleaning	
D00002	Embankments		Erosion Control at Bridges	Erosion at northeast and southwest quadrants.
D00016	Girders	North and South	Painting steel bridge structures	WWF1200x263 cast integral into abutment and composite with deck. Light rust visible in small spots at bottom flange of girders and also at welded splices.
D00018	Abutment Walls	North and South	Concrete Sealing	Several narrow cracks in South abutment wall. Large crack on retaining wall on northwest quadrant.
	Deck Top	North and South	Concrete Sealing	Cracking of asphalt at end dams. New water main hangers in 2001 on west side. Evidence of repair work on east and west fascia. Localized cracking on fascia. Concrete barriers and sidewalks have narrow vertical cracks throughout.
D00019	Curb / Gutters		Concrete Patch	End of sidewalk at northwest corner should be marked. Roadway slopes are stable. Localized damage to curbs at corners. Exposed rebar on Northwest sidewalk. East sidewalk damaged at joints.
	Deck Top	Top	Concrete Sealing	New deck bare concrete. Transverse map cracking at abutment and pier joints. Three hairline longitudinal cracks throughout. Medium transverse cracks at both piers. Longitudinal cracking at centreline running entire span of bridge.
D00023	Inlet Components	West	Bridge Cleaning	North box not functional, filled with 0.4m of sand. Acts as overflow in current state.
D00025	Approach Slabs (Approaches)	N and S End	Erosion Control at Bridges	Northeast and northwest quadrants are eroding.
	Barrier/Parapet Walls		Bridge Railing Maintenance	One-cable guide rail at SE quadrant only. Current cable is very loose.
D00026	Railing System	E and W	Bridge Railing Maintenance	Cables missing from guide rail. No hazard signs.
D00030	Barrels		Concrete Sealing	Cracks in soffit near centre of barrel. Beginning to spall at second crack near midspan; formed with efflorescence. Cracking down walls of barrel near soffit cracks. Narrow crack at haunch of inlet.
H000001	Barrels	Inside	Repair of Bridge Concrete	Some original honeycomb in north wall. Leaking evident. Localized honeycombing throughout. Original forming paper deteriorating on soffit.
	Outlet Components		Repair of Bridge Concrete	Approximately 40% of soffit is delaminated at outlet. Stalactites on soffit. Scaling on top exposed surfaces.
	Inlet Components		Repair of Bridge Concrete	Approximately 40% of soffit is delaminated at inlet. Stalactites on soffit. Large spall on top edge. Scaling on top exposed surfaces.
H000002	Outlet Components		Repair of Bridge Concrete	Spalling and deteriorated concrete below headwall. Cracking and spalling on outlet with efflorescence. Stalactites noted on soffit. Slopes are stable.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
<b>Within 2 Years</b>				
000001	Abutment Walls	E and W	Concrete Sealing	Includes: abutment walls (2), wingwalls (4), seats (10), ballast wall visible between beams. Water leak/infiltration evident on abutment walls. Four (4) vertical cracks with efflorescence in West abutment. Four (4) vertical cracks in East abutment. Vertical crack in Southwest wingwall.
	Wearing Surface (Approaches)	Before Approach	Bridge Surface Repair	Slope stable grassed. Wearing surface has settled at expansion joints. Pothole on East approach.
	Barrier/Parapet Walls	North and South	Repair of Bridge Concrete	North side - parapet wall on sidewalk. South side - Jersey wall on deck. South face of sidewalk showing water/stop should be parged. Spalling underneath approach barrier wall on Southwest quadrant. Steel railing good shape, minor surface corrosion.
	Wearing Surface	Top of Deck	Repair of Bridge Concrete	Sidewalk and curb spalling at various locations.
000002	Abutment Walls	E & W of River	Repair of Bridge Concrete	Concrete patches on west abutment. Honeycombing throughout. Deterioration at construction joints. Deterioration under abutment drains. Scaling and narrow cracking typical at all wingwalls around joint. Half of patch on Northeast wingwall has failed.
	Soffit Thin Slab	Above River	Repair of Bridge Concrete	Cracks along centreline road on soffit have been patched during 2007 rehab. Narrow cracking starting at south fascia.
	Wearing Surface	Top of Deck	Rout and Seal	Settlement (slight) at West approach. Minor settlement at East joint. Longitudinal crack in asphalt wearing surface approx. 2m long.
000003	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Deterioration in wearing surface with potholes at east and west approaches. Deterioration in existing patches at west approach.
	Wearing Surface	Top of Concrete Deck	Rout and Seal	Settlement and displacement at both expansion joints. Longitudinal centreline crack on deck wearing surface.
000004	Soffit Thick slab	N and S side	Repair of Bridge Concrete	Three(3) large spalls along the south fascia with exposed rebar. Spalls and delamination at the SE, SW and NW quadrants. Limited inspection due to access.
	Wearing Surface		Rout and Seal	Cracking along centreline of road.
000006	Wearing Surface	Top of Deck	Rout and Seal	Deterioration of patches and settlement with potholes forming at north and south joints. Longitudinal and transverse cracking in wearing surface.
000008	Wearing Surface	Top of Deck	Rout and Seal	Longitudinal and transverse cracking in wearing surface.
000009	Barrels	Inside	Concrete Sealing	Hairline cracking with leakage and chlorides on soffit and barrel walls.
	Wearing Surface	Top of Deck	Rout and Seal	Thin asphalt layer over approaches and deck. Approx. 40cm of exposed concrete deck at edges. Transverse cracks in wearing surface at joints with settlement. Transverse and longitudinal cracks in deck wearing surface.
000010	Inlet Components		Repair of Bridge Concrete	Small localized spalls on north fascia at construction joint. Fallen tree and debris at inlet.
	Deck Top	Soffit	Concrete Sealing	Localized transverse cracks with efflorescence throughout soffit.
000011	Wearing Surface	Top of Concrete Deck	Rout and Seal	
000014	Armouring/retaining devices	East and West	Bridge Cleaning, Joint Repair	East and west expansion joints packed with debris. Damaged armour angles at southeast and northeast, with rubber membrane exposed at southwest. Settlement in wearing surface east and west joints.
000016	Barrels	Soffit and Walls	Concrete Sealing	Existing patchwork in good condition. Hairline cracks and some localized efflorescence present. Small debris buildup in barrel.
000017	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair / Rout and Seal	Surface shows cracks and settlement at structure edges. Alligator/map cracking at East of culvert edge.
	Barrels	North and South	Concrete Sealing	Fine crack in soffit, may need Deck Condition Survey. Localized vertical cracking in barrel walls with evidence of leakage. Cracking with efflorescence on exterior northwest corner.
000018	Wearing Surface (app)	Top of Fill	Rout and Seal / Bridge Surface Repair	Settlement at quadrants. Transverse cracking in wearing surface above culvert. Deterioration of edges of wearing surface.
000020	Wingwalls	East and West of Creek. Includes Headwall	Concrete Sealing	Includes retaining walls at southeast. All hairline cracks extending from corner of culvert at northwest, and vertical hairline shrinkage cracks with efflorescence on north fascia.
	Barrels	Inside	Other Maintenance - Parging	Includes inlet and outlet. Parging failing. Some joint leakage with chlorides.
	Wearing Surface	Top of Deck	Rout and Seal	Two longitudinal cracks in wearing surface.
000021	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	No barrier, No signs. Longitudinal & transverse cracking throughout wearing surface with potholes beginning to form.
000100	Structural Steel		Paint Steel Structure, Repair to Steel	Centre span coating deteriorating. East pier coating deteriorating.
	Streams and Waterways		Erosion Control at Bridges	Banks are stable. Poor drainage. Area of scour at North side of West pier.
000102	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	No signs, no barriers. Transverse cracks at structure edges.
	Outlet Components	South End	Bridge Concrete Repair	Minor deterioration at southeast on top of culvert and wall. Minor deterioration at construction joint. Small spall on East exterior wall.
	Embankments		Erosion Control at Bridge	Minor erosion at North quadrants. New riprap slope protection at South quadrants.
000103	Deck Top	Top of Deck	Concrete Sealing	Leaks into beams. DST evident.
	Bottom Chords		Repair to Structural Steel	Road closed. Corroded with section loss up to 100% through on several areas - estimate 50% loss.
000106	Drainage	Through Deck	Other - Extended deck drains.	Galvanized good condition. Leaking onto beams underneath. Drain extensions required to avoid damage to girders. One drain is damaged at top grate.
000107	Ballast Walls	E & W	Repair of Bridge Concrete	Minor repairs needed at road level - snow plow damage.
	Approaches Drainage (app)	On Approach	Bridge Surface Repair	Bleeding evident at centreline. Asphalt padded in joint. Deteriorating at abutment/ballast end dam. Settlement at both approaches.
	Soffit Thin Slab		Repair of Bridge Concrete	Transverse cracks on soffit with efflorescence.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
000108	Approach Slabs (Approaches)		Rout and Seal, Bridge Surface Repair	East approach has settled & has been patched. West approach paved in 2014.
	Railing System		Painting Steel Bridge Structures	Has been repaired. Some corrosion is reoccurring at welds. Surface corrosion on some posts.
	Soffit Thin Slab		Repair of Bridge Concrete	Includes fascia. Minor deterioration of fascia above west pier on south side. Existing patches on soffit in good condition.
000113	Streams and Waterways		Erosion Control at Bridges	Light erosion at quadrants.
000200	Outlet Components	West	Erosion Control at Bridges	Two short galvanized steel retaining walls. Erosion behind retaining walls.
	Inlet Components	East	Erosion Control at Bridges	Two short galvanized steel retaining walls. Scouring of bank at East end. Erosion behind retaining walls.
000203	Wearing Surface (Approaches)	Top of Deck	Rout and Seal	Two (2) posts with hazard signs. Surface showing rutting, should be patched up. Settlement at edges and cracking on approaches. Pothole forming at south edge of wearing surface.
	Barrels	Inside	Repair of Bridge Concrete	Efflorescence visible at south end midwall face. Includes inlet and outlet. Limited inspection of West barrel due to water level. Hairline vertical cracking at East wall and central wall near South end. Honeycombing at bottom of East wall, at centre of box.
	Outlet Components		Repair of Bridge Concrete	Delamination and efflorescence at centre wall of outlet.
000205	Outlet Components	West	Erosion Control	Outlet needs riprap protection to reduce scour at outfall. Bottom corners of outlet deteriorated. SW wall of exposed end has delaminated and popped (+/- 1sq.m)
000206	Wearing Surface (Approaches)	Top of Deck	Bridge Surface Repair	Surface shows polishing and transverse cracks at approach joints. Settlement at structure ends. Edges of wearing surface showing signs of deterioration.
	Inlet Components	North End	Repair of Bridge Concrete	Delamination and deterioration at northwest quadrant. Staining and spalling. Minor cracking on soffit.
	Deck Top		Repair of Bridge Concrete	Northwest corner needs repair as it has delaminated and spalled. Only 1.0 m of deck visible at north and south ends.
000301	Wearing Surface (Approaches)	Top of Culvert	Rout and Seal	No signs or barriers. Minor polishing. Transverse crack at West structure edge.
000303	Bottom Chords		Painting Steel Bridge Structures	Corrosion throughout. Lower gusset plates noted with severe corrosion & holes. Loss of cross-sectional area of bottom chord at NE bearing. Local bucking of bottom chord at Southwest corner. Severe corrosion and loss of material on outside 'L' of bottom chord at Northwest corner. Monitor.
002024	Inlet Components		Bridge Cleaning	Clear vegetation. Gas attached to north face. Includes outlet.
002030	Railing System		Bridge Railing System Maintenance	Cables loose, one (1) broken/rotted post noted on southwest near culvert inlet. Many cracked and rotted posts. Guide rail is overgrown. (2016) Many leaning posts typical throughout. (2018)
002033	Streams and Waterways		Erosion Control at Bridges	Minor erosion at quadrants.
002035	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No signs or barriers. Roadside ditches. Transverse cracks in wearing surface. Surface polished.
002106	Foundation (below ground level)		Repair of Bridge Concrete	The footings are visible throughout - the waterbed is 0.6m below top of footings. Minor deterioration and standing water on footings. Minor deterioration at joint between wall and footing. Small spall on West footing.
002113	Wingwalls	Each End	Repair of Bridge Concrete	0.4m above road.
	Barrier System on Walls	N & S	Repair of Bridge Concrete	No guide rail on approaches.
002118	Wearing Surface (Approaches)		Rout & Seal	No hazard signs or barriers. Light cracking throughout. Transverse cracks.
002119	Embankments		Erosion Control at Bridges	Minor erosion at wingwalls.
002436	Barrels		Concrete Sealing	Light vertical cracking on walls with staining and leaking evident at approximately 16 locations. Crack on South wall extending onto soffit with chlorides. Two narrow transverse cracks in soffit of barrel.
	Outlet Components		Concrete Sealing/Waterproofing	Minor deterioration of construction joint on northwest exterior wall.
010032	Inlet Components	North End	Repair of Bridge Concrete	Deterioration of parging.
	Outlet Components	South End	Repair of Bridge Concrete	Vertical crack between outlet boxes (parging). Deterioration of parging. Utility cable hanging from outlet due to broken utility bracket. Exposed rebar at Southeast corner.
010033	Barrier/Parapet Walls	North and South Sides	Repair of Bridge Concrete	Cracking and spalling of parapet walls at joints on interior and exterior face. Cable hanging from north wall not attached.
	Soffit Thick slab		Repair of Bridge Concrete	Includes: Both walls and underside of deck and wingwalls. Localized areas of deterioration with chlorides on southeast and southwest fascia. Crack on west soffit with visible chlorides.
	Streams and Waterways		Erosion Control at Bridges	Light erosion at quadrants.
010034	Barrels		Repair of Bridge Concrete	Vertical crack in centre barrel wall at west end with leakage and chlorides. Vertical crack in both faces of wall. Three hairline vertical cracks in centre wall, South face. Deterioration below drains in north barrel.
	Inlet Components	West End	Repair of Bridge Concrete	Minor cracking and delamination on soffit.
	Outlet Components	South End	Repair of Bridge Concrete	Delamination with chlorides on southeast and northeast corners and on east fascia.
010035	Abutment Walls	End of Each Slab	Concrete Sealing	Narrow vertical cracks on both abutment walls. Cracks on wingwalls at North bearings.
	Approach Slabs (Approaches)	East and West	Bridge Surface Repair	No approach barriers. Settlement and patching at joints.
	Girders	Above Water	Repair of Bridge Concrete	Leaking between girders at joints with chlorides. Chloride deposits on East bearing at abutment. Small 0.5 sq. m delamination on soffit. Crack on soffit at west bearing. Light cracking noted on bearing pads.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
010036	Abutment Walls	North and South Ends	Concrete Sealing	Crack on North abutment at 2nd bearing seat from West. Crack on South abutment at West corner at water level.
	Drainage	At Curb Line	Bridge Cleaning	Ends of deck drains are corroded.
	Deck Top	Top of Beams	Bridge Cleaning	Exposed concrete deck. Clean debris off of surface edges. Small pothole forming on deck. Hairline cracks on deck.
010037	Inlet Components		Repair of Bridge Concrete	Inlet is protected with ice breaking nose between culverts. Ice break nose has minor cracking and efflorescence. Contains delamination around steel culvert and spalling at the water level. Inspection limited to above waterline.
	Outlet Components		Repair of Bridge Concrete	Contains delamination around steel culvert and spalling at the water level. Inspection limited to above waterline.
010039	Wearing Surface (Approaches)		Rout and Seal	Wearing surface has cracks & patching along expansion joints. Asphalt deterioration at East expansion joint.
	Railing System	North and South	Repair of Bridge Concrete	Southwest railing cap missing. Various small areas of impact damage and areas with exposed reinforcement. Localized areas of small spalls and cracking on curbs.
	Deck Top	Top of girders	Bridge Concrete Repair	Super-elevated to south. Exposed concrete deck, two spalls patched with asphalt and one small spall near East end of deck.
	Slope Protections	North and south	Erosion Control at Bridge	Regrade slopes to drain away from wingwall tops. - Suspected cause of deterioration of quadrants.
	Seals/Sealants	East and West End of Deck	Bridge deck joint repair	Joints are armoured compression - need cleaning of debris. Concrete deteriorated at joints, curb and parapet. Wearing surface is cracking at joints. Joint seals are slightly separating in small localized areas on both approaches.
010040	Foundation (below ground level)	Under Abutment	Repair of Bridge Concrete	Spread footings on rock (partially visible). Vertical rebar extending past footings. Light deterioration (concrete erosion) on West footing.
010041	Wearing Surface (Approaches)		Bridge Surface Repair	Asphalt cracking. Four (4) cracks at joints. Patched pothole at south approach joint. Transverse cracking and settlement at north and south approaches.
	Soffit Thin Slab	Underside of Deck	Concrete Sealing	Multiple localized cracks, seepage and efflorescence evident. Cracks on soffit are near abutments at deck corners.
	Wearing Surface	Top of Deck	Rout and Seal	Small pothole at North and at centreline. Settlement and cracking at joints.
010047	Wearing Surface (Approaches)	East and West	Rout and Seal	centreline crack on East approach wearing surface. Settlement and cracking at East approach joint.
	Soffit Thin Slab	North and South Fascia	Bridge Cleaning	Visible hairline cracking on fascia.
010048	Soffit Thin Slab	Underside	Concrete Sealing	Cracks with efflorescence at all corners on fascia at abutment wall.
010050	Wearing Surface (Approaches)	Top of Fill	Bridge Structure Repair	Tar and Chip resurfaced since last inspection. Slight settlement at structure edges.
010051	Deck Top	Between Curb and Pavement	Bridge Cleaning	Only visible on edges. Pot holes to concrete. Spall in the sidedam at the southwest quadrant with exposed rebar. Debris and aggregate on deck edges.
010052	Abutment Walls		Repair of Bridge Concrete	Longitudinal crack on South East and South West abutment. Honeycombing throughout. Scaling at localized areas.
	Approaches Drainage (app)	4 Quadrants	Bridge Cleaning	Grade and pave to direct water away from deck. Drains are cast in concrete curbs.
	Wearing Surface (Approaches)	Top of Road	Repair of Bridge Surface	New surface required. Transverse cracks and potholes on West approach. No guide rail on approaches. Transverse cracks and patching at East approach.
	Deck Top	Abut to Abutment	Concrete Sealing	Rigid frame includes North and South fascia. Crack on South fascia.
010055	Drainage	East and West	Bridge Deck Drainage	Drain pipes are too short - allows water and salt to migrate onto deck underside. Extend.
010063	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No hazard markers & barriers. centreline crack on wearing surface.
	Barrels	Inside	Repair of Bridge Concrete	Spalls at North and South end - top slab. Small delamination at mid-soffit on East side.
	Outlet Components	South End	Repair of Bridge Concrete	Some scaling and spalling at top fascia. Chlorides and stalactites. Gas line on outlet fascia.
010065	Wearing Surface (Approaches)	North and South Ends	Rout & Seal	Narrow longitudinal cracks on South approach.
	Barrels	Inside	Other Maintenance - Parging of Joints	Parging failing at joints. Joints are stained and leaking. Hairline cracks on two precast section walls.
	Inlet Components	East End	Repair of Bridge Concrete	Impact damage on fascia due to construction
	Outlet Components	West End	Repair of Bridge Concrete	Impact damage on fascia due to construction
010068	Barrels	Inside	Repair of Bridge Concrete	Outside visible deck top, bottom and walls. Several spalls on soffit at box joints. Installation damage. One (1) spall has exposed rebar at south joint. Some water damage at bottom of culvert boxes underneath plugged drains.
	Embankments		Erosion Control at Bridges	Stream has sharp bend at inlet protected by large concrete blocks. Light erosion at Southwest quadrant.
010069	Outlet Components	South End	Other Maintenance - Parging	Parging failing at outlet exterior joint.
010078	Outlet Components	South	Repair of Bridge Concrete	Utility line on face has been damaged due to damaged pipe casing. Localized spalling and moderate deterioration.
010084	Embankments		Erosion Control at Bridges	Light erosion at quadrants.
010093	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Tar and Chip resurfaced since last inspection. Light settlement at structure edges.
010096	Embankments		Erosion Control at Bridges	Light erosion at quadrants.
010097	Wearing Surface (Approaches)	Top of Deck	Bridge Surface Repair	Level approach. Surface is polished with settlement at edges of culvert.
	Outlet Components	South	Repair of Bridge Concrete	Surface cracking. Cracking on midwall at outlet. Chlorides.
010101	Barrels	Inside	Concrete Sealing	Narrow cracks near centre. Showing leakage. (minor)

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
030005	Approaches Drainage (app)	Through Barrier	Bridge Cleaning	Replace damaged pipe on SE side. Debris at drains.
	Barrier/Parapet Walls	N and S Top on Fill	Repair of Bridge Concrete	Narrow and hairline cracking in both North and South barrier walls. Localized spalls (0.1x0.3) on top flange of barrier walls.
	Outlet Components		Repair of Bridge Concrete	Outlet has low concrete dam to hold back & regulate flow. Concrete collars & short corrugated steel retaining walls at inlet & outlet protect toe of fill.
	Embankments	On Culvert	Erosion Control at Bridge	Light erosion at quadrants.
030043	Barrels	Interior	Repair of Bridge Concrete	Walls are in good condition. Parging is failing. Culvert is leaking at joints. Staining & chlorides at drains. Small Hairline cracking with leakage on soffit. Light deterioration at precast joints. Small spall of soffit at north joint.
030048	Barrels	Interior	Concrete Sealing	Top of deck only visible from 0.30m at north end. Scaling inside and cracking at localized areas on east and west walls. Leaking at cold joints.
030056	Embankments		Erosion Control at Bridge.	Erosion at Northwest corner. Slope protection present.
970301	Barrels	Inside	Concrete Sealing	Vertical narrow cracks at most drain outlets in walls. Wall leak in Northeast barrel. Chloride staining below drains. A few vertical cracks in barrel walls. Scaling and honeycombing at base of walls at South end.
	Inlet Components	North End	Repair of Bridge Concrete	Delamination beginning on soffit. Inlet partially blocked by brush.
	Embankments		Erosion Control at Bridges	Moderate erosion at Northeast quadrant.
970302	Wingwalls	Four (4) Quadrants	Repair of Bridge Concrete	All four (4) retaining walls show significant delamination and spalling, exposed reinforcement and leakage. North wingwalls have corrosion at bottom flange.
	Wearing Surface (Approaches)	Top of Culvert	Rout and Seal	Multiple longitudinal and transverse cracks in wearing surface. Area of minor settlement above culvert at transverse crack.
	Inlet Components		Repair to Structural Steel	Angle connection (steel to footing) is corroded and may require replacement in the next few years. Monitor.
	Outlet Components		Repair to Structural Steel	Angle connection (steel to footing) is corroded and may require replacement in the next few years. Monitor.
970501	Outlet Components	East	Concrete Sealing	Soffit shows efflorescence along crack at end. Timber retaining walls at east side are showing failure. Drain pipe outlets at culvert outlet.
	Inlet Components	West	Concrete Sealing	Soffit shows efflorescence along crack at ends.
970504	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Slopes are grass covered and stable. Transverse crack and minor settlement in asphalt at North structure edge. Rout and sealing is wearing.
	Inlet Components	West End	Repair of Bridge Concrete	Delamination and deterioration. Localized honeycombing. Spalling on southwest corner with exposed rebar.
	Outlet Components	South End	Repair of Bridge Concrete	Delamination and efflorescence at southeast corner. Crack at southeast outside corner.
970505	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Settlement at structure edge with transverse cracks. One crack has been sealed.
	Barrels	Inside	Concrete Sealing	Leaking at cold joints. There is a bulge at mid-span in north wall (pour defect during construction) and leaking (approximately 2m long and 1.2m high). South wall construction joint is leaking.
	Embankments		Erosion Control at Bridges	Grassed waterway. Light erosion at all quadrants.
970506	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No guard rails/posts or hazard signs. Longitudinal cracking at edges and centreline of wearing surface. Transverse cracking throughout. Area of settlement in South bound lane.
	Foundation (below ground level)	Between Walls	Repair of Bridge Concrete	Localized deteriorated section with large spall on South foundation.
970901	Wearing Surface		Rout and Seal	Resurfaced with asphalt. Transverse and longitudinal cracks in wearing surface at culvert.
971001	Wearing Surface (Approaches)		Rout and Seal	Hazard signs are missing at north and south end of approaches. Settlement and cracking of wearing surface near structure edges.
	Barrels		Concrete Sealing	Deterioration and spalling at drains. Exposed rebar at a few drains. Narrow vertical cracks appear in three places on walls and soffit of barrel, at construction joints. Evidence of leaking at cracks. Exposed ties on soffit.
	Inlet Components	West End	Erosion Control at Bridges	Moderate erosion at quadrants. Efflorescence and staining at both Northwest and Southwest quadrants of inlet.
971601	Inlet Components	East	Repair of Bridge Concrete, Erosion Control	Deterioration of fascia. Efflorescence and spalling present. Slope above culvert is eroding. Overgrown.
	Outlet Components	West	Bridge Concrete Repair	Severe deterioration and delamination. Utility cable present on fascia. Half of cable conduit is missing. Slope above culvert is eroding.
971902	Wearing Surface (Approaches)	Top of Road	Rout and Seal	Asphalt slopes are stable. One (1) transverse crack on the west approach.
	Streams and Waterways		Erosion Control at Bridges	Concrete rubble on east approach quad. Erosion control at all quadrants required.
971903	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	No barriers, or signs. Edges of road patched and regraded. Minor erosion evident at south edge of wearing surface. Longitudinal crack in South lane.
972401	Barrels		Repair of Bridge Concrete	Joints at barrel extensions have minor deterioration. Joints are leaking. Spall at North culvert joint at West wall.
972402	Wingwalls	4 Corners	Repair of Bridge Concrete	Wingwalls are not attached to the box culvert and retaining wall. Southwest wingwall shifted about 75mm. Delamination (1m) on both SW and NW wall. NW wall showing spalling and efflorescence at waterline. Area of delamination on Southeast wingwall.
972801	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Transverse and longitudinal cracking. Minor polishing beginning.
972802	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Cracking in surface. Drainage is in open ditches. Slopes are stable.
973001	Wearing Surface (Approaches)	Top of Fill	Install Signage	No signs. New asphalt wearing surface and three-cable guide rail (2016). Minor erosion of gravel shoulder at southwest approach.
973501	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	Transverse cracks in wearing surface at joints.
974001	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No signs - reflectors on posts. Transverse cracks in wearing surface at edge of structure. Longitudinal crack in wearing surface.

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Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
974201	Streams and Waterways		Erosion Control at Bridges	Slopes stable overall. Northwest quadrant shows signs of sliding/erosion.
974202	Embankments		Erosion Control at Bridges	Minor scour and erosion at ends of culvert.
974203	Wearing Surface (Approaches)	Top of Fill	Rout and Seal	No barrier or hazard signs. Surface has been repaved since 2014 inspection. Minor crack in asphalt at centreline road.
	Inlet Components	North	Repair of Bridge Concrete	Corrosion on walls. Concrete collar is deteriorating at North.
	Embankments		Erosion Control at Bridges	Scour and erosion at ends of culvert. Overgrown
974204	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	Transverse crack in wearing surface in West bound lane.
	Railing System	North & South	Other - Tighten Cables	North guide rail cables are loose. South cables are tight.
	Outlet Components	North End	Other - Seal Joint	
	Inlet Components	South End	Other - Remove Shrub	Shrub growing on South culvert top. Box joint at outlet is wide & leaking. Parging has failed. Seal is broken & hanging at SW corner of joint.
977401	Wearing Surface	Top of Fill	Rout & Seal	Minor pop-ups of aggregates. 1.0 m of open deck visible at each end. No barriers or signs. Surface is polished. Tar and chip resurface since last inspection. Transverse cracks at structure edges.
980301	Wearing Surface (Approaches)	Between west walls	Rout and Seal	Many sealed cracks - additional cracking. Approaches are patching with settlement and have a rough riding surface. Poor condition.
	Wearing Surface	Top of Deck	Rout and Seal	Longitudinal crack in north lane. Crack at centreline. Cracking and potholes at joints due to settlement.
	Curbs	North and South Sides	Repair of Bridge Concrete	Cracking of concrete at ends of curbs. Large spall Northeast and Southwest corners
980502	Barrels		Bridge Cleaning	Build up in North barrel should be cleared. Minor hairline cracking throughout. Narrow vertical crack on north wall and haunch, north barrel.
	Inlet Components	West End	Bridge Concrete Repair	Build-up of soil at north. Minor localized area of scaling at Northwest corner.
980901	Girders	Each Side	Painting Steel Bridge Structures	Touch up paint required and cleaning of corrosion. Surface corrosion on inside flanges.
980902	Abutment Walls	East and West Ends	Concrete Sealing	Narrow vertical crack in East abutment.
	Wingwalls	Quadrants	Bridge Concrete Repair	Delamination and cracking in North wingwall.
	Wearing Surface (Approaches)	East and West Ends of Deck	Bridge Surface Repair	Settlement at joints causing armour angles to stick up one inch to one and a half inches above the asphalt surface.
	Barrier/Parapet Walls	Top of Deck	Concrete Sealing	Includes inside and outside faces. Vertical narrow cracks throughout.
	Soffit - Thick Slab		Bridge Concrete Repair	Spalled area at North West deck drain, rebar exposed.
980903	Wingwalls	East and West Ends	Repair of Bridge Concrete	Minor cracking with leakage and chlorides at wingwalls. Popouts with exposed rebar on Northeast wingwall.
	Soffit - Thick Slab	Above Stream	Repair of Bridge Concrete	Included north and south fascia and coping. Cracks in centre with some delamination
981602	Embankments	North and South	Erosion Control at Bridge	Some erosion top and bottom of concrete spillway. Spillway is deteriorating. Southeast spillway is blocked with debris, vegetation and or soil.
	Seals/Sealants	North and South	Bridge Deck Joint Repair	Joints mastic filled, some snow plow damage. Cracking of surface around joints at curbs. Recommend rehabilitation. (2014) Joints paved over prior to 2016 inspection. Limited inspection 2016. Asphalt surface has transverse cracks at joints. Rout and seal recommended. Wabo seal detached and hanging at south abutment near southeast wingwall.
981603	Embankments	Quadrants	Erosion Control at Bridges	Minor erosion at quadrants.
981901	Wearing Surface (Approaches)	Each End of Deck	Rout and Seal	Minor deterioration of asphalt at expansion joint armour angle. Hairline centreline cracks at approaches. Transverse cracking at west approach.
981905	Outlet Components		Erosion Control at Bridges	Erosion at ditch banks at outlet.
982101	Wingwalls	All Quadrants	Repair of Bridge Concrete	Includes massive retaining wall at northwest corner of west abutment wall (former bridge structure). Efflorescence and spalling on retaining wall. Minor deterioration at construction joints.
982401	Wearing Surface (Approaches)	North and South	Rout and Seal	Approaches between wingwalls. Asphalt has minor deterioration at armour angles. Transverse cracking at ends of approach slabs.
	Armouring/retaining devices	North and South Ends	Bridge Cleaning	Made of neoprene. Minor asphalt deterioration at amour angles. Joints filled with debris, clean joints.
	Curbs	East and West	Concrete Sealing	Includes: East and West, inside and outside. Minor transverse cracks. Crack at approach slab at South West.
982403	Wearing Surface		Rout & Seal	Centreline crack in asphalt full length of wearing surface. Transverse crack at asphalt joints at East and West.
982404	Wearing Surface		Rout & Seal	Wide cracks along centreline of road and approach. Approach surface wearing away at expansion joints (north and south). Pothole at South expansion joint due to deterioration. Transverse cracks throughout.
	Slope Protection	Between Abutments and Piers	Erosion Control at Bridges	North slope protection has slid down slope.
982501	Abutment Walls		Repair of Bridge Concrete	15m of cracks. South - 7 cracks. North - 8 cracks. Rout and seal recommended.
983401	Soffit Thick slab		Bridge Concrete Repair	Entire west fascia is delaminated and spalling. Minor delamination and hairline cracking with chlorides on east fascia
	Wearing Surface	Top of Deck	Rout and Seal	Transverse cracks in wearing surface at approaches.

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Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
983502	Railing System	Top of Sidewalk	Bridge Concrete Repair	No approach barriers, railing assemblies or hazard signs at quadrants. Surface corrosion on barrier rail.
	Soffit Thick slab		Bridge Concrete Repair	Transverse cracks noted two (2) with some leakage and chlorides. Discharge running down walls with staining and minor deterioration at storm sewer outlets on north and south abutment walls, outlets should be extended.
	Soffit Thin Slab	East and West	Concrete Sealing	Includes sidewalk outside face. Minor localized cracks and spall at NE quadrant.
	Wearing Surface	Top of Deck	Rout and Seal	Transverse cracks in wearing surface at both north and south approaches. Vegetation growing on curbs and sidewalks.
983701	Bearings	Under Girders	Bridge Bearing Maintenance	Bearing seats need washing. Concrete I beams delaminating and spalling at beam seats.
	Sign	On Roadway	Replace Sign	Sign at NE quadrant appears damaged and rusted.
984101	Outlet Components	East End	Bridge Concrete Repair	Minor impact damage at Northeast and Southeast quadrants.
	Wearing Surface	Top of Concrete Deck	Rout and Seal	Transverse cracks in wearing surface at approaches and centreline longitudinal crack.
984203	Abutment Walls	E & W	Repair of Bridge Concrete	Localized deterioration of abutment walls at vertical joints. Including cracking, staining and honeycombing. Staining and evidence of leaking at North precast joint.
	Soffit Thin Slab		Repair of Bridge Concrete	Joints between precast sections stepped to create superelevation of roadway. Exposed rebar at Northwest soffit. Localized spalls at precast joints. Leaking at North precast joint.
984503	Deck Top		Bailey Bridges - Installation, Maintenance and Removal	Load limit of three (3) tonnes. Replacement of selected planks completed in emergency repair (2011). Many deteriorated planks remain. Decking at east approach is loose.
985701	Wingwalls	All Four (4) Quadrants	Repair of Bridge Concrete	Minor spalling at southwest corner at stone retaining wall. Patch.
	Soffit Thin Slab		Repair of Bridge Concrete	Minor spalls and installation damage at north and south box joints.
	Wearing Surface	Top of Deck	Rout and Seal	Asphalt surface on deck and approaches. Transverse cracking at both approach joints due to settlement. Narrow cracks on deck wearing surface at North end.
985902	Wearing Surface	Top of Fill	Rout & Seal	Cracks in asphalt have been rout and sealed.
986001	Outlet Components	South End	Repair of Bridge Concrete	Deterioration at SW corner including cracking and efflorescence. Cracks on South fascia.
	Wearing Surface	Top of Deck	Rout & Seal	Roadway fill slopes stable, however are eroding from road drainage. Road repaved since 2014 inspection. Asphalt in good condition. One transverse crack in wearing surface.
986002	Inlet Components	North End	Repair of Bridge Concrete	Deterioration on Northwest top construction joint of inlet.
986003	Soffit Thin Slab	North and South	Repair of Bridge Concrete	Fascia severely deteriorated. Spalling at construction joint.
987404	Wearing Surface (Approaches)		Rout & Seal	New asphalt wearing surface since last inspection. Minor settlement at structure edges. Transverse and longitudinal cracks beginning to propagate through new wearing surface.
987407	Inlet Components		Bridge Concrete Repair	Light scaling on surface throughout structure. Honeycombing on walls.
	Outlet Components		Bridge Concrete Repair	Light scaling on surface throughout structure. Fence at outlet is blocking debris in stream. Erosion at east quadrant.
D00001	Wearing Surface	Top of Deck	Rout and Seal	Tar and chip. Includes approach and road wearing surface. Longitudinal cracking with pothole forming on asphalt wearing surface.
	Deck Top	Top of Deck	Bridge Cleaning	Debris on bridge against barrier walls.
D00002	Wearing Surface (Approaches)	E & W	Bridge Surface Repair	Includes slopes. No signs, barriers. Slight settlement at approach corners and at ends of structure.
	Barrels	Inside	Repair of Bridge Concrete	Vertical cracking on midwall at outlet. Honeycombing at various locations on walls and soffit. Areas of narrow vertical cracking noted throughout.
	Outlet Components		Repair of Bridge Concrete	Deterioration and scaling of midwall. Cracking and efflorescence on southeast face. Large spall on west outlet and at bottom of centre leg at outlet.
D00005	Bearings	Under Slab	Repair of Bridge Concrete	Seat not visible. Pads visible are continuous strips of neoprene. Some cracking at northwest seat. Northeast seat cracking and deterioration.
D00007	Approach Slabs (Approaches)		Other	Beam on northeast and southwest embankment. No barriers on northwest and southeast approach. Minor impact damage on northeast structure connection.
	Barrier/Parapet Walls	Top of Curb	Repair of Bridge Concrete	Repaired in 2003 rehabilitation. Cracks routed and sealed. More cracking appearing. Curbs have minor areas of spalling. Localized area of cracking and delamination on barrier top at south.
	Girders	Abutment to Abutment	Repair of Bridge Concrete	Two (2) spalls on north fascia showing rust. Areas of lower flange showing rebar due to lack of cover.
	Soffit Thin Slab	Underneath	Concrete Sealing	Several short narrow cracks. Showing efflorescence and previous repair work. Cracking with efflorescence on south fascia.
	Wearing Surface	Top of Deck	Bridge Surface Repair	Cracking at localized areas along centreline of bridge. Few potholes forming at West end.
D00012	Deck Top	E & W	Repair of Bridge Concrete	Monitor hairline cracks at cast-in post base plate, minor localized spall locations. Top of concrete is wear surface, minor polishing in wheel tracks. Areas of deterioration and spalling in east and west fascia.
D00018	Wearing Surface (Approaches)	North and South	Rout and Seal	Asphalt is cracking and settling at approach joints and end dams. Impact damage to Southeast and Southwest guide rails. Southwest guide rails loose at localized posts.
	Soffit - Thick Slab		Bridge Concrete Repair	Minor deterioration of soffit at drains. Surface staining throughout.
	Wearing Surface	Top of Deck	Rout and Seal	Cracking at all end dams. Transverse and longitudinal cracking on asphalt wearing surface. Approx. 5m longitudinal crack at centreline of wearing surface.
D00022	Streams and Waterways		Erosion Control	Areas of erosion noted at each quadrant. Gabion basket at southwest quadrant is settling.

## BRIDGE MANAGEMENT TABLES

Structure No.	Element Name:	Location:	Maintenance Needs:	Comments:
D00023	Wearing Surface (Approaches)	Top of Fill	Bridge Surface Repair	Settlement at structure edges. No barriers and hazard signs. Minor potholes above culvert in first layer of surface treatment.
	Barrels		Repair of Bridge Concrete	North box blocked by sand. Stream runs through South barrel. Hairline vertical crack in North wall of North barrel. Several hairline vertical cracks in North wall of South barrel. Leaking at cracks.
D00027	Approach Slabs	Southwest Corner	Erosion Control	Erosion at Southeast corner.
	Embankments		Erosion Control	Erosion at Southeast corner.
D00028	Barrels		Concrete Sealing	Narrow vertical cracks visible on North and South wall.
	Inlet Components	West End	Clear Overgrowth	Surface cracking. Vegetation needs to be cleared. Utility pipe on top of inlet. Build-up of debris blocking inlet.
	Wearing Surface	Top of Deck	Bridge Surface Repair	Light map cracking. Slight settlement at structure edges.
	Embankments		Bridge Cleaning	Clear vegetation at inlet.
D00030	Inlet Components		Erosion Control, Repair of Concrete	Vegetation should be cleared from inlet. Settlement at inlet quadrant. Map cracking and efflorescence at northwest corner. Utility conduit at each face of inlet is broken. Build-up of branches at inlet.
	Outlet Components		Repair of Bridge Concrete	Some delamination at top slab. Map cracking and efflorescence.
	Embankments		Erosion Control at Bridges	Banks stable overall. Overgrown. Minor erosion at southwest quadrant.
D00031	Wearing Surface (Approaches)	Top of Deck	Bridge Surface Repair	Settlement at structure edges. Cracking throughout with potholes forming at approaches.
	Barrels	Inside	Concrete Sealing	Narrow vertical cracks at barrel walls at some drains. Transverse soffit crack at West end of culvert.
	Streams and Waterways		Clear Overgrowth	Banks stable. Heavy growth.
D00034	Inlet Components	North	Repair of Bridge Concrete	Minor surface cracking and localized delamination due to freeze/thaw.
	Embankments		Erosion Control at Bridges	Erosion at ditch at Southwest quadrant.
H000001	Embankments		Erosion Control at Bridges	
H000002	Wearing Surface (Approaches)	Top of Fill	Rout & Seal	Drainage ditches. No signs or barriers. Transverse cracking. Some polishing & rutting.
	Barrels	Inside	Concrete Sealing	Short headwall at inlet and outlet. Horizontal and vertical cracks and leakage on walls. Area of delamination noted on north wall near inlet Crack in soffit at west end (across culvert). Crack and leakage on midspan soffit. Monitor.

## APPENDIX E: ENHANCED OSIM LIST

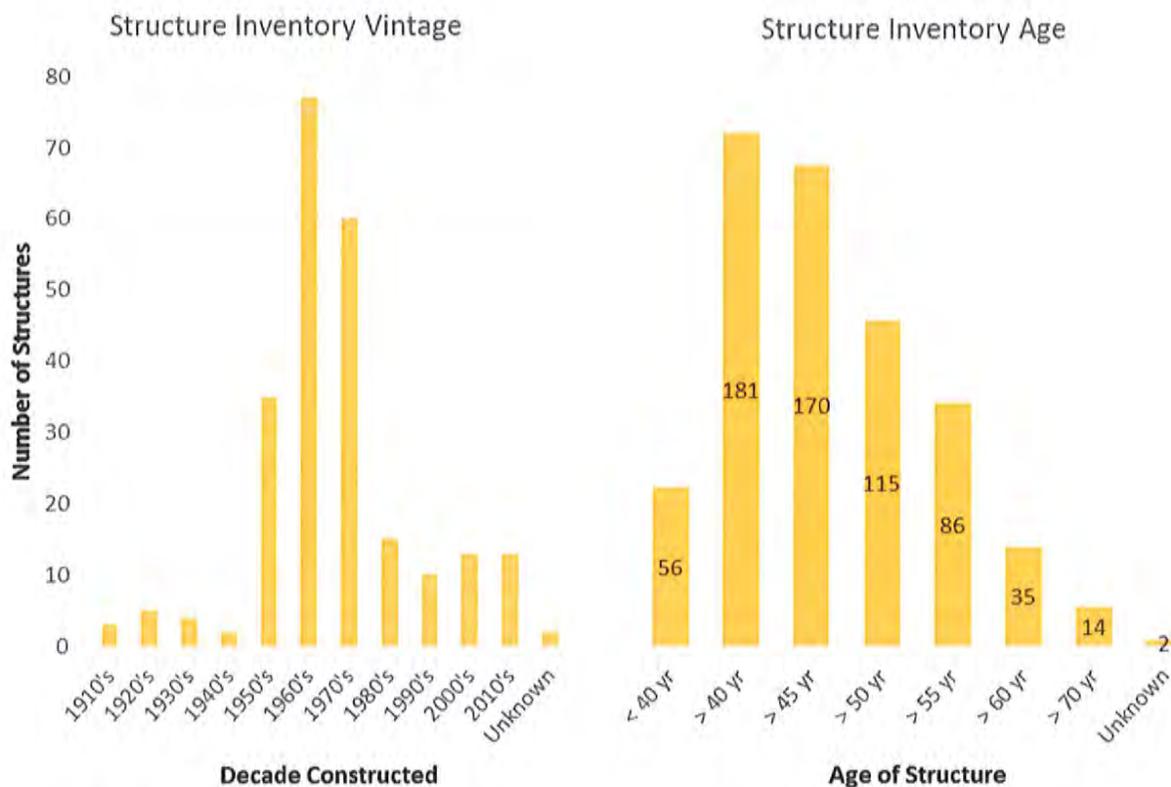
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## ENHANCED OSIM LIST

Structure No.	Comments
000004	Enhanced OSIM inspection recommended. Boat required.
000021	Limited inspection due to confined space. Enhanced OSIM inspection recommended.
000022	Limited inspection due to confined space. Enhanced OSIM inspection recommended.
000101	No signs or barriers. Enhanced OSIM inspection recommended. Boat required.
000106	No approach barriers. Deck Condition Survey recommended. Enhanced OSIM inspection recommended. Ladder required.
000203	Efflorescence visible at south end midwall face. Includes inlet and outlet. Limited inspection of West barrel due to water level. Hairline vertical cracking at East wall and central wall near South end. Honeycombing at bottom of East wall, at centre of box.
000204	No barriers in place. Limited inspection due to dogs (2018).
000302	Limited inspection due to access. Surface rust visible at water level and at various locations at bolts. Multi-Plate connection showing signs of corrosion and leakage.
002031	No signs or barriers. Limited inspection due to high water level. (2018)
002035	No signs or barriers. Limited inspection due to high water level. (2018)
002404	Monitor deflection. Investigate culvert liner. Limited inspection due to high water. (2018)
010036	No approach barriers. Enhanced OSIM inspection recommended. Ladder required.
010037	Inlet is protected with ice breaking nose between culverts. Ice break nose has minor cracking and efflorescence. Contains delamination around steel culvert and spalling at the water level. Inspection limited to above waterline.
010049	Bridge condition study will determine extent of rehabilitation required. Enhanced OSIM inspection recommended. Ladder required.
010053	No hazard signs. Limited inspection due to high water. (2018)
010064	Upstream walls partly under water. Limited inspection on upstream wingwalls due to chain link fence. Northwest and northeast walls deteriorating. Large spalls and delamination on northwest wingwalls with exposed rebar. Deterioration and staining on Southeast wingwall.
010100	Limited inspection due to high water.
973801	Limited inspection due to high water levels (2018).
973801	Limited inspection due to high water levels (2018).
974601	No signs or barriers. Due to age and deterioration of culvert ends, DCS recommended. Limited inspection due to highwater. (2018)
974501	No hazard signs at quadrants. Enhanced OSIM inspection recommended. Ladder required.
975901	water level. (2018)
980101	Enhanced OSIM inspection recommended. Boat required.
981602	Enhanced OSIM inspection recommended. Bridgemaster required.
981901	Bell and gas on North side. Gas attached. DCS to determine extent of rehab. Enhanced OSIM inspection recommended. Ladder required.
982101	Cracks are 1mm wide, longitudinal on top of "99" deck. DCS recommended. Utilities attached to fascia. Enhanced OSIM inspection recommended. Bridgemaster required.
982404	Delamination and spalling on diaphragms at pier support. Delamination and spalling showing rebar on soffit of Southeast span. Enhanced OSIM inspection recommended. Bridgemaster required.
982501	Enhanced OSIM inspection recommended. Bridgemaster required.
983502	Ladder or Bridgemaster required.
984101	Limited inspection due to confined spaces. Enhanced OSIM inspection recommended.
984202	Special maintenance required to midspan North outside girder. Two areas needing repair on beam soffit. Curb and expansion joints need replacing. Joints require replacement. Girders require repair. Enhanced OSIM inspection recommended. Boat required.
984502	Recommend enhanced OSIM inspection with aerial platform to view soffit, bearings and girders. DCS needed to identify scope of work required.
985901	Underwater investigation recommended. Pile not visible under water level. Gabion basket protection at both abutments show failure. Deck showing signs of failure at centerline at various locations. Enhanced OSIM inspection recommended. Boat required.
985902	Studies required due to extensive cracks in deck, spalling of soffit. Enhanced OSIM inspection recommended. Bridgemaster required.
D00005	Recommend enhanced OSIM and deck condition survey. Bridgemaster required.
D00007	Rehabilitation will be based on the results from a Bridge Condition Study. Enhanced OSIM inspection recommended. Ladder required.
D00009	Enhanced OSIM inspection recommended. Bridgemaster required.

## APPENDIX F: STRUCTURE INVENTORY AGE

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**APPENDIX G:  
O.Reg.472/10**

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ServiceOntario

e-Laws

**Public Transportation and Highway Improvement Act**  
**Loi sur l'aménagement des voies publiques et des transports en commun**

**ONTARIO REGULATION 104/97**

**STANDARDS FOR BRIDGES**

**Consolidation Period:** From December 6, 2010 to the e-Laws currency date.

Last amendment: O. Reg. 472/10.

*This Regulation is made in English only.*

1. In this Regulation,

“Canadian Highway Bridge Design Code” means the “Canadian Highway Bridge Design Code” designated as CAN/CSA-S6-06 published by the Canadian Standards Association and the “Commentary on CAN/CSA-S6-06, Canadian Highway Bridge Design Code” published by the Canadian Standards Association, as amended from time to time;

“evaluation” has the meaning set out in the General Technical Definitions of the Canadian Highway Bridge Design Code;

“Ontario Structure Inspection Manual” means the “Ontario Structure Inspection Manual (OSIM)”, published by the Ministry and dated October 2000 (revised November 2003 and April 2008), as amended from time to time and available from the Ministry;

“professional engineer” means a person who holds a licence or a temporary licence issued under the *Professional Engineers Act* to engage in the practice of professional engineering, but does not include a person who holds a limited licence issued under that Act;

“rehabilitation” has the meaning set out in the General Technical Definitions of the Canadian Highway Bridge Design Code;

“Structural Manual” means the “Structural Manual” published by the Ministry and dated April 2008, as amended from time to time and available from the Ministry. O. Reg. 104/97, s. 1; O. Reg. 160/02, s. 1; O. Reg. 278/06, s. 1; O. Reg. 472/10, s. 1.

2. (1) Where any person undertakes or causes to be undertaken the design, evaluation, construction or rehabilitation of a bridge, the design, evaluation, construction or rehabilitation shall conform to,

(a) the standards set out in the Canadian Highway Bridge Design Code; and

(b) the most current accepted engineering standards, guidelines, procedures and practices.

O. Reg. 472/10, s. 2.

(2) Despite clause (1) (a), if there is a conflict or inconsistency between a standard set out in the Canadian Highway Bridge Design Code and a standard set out in Division 1 of the Structural Manual entitled “Exceptions to the Canadian Highway Bridge Design Code”, the design, evaluation, construction or rehabilitation of a bridge shall, instead of conforming to the standard set out in the Canadian Highway Bridge Design Code, conform to the standard set out in Division 1 of the Structural Manual. O. Reg. 472/10, s. 2.

(3) The structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer and in accordance with the Ontario Structure Inspection Manual. O. Reg. 472/10, s. 2.

(4) For greater certainty, the inspection referred to in subsection (3) may be performed at any time in the calendar year, regardless of when in a prior calendar year the previous inspection was performed. O. Reg. 472/10, s. 2.

(5) Despite subsection (3), the inspection of a bridge may vary from the Ontario Structure Inspection Manual if,

- (a) the variation is not a marked departure from the Ontario Structure Inspection Manual; and
  - (b) the variation does not adversely affect the safety and mobility of people and goods.
- O. Reg. 472/10, s. 2.

3. Every bridge shall be kept safe and in good repair. O. Reg. 104/97, s. 3.

4. Omitted (provides for coming into force of provisions of this Regulation). O. Reg. 104/97, s. 4.

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